

# UNIVERGE<sup>®</sup> SV9100

## **System Hardware Manual**

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Communications Technology Group

## PREFACE

## GENERAL INFORMATION Congratulations! You have purchased the NEC UNIVERGE SV9100 System.

The feature-rich UNIVERGE SV9100 key system provides over 200 features including Computer Telephony Integration, Least Cost Routing, Automatic Call Distribution, T1/E1 Digital Trunk, ISDN-BRI Voice Trunks, ISDN-PRI Voice Trunks, Voice over Internet Protocol, and many others.

The UNIVERGE SV9100 system provides what the customer needs today, and as business expands the system can be expanded to grow as well.

The UNIVERGE SV9100 system has a set of manuals that provides all the information necessary to install and support the system. This preface describes these manuals.

**THIS MANUAL** This manual contains detailed instructions to install the UNIVERGE SV9100 chassis, Blades, Multiline Terminals, and optional equipment in the following chapters.

#### Regulatory

This chapter provides important regulatory information.

#### Chapter 1 – Introduction to SV9100

This chapter provides an overview of the UNIVERGE SV9100 system.

#### Chapter 2 – SV9100 System Specifications

This chapter contains detailed specifications for the SV9100 system and should be carefully reviewed by the technician *before* installing the system.

#### Chapter 3 – Installing the SV9100 Chassis

This chapter contains the information necessary for installing the SV9100 chassis. The technician should become familiar with this section *before* starting installation.

#### Chapter 4 – Installing the SV9100 Blades

This chapter contains instructions for installing the blades in the UNIVERGE SV9100 chassis.

## Chapter 5 – Installing DT Series Digital, IP Terminals and Single Line Telephones

This chapter provides information about the UNIVERGE SV9100 system digital and IP terminals in addition to the single line telephones, cordless telephones and wireless telephones.

#### Chapter 6 – Installing SV9100 Cordless Telephones

This chapter provides information regarding cordless telephones that can be used in conjunction with the UNIVERGE SV9100 system.

#### Chapter 7 – Installing SV9100 Wireless Telephones

The wireless telephones provide wireless freedom that also allows access to features provided by the UNIVERGE SV9100 system.

#### Chapter 8 – Installing SV9100 Conference Solutions

Conferencing solutions provide premium, full-duplex audio to small conference rooms as a single unit or to larger rooms when expanded by up to three units that also expand microphone access and loudspeaker coverage.

#### Chapter 9 – Installing SV9100 Optional Equipment

This chapter provides information for installing optional equipment, such as PGD(2)-U10 ADPs, background music, door boxes, DSS consoles, *D*<sup>term</sup> VSR, external paging as well as other handsets, recording devices and adapters on the UNIVERGE SV9100 digital and IP telephones.

## SUPPORTINGDOCUMENTSOther manuals in the set are described below.

Documents supporting the SV9100 system include:

#### **UNIVERGE SV9100 Features and Specifications Manual**

This manual describes each available feature for the SV9100 system.

#### UNIVERGE SV9100 Programming Manual

This manual contains all programming instructions for the SV9100 system.

#### UNIVERGE SV9100 PC Programming Manual

This manual describes the operation of the PCPro program for the SV9100 system. This program is a user-friendly Windows application that allows the user to program and configure features of the SV9100 system from the PC environment.

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Issue 10.0



# Regulatory

#### SAFETY INFORMATION

This equipment has been certified by Canadian Standards Association and found to comply with all applicable requirements of North America:

- O CAN/CSA C22.2 No. 0-M91 (R2001) General Requirements Canadian Electrical Code, Part II
- CAN/CSA-C22.2 No. 60950-1-07, 2nd Ed. Information Technology Equipment Safety Part 1: General Amendment 2: 2014 (MOD) Requirements (Bi-national Standard, with UL 60950-1-2014, 2nd Ed.)
- O ANSI/UL Std No. 60950-1-2014, 2nd Ed. Information Technology Equipment Safety Part 1: General Requirements

#### RADIO FREQUENCY INTERFERENCE

In compliance with FCC Part 15 rules, the following statements are provided:

#### **IMPORTANT NOTE**

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### O For Canada: CAN ICES-3(A)/NMB-3(A)

#### **CANADA - TELEPHONE TERMINAL APPARATUS**

#### Notice:

This equipment meets the applicable Innovation, Science and Economic Development Canada (ISED) Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that ISED technical specifications were met. It does not imply that ISED approved the equipment.

#### Avis:

Le présent matériel est conforme aux spécifications techniques applicables d'Innovation, Sciences et Développement économique Canada (ISED) au matériel terminal. Cette conformité est confirmée par le numéro d'enregistrement. Le sigle IC, placé devant le numéro d'enregistrement, signifie que l'enregistrement s'est effectué conformément à une déclaration de conformité et indique que les spécifications techniques d'ISED ont été respectées. Il n'implique pas qu'ISED a approuvé le matériel.

#### Notice:

The Ringer Equivalence Number (REN) for this terminal equipment is 0.5. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

#### Avis:

L'indice d'équivalence de la sonnerie (IES) du présent matériel est de 0.5. L'IES assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

#### ISED Registration Number: IC: 140L-SN1750

#### Ringer Equivalence Number (REN): 0.5

#### PRODUCT LIABILITY

#### Using the Equipment Safely

The following safety information describes how to avoid injuries while working with the equipment and how to prevent damage to the equipment. Learn the meaning of the following symbols and then read this section carefully before using the equipment.

SYMBOL	DESCRIPTION
DANGER	Incorrect use of the equipment may cause personal injury or death.
WARNING	Incorrect use of the equipment may cause personal injury or a serious system fault.
	Incorrect use of the equipment may limit the system performance or cause the system to fail.

The telephone system can only be used in NEC-designated countries.

If a system-down, malfunction, defect or external factor such as an electrical failure indirectly causes a loss of profit, the company (or affiliates) will not be held responsible.

The goal is to produce a comprehensive and accurate manual. However, if errors or omissions are found in this manual, please notify NEC Corporation.

If the system requires installation or repair, contact the dealer or its service technician. Carefully read all the manuals that relate to the system.

#### **Safety Considerations**

The following describes the safety considerations that must be observed before using the system, the power- related equipment and the peripheral equipment, such as consoles, the Main Distribution Frame (MDF), telephones, PCs, printers, etc.

DANGER		
<u>(j)</u>	If the system emits smoke or a burning, acrid odor, immediately turn off the system power. Operating the system in this state might cause a fire, an electrical shock, or a system failure. After turning off the power and confirming that the smoke has disappeared, contact the dealer.	
	If any equipment, such as the system, the main power source, a cabinet or peripheral equipment tips over, turn off the power and contact the dealer.	
	If liquid reaches the inside of the system or the main power source, turn off the power. Operating the system in this state might cause a fire, an electrical shock, or a system failure.	
	Do not touch the internal parts of the main power source to disassemble or configure it. This action may cause a fire, an electrical shock or a system failure.	
A MARKAN	NEC Corporation does not take any responsibility for disassembled or reconfigured equipment.	
	Do not put any container objects (such as a vase or a cup) on the main power source or any peripheral equipment. It might cause a fire, an electrical shock or a system failure.	
OK?	Be sure to use cables designated by NEC or cables attached to the equipment. If cables are not designated particularly, choose cables with considering safety and transmission performance carefully. Ask the dealer or your local agency if needed.	
Agre	Do not tamper with, modify, forcefully bend, forcefully remove or twist an electrical cord or any wiring to or from the system, the main power source or any peripheral equipment. It might cause a fire, an electrical shock, or a system failure. If the wiring is damaged, contact the dealer.	
dust	Correctly insert all of the electrical plugs into the electrical outlets. Before inserting a plug into an electrical outlet, ensure that there is no dust on the plug's blades. If there is dust on a blade, it might cause a fire.	
DANGER		
-----------------------	--	
жик (При страници)	Do not use power other than the power that was designated for the system when it was installed.	
PWR	Do not attempt to repair or move the main power source without assistance from the dealer.	
<u>(</u> )	Do not put any metal or combustible objects into a vent of the system, the main power source, or any peripheral equipment. Operating the system in this state might cause a fire, an electrical shock, or a system failure. If this occurs, turn off the power and contact the dealer.	
	Be careful when using any peripheral equipment's Liquid Crystal Display (LCD). If the liquid leaks, it can be harmful to the user and to the system.	
?	Before connecting any non-NEC, customer-provided equipment, check with the supplier to ensure that the equipment is compatible. If the supplier cannot confirm the compatibility, do not connect the equipment. Connecting incompatible equipment might cause a fire or an electrical shock.	

WARNING	
	Do not place any object on the system or the main power source. If the object falls, it might cause personal injury or damage to the equipment.
	When removing a plug from an outlet, be sure to grip the plug, not the cord. Gripping the cord to remove the plug could cause a fire or an electrical shock to occur.
<i>¥</i>	If lightning causes a fault, contact the dealer.
	Provide the appropriate temperature, humidity, and ventilation on an around-the-clock basis. For example, at a height that is one meter (3.28 feet) above the floor, the temperature should be between 20° C and 25° C (68° F to 77° F) and the humidity should be approximately 50%.
ATTENTION Contents Static Sensitive Handling Precautions Required	Take appropriate anti-static measures so that the other end of the anti-static kit can be connected to the metal part of the frame.

WARNING	
	Observe the following precautions when using any optional batteries:
	• The system's emergency back-up battery may be a rechargeable lead battery. Check the emergency battery for an electrical failure.
	<ul> <li>Battery acid (electrolyte) is extremely harmful to human skin and eyes. If battery acid contacts skin, wash the affected area with soap and water. If battery acid contacts the eyes, flush the eyes with water. In either event, seek medical attention. If there is battery acid on a cloth, use water to wash the battery acid from the cloth.</li> </ul>
1	<ul> <li>Do not intentionally short batteries. Do not put the battery near a fire or in a fire. Do not disassemble the battery, drop it or knock it against another object.</li> </ul>
	• The battery's life expectancy is affected by its environment. The normal battery life is approximately three years. If the battery is used in an outdoor setting and is exposed to high temperatures, its life expectancy drops to approximately one year.
	Perform periodic diagnostic tests and maintenance procedures on the emergency battery and its terminals to ensure their readiness. If there is a power failure and the emergency battery is not ready, then the system will not work. Additionally, a damaged or dead battery, or terminals that need replacement might cause battery acid to leak, which might cause smoke or a fire. The battery and terminals are periodic replacement parts (the cost is chargeable to the customer). A service contract, with the supplier or service technician, to perform routine maintenance for the battery is recommended.
	Do not touch peripheral equipment with wet hands. Do not allow any liquid to touch any of the peripheral equipment.
	Do not touch the printer's internal components when replacing disposables such as a cartridge or a ribbon. Ensure that the printer is turned off and that it is not hot in order to prevent burns from any accidental contact with the internal components.
	Do not drop the peripheral equipment or knock it against another object. These actions might cause an equipment failure.
Thinner	Do not use benzine, thinner or alcohol for cleaning. When removing dust and dirt, put diluted, mild detergent on a cloth and then wring out the cloth. Remove the dust and dirt with the cloth and then wipe the cleaned area with a dry cloth.



# INSTALLATION ENVIRONMENT

Consider the following items before installation.

#### Stability

WARNING	
	Install the system with anchor bolts to prevent constant movement or vibration, such as from a nearby motor or automatic door, and to resist catastrophic movement from natural disasters, such as an earthquake. If the system moves or falls, an injury could occur.

# Floor, Wall and Ceiling

WARNING	The wall and ceiling materials must be resistant to Electrostatic Discharge (ESD) and provide heat insulation. Since the battery's life expectancy depends on the ambient temperature, the room where the battery is installed must be well ventilated and vented to the outside. Check the battery specifications to determine if the battery can or cannot be installed near a motor or a power transformer.
	The floor material that is under and around the system must be resistant to ESD.

#### Windows

WARNING	
	Keep all of the windows closed if the location is affected by dust, sea breeze or corrosive gas. Curtains or blinds are necessary to avoid direct sunlight.

# **Fire Extinguisher**

WARNING	Place a fire extinguisher for electrical fires (such as a carbon-gas fire extinguisher or a
	halon-gas fire extinguisher) near the system. It is recommended that the room also be equipped with an automatic fire-detection system. In the event of smoke and fire, turn off the main power source and the backup battery, then use the fire extinguisher to put out the
	fire while trying to avoid inhaling any smoke.

# Safety Environment

WARNING	Consider measures to deal with disasters (such as fires, floods and earthquakes) and to ensure the safety of the staff.
	Regularly clean the room or rooms where the switching equipment resides.
	Do not spray any insecticides directly on the equipment (insecticides can adversely affect the switching equipment).

# Air Conditioning Facilities

WARNING	The system and the air conditioning system must be installed separately and have separate power sources.
	To prevent an electromagnetic arc from causing noise, attach a surge-limiting capacitor and resistor on the air conditioner's electromagnetic switch's coil.
	It might be necessary to adjust the ventilation so the air conditioning is equally effective throughout the equipment room.
	Do not place the system in a location where condensation might fall from an air conditioner or a duct.
	Do not place the system in a location where hot and humid air is exhausted, as this might damage the system.

# Lightning Strikes

WARNING	The grounding system must protect the system, MDF, main power source, PCPro, printer, modems, etc. from damage caused by lightning strikes and electrical surges. All the grounding conductors must have a resistance of less than one $\Omega$ to bring a zero-voltage reference to the system components.
	To achieve this, the following ground conductors must connect to the Primary Ground Bar:
	O The Earth Ground (E) from the Rectifier
	O The Frame Ground (FE) from the system
	O The Power Ground (PE) from the system, through the Rectifier
	O The Frame Ground (FE) from the MDF
	• The AC service outlets, with plug outlets, for the PCPro, printer, modems and any measurement devices, such as a protocol analyzer.

# Electromagnetic Interference

When installing an additional device in the vicinity of the system, observe the installation and operating instructions for the device.
Otherwise, EMI noise from the device may cause a malfunction of the system.

#### **Disposables and Periodic-replacement Parts**

Many parts, such as batteries, backup batteries, fuses and displays need to be replaced on a periodic basis. In the event of sudden traffic, a part that is past due for replacement might lead to a system failure and damage to the system.
A service contract with the dealer or its service technician to monitor the replacement cycles and to supply the replacement parts and the necessary disposables is recommended.

## NORTH AMERICAN INFORMATION

#### **TELEPHONE TERMINAL EQUIPMENT (TTE)**

This equipment complies with Part 68 of the FCC Rules and the requirements adopted by the ACTA (Administrative Council for Terminal Attachments). On the equipment is a label that contains, among other information, the FCC Registration Number or product identifier in the format: **US:AAAEQ##TXXXX**. If requested, this number must be provided to the telephone company.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

The Ringer Equivalence Number (REN) applies to analog telephone lines (or trunks) and is used to determine the maximum number of devices that may be connected to a telephone line. Excessive devices on a telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company. The REN for this product is part of the FCC Registration Number (or product identifier) in the format: **US:AAAEQ##TXXXX**. The digits represented by ## are the REN without a decimal point (e.g., 03 is a REN of 0.3). The REN and the FCC Registration Number for this product are provided below.

Connection to party line service is subject to state tariffs. Contact the state public utilities commission, public service commission or corporation commission for information.

For single and two-line equipment that connects to the telephone network via a plug and jack, the plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by ACTA. A compliant telephone cord and modular plug may be provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. See installation instructions for details.

#### **TELEPHONE/SERVICE PROVIDER COMPANY NOTIFICATION**

Before connecting this telephone system to the telephone network, the following information must be provided to the telephone company:

- O Your telephone number.
- O FCC registration number:
- O When the SV9100 system is to be installed as a Key Function system (no dial access to Trunk Groups/Route Advance Blocks), use the following number:

#### US:NIFKF07BSN1750

O When the SV9100 system is to be installed as a Multifunction system, use the following number:

#### US:NIFMF07BSN1750

O When the SV9100 system is to be installed as a PBX system, use the following number:

#### US:NIFPF07BSN1750

Ringer Equivalence Number (REN): **0.5A** for GCD-4COTB-A and GPZ-4COTF-A **0.7B** for all others

*Note: Ringer type B was discontinued starting with TIA-968-B-3 Addendum (see 5.1.11.2.6) in March 2016.* 

USOC jacks required: RJ11C, RJEX, RJ2FX, RJ2HX, RJ48C, RJ21X

## **EXPORT ADMINISTRATION REGULATIONS (EAR)**

This product contains items subject to export regulations of U.S. When the product is exported to other countries, prior approval by U.S. government may be required for certain countries.

#### CATCH-ALL CONTROLS

#### \*\*Warning Notice\*\*

This (product and/or technology) can be utilized for development and/or manufacturing of weapons of mass destruction. Therefore, when you (sell or provide them to any third party and/or grant license to use), you have to take ample and necessary actions so that this (product or technology) shall not be used for development and manufacturing of weapons of mass destruction, which would disrupt world peace and security.

#### ELECTRICAL SAFETY ADVISORY

Telephone companies report that electrical surges, typically lightening transients, are very destructive to customer terminal equipment connected to AC power sources. This has been identified as a major nationwide problem. Therefore it is recommended that you use a surge arrestor on the AC power input.

#### **INCIDENCE OF HARM**

Should this product cause harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, you will be notified as soon as possible. Additionally, the telephone company may request that you disconnect the equipment until the problem is resolved. Also, you will be advised of your right to file a complaint with the FCC, should you feel it is necessary.

# **REPAIR SERVICE REQUIREMENTS**

If equipment malfunctions, all repairs must be performed by an authorized agent of NEC Corporation of America. The user requiring service is responsible for reporting the need for service to an NEC Corporation of America authorized agent or to NEC Corporation of America.

# PRIVATE (LEASED) LINES

For Private (Leased) Line (Analog Data Format) equipment, type JM8 jack is required. Refer to ATIS Technical Report No. 5 for details on this connector.

The Facility Interface Code (FIC) associated with each private line application represents the type of service that will be provided by the telephone company. The user instructions must contain a detailed list of private line ports and the associated FICs for which the equipment has been approved. In addition, the Service Order Code (SOC) must also be included for analog systems. The SOC indicates the degree of network protection provided by the equipment,.

For Private (Leased) Line (Digital Format) equipment, in addition to the general requirements for all equipment, certain digital connections require that an encoded analog content and billing protection affidavit be provided the telephone company. Customer instructions must contain information on the preparation and submission of the affidavit.

To comply with state tariffs, the telephone company must be given notification prior to connection. In some states, the state public utility commission, public service commission or corporation commission must give prior approval of connection.

# TOLL RESTRICTION AND LEAST COST ROUTING EQUIPMENT

- O The software contained in the UNIVERGE SV9100 to allow user access to the network must be upgraded to recognize newly established network area codes and exchange codes as they are placed into service.
- O Failure to upgrade the premises systems or peripheral equipment to recognize the new codes as they are established will restrict the customer and the customer's employees from gaining access to the network and these codes.

# ANSWER SUPERVISION

#### Allowing this equipment to be operated in such a manner as to not provide for proper Answer Supervision is a violation of Part 68 of the FCC Rules. Proper Answer Supervision is when:

- O This equipment returns answer supervision to the Public Switched Telephone Network (PSTN) when Direct Inward Dialing (DID) calls are:
  - Answered by the called station.
  - Answered by the Attendant.
  - Routed to a recorded announcement that can be administered by the Customer Premise Equipment (CPE) user.
  - **Routed to a dial prompt.**
- O This equipment returns answer supervision on all DID calls forwarded to the Public Switched Telephone Network (PSTN). Permissible exceptions are:
  - A call is unanswered.
  - A busy tone is received.
  - □ A reorder tone is received.

# **RECORDING CONVERSATIONS OR MONITORING AUDIO**

The use of monitoring, recording, or listening devices to eavesdrop, monitor, retrieve, or record telephone conversations or other sound activities, whether or not contemporaneous with transmission, may be illegal in certain circumstances under federal or state laws. This includes using the Voice Announcement feature for recording or monitoring purposes. Legal advice should be sought prior to implementing any practice that monitors or records any telephone conversation. Some federal and state laws require some form of notification to all parties to a telephone conversation, such as using a beep tone or other notification methods or requiring the consent of all parties to the telephone conversation, prior to monitoring or recording the telephone conversation. Some of these laws incorporate strict penalties.

# EQUAL ACCESS REQUIREMENTS

If equipment such as Private Branch Exchanges (PBX), key systems or customer-owned coin/credit card telephones is sold to a call aggregator, it must be capable of providing users access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

# HEARING AID COMPATIBILITY

NEC Multiline Terminals and NEC Single Line Telephones that are provided for this system are hearing aid compatible. The manufacturer of other Single Line Telephones for use with the system must provide notice of hearing aid compatibility to comply with FCC rules that now prohibit the use of non-hearing aid compatible telephones.

# MUSIC ON HOLD

In accordance with U.S. Copyright Law, a license may be required from the American Society of Composers, Authors and Publishers (ASCAP), or other similar organizations, if radio, television broadcasts, music, or works other than material not in the public domain are transmitted through the Music On Hold feature of this telecommunications system. NEC Corporation of America, hereby disclaims any liability arising out of the failure to obtain such a license.

## BATTERY DISPOSAL

The UNIVERGE SV9100 system includes the batteries listed below. When disposing of these batteries, Chassis, and/or Blades, you must comply with applicable federal and state regulations regarding proper disposal procedures.

Unit Name	Type of Battery	Quantity	
GCD-CP10	Lithium	1	
GCD-CP20	Lithium	1	
DTL-8R-1	Ni MH	1	
CHSG LARGE BATT SET	Sealed Lead	6	
Headset Cordless II	Ni MH	1	
Internal Batteries	Sealed Lead	2	
BCH-L	Lithium-ion	1	
G955 Wireless	Lithium-ion	1	
CHS2UG B SMALL BATT SET	Sealed Lead	2	

|--|

The SV9100 GCD-CP10 or GCD-CP20 provides memory backup for approximately three years. The Lithium battery should be replaced every two years.

#### IMPORTANT SAFEGUARDS FOR BATTERY DISPOSAL

DO NOT PLACE USED BATTERIES IN YOUR REGULAR TRASH! THE PRODUCT YOU PURCHASED CONTAINS LITHIUM, NICKEL-CADMIUM OR SEALED LEAD BATTERIES. LITHIUM, NICKEL-CADMIUM OR SEALED LEAD BATTERIES MUST BE COLLECTED, RECYCLED, OR DISPOSED OF IN AN ENVIRONMENTALLY SOUND MANNER.

The incineration, landfilling or mixing of nickel-cadmium or sealed lead batteries with the municipal solid waste stream is PROHIBITED BY LAW in most areas. Contact your local solid waste management officials for other information regarding the environmentally sound collection, recycling, and disposal of the battery.

Nickel-Cadmium (or sealed lead) batteries must be returned to a federal or state approved nickel-cadmium (or sealed lead) battery recycler. This may be where the batteries were originally sold or a local seller of automotive batteries. Contact your local waste management officials for other information regarding the environmentally sound collection, recycling and disposal of the battery contained in this product. For Ni-Cd batteries, you can also call 1-800-8-BATTERY<sup>SM</sup> when further information is required.

The packaging for the UNIVERGE SV9100 system contains the following labels regarding proper disposal.

#### PRODUCT PACKAGE LABELING



#### **EUROPEAN UNION INFORMATION**

#### **Export Administration Regulations (EAR)**

This product contains items subject to export regulations of U.S. When the product is exported to other countries, prior approval by U.S. government may be required for certain countries.

#### **Catch-All Controls**

\*\*Warning Notice\*\*

This (product and/or technology) can be utilized for development and/or manufacturing of weapons of mass destruction.

Therefore, when you (sell or provide them to any third party and/or grant license to use), you have to take ample and necessary actions so that this (product or technology) shall not be used for development and manufacturing of weapons of mass destruction, which would disrupt world peace and security.

#### Notice to the user

The system described in this manual is intended to be connected to analog and digital networks and supports a wide range of peripheral equipment. The following interfaces are available for connection to public analog and digital telecommunication networks:

- O TBR3 ISDN basic rate interface
- O TBR4 ISDN primary rate interface
- O ES203-021 Analogue interface

To take advantage of all features of this system and the connected equipment, the country or network specific features should match the supported features of the system. For an overview of the supported features, refer to the documentation that comes with this system, or contact your local NEC representative.

#### **Declaration of conformity**

Hereby, NEC Enterprise Solutions, declares that the SV9100 is in compliance with the essential requirements and other relevant provisions of Directive 2014/35/EU(LVD), 2014/30/EU(EMCD) and 2011/65/EU(RoHS).

For the Declaration of Conformity, visit:

http://www.nec-enterprise.com/Support/Declaration-of-Conformity/

# CE

#### **Electromagnetic Compatibility**

For the SV9100 system the following warning is applicable:

#### Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. Notice that this warning is only applicable to components of the SV9100 communication platform of which the product type plate indicates "Complies with EN55032 Class A".

#### PRODUCT DISPOSAL INFORMATION

#### For Countries in the European Union



The symbol depicted here has been affixed to your product to inform you that electrical and electronic products should not be disposed of as municipal waste.

Electrical and electronic products including the cables, plugs and accessories should be disposed of separately to allow proper treatment, recovery and recycling. These products should be taken to a designated facility where the best available treatment, recovery and recycling techniques are available. Separate disposal has significant advantages: valuable materials can be re-used and it prevents the dispersion of unwanted substances into the municipal waste stream. This contributes to the protection of human health and the environment.

Please be informed that a fine may be imposed for illegal disposal of electrical and electronic products via the general municipal waste stream.

To facilitate separate disposal and environmentally sound recycling arrangements have been made for local collection and recycling. If your electrical and electronic products must be disposed of please refer to your supplier or the contractual agreements that your company has made upon acquisition of these products.

Disposal of electrical and electronic products in countries outside the European Union should be done in line with the local regulations. If no arrangement has been made with your supplier, please contact the local authorities for further information.

At https://www.nec-enterprise.com/Support/WEEE-934 you can find information about separate disposal and environmentally sound recycling.

#### **Battery information**

Defective or exhausted batteries should never be disposed of as municipal waste. Return old batteries to the battery supplier, a licensed battery dealer or a designated collection facility. Do not incinerate batteries. This product uses Lithium batteries. Do not use any other type.

For an overview of the location of batteries used in these systems, the battery replacement or removal instructions, please refer to the UNIVERGE SV9100 System Hardware Manual.

Issue 10.0

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# Introduction to SV9100

# Chapter 1

# SECTION 1 GENERAL INFORMATION

The SV9100 is a full-featured IP based communications system providing a rich set of existing system features, with pure Voice over IP (VoIP) communications, across corporate Local and Wide Area Networks (LAN and WAN).

The IP Multiline Terminals provide a converged infrastructure at the desktop, with a 10Base-T/100Base-TX connection to the LAN and built-in hub for a PC connection to the telephone itself. The system can provide peer-to-peer connections between the IP Multiline Terminals with voice compression, offering existing IP telephone features with an enhanced user interface. On the WAN side, the system can provide peer-to-peer connections over IP networks with the voice compression – on CCIS over IP.

The SV9100 can provide legacy line/trunk interfaces to support the existing Time Division Multiplexing (TDM) based infrastructure, such as analog telephones, Digital Multiline Terminals, analog networks and digital networks (T1/E1, ISDN, etc.).

The 9.5" Base chassis provides 48 total ports (32 digital terminals) and can include any combination of stations and trunks below this number.

The 9.5" Base and Expansion (Combined) chassis provides 104 total ports (80 digital terminals) and can be expanded, using three additional combined chassis, for a maximum of 416 ports (368 digital terminals). Through IP connection and four additional combined chassis, the system can be expanded to a maximum of 960 ports for SV9100 (refer to Table 2-3 SV9100 Maximum System Capacities – Trunks/ Ports/Channels (CHS2UG B and CHS2UG E chassis) on page 2-9).

The 19" chassis provides 104 total ports (80 digital terminals) and can be expanded, using three additional 19" chassis, for a maximum of 416 ports (368 digital terminals). Through IP connection and four additional 19" chassis, the system can be expanded to a maximum of 960 ports for the SV9100 (refer to Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels (CHS2UG Chassis) on page 2-5).



Communications between legacy stations/trunks and IP stations/IP networks are made using a VoIP daughter board, which converts packet-based voice data to TDM-based voice data, and vice versa. Both peer-to-peer connections and TDM-based connections are controlled by the CPU blade. The CPU incorporates a built-in Device Registration Server (DRS) and a single interface point of IP connection to IP telephone, PCPro and OAI / ACD servers. Figure 1-1 Simplified SV9100 System (9.5" Chassis) Connectivity, Figure 1-2 Simplified SV9100 System (9.5" Base and Expansion) Connectivity on page 1-3 and Figure 1-3 Simplified SV9100 System (19") Connectivity on page 1-3 are simplified views of the SV9100 system connectivity.









Figure 1-2 Simplified SV9100 System (9.5" Base and Expansion) Connectivity







Highlights of the UNIVERGE SV9100 are as follows:

- Pure IP System Capable TDM Configuration
  - The SV9100 supports both pure IP switching (peer-to-peer connections) and Time Division Switching. The pure IP switching is provided for communications between IP Multiline Terminals and for CCIS/Remote Unit connections with other SV8100/SV8300/SV7000/SV9100. On the other hand, the TDM switching is provided for communications between legacy stations/trunks. Connection between IP network and legacy network is made via VoIP daughter board on the CPU blade, which converts packet-based voice data to TDM-based voice data, and vice versa.

Powerful CPU Blade with Built-in Functionalities The CPU blade of SV9100 is the heart of the pure IP connections and TDM-based connections. The CPU blade employs a 32-bit microprocessor. With this processing power and DSP technology, it integrates the following functions on one board. These functions are managed with software licenses.

- O DTMF senders/receivers
- O Caller ID receivers
- O Caller ID senders
- O MF senders / receivers
- O CCPU LAN port supports 10/100/1000 (Gigabit) Ethernet modes
- O 2 Control Relays
- O MOH Input Port
- O Paging Output Port
- O InMail /SD Card
- O VolP
- ➡ InMail is available only for the SV9100.

In addition, by means of advanced LSI technology, size of the CPU blade is minimized, O&M NIC port (10/100/1000M) is built-in and VoIPDB which has VoIP NIC port (Gigabit Ethernet) is mountable without additional slots in the chassis. The O&M NIC port is linked with LAN/WAN for inter-work with PCPro, SMDR, OAI server, and the VoIP NIC port is linked with LAN/WAN for control signaling and voice signaling (RTP) for IP Multiline Terminals.

High Density Legacy Line/Trunk Blades

Major legacy line/trunk blades used in SV9100 are provided with blade + daughter board architecture. When the blade is mounted only in an initial supply, line/trunk interfaces can be easily expanded by adding the daughter board. The maximum number of ports for the line/trunk blades is 8/16 ports with daughter board, respectively. This allows the physical system size to be compact.



- Universal Blade Slot (9.5" Base Chassis) A 9.5" Base (CHS2UG B) chassis is used for legacy line/trunk blades. The 9.5" chassis provides three universal slots. Also, the universal slots can be used for special application blades without complicated limitation. This makes for easy quotation and installation.
- Universal Blade Slot (9.5" Base and Expansion Chassis)
   A 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) chassis is used for legacy line/trunk blades. One combined chassis provides six universal slots and one expansion slot. Also, the universal slots can be used for special application blades without complicated limitation.
- Universal Blade Slot (19" Chassis) A 19" (CHS2UG) chassis is used for legacy line/trunk blades. One 19" Chassis provides six universal slots and one expansion slot. Also, the universal slots can be used for special application blades without complicated limitation.
- Easy Installation (Front Cabling and Enhanced O&M Tool) Cable connectors (RJ-45 or RJ-61) are located on the front panel of each chassis and blade. This increases efficiency of the cabling work. Also, PCPro provides an enhanced user interface. A Quick Setup tool provides easy setup (system data programming) for a basic system configuration in shorter time.

# SECTION 2 EQUIPMENT LIST

The following tables list all equipment for the SV9100 system.

Table 1-1	Chassis Equipment List
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Equipment Name	Equipment Description
CHS2UG	19" Chassis (6-slot)
CHS2UG B	9.5" Base Chassis (3-slot)
CHS2UG E	9.5" Expansion Chassis (3-slot)

Table 1-2 Chassis	Installation	Equipment List
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Equipment Name	Equipment Description
CHS2UG MOVABLE WALL MOUNT KIT	Movable Wall Mount Set for CHS2UG B and CHS2UG E chassis
CHS BASE UNIT	Floor Mount Set for all chassis (CHS1UG and CHS2UG)
CHS2UG BLANK SLOT COVER KIT	Blank Slot Cover Set
CHS2UG JOINT BRACKET KIT	Upper Joint Bracket for 6-slot Chassis



#### Table 1-2 Chassis Installation Equipment List (Continued)

Equipment Name	Equipment Description
CHS2UG RACK MOUNT KIT	Rack Mount for CHS2UG Chassis
CHS1UG/2UG WALL MOUNT KIT	Wall Mount Set for CHS2UG Chassis
CHS2UG Stand Kit (K)	Stand Mount Kit for CHS2UG Chassis
CHS2UG STAND KIT (EXT)	Expansion Plate for Stand Mount Kit for CHS2UG Chassis, 2 sets
IP5D-RACK MOUNT BAR SET	Rack Mount Set for CHS2UG B and CHS2UG E

#### Table 1-3 Battery Mount Equipment List

Equipment Name	Equipment Description
CHS2UG B SMALL BATT BOX	Short-term battery box for CHS2UG B chassis Backup Time – 10 minutes
CHSG LARGE BATT BOX	Long Term Battery Box for CHS1UG and CHS2UG B Chassis Cable between batteries – 9.06in/230mm Fuse Unit to Batteries – 18.11ln/460mm Cable from chassis to battery box – 81.1in/2060mm
CHS2UG BATT MTG KIT	Battery Mount for CHS2UG B Chassis Backup time – 10 minutes
CHS2UG SMALL BATT SET	Short-term battery set for CHS2UG B chassis
CHSG LARGE BATT SET	Long term battery set (3) 12V 7Ah SLA Batteries with Faston 187 terminals
CHS2UG INT BATT SET	Internal battery set for CHS2UG chassis 12V 2.3Ah SLA Battery with Faston 187

#### Table 1-4 Blade Equipment List

Equipment Name	Abbreviations	Equipment Description	
GPZ-BS10	BUS0	Expansion Chassis Interface Unit, 3-jack	
GPZ-BS20	BUS20	Expansion Chassis Interface Unit for GCD-CP20, 3-jack	
GPZ-BS11	BUS1	Expansion Chassis Interface Unit, 1-jack	
GCD-8DLCA	DLC	8-port Digital Station Interface	
GPZ-8DLCB	DLCDB	8-port Digital Station Interface on GCD-8DLCA	
GCD-16DLCA	DLC	16-port Digital Station Interface	



Table 1 1	Plada Eau	inmont Lie	t (Continued)
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Equipment Name	Abbreviations	Equipment Description	
GCD-4COTB	СОТ	4-port Analog Trunk Interface. Name and location is: GCD-4COTB: North America	
GCD-4COTB-A	СОТ	4-port Analog Trunk Interface. Name and location is: GCD-4COTB-A: North America	
GPZ-4COTF	COTDB	4-port Analog Trunk Interface on GCD-4COTB or GCD-4COTB-A and GCD-LTA. Name and location is: GPZ-4COTF: North America	
GPZ-4COTF-A	COTDB	Version 9 or Lower 4-port Analog Trunk Interface on GCD-4COTB	
		Version 10 or higher 4-port Analog Trunk Interface on GCD-4COTB or GCD-4COTB-A and GCD-LTA. Name and location is: GPZ-4COTF-A: North America	
GCD-4LCA	LC	4-port Single Line Telephone Interface	
GPZ-4LCA	LCDB	4-port Single Line Telephone Interface on GCD-4LCA and GCD-8LCA	
GCD-8LCA	LC	8-port Single Line Telephone Interface	
GPZ-8LCE	LCDB	8-port Single Line Telephone Interface on GCD-4LCA and GCD-8LCA	
GCD-2BRIA	BRT	2 Basic Rate Interface	
GPZ-2BRIA	BRTDB	2 Basic Rate Interface on GCD-2BRIA, for SV9100 can also be mounted on the GCD-LTA blade	
GCD-PRTA	PRT	1 Primary Rate Interface	
GCD-CCTA	CCT	Common Channel Interoffice Signaling Trunk Interface/ Common Channel Handler	
GCD-4DIOPA	DIOP	4 DID/OPX	
GCD-40DTA	ODT	4-port Tie Line Interface (E&M)	
GCD-LTA	LTA	8 Digital Station/2SLT for SV9100 only	
GPZ-IPLE	VoIPDB	VOIP on the CPU	
GCD-VM00	VM00	Voice Mail and Server	
GCD-ETIA	GSWU	PoE Gigabit Switch Unit	
GCD-PVAA	PMS	Packet Voice Application	
GCD-SVR2	SVR2	Server blade	
GCD-SVR3	SVR3	Server Blade for SV9100	
GCD-CP10	CPU	Main Processor Blade for KTS	
GCD-CP20	CPU20	Main Processor Blade for SV9100	
SD-A1	1G-APP-CF	1GB InMail SD Card for CP10	



Equipment Name	Abbreviations	Equipment Description
SD-B1	4G-APP-CF	4GB InMail SD Card for CP10
SD-A2	2G-APP-CF	2GB InMail SD Card for CP20
SD-B2	8G-APP-CF	8GB InMail SD Card for CP20
GCD-RGA	RGA	Application Gateway – Router and Conference
GCD-4LC	LC	4-port Single Line Telephone Interface
GCD-8LC	LC	8-port Single Line Telephone Interface
GPZ-4LC	LCDB	4-port Single Line Telephone Interface on GCD-4LC and GCD-8LC
GPZ-8LC	LCDB	8-port Single Line Telephone Interface on GCD-4LC and GCD-8LC
AKS-RGA-APP- GATEWAY-CF	AKS-RGA CF	Application Gateway – Compact Flash

Table 1-4 Blade Equipment List (Continued)

Table 1-5 Cable Equipment List

Equipment Name	Equipment Description
RS CONSOLE CA-A	MAT (PCPro) Cable 6.6 ft. (2.0m)
RS NORM-4S CA-F	RS-232C Cable (normal) 13.1 ft (4m)
RS RVS-15S CA-F	RS-232C Cable (reverse) 49.2 ft (15.0m)
RS RVS-4S CA-F	RS 232C Cable (reverse) 13.1 ft (4.0m)
RS RVS-4S CA-G	RS 232C Cable (reverse) 13.1 ft (4.0m)
RS PRT-15S CA-F	RS-232C Cable (printer) 49.2 ft (15.0m)
BUS CABLE	Bus Cable
AC CORD	AC Power Cable for US
CHS2U BATT CABLE INT	CHS2UG Battery Cable for Internal Battery 2U Chassis Cable A – 18.9in/480mm Cable B – 3.15in/80mm
CHS2U BATT CABLE EXT-A	Battery Cable for External Battery CHS2UG Chassis

Table 1-6 Digital Multiline Terminal (DT300 Series) Equipment List

Equipment Name	Equipment Description
DTL-2E-1 (BK) TEL	Economy Digital 2-button Telephone (No-Display)



Equipment Name	Equipment Description
DTL-6DE-1 (BK) TEL	Economy Digital 6-button Display Telephone
DTL-12E-1 (BK) TEL	Economy Digital 12-button Telephone (No-Display)
DTL-12D-1 (BK) TEL DTL-12D-1 (WH) TEL	Value Digital 12-button Display Telephone
DTL-24D-1 (BK) TEL DTL-24D-1 (WH) TEL	Value Digital 24-button Display Telephone
DTL-32D-1 (BK) TEL DTL-32D-1 (WH) TEL	Value Digital 32-button Display Telephone
DTL-12BT-1 (BK) TEL	Value Digital 12-button Telephone with Bluetooth Cordless Handset
DTL-12PA-1 (BK) TEL	Value Digital 12-button Telephone with Power Failure Adapter
DTL-8LD-1 (BK) TEL DTL-8LD-1 (WH) TEL	Value Digital 8-button Telephone (Self-Labeling)
DCL-60-1 (BK) CONSOLE DCL-60-1 (WH) CONSOLE	60-button Direct Station Selection (DSS) Console
8LK-L (BK) UNIT 8LK-L (WH) UNIT	8-button Line Key Unit
8LKD (LD)-L (BK) UNIT 8LKD (LD)-L (WH) UNIT	Self-Labeling 8-button Line Key Unit/LCD Unit for Digital Telephone
LCD (BL)-L (BK) UNIT LCD (BL)-L (WH) UNIT	LCD Unit (Backlight LCD) for Digital Telephone

Table 1-6 Digital Multiline Terminal (DT300 Series) Equipment List (Continued)

Table 1-7 Digital Multiline Terminal (DT400 Series) Equipment List

Equipment Name	Equipment Description
DTZ-2E-3 (BK) TEL	Economy Digital 2-button Telephone (No-Display)
DTZ-6DE-3 (BK) TEL	Economy Digital 6-button Display Telephone
DTZ-12D-3 (BK) TEL DTZ-12D-3 (WH) TEL	Value Digital 12-button Display Telephone
DTZ-24D-3 (BK) TEL DTZ-24D-3 (WH) TEL	Value Digital 24-button Display Telephone
DTZ-8LD-3 (BK) TEL DTZ-8LD-3 (WH) TEL	Value Digital 8-button Telephone (Self-Labeling)
DCZ-60-2 (BK) CONSOLE DCZ-60-2 (WH) CONSOLE	60-button Direct Station Selection (DSS) Console
8LK-Z (BK) UNIT 8LK-Z (WH) UNIT	8-button Line Key Unit



Table 1-7 Digital Multiline Terminal (DT400 Series) Equipment List (Continued)

Equipment Name	Equipment Description
16LK-Z (BK) UNIT 16LK-Z (WH) UNIT	16-button Line Key Unit

#### Table 1-8 Digital Multiline Terminal (DT500 Series) Equipment List

Equipment Name	Equipment Description
DTK-12D-1 (BK) TEL DTK-12D-1 (WH) TEL	Digital 12-button Display Telephone
DTK-24D-1 (BK) TEL DTK-24D-1 (WH) TEL	Digital 24-button Display Telephone

Equipment Name	Equipment Description
ITL-2E-1 (BK) TEL	Economy IP 2-button Telephone (No Display)
ITL-6DE-1 (BK) TEL	Economy IP 6-button Display Telephone
ITL-8LDE-1 (BK) TEL	Economy IP 8-button Display Telephone
ITL-12D-1 (BK) TEL ITL-12D-1 (WH) TEL	Value IP 12-button Display Telephone
ITL-12CG-3 (BK) TEL	Value IP 12-button Display Telephone (Color)
ITL-12DG-3 (BK) TEL	Value IP 12-button Display Telephone (Grayscale)
ITL-24D-1 (BK) TEL ITL-24D-1 (WH) TEL	Value IP 24-button Display Telephone
ITL-32D-1 (BK) TEL ITL-32D-1 (WH) TEL	Value IP 32-button Display Telephone
ITL-12PA-1 (BK) TEL	Value IP 12-button Telephone with Power Failure Adapter
ITL-8LD-1 (BK) TEL ITL-8LD-1 (WH) TEL	Value IP 8 Line Key Display Telephone Value IP Telephone: Self-Labeling
ITL-320C-1 (BK) TEL	Sophisticated Telephone (Replaced by 690019)
8LKI (LD)-L (BK) UNIT 8LKI (LD)-L (WH) UNIT	Self Labeling LK/LCD Unit for IP
ITL-320C-2 (BK) TEL	Sophisticated Telephone (Replacement for 690012)

#### Table 1-9 IP Multiline Terminal (DT700 Series) Equipment List



Equipment Name	Equipment Description
ITY-6D-1 (BK) TEL	Entry IP 6-button Display Telephone
ITY-8LDX-1 (BK) TEL	Entry IP 8-button Display Telephone (Self-Labeling)
ITY-8LCGX-1P (BK) TEL	Entry IP 8-button Color Display Telephone (Self-Labeling)
ITZ-8LD-3 (BK) TEL	Economy IP 8-button Line Key Display Telephone (Self-Labeling)
ITZ-12D-3 (BK) TEL ITZ-12D-3 (WH) TEL	Value IP 12-button Display Telephone
ITZ-12CG-3 (BK) TEL ITZ-12CG-3 (WH) TEL	Value IP 12-button Display Telephone (Color)
ITZ-12DG-3 (BK) TEL ITZ-12DG-3 (WH) TEL	Value IP 12-button Display Telephone (Grayscale)
ITZ-24D-3 (BK) TEL ITZ-24D-3 (WH) TEL	Value IP 24-button Display Telephone
ITZ-8LDG-3 (BK) TEL ITZ-8LDG-3 (WH) TEL	Value IP 8 Line Key Display Telephone

Tahle 1-10	IP Multiline	Terminal	(NTRAN) !	Series)	Faui	nment l	list
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Table 1-11 IP Multiline Terminal	(DT900 Series) Equipment List
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Equipment Name	Equipment Description
ITK-24CG-1 (BK) TEL ITK-24CG-1 (WH) TEL	IP 24-button Color Display Gigabit Ethernet Telephone
ITK-6D-1 (BK) TEL	IP 6-button Display Telephone
ITK-12D-1 (BK) TEL	IP 12-button Display Telephone
ITK-8LCX-1 (BK) TEL	IP 8 Line Key Self Labeling Color Display Telephone
ITK-8TCGX-1 (BK) TEL	IP 8 Line Key Touch Panel Color Display Gigabit Ethernet Telephone

## Table 1-12 Single Line Telephones Equipment List

Equipment Name	Equipment Description
AT-50 (BK) TEL AT-50 (WH) TEL	Caller-ID Analog Terminal with feature keys such as Redial, Flash/Pause, PBX Dial/Set, Search and Mute. (Except for China and Malaysia)



Table 1-12 Single Line Telephones Equipment List (Continued)

Equipment Name	Equipment Description
AT-55 (BK) TEL AT-55 (WH) TEL	Caller-ID Analog Terminal with feature keys such as Speaker, Hold, One touch, Redial, Flash/Pause, PBX Dial/Set, Search and Mute. (Except for China and Malaysia)

Equipment Name	Equipment Description
Appointment Reminder	External Server
Broadcast Server	External Server
IPv6-Adapter	Converts IPv4 to IPv6 protocol
IP3NE-IPCDH	IP Video Doorphone
IP3WW-CDH BRACKET SET	Bracket set for IP Video Doorphone
IP3WW-CDH WALL COVER SET	Wall Cover set for IP Video Doorphone
APR-L UNIT	Analog Port Ringer (DT 330 only)
ADA-L UNIT	Ancillary Device Adapter
BHA-L UNIT	Bluetooth <sup>®</sup> Hub Adapter (DT 330 only)
PSA-L (BK) UNIT PSA-L (WH) UNIT	Power Save Adapter
BCH-L (BK) UNIT	Bluetooth Cordless Handset (DT 330 only)
12LK-L (BK) KIT 12LK-L (WH) KIT	12-button Line Key Kit
WM-L UNIT	Wall Mount Unit
DSS WM-L UNIT	Wall Mount Unit for DCL-60-1/DCZ-60-2
DESI ITL/DTL-2E (25 PKG)	DESI Sheet for Economy 2-button Telephone (2 Part Sheet, 25 Package)
DESI ITL/DTL-6DE (25 PKG)	DESI Sheet for Economy 6-button Display Telephone (2 Part Sheet, 25 Package)
DESI ITL/DTL-12D (25 PKG)	DESI Sheet for Value 12-button Display Telephone (2 Part Sheet, 25 Package)
DESI ITL/DTL-8LK (25 PKG)	DESI Sheet for 8-button Line Key (1 Part Sheet, 25 Package)
DESI DCL-60 DSS (25 PKG)	DESI Sheet for 60DSS (1 Part Sheet, 25 Package)
DESI ITL/DTL-SIDE (25 PKG)	DESI Sheet for Clear Side Panel (Left and Right Part Sheet, 25 Package)
DESI ITL/DTL-SIDE-LCDV (25 PKG)	DESI Sheet for Value Telephone LCD (Left and Right Part Sheet, 25 Package)

Table 1-13 DT300/DT700 Series Optional Equipment List



Equipment Name	Equipment Description
DESI ITL/DTL-SIDE-LCDS (25 PKG)	DESI Sheet for Sophisticated Telephone LCD (Left and Right Part Sheet, 25 Package)
DESI ITL/DTL DIR CARD	Directory Card
DESI ITL/DTL-24D (25 PKG)	DESI Sheet for Value 24-button Display Telephone (2 Part Sheet, 25 Package)
Panel (Red-Base)-L UNIT	Color Side Panel for Base (Red)
Panel (Red-VLCD)-L UNIT	Color Side Panel for Value Telephone LCD (Red)
Panel (Red-SLCD)-L UNIT	Color Side Panel for Sophisticated Telephone LCD (Red)
Panel (Blue-Base)-L UNIT	Color Side Panel for Base (Blue)
Panel (Blue-VLCD)-L UNIT	Color Side Panel for Value Telephone LCD (Blue)
Panel (Blue-SLCD)-L UNIT	Color Side Panel for Sophisticated Telephone LCD (Blue)
Panel (Silver-Base)-L UNIT	Color Side Panel for Base (Silver)
Panel (Silver-VLCD)-L UNIT	Color Side Panel for Value Telephone LCD (Silver)
Panel (Silver-SLCD)-L UNIT	Color Side Panel for Sophisticated Telephone LCD (Silver)
Panel (Wood-Base)-L UNIT	Color Side Panel for Base (Wood)
Panel (Wood-VLCD)-L UNIT	Color Side Panel for Value Telephone LCD (Wood)
Panel (Wood-SLCD)-L UNIT	Color Side Panel for Sophisticated Telephone LCD (Wood)
Panel( Logo-Base)-L UNIT	Color Side Panel for Base (Wood with Logo)
Panel (Clear-Base)-L UNIT	Color Side Panel for Base (Clear)
LKPANEL(2BTN)-L (BK) UNIT	Spare Plastic Cover Kit (2-button) (Black)
LKPANEL(6BTN)-L (BK) UNIT	Spare Plastic Cover Kit (6-button) (Black)
LKPANEL(12BTN)-L (BK) UNIT LKPANEL(12BTN)-L (WH) UNIT	Spare Plastic Cover Kit (12-button)
LKPANEL(24BTN)-L (BK) UNIT LKPANEL(24BTN)-L (WH) UNIT	Spare Plastic Cover Kit (24-button)
LKPANEL(8BTN)-L (BK) UNIT LKPANEL(8BTN)-L (WH) UNIT	Spare Plastic Cover Kit (8-button)
LKPANEL(60BTN)-L (BK) UNIT LKPANEL(60BTN)-L (WH) UNIT	Spare Plastic Cover Kit (60-button)
DTL (Value)-Base-1 unit	Digital Base
LCDD(S)-L (BK) UNIT LCDD(S)-L (WH) UNIT	Digital Standard Telephone LCD
Ten Key (STD)-L Kit	10-Key Kit (Standard)
FNCKEY(STD)-L (BK) SET FNCKEY(STD)-L (WH) SET	Standard Function Key



Equipment Name	Equipment Description
12LKSoft-L (BK) SET 12LKSoft-L (WH) SET	12-button Kit without Softkey
12LK(STD)-L (BK) SET 12LK(STD)-L (WH) SET	12-button on 12D Terminal (Line #13~24)
TKPANEL(STD)-L (BK) UNIT TKPANEL(STD)-L (WH) UNIT	10-Key Panel
Cradle (STD)-L(BK) Cradle (STD)-L(WH)	Cradle
VAL DIRECTORY CARD UNIT(L)	Directory Card Holder for Value Telephone
ECO DIRECTORY CARD UNIT(L)	Directory Card Holder for Economy Telephone
Panel (Clear-VLCD)-L UNIT	Color Side Panel for Value Telephone LCD (Clear)
Panel (Clear-SLCD)-L UNIT	Color Side Panel for Sophisticated Telephone LCD (Clear)
LKPANEL(16BTN)-L (BK) UNIT LKPANEL(16BTN)-L (WH) UNIT	Spare Plastic Cover Kit (16-button)
KeyKitPanel (Value) (BK) Unit KeyKitPanel (Value) (WH) Unit	Spare Plastic Cover Key Kit for Value Telephone
KeyKitPanel (Retro) (BK) Unit KeyKitPanel (Retro) (WH) Unit	Spare Plastic Cover Key Kit for Retro Telephone
KeyKitPanel (Sophi) (BK) Unit KeyKitPanel (Sophi) (WH) Unit	Spare Plastic Cover Key Kit for Sophisticated Telephone
KeyKitPanel(V)-L (M-Blue) Unit	Color face panel for Value (Metallic Blue) 1 set consists 10 of panels
KeyKitPanel(V)-L (GUNMETA) Unit	Color face panel for Value (GunMetallic) 1 set consists 10 of panels
KeyKitPanel(V)-L (L-Green-M) Unit	Color face panel for Value (Lime Green Metallic) 1 set consists 10 of panels
KeyKitPanel(V)-L (Orange-M) Unit	Color face panel for Value (Orange Metallic) 1 set consists 10 of panels
KeyKitPanel(V)-L (D-Brown-M) Unit	Color face panel for Value (Dark Brown Metallic) 1 set consists 10 of panels
LKPANEL(12BTN)-L (M-Blue) UNIT	Color LK panel (12button) for Value (Metallic Blue) 1 set consists 10 of panels
LKPANEL(12BTN)-L (GUNMETA) UNIT	Color LK panel (12button) for Value (GunMetallic) 1 set consists 10 of panels
LKPANEL(12BTN)-L (L-Green-M) UNIT	Color LK panel (12button) for Value (Lime Green Metallic) 1 set consists 10 of panels
LKPANEL(12BTN)-L (Orange-M) UNIT	Color LK panel (12button) for Value (Orange Metallic) 1 set consists 10 of panels
LKPANEL(12BTN)-L (D-Brown-M) UNIT	Color LK panel (12button) for Value (Dark Brown Metallic) 1 set consists 10 of panels



Equipment Name	Equipment Description
LKPANEL(24BTN)-L (M-Blue) UNIT	Color LK panel (24button) for Value (Metallic Blue) 1 set consists 10 of panels
LKPANEL(24BTN)-L (GUNMETA) UNIT	Color LK panel (24button) for Value (GunMetallic) 1 set consists 10 of panels
LKPANEL(24BTN)-L (L-Green-M) UNIT	Color LK panel (24button) for Value (Lime Green Metallic) 1 set consists 10 of panels
LKPANEL(24BTN)-L (Orange-M) UNIT	Color LK panel (24button) for Value (Orange Metallic) 1 set consists 10 of panels
LKPANEL(24BTN)-L (D-Brown-M) UNIT	Color LK panel(24button) for Value (Dark Brown Metallic) 1 set consists 10 of panels
PANEL(Pink-Base)-L UNIT	Color side panel for Base (Pink) 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(Pink-VLCD)-L UNIT	Color side panel for Value LCD (Pink) 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(Pink-SLCD)-L UNIT	Color side panel for Sophi LCD (Pink) 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(C Gold-Base)-L UNIT	Color side panel for Base (Champagne Gold) 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(C Gold-VLCD)-L UNIT	Color side panel for Value LCD (Champagne Gold) 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(C Gold-SLCD)-L UNIT	Color side panel for Sophi LCD (Champagne Gold) 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(BIO-Base)-L UNIT	BIO side panel for Base 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(BIO-VLCD)-L UNIT	BIO side panel for Value LCD 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
PANEL(BIO-SLCD)-L UNIT	BIO side panel for Sophi LCD 1 set consist of 10 pair of panels. A pair includes (1) left and (1) right panel
MH240	Wireless SIP telephone
AP400 Base Unit	Optional base unit for ML440
G266 DECT Handset	SIP DECT wireless handset
G566 DECT Handset	SIP DECT wireless handset



Equipment Name	Equipment Description	
WFA-Z Adapter	Wireless adapter (Wi-Fi) for DT700 series	
BS (F)-L (BK) KIT BS (F)-L (WH) KIT	French Keypad	
BS (S)-L (BK) KIT BS (S)-L (WH) KIT	Spanish Keypad	
BS (ICON)-L (BK) KIT BS (ICON)-L (WH) KIT	ICON Support Keypad	
BS (Retro)-L (BK) KIT BS (Retro)-L (WH) KIT	Retrofit Support Keypad	
BS (RetroCON)-L (BK) KIT BS (RetroCON)-L (WH) KIT	Retrofit ICON Support Keypad	
Sticker-Braille-L KIT	Braille Support Keypad Stickers	
HANDSET(NARROW)-L (BK) UNIT HANDSET(NARROW)-L (WH) UNIT	Spare Narrowband Handset	
HANDSET(WIDE)-L (BK) UNIT HANDSET(WIDE)-L (WH) UNIT	Spare Wideband Handset	
HandsetCord(12FT)-L (BK) SET HandsetCord(12FT)-L (WH) SET	Spare Handset Cord 12 Feet	
HandsetCord(25FT)-L (BK) SET HandsetCord(25FT)-L (WH) SET	Spare Handset Cord 25 Feet	
HandsetHanger-L (BK) SET HandsetHanger-L (WH) SET	Spare Handset Hanger	
ITL (Value)-Base-1 unit	IP Base	
LCDI(S)-L (BK) UNIT LCDI(S)-L (WH)) UNIT	IP LCD Unit (without Backlight)	
LineCord-L (BK) SET	Spare Line Cord (BK)	
ITL/DTL PTM Handset (BK)	Push to Mute Handset	
ITL/DTL PTT Handset (BK)	Push to Talk Handset	
GBA-L UNIT	Gigabit Adapter	
AC-L UNIT/AC-Z UNIT	AC Adapter for GBA-L UNIT	
BS(S-HOTEL)-L (BK) UNIT	Standard Hotel function keypad for Sophi (BK) with Blank D/F panel	
CG Directory Card Holder	CG Directory Card Unit	
DTL-8R-1 Cordless DECT	Cordless Handset and Base Unit	
DTL-RPT-1 Repeater	Repeater for DTL-8R-1	
ML440	Wireless Handset	
AP20 Base Unit	Base Unit for ML440	



Tabla 1 12	DTOOD/DTTOO Corico	Ontional Fausimment List	(Continued)	
1able 1-13	DI300/DI700 Series	Oblional Equipment List	(Continuea)	
			1	

Equipment Name	Equipment Description
G955 SIP DECT Handset	SIP DECT wireless handset
4-Port Digital Call Logging Unit	Digital Call Logging Unit
1-Port Digital Call Logging Unit	Digital Call Logging Unit
16-Port Digital Call Logging Unit	Digital Call Logging Unit
I766 SIP DECT Handset	SIP DECT wireless handset

#### Table 1-14 DT400/DT800 Series Optional Equipment List

Equipment Name	Equipment Description
APR-L UNIT	Analog Port Ringer (DT430 only)
ADA-L UNIT	Ancillary Device Adapter
BHA-L UNIT	Bluetooth <sup>®</sup> Hub Adapter (DT430 only)
BCA-Z UNIT	Bluetooth Connection Adapter
DCZ-60-2 (BK) CONSOLE DCZ-60-2 (WH) CONSOLE	60-button Direct Station Selection (DSS) Console
8LK-Z (BK) UNIT 8LK-Z (WH) UNIT	8-button Line Key Unit
16LK-Z (BK) UNIT 16LK-Z (WH) UNIT	16-button Line Key Unit
WFA-Z Adapter	Wireless adapter (Wi-Fi) for DT800 series
DTZ-8R-1 Cordless DECT	Cordless Handset and Base Unit
IP4WW-Wall Mount Unit	Wall Mount Unit DT820 terminals

		~ · ~		
Table 1-15	D1500/D1900	Series ()	ntional Fai	iinment List
10010 1 10	D1000/D1000	001100 0	phonia Equ	

Equipment Name	Equipment Description	
APR-L UNIT	Analog Port Ringer (for DTK series terminals only)	
ADA-L UNIT	Ancillary Device Adapter (for DTK and ITK-24CG series terminals only)	
8LK-K (BK) UNIT 8LK-K (WH) UNIT	8-button Line Key Unit (for DTK and ITK-24CG series terminals only)	
DCK-60-1 (BK) CONSOLE DCK-60-1 (WH) CONSOLE	60-button Direct Station Selection (DSS) Console (for DTK, ITK-24CG and ITK-8/32TCG series terminals only)	



Equipment Name	Equipment Description
WM-L UNIT	Wall Mount Unit for DT900 series IP Multiline Terminals
DSS WM-K UNIT	Wall Mount Unit for DT500 series Digital Multiline Terminals and DSS console
BS (F)-K	French keypad
BS (S)-K	Spanish keypad
BS (ACD)-K	Keypad for ACD terminal
STICKER-BRAILLE-K	Braille Support Keypad Sticker
LEG (VALUE)-K	Tilt leg for terminals
LEG (DSS)-K	Tilt Leg for DCK-60-1 Console
HANDSET(NARROW)-K (BK) UNIT HANDSET(NARROW)-K (WH) UNIT	Narrowband Handset for Digital Multiline Terminals (without cord)
HANDSET(NARROW)-Z (BK) UNIT HANDSET(NARROW)-Z (WH) UNIT	Narrowband Handset for Digital Multiline Terminals (without cord)
HANDSET(WIDE)-K (BK) UNIT HANDSET(WIDE)-K (WH) UNIT	Wideband Handset for IP Multiline Terminals (without cord)
HANDSET(WIDE)-Z (BK) UNIT HANDSET(WIDE)-Z (WH) UNIT	Standard Handset for IP Multiline Terminals (without cord)
HandsetCord(12FT)-Z (BK) SET HandsetCord(12FT)-Z (WH) SET	Spare Handset Cord 12 Feet
VAL DIRECTORY CARD UNIT(L)	Directory Card for DTK-12D and DTK-24D terminal
CG DIRECTORY CARD UNIT (L)	Directory Card for ITK-24CG terminal
ECO DIRECTORY CARD UNIT (L)	Directory Card for ITK-6D, ITK-6DG, ITK-12D and ITK-12DG terminal

#### Table 1-16 UT880 (IP Terminal) Equipment List

Equipment Name	Equipment Description
UT880	Touch-Screen IP Desktop Terminal

# SV9100 System Specifications

# Chapter 2

# SECTION 1 GENERAL INFORMATION

This chapter provides detailed specifications for the SV9100 system technician. The technician should review this information carefully *before* installing the system.

# SECTION 2 SYSTEM BLOCK DIAGRAM

Figure 2-1 SV9100 System Block Diagram shows the Blades that can be installed in the chassis and the number of channels supported when the Blade is installed. Table 2-1 List of Abbreviations lists abbreviations used in the diagram.

Abbreviation	Description
Contact Center	Automatic Call Distribution
ADA	Ancillary Device Adapter
APR	Analog Port Adapter (with ringer)
AUX IN/OUT	BGM/MOH Port (on CPU)
BCH	Bluetooth Cordless Handset
BHA	Bluetooth Hub Adapter
BRI	Basic Rate Interface
BRIDB	Expansion Basic Rate Interface Daughter Board on BRI
BRT	Basic Rate Interface Blade/ISDN Terminal Interface Blade
BUS0	BUS Interface Blade (for Base chassis)
BUS1	BUS Interface Blade (for Expansion chassis)
ССТ	CCIS Interface Blade
CF	Compact Flash
CFT	Conference Trunk (on CPU)
СОТ	Central Office Trunk (Loop and Ground Start Interface)
COTDB	Loop and Ground Start Interface Daughter Board on COT
CPU	Central Processing Unit

Table 2-1 List of Abbreviations



Table 2-1 List of Abbreviations (Continued)

Abbreviation	Description
DID	Direct Inward Dialing
DIOP	DID/OPX Blade
DLC	Digital Multiline Terminal Interface Blade
DLCB	Expansion Digital Multiline Terminal Interface Blade on DLC
DRS	Device Registration Server (on CPU)
DSS	Direct Station Selection Console
DTI	Digital Trunk Interface
DTG	Digital Tone Generator (on CPU)
ETHERNET	Ethernet Port (on CPU)
FT1	Fractional T1
GBA	GigaBit Adapter
GSWU	Power over Ethernet Gigabit Switch
IDF	Intermediate Distribution Frame
IPT	IP Trunk (P2P CCIS) (on CPU)
ISDN	Integrated Service Digital Network
LAN	Local Area Network
LC	Single Line Telephone Interface Blade
LCDB	Single Line Telephone Interface Daughter Board on LC
MDF	Main Distribution Frame
MEM	Main Memory (on CPU)
MIS	Management Information System
МОН	Music On Hold
OAI	Open Application Interface (on CPU)
ODT	Tie Line Interface Blade (2W/4W E&M)
OPX	Off-Premise Extension
PBR	PB Receiver (on CPU)
PBSND	PB Sender (on CPU)
PCPro	PC Programming
PFT	Power Failure Transfer
PLO	Phase Locked Oscillator (on CPU)
PMS	Property Management System
PRI	Primary Rate Interface


Abbreviation	Description
PRT	Primary Rate Interface Blade
PS	Personal Station
PSA	PSTN Adapter (analog)
PVA	Packet Voice Application
RTB	Router Blade
SD	SD card
SERIAL	Serial Port (on CPU)
SLT	Single Line Telephone
SMDR	Station Message Detail Recording
TDSW	Time Division Switch (on CPU)
USB	Universal Serial Bus (on CPU)
GCD-VM00	UMS Blade Server Blade (SV9100 only)
VMS	Voice Mail System
VoIP	Voice over Internet Protocol
VoIPDB	VoIP Daughter Board (on CPU)
VRS	Voice Response System
WAN	Wide Area Network
WebPro	Web-Based PC Programming

## Table 2-1 List of Abbreviations (Continued)







# SECTION 3 MAXIMUM SYSTEM CAPACITIES

### 3.1 Trunk/Port/Channel Capacities

The CHS2UG is a compact 19" chassis that has six universal slots, one expansion slot and one MPS7101 (power supply unit). When the GCD-CP10/GCD-CP20 is installed in the first CHS2UG, it is called the *Controlling Chassis*. Additional chassis, called *Expansion Chassis*, can be installed to increase the capacity of the system to meet the customer's business needs.

As Figure 2-2 19" Controlling and Expansion Chassis and Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels (CHS2UG Chassis) illustrate, the system can be expanded from 64 ports to 896 ports by vertically stacking a maximum of three additional chassis onto the controlling chassis. This provides a maximum of 24 slots and 368 digital terminals. To obtain the maximum port capacity of 896 ports, two systems can be linked together via an IP connection.

The maximum slot and channel capacities for the CHS2UG chassis are listed in Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels (CHS2UG Chassis).

		CHS2UG Chassis					
Number of:		x 1 (6 Slots)	x 2 (12 Slots)	x 3 (18 Slots)	X4 (24 Slots)	Maximum	
Number of Timeslate *4	РСМ	104	208	312	416	416	
Number of Timesiots *1	Data	7	14	21	28	28	
TDM Digital Multiline Terminals (-4	80	176	272	368			
SLT (-28V)		80	176	272	368		
SLT (-48V)		20	44	68	92	Total 896	
IP Multiline Terminals							
Softphone (UC Suite) InUC Conne	ection		Total 256				
Softphone (UC Suite) with Shared Service				Total 512			
SIP/WLAN			8	96		Total 896	

Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels (CHS2UG Chassis)



		CHS2U	G Chassis		Sustem
Number of:	x 1 (6 Slots)	x 2 (12 Slots)	x 3 (18 Slots)	X4 (24 Slots)	Maximum
Analog Trunks (COT)	40	88	136	184	
BRI	40	88	136	184	Total 400
PRI/T1 (1.5M)	96	192	288	384	10(a) 400
PRI/E1 (2M)	90	180	270	360	
IP Trunk (SIP)		4	00		
Tone Receivers (GCD-CP10)	80	144	144	144	144 * <b>2</b>
Tone Receivers (GCD-CP20)	105	153	153	153	153 * <b>3</b>
VoIP Channels		2	56		256
Voice Mail Channels on CPU		16 ch	annels		16
Modem (GCD-CP10)					
Modem (GCD-CP20)		1			
Modem (GCD-CP20 + GPZ-BS20)		1 ch	annel		

Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels (CHS2UG Chassis) (Continued)

\*1 = For  $\mu$ -law countries 104 timeslots per chassis are assigned the G.711 PCM communications (e.g., voice communications) and 7 timeslots per chassis are assigned for the Data communications (e.g., HDLC over ISDN). Thus the simultaneous data communications are limited up to seven per chassis.

**\*2 = An additional 64 Tone Receivers are available when the** GPZ-BS10 is installed.

**\*3 = An additional 48 Tone Receivers are available when the** GPZ-BS20 **is installed.** 

Additional Tone receivers are available when the GPZ-BS10 or GPZ-BS20 is installed. If using Caller ID to analog trunks and DSP resources are set to common, DSP resources will only be used for analog trunks and not analog stations.







There are two 9.5" chassis, the Base and Expansion. The base unit has three universal slots, one expansion slot and one MPS7101 (power supply unit). The expansion unit has three universal slots, no expansion slot, and no power supply unit. When the GCD-CP10 or GCD-CP20 is installed in the first slot of the base chassis, it is called the *Controlling Chassis*. Additional chassis, called *Expansion Chassis*, can be installed to increase the capacity of the system to meet the customer's business needs.

The system can be expanded from 64 ports to 896 ports by vertically stacking a maximum of three additional chassis onto the controlling chassis. This provides a maximum of 24 slots and 368 digital terminals. To obtain the maximum port capacity of 896 ports, three systems can be linked together via an IP connection.

Up to four combined CHS2UG B/CHS2UG E (3-Slot Base/3-Slot Expansion) or CHS2UG (6-Slot) chassis can be connected locally to reach the system's maximum port capacity.

### EXAMPLE:

0 CHS2UG (19" Chassis) & 4 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

1 CHS2UG (19" Chassis) & 3 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

2 CHS2UG (19" Chassis) & 2 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

3 CHS2UG (19" Chassis) & 1 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

4 CHS2UG (19" Chassis) & 0 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)



The maximum slot and channel capacities for the CHS2UG B and CHS2UG E chassis are listed in Table 2-3 SV9100 Maximum System Capacities – Trunks/ Ports/Channels (CHS2UG B and CHS2UG E chassis).

		CHS2UG B	(	CHS2UG B	+ CHS2UG	E		
Number of:		x 1 (CPU + 2 Slots)	x 1 (6 Slots)	x 2 (12 Slots)	x 3 (18 Slots)	X4 (24 Slots)	System Maximum	
Number of Times late #4	РСМ	60	104	208	312	416	416	
Number of Timeslots *1	Data	7	7	14	21	28	28	
TDM Digital Multiline Terminals	(-48V)	32	80	176	272	368		
SLT (-28V)		32	80	176	272	368		
SLT (-48V)		8	20	44	68	92	Total 896	
IP Multiline Terminals				896				
Softphone (UC Suite) InUC Con	nection			256			Total 256	
Softphone (UC Suite) with Share Service		Total 512						
SIP/WLAN			896					
Analog Trunks (COT)		16	40	88	136	184		
BRI		16	40	88	136	184	Total 400	
PRI/T1 (1.5M)		48	96	192	288	384	lotal 400	
PRI/E1 (2M)		60	90	180	270	360		
IP Trunk (SIP)				400				
Tone Receivers (GCD-CP10)		80	80	144	144	144	144 * <b>2</b>	
Tone Receivers (GCD-CP20)		105	105	153	153	153	153 * <b>3</b>	
VoIP Channels			256					
Voice Mail Channels on CPU	16 channels					16		
Modem (GCD-CP10)	1 channel							
Modem (GCD-CP20)				0 channel			1	
Modem (GCD-CP20 + GPZ-BS20	)							

Table 2-3 SV9100 Maximum System Capacities – Trunks/Ports/Channels (CHS2UG B and CHS2UG E chassis)



Table 2-3 SV9100 Maximum System Capacities – Trunks/Ports/Channels (CHS2UG B and CHS2UG E chassis)

	CHS2UG B	(	CHS2UG B	+ CHS2UG	E	
Number of:	x 1 (CPU + 2 Slots)	x 1 (6 Slots)	x 2 (12 Slots)	x 3 (18 Slots)	X4 (24 Slots)	System Maximum

\*1 = For  $\mu$ -law countries 104 timeslots per chassis are assigned the G.711 PCM communications (e.g., voice communications) and 7 timeslots per chassis are assigned for the Data communications (e.g., HDLC over ISDN). Thus the simultaneous data communications are limited up to seven per chassis.

\*2 = An additional 64 Tone Receivers are available when the GPZ-BS10 is installed.

\*3 = An additional 48 Tone Receivers are available when the GPZ-BS20 is installed.

► Additional Tone receivers are available when the GPZ-BS10 or GPZ-BS20 is installed. If using Caller ID to analog trunks and DSP resources are set to common, DSP resources will only be used for analog trunks and not analog stations.



## 3.2 System Chassis Capacities

Table 2-4 Maximum System Capacities – CHS2UG Chassis shows the maximum number of chassis and related equipment that can be installed in a system.

Table 2-4 Maximum System	Capacilles – Ci	13209 01183313			
Hardware	CHS2UG Chassis with CPU	CHS2UG Chassis without CPU	CHS2UG Chassis x4	Networked Chassis	Comments
Number of Slot(s) for Interface Package	5 Slots	6 Slots	23 Slots	(NetLink)	
Chassis:					
CHS2UG (19" Chassis)	1	1	4	50 x (1+3)	Virtual slot in NetLink is limited to maximum of 240
Expansion:					
GPZ-BS10 or GPZ-BS20 3-jack Expansion Board for Controlling Chassis	1	0	1	*	_
GPZ-BS11 1-jack Expansion Board for Expansion Chassis	0	0	3	*	_
Battery:					
CHSG LARGE BATT BOX (External Battery Box)	1	1	4	50 x (1+3)	_
CHS2UG B SMALL BATT BOX (Small Battery Box)	-	_	-	-	_
Fan Box:					
CHS2U FAN BOX SET	1	1	4	_	1 is factory installed with each chassis
Power Supply:					
MPS7101	1	1	4	_	1 is factory installed with each chassis

Table 2-4 Maximum System Capacities – CHS2UG Chassis

\* Dependent on size of system.



## Table 2-5 Maximum System Capacities – CHS2UG B and CHS2UG E Chassis

shows the maximum number of chassis and related equipment that can be installed in a 9.5" Base and Expansion system.

Hardware	CHS2UG B	CHS2UG B + CHS2UGE with CPU	CHS2UG B + CHS2UG E without CPU	CHS2UGB + CHS2UG E x4	Networked Chassis (NetLink)	Comments
Interface Package	3 Slots	5 Slots	6 Slots	23 Slots		
Expansion:						
GPZ-BS10 or GPZ-BS20 3-port Expansion Board for Controlling Chassis	1	1	1	1	-	_
GPZ-BS11 1-port Expansion Board for Expansion Chassis	0	020	1	3	-	_
Battery:						
CHSG LARGE BATT BOX (External Battery Box)	1	1	1	4	50 x (1+3)	_
CHS2UG B SMALL BATT BOX (Small Battery Box)	1	1	1	4	50 x (1+3)	_
Power Supply:						
MPS7101	1	1	1	4	_	1 is factory installed with each chassis

### Table 2-5 Maximum System Capacities – CHS2UG B and CHS2UG E Chassis



## 3.3 Blade Capacities

This is determined by the maximum blade configuration allowed. When installing single line sets, DISA, or tie lines, CPU circuits must be allocated for DTMF receivers. To install single line sets with CO/PBX line access, or when installing immediate-start tie lines, CPU circuits must be allocated for dial tone detection.

	•				
Hardware	CHS2UG Chassis with CPU	CHS2UG Chassis without CPU	CHS2UG Chassis x4	Networked Chassis	Comments
Number of Slot(s) for Interface Package	5 Slots	6 Slots	23 Slots	(NetLink)	
Common Control Blades:					
GCD-CP10 or GCD-CP20	1	0	1	50	-
GPZ-IPLE (VoIP Daughter Board)	1	0	1	50	This unit provides 256 VOIP Gateway channels
Station Blades:					
GCD-4DIOPA (4 DID/OPX)	5	6	23	128	When installed as an OPX blade
GCD-4LCA (4 Single Line Telephone Interface)	5	6	23	224	-
GCD-8LCA (8 Single Line Telephone Interface)	5	6	23	112	-
GCD-8DLCA (8 Digital Station Interface)	5	6	23	112	-
GCD-16DLCA (16 Digital Station Interface)	5	6	23	56	-
GPZ-8DLCB (8 Digital Station Interface Daughter Board)	5	6	23	56	-
GPZ-4LCA (4 Single Line Telephone Interface Daughter Board)	5	6	23	74	-
GPZ-8LCE (8 Single Line Telephone Interface Daughter Board)	5	6	23	56	_
GCD-4LCF (4 Single Line Telephone Interface)	5	6	23	224	

Table 2-6 SV9100 Maximum Blade Capacities – CHS2UG Chassis



Table 2-6 SV9100 Maximum Blade Capacities – CHS2UG Chassis (Continued)

Hardware	CHS2UG Chassis with CPU	CHS2UG Chassis without CPU	CHS2UG Chassis x4	Networked Chassis	Comments
Number of Slot(s) for Interface Package	5 Slots	6 Slots	23 Slots	(NetLink)	
GCD-8LCF (8 Single Line Telephone Interface)	5	6	23	112	
GPZ-4LCF (4 Single Line Telephone Interface Daughter Board)	5	6	23	74	
GPZ-8LCF (8 Single Line Telephone Interface Daughter Board)	5	6	23	56	
GCD-LTA <b>*</b> (8 Digital/2 Single Line)	2	2	8	23	An optional GPZ-4COTF or GPZ-4COTF-A or GPZ-2BRIA can be installed
Trunk Blades:					
GCD-2BRIA (2 Basic Rate Interface)	5	6	23	T interface = 100 S interface = 224	-
GPZ-2BRIA (2 Basic Rate Interface Daughter Board)	5	6	23	T interface = 50 S interface = 112	_
GCD-4COTB or GCD-4COTB-A (4 Analog Trunk)	5	6	23	100	-
GPZ-4COTF or GPZ-4COTF-A (4 Analog Trunk Daughter Board)	5	6	23	50	-
GCD-4DIOPA (4 DID/OPX)	5	6	23	DID = 100 OPX = 224	When installed as a DID blade
GCD-4ODTA (4 E&M)	5	6	23	100	-
GCD-PRTA (1 Primary Rate Interface)	4	4	16	T interface = 16 S interface = 37	Blade is used for Primary Rate Interface or T1/E1 Interface
Optional Blades:					
GCD-PVAA (Interactive Voice Response, PVA PMS)	1	1	1	1	



Hardware	CHS2UG Chassis with CPU	CHS2UG Chassis without CPU	CHS2UG Chassis x4	Networked Chassis	Comments
Number of Slot(s) for Interface Package	5 Slots	6 Slots	23 Slots	(NetLink)	
GCD-PVAA (CCIS Point-to-Multipoint)	5	6	23	32	
GCD-ETIA (Switching Hub with Power over Ethernet)	3	3	11	64	_
GCD-CCTA (CCIS Trunk Interface/Common Channel Handler)	4	6	8	8	-
GCD-VM00 (Voice Mail and Server)	1	0	1	1	Maximum of One per system
GCD-SVR2 (Server Blade)	2	3	11	1	
GCD-RGA (Application Gateway – Router and Conference)	1	1	1	1	Maximum of One per system
GCD-SVR3 (Server Blade)	2	3	11	1	

Table 2-6 SV9100 Maximum Blade Capacities – CHS2UG Chassis (Continued)

Table 2-7 SV9100 Maximum Blade Capacities – CHS2UG B and CHS2UG E Chassis

Hardware Number of Slot(s) for	CHS2UG B 3 Slots	CHS2UG B + CHS2UGE with CPU 5 Slots	CHS2UG B + CHS2UG E without CPU 6 Slots	CHS2UG B + CHS2UGE with CPU x4 23 Slots	Networked Chassis (NetLink)	Comments
Common Control Blades:						
Common Control Diades.						
GCD-CP10 or GCD-CP20	1	1	0	1	50	-
GPZ-IPLE (VoIP Daughter Board)	1	1	0	1	50	This unit provides 256 VOIP Gateway channels



Table 2-7 SV9100 Maximum Blade Capacities – CHS2UG B and CHS2UG E Chassis (Continued)

Hardware Number of Slot(s) for Interface Package	CHS2UG B 3 Slots	CHS2UG B + CHS2UG E with CPU 5 Slots	CHS2UG B + CHS2UG E without CPU 6 Slots	CHS2UG B + CHS2UGE with CPU x4 23 Slots	Networked Chassis (NetLink)	Comments
Station Blades:						
GCD-4DIOPA (4 DID/OPX)	2	5	6	23	128	When installed as an OPX blade
GCD-4LCA (4 Single Line Telephone Interface)	2	5	6	23	224	-
GCD-8LCA (8 Single Line Telephone Interface)	2	5	6	23	112	-
GCD-8DLCA (8 Digital Station Interface)	2	5	6	23	112	-
GCD-16DLCA (16 Digital Station Interface)	2	5	6	23	56	-
GPZ-8DLCB (8 Digital Station Interface Daughter Board)	2	5	6	23	56	_
GPZ-4LCA (4 Single Line Telephone Interface Daughter Board)	2	5	6	23	74	_
GPZ-8LCE (8 Single Line Telephone Interface Daughter Board)	2	5	6	23	56	_
GCD-4LCF (4 Single Line Telephone Interface)	2	5	6	23	224	
GCD-8LCF (8 Single Line Telephone Interface)	2	5	6	23	112	
GPZ-4LCF (4 Single Line Telephone Interface Daughter Board)	2	5	6	23	74	
GPZ-8LCF (8 Single Line Telephone Interface Daughter Board)	2	5	6	23	56	



Hardware	CHS2UG B	CHS2UG B + CHS2UGE with CPU	CHS2UG B + CHS2UG E without CPU	CHS2UG B + CHS2UGE with CPU x4	Networked Chassis (NetLink)	Comments
Number of Slot(s) for Interface Package	3 Slots	5 Slots	6 Slots	23 Slots		
GCD-LTA <b>*</b> (8 Digital/2 Single Line)	2	2	2	8	23	An optional GPZ-4COTF or GPZ-4COTF-A or GPZ-2BRIA can be installed
Trunk Blades:						
GCD-2BRIA (2 Basic Rate Interface)	2	5	6	23	25	-
GPZ-2BRIA (2 Basic Rate Interface Daughter Board)	2	5	6	23	25	-
GCD-4COTB or GCD-4COTB-A (4 Analog Trunk)	2	5	6	23	25	-
GPZ-4COTF or GPZ-4COTF-A (4 Analog Trunk Daughter Board)	2	5	6	23	25	_
GCD-4DIOPA (4 DID/OPX)	2	5	6	23	50	When installed as a DID blade
GCD-4ODTA (4 E&M)	2	5	6	23	50	-
GCD-PRTA (1 Primary Rate Interface)	2	4	4	16	8	Blade is used for Primary Rate Interface or T1/E1 Interface
Optional Blades:						
GCD-PVAA (Interactive Voice Response, PVA PMS)	1	1	1	1	1	
GCD-PVAA (CCIS Point-to-Multipoint)	2	5	6	23	32	
GCD-ETIA (Switching Hub with Power over Ethernet)	2	3	3	11	64	_

Table 2-7 SV9100 Maximum Blade Capacities – CHS2UG B and CHS2UG E Chassis (Continued)



Table 2-7 SV9100 Maximum Blade Capacities –	CHS2UG B and CHS2UG E Chassis (Continued)

Hardware	CHS2UG B	CHS2UG B + CHS2UG E with CPU	CHS2UG B + CHS2UG E without CPU	CHS2UG B + CHS2UGE with CPU x4	Networked Chassis (NetLink)	Comments
Number of Slot(s) for Interface Package	3 Slots	5 Slots	6 Slots	23 Slots		
GCD-CCTA (CCIS Trunk Interface/ Common Channel Handler)	2	4	4	4	4	_
GCD-VM00 (Voice Mail and Server)	1	1	0	1	1	Maximum of One per system
GCD-SVR2 (Server Blade)	1	1	1	4	1	GCD-SVR2 cannot be installed in the same CHS2UG B or CHS2UG E chassis as the GCD-RGA
GCD-RGA (Application Gateway – Router and Conference)	1	1	1	1	1	Maximum of One per system GCD-RGA cannot be installed in the same CHS2UG B or CHS2UG E chassis as the GCD-SVR2
GCD-SVR3 (Server Blade)	1	1	1	4	1	GCD-SVR3 cannot be installed in the same CHS2UG B or CHS2UG E chassis as the GCD-RGA, CD-SVRU or GCD-SVR2



Table 2-8 Daughter Board Combinations shows each blade and associated daughter board combinations. The daughter boards that can be mounted on specific blades are indicated by a checkmark. For example, the GCD-LTA can have a GPZ-2BRIA or the GPZ-4COTF or GPZ-4COTF-A daughter board mounted.

	Daughter Board							
	GPZ-2BRIA	GPZ-4COTF/ GPZ-4COTF-A	GPZ-4LCA	GPZ-8LCE	GPZ-8DLCB			
Blades								
<b>GCD-LTA</b> (8 Digital/2 Single Line)	>	>	Ι	Ι	Ι			
GCD-4COTB or GCD-4COTB-A (4 Analog Trunk Inter- face)	Ι	>	Ι	Ι	Ι			
<b>GCD-4LCA</b> (4 Single Line Interface)	-	-	~	~	-			
GCD-8LCA (8 Single Line Interface)	-	-	~	~	-			
<b>GCD-8DLCA</b> (8 Digital Station Interface)	-	-	-	-	~			
<b>GCD-16DLCA</b> (16 Digital Station Interface)	-	-	-	-	-			
<b>GCD-2BRIA</b> (2 Basic Rate Interface)	~	_	-	_	-			

Table 2-8 Daughter Board Combinations

– = Does not apply

I = Does apply



# SECTION 4 LICENSING

Table 2-9 License Information provides a list of the licensing available with the system.

Feature Code	Item Name	Feature Name (WebPro/PCPro)	Min	Max	Note
0002	SV9100 NETLINK NODE LIC-01	NetLink	1	49	This license number is determined according to number of secondary sites. For example, if you have one (1) Primary and three (3) Secondary sites networked; three (3) licenses are needed. All licenses are activated at the Primary site. With each "SV9100 NETLINK NODE LIC- 01" you receive (32) "SV9100 IP RESOURCE- LIC 01" licenses.
0007	SV9100 HM LIC	Hotel/Motel	On	/Off	-
0017	SV9100 REMOVE LIC		On	/Off	-
0030	SV9100 ENCRYPTION LIC	Encryption	On	/Off	_
0031	SV9100 NAT TRAVERSAL LIC	NAT Traversal	On	/Off	_
0041	SV9100 XMLPRO LIC	XML Pro	On	/Off	-
0042	SV9100 VIDEO MCU LIC Video MCU		On/Off		_
0046	SV9100 PMS LIC PMS		On/Off		_
0047	SV9100 REMOTE CONF LIC-01	Remote Conference	1	20	-
0048	SV9100 HW MIGRATION LIC	H/W migration	igration On/Off		_
0049	SV9100 MULTI-DEVICE	Multi-Device	1	512	_
0080	SV9100 WEB VIDEO CONFERENCE	Video Conference with WebRTC	1	32	-
0111	SV9100 1ST PARTY CTI LIC-01	1st Party CTI (Ethernet)	1	256	1st Party CTI (Ethernet) xx client
0112	SV9100 3RD PARTY CTI-LIC 01	3rd Party CTI Client	0	999	-
0123	SV9100 OAI LIC	OAI Interface	On	/Off	_
0300	SV9100 RESOURCE - LIC 01	System Port	1	1296	Required for each port TDM/IP station port, trunk port, etc., that connects to the system.
0411	SV9100 VERSION LIC (R1)	Version R1	On	/Off	-
0413	SV9100 VERSION LIC (R3)	Version R3	On	/Off	_
0414	SV9100 VERSION LIC (R4)	Version R4	On	/Off	-
0415	SV9100 VERSION LIC (R5)	Version R5	On/Off		-
0416	SV9100 VERSION LIC (R6)	Version R6	On	/Off	-
0417	SV9100 VERSION LIC (R7)	Version R7	On	/Off	-

Table 2-9 License Information



## Table 2-9 License Information (Continued)

Feature Code	Item Name	Feature Name (WebPro/PCPro)	Min	Max	Note
0418	SV9100 VERSION LIC (R8)	Version R8	On	/Off	-
0419	SV9100 VERSION LIC (R9)	Version R9	Or	/Off	-
0420	SV9100 VERSION LIC (R10)	Version R10	On	/Off	_
1001	SV9100 INMAIL VRS PORT-LIC 01	VRS Port	1	16	-
1012	SV9100 INMAIL VM BOX-LIC 01	VM Box	1	896	_
1014	SV9100 INMAIL EMAIL CLIENT-LIC 01	InMail Email Client	1	896	-
1402	SV91/93 UM8000 FAX PORT- LIC 01	UMS FAX Port	1	4	1 Port FAX
1403	SV91/93 UM8000 TTS PORT- LIC 01	UMS TTS Port	1	6	1 Port of Text-to-Speech language for Microsoft outlook activation license.
1404	SV91/93 UM8000 UMS CLIENT- LIC 01	UMS Client	1	896	A minimum of 6 UMS Client licenses are required for UM8000 in a SV9100. This license enables the following features for UM8000 Mail: – One Subscriber or Guest Mailbox. – One View App Session, (Supports View Mail, View Call Plus, VMM (Outlook), VML (Lotus Notes), VMG (GroupWise) and Web Mailbox clients Manager.)
1406	SV91/93 UM8000 SYSTEM LANG-01 LIC	UMS Multi-Language	1	25	1 Language activation License.
1407	SV91/93 UM8000 HOSPITALITY & PMS LIC	UMS Hospitality and PMS	Or	/Off	Hospitality and PMS activation license.
1408	SV91/93 UM8000 HOSPITALITY LANG-LIC 01	UMS Hospitality Language	1	10	1 Hospitality Language activation license.
1409	SV91/93 UM8000 AMIS NETWORK LIC	UMS Amis/Plus Net	Or	/Off	-
1410	SV91/93 UM8000 TTS LANG-LIC 01	UMS TTS Language	1	10	1 Port of Text-to-Speech language activation license.
2002	SV9100 CONTACT CENTER AGENT-LIC 01	ACD Client	1	896	-
2101	SV9100 CONTACT CENTER P-EVENT LIC	ACD P-event	Or	/Off	
2102	SV9100 CONTACT CENTER- MIS LIC	ACD-MIS Basic	On	/Off	-
2103	SV9100 CONTACT CENTER RT- REPORTING-LIC 01	ACD-MIS Monitor	1	16	-
2104	SV9100 CONTACT CENTER MIS AGENT-LIC 01	ACD-MIS Agent	1	197	_
2105	SV9100 CONTACT CENTER SKILL/CID BASE LIC	ACD Advance	Or	/Off	_



Table 2-9	License	Information	(Continued)
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Feature Code	Item Name	Feature Name (WebPro/PCPro)	Min	Max	Note
2107	SV9100 INCONTROL CR PKG LIC	InControl Server	On	/Off	-
3000	SV91/93/95 CA STATION PKG LIC-20	CA-Basic	On	/Off	-
3001	SV91/93/95 CA STATION PKG LIC-256	CA-256 Station	On	/Off	-
3002	SV91/93/95 CA UPG LIC-20/256	CA-Up 20 to 256	On	/Off	_
3003	SV91/93/95 CA NETWORK CLIENT PACK-LIC 05	CA-Network Client	1	999	_
3004	SV91/93/95 CA ADD REMOTE SITE-LIC 01	CA-Add Remote Site	1	999	-
3005	SV91/93/95 CA ADD REMOTE SOFTWARE-LIC 01	CA-Remote Site Soft	1	999	_
3006	SV91/93/95 CA SYS TRAFFIC ANALYSIS LIC	CA-Traffic Analys	On	/Off	-
3007	SV91/93/95 CA SYS PMS INTEGRATION LIC	CA-PMS Integratio	On	/Off	-
3008	SV91/93/95 CA WEB REPORTING-LIC 05	CA-Web Reporting	On	/Off	-
3013	SV91/93/95 CA ADDITIONAL STATION LIC-256	CA-Add Stations	1	256	-
3014	SV9100 CA E911-REPORTING- LIC	CA-E911 Reporting	1	999	_
3200	SV91/93 IP RECORDER - Basic Package	IP REC BASIC PAC	On	/Off	_
3201	SV91/93 IP RECORDER - Basic Supervisor Capacity	REC BASIC SUPV	1	256	_
3202	SV91/93 IP RECORDER - Basic Port Capacity	REC BASIC PORT	1	256	_
3203	SV91/93 IP RECORDER - IP Recorder-LIC 01	IP REC ADD 256	1	256	
3204	SV91/93 IP RECORDER - Call Scoring-LIC 01	IP REC CALLSCORING	1	999	
3205	SV91/93 IP RECORDER - Reporting-LIC	IP CALL REPORTING	On	/Off	
3210	SV91/93/95 IP/DIGITAL- REPORT-LIC 01	VSR-IP Port			Includes feature codes 3210 and 3211.
3211	SV91/93/95 IP/DIGITAL- ENCRYPTION-LIC 01	VSR-Encrypt			_
3212	SV91/93/95 MANAGER PORT- LIC 01	VSR-Manager			_
3213	SV91/93/95 IP/DIGITAL- REPORT-LIC 01	VSR-Reporter			-



# Table 2-9 License Information (Continued)

Feature Code	Item Name	Feature Name (WebPro/PCPro)	Feature Name (WebPro/PCPro) Min Max		Note
3214	SV91/93/95 IP/DIGITAL ARCHIVER PORT-LIC 01	VSR-Archive	-		-
3300	SV91/93 E911 ESN Suite-LIC	ESN Registry	On	/Off	-
3301	SV91/93 E911On-Site Monitor- LIC	ESN Site Monitor	1	9999	-
3302	SV91/93 E911 ALARM CLIENT ADD-ON -LIC	ESN Alarm Client	1	9999	-
3303	SV91/93 E911 Call Notify-Addon- LIC	ESN Call Notify	1	9999	-
3400	SV9100 CTI OCX LIC	CTI-OCX	On	/Off	_
3512	SV9100 INGUARD LIC	InGuard	On	/Off	-
3513	SV9100 LUA PMS LIC	LUA InPMS	On	/Off	-
3514	SV9100 LUA PHONEPRO LIC	LUA PhonePro	On	/Off	-
5001	SV9100 IP TRUNK-LIC 01	IP Trunk	1	400	_
5012	SV9100 NETWORKING-LIC 01	K-CCIS over IP	1	400	Each system need this license to specify suitable K-CCIS over IP channel (Trunk) number.
5050	DT820 GIGABIT	DT820 Gigabit	1	896	
5051	DT820 EXT LK 16	DT820 Ext LK 16	1	896	only. Each telephone must be manually
5052	DT820 EXT LK 32	DT820 Ext LK 32	1	896	set to get this license from the SV9100.
5053	DT920/930 Gigabit for SV91 (LIC)	DT920 Gigabit	1	896	-
5054	DT920/930 Ext LK 16 for SV91 (LIC)	DT920 Ext LK 16	1	896	-
5055	DT920/930 Ext LK 32 for SV91 (LIC)	DT920/930 Ext LK 32	1	896	-
5091	SV9100 NETWORKING OVER IP-LIC 01	Networking over IP	1	128	
5103	SV9100 IP RESOURCE-LIC 01	VoIP Channel	1	12800	-
5111	SV9100 IP PHONE-LIC 01	IP Terminal	1	896	-
5201	SV9100 MOBILE EXT-LIC 01	Mobile Extension	1	896	-
5301	SV9100 UCS SOFTPHONE CLIENT-LIC01	UCS SoftPhone Client	1	256	-
5303	SV9100 UCS SOFTPHONE E CLIENT-LIC01	UCS SoftPhone Enhance	1	256	-
5304	SV9100 UCS ATTENDANT CLIENT-LIC 01	UCS Attendant Client	1	512	_
5305	SV9100 UCS CLIENT-LIC01	UCS Client	1	256	-
5309	SV9100 UCS ADVANCED SERVICE-LIC 01	UCS Enhancement I	1	512	-



Table 2-9	License	Information	(Continued)
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Feature Code	Item Name	Feature Name (WebPro/PCPro)	Min	Мах	Note
5310	SV9100 UCS CRM INTEGRATION-LIC 01	UCS CRM Integration	1 256		This will support external CRM applications. Refer to the UC Suite Installation manual for further details.
5311	SV9100 MOBILE PRESENCE LIC	UCS Mobile Presence	On	/Off	-
5312	SV9100 UCS VOICEMAIL INT- LIC 01	UCS InMail Integration	InMail Integration 1 128		Access to InMail function from UC Suite. Client base license.
5313	SV9100 UCS WEB CLIENT-LIC 01	UCS Web Client 1 51		512	-
5320	SV9100 UCS VERSION LIC(R1)	UCS Version 1	On	/Off	-
5326	SV9100 UCS WebRTC P2P-LIC 01	UCS WebRTC P2P (Advanced)	1	512	_
5327	SV9100 INCONTROL ADDON-01 LIC	InControl Addon	Or	/Off	_
6200	PVA-CCIS PORT LIC	PVA-CCIS Port	4	400	-
6201	SV9100 PVA-PMS US LIC	PVA-PMS	Or	/Off	-
6300	RGA CONF PORT-LIC 08	RGA Conference	8	32	-
6301	RGA CONF ENH I-LIC	RGA-CNF ENH I	Or	/Off	
6302	RGA CONF ENH II-LIC	RGA-CNF ENH II	Or	/Off	
6303	RGA CONF ENH III-LIC	RGA-CNF ENH III	Or	/Off	
6304	RGA CONF MULTI LANG-LIC 01	RGA-CNF Multi Lang	1	60	



#### SECTION 5 NEC EXTERNAL SOLUTIONS

Some NEC Solutions require feature activation directly on the applications interface. These external applications are excluded from SV9100 PBX system features and the application feature set is based on predefined feature maps configured in the License Manager Server.

	Table 2-10 TNEO External Solutions						
Application	Feature Code	Item Name		Мах	Note		
	X1ADDPRT	NMC XMP Audio Add-On Port	1	24	-		
	X1AUDPRT	NMC XMP Audio Port	8	32	-		
	X1DFBPRT	NMC XMP Dial-Out Fire bar Conferencing	8	32	-		
Meeting	X1WEBCON	NMC XMP Audio Web Conf Port	8	32	-		
Center	X1MASPRT	NMC XMP Audio Mass Notification Port	8	32	-		
	X1RECORD	SNMC XMP Conf Recording	1	1	-		
	X1LDAPRT	NMC XMP LDAP	1	1	-		
MLC BYOD Application	BYODMLC	Multi Line Client User	1	896	-		

Table 2-10 NEC External Solutions



Refer to the application specific user manual for license installation and activation procedures.

#### SECTION 6 **POWER-BASED CALCULATOR CHART**

For the Univerge SV9100 system, two types of power factors are designated: Blade Power Factor, and Terminal Power Factor. For a single chassis chart refer to Table 2-11 Blade Power Factor Chart on page 2-26. For each chassis, the blade power factor for blades installed in that chassis must not exceed a sum total of seven. For the maximum number of specific blades per system, see Table 2-12 Maximum Number of Packages Installed – CHS2UG or Table 2-13 Maximum Number of Packages Installed – CHS2UG B/CHS2UG E on page 2-27. Refer to Table 2-14 Terminal Power Factor on page 2-27 below, for the Terminal/ Adapter power chart.



Table 2-11	Rlade	Power	Factor	Chart
	Diaue	1 00001	racior	Unant

Blade Power Factor							
Total	=<7						
Item	Power Factor						
GCD-CP10 or GCD-CP20	1						
GCD-VM00	2						
GCD-ETIA	2						
GCD-PVAA	1						
GPZ-IPLE	2						
GCD-SVR2	2						
GCD-SVR3	2						
GCD-RGA	1						
All Others	0						

Plade	Maximum Number of Packages Installed					
(Power Factor)	CHS2UG with CPU	CHS2UG without CPU	4 x CHS2UG			
GCD-ETIA (2)	3	3	12			
GCD-PVAA (1)	5	6	23			
GCD-SVR2 (2)	2	3	11			
GCD-SVR3 (2)	2	3	11			
GCD-RGA (1)	1	1	1			

Table 2-12	Maximum	Number of	Packages	Installed -	CHS2UG
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	Maximum Number of Packages Installed						
Blade (Power Factor)	CHS2UG B with CPU	CHS2UG B + CHS2UG E with CPU	CHS2UG B + CHS2UG E without CPU	4 x CHS2UG B + CHS2UG E			
GCD-ETIA (2)	2	3	3	12			
GCD-PVAA (1)	2	5	6	23			
GCD-SVR2 (2)*	1	1	1	4			
GCD-SVR3 (2)*	1	1	1	4			
GCD-RGA (1)**	0-RGA (1) <b>**</b> 1		1	1			
<ul> <li>* Only one server blade (CD-SVRU, GCD-SVR2 or GCD-SVR3) can be installed in the CHS2UG B and CHS2UG E chassis.</li> <li>* The server blade cannot be installed in the same CHS2UG B or CHS2UG E chassis as the GCD-RGA blade.</li> <li>** The GCD-RGA blade cannot be installed in the same CHS2UG B or CHS2UG E chassis as the server blade (CD-SVRU, GCD-SVR2 or GCD-SVR3).</li> </ul>							

|--|

Table 2-14 Termina	l Power Factor					
Terminal Power Factor						
CHS2UG Chassis with Fan  = <80 CHS2UG B or CHS2UG E Chassis without Fan =<64						
Item Power Factor						
QLT.	Standard (-28V)	0.8				
SLI	Long Line (-48V)	2				
	Economy (DTL/DTZ 2-, 6- or 12-Button)	0.8				
	Value (DTL/DTZ12-, 24 or 32-Button)	0.8				
Digital Multiline Terminals	Value (DTL/DTZ Self-Labeling)	0.8				
	Value (DTL 12-Button) with BCH	3				
	Value (DTL 12-Button) with PSA	2				



	Torminal Dower Feeter	
	Terminal Power Factor	
CHS2	CHS2UG Chassis with Fan  = <80 UG B or CHS2UG E Chassis without Fan =	<64
	Power Factor	
	DSS Console (DCZ-60-2/DCL-60-1-CONSOLE) (DCK-60-1 CONSOLE)	2
	Power Save Adapter (PSA-L UNIT)	1.2
	Line Key Unit (8LK-Z/16LK-Z/8LK-L/8LK-K UNIT)	0
Optional	Ancillary Device Adapter (ADA-L UNIT)	2
	Analog Port Adapter with Ringer (APR-L UNIT)	2
	Bluetooth Cordless Handset (BCH-L UNIT)	2
	Bluetooth Hub Adapter (BHA-L UNIT)	2
	Bluetooth Connection Adapter (BCA-Z UNIT)	2
DTEOO Corico	DTK-12D-1 TEL	0.8
D1500 Series	DTK-24D-1 TEL	0.8
	Economy (ITL 2- or 6-Button)	4
	Economy (ITL Self-Labeling)	4
	Entry Level (ITY 6-Button)	4
	Entry Level (ITY Self-Labeling)	4
	Value (ITL/ITZ 12-, 24 or 32-Button)	4
	Value (ITL/ITZ Self-Labeling)	4
	Value (ITL 12-Button) with PSA	4
IP Multiline Terminals	Sophi (ITL 32-Button)	6
(PoE from GCD-ETIA)	Cradle (2-Button)	4
	Ancillary Device Adapter (ADA)	2
	Bluetooth Connection Adapter (BCA)	2
	ITK-6D or 12D	4
	ITK-6DG or 12DG	4
	ITK-8TCGX or 32TCG	4
	ITK-8LCX, 8LCG or 32LCG	4
	ITK-24CG	4



### Table 2-14 Terminal Power Factor (Continued)

Terminal Power Factor						
CHS2UG Chassis with Fan  = <80 CHS2UG B or CHS2UG E Chassis without Fan =<64						
Item Power Facto						
Paging Adapter (PGD(2)-U10 ADP)	2					
IP Video Doorphone (IP3NE-IPCDH)	8					

### Table 2-15 IP Terminal Power Factor Chart – DT700

IP Torminal	IEEE802.3 af	2.3 Label Indication (Maximum Current with All Options)				Maximum Current Without Options			
Termina	Class	48V	DC	24V	DC	48VDC		24V	DC
ITL-12CG-3 TEL	Class 3	230mA	11.04W	450mA	10.8W	102mA	4.9W	192mA	4.62W
ITL-12DG-3 TEL	Class 3	230mA	11.04W	450mA	10.8W	102mA	4.9W	192mA	4.62W
ITL-320C-1 TEL/ ITL-320C-2 TEL	Class 3	160mA	7.7W	290mA	7.0W	111mA	5.3W	192mA	4.6W
ITL-32D-1 TEL	Class 2	130mA	6.2W	235mA	5.6W	90mA	4.3W	153mA	3.7W
ITL-8LD-1 TEL	Class 2	130mA	6.2W	235mA	5.6W	81mA	3.9W	137mA	3.3W
ITL-24D-1 TEL	Class 2	130mA	6.2W	235mA	5.6W	81mA	3.9W	137mA	3.3W
ITL-12D-1 TEL	Class 2	130mA	6.2W	235mA	5.6W	81mA	3.9W	137mA	3.3W
ITL-24PA-1 TEL	Class 2	130mA	6.2W	235mA	5.6W	_	0.0W	_	W0.0
ITL-24PD-1 TEL	Class 2	130mA	6.2W	235mA	5.6W	_	0.0W	_	0.0W
ITL-24BT-1 TEL	Class 2	130mA	6.2W	235mA	5.6W	_	0.0W	_	0.0W
ITL-6DE-1 TEL	Class 1	68mA	3.3W	122mA	2.9W	68mA	3.3W	122mA	2.9W
ITL-2E-1 TEL	Class 1	68mA	3.3W	122mA	2.9W	68mA	3.3W	122mA	2.9W
ITL-2CR-1 TEL	Class 3	180mA	8.64W	360mA	8.64W	96mA	4.6W	192mA	4.6W

Label Indication:

IP Value/Sophisticated – Maximum watts when adding options or modular upgrades.

IP Value - Maximum watts when ITL-12D-1 TEL is changed to ITL-8LD-1 TEL or ITL-24D-1 TEL.



IP	IEEE802.3 af	(Maximu	Label In m Current	dication t with All (	Options)	Maximum Current Without Options			
Terminal	Class	48\	/DC	24V	DC	48V	DC	24\	/DC
ITY-6D-1 TEL	Class 1	75mA	3.6W	-	-	75mA	3.6W	-	-
ITY-8LDX-1 TEL	Class 1	75mA	3.6W	-	-	75mA	3.6W	-	-
ITY-8LCGX-1 TEL	Class 1	75mA	3.6W	-	-	75mA	3.6W	-	-
ITZ-12D-3 TEL	Class 2	110mA	5.28W	217mA	5.21W	77mA	3.7W	154mA	3.7W
ITZ-24D-3 TEL	Class 2	110mA	5.28W	217mA	5.21W	77mA	3.7W	154mA	3.7W
ITZ-12CG-3 TEL	Class 3	230mA	11.04W	450mA	10.8W	102mA	4.9W	192mA	4.62W
ITZ-24CG-3 TEL	Class 3	230mA	11.04W	450mA	10.8W	102mA	4.9W	192mA	4.62W
ITZ-8LD-3 TEL	Class 2	130mA	6.2W	235mA	5.6W	81mA	3.9W	137mA	3.3W
ITZ-8LDG-3 TEL	Class 2	125mA	6W	250mA	6W	92mA	4.4W	183mA	4.4W
ITZ-12DG-3 TEL	Class 3	230mA	11.04W	450mA	10.8W	102mA	4.9W	192mA	4.62W
ITZ-24DG-3 TEL	Class 3	230mA	11.04W	450mA	10.8W	102mA	4.9W	192mA	4.62W

Table 2-16 IP Terminal Power Factor Chart – DT800

Label Indication:

IP Value – Maximum watts when adding options or modular upgrades.

IP Value – Maximum watts when ITZ-12D-3 TEL is changed to ITZ-8LD-3 TEL or ITZ-24D-3 TEL.

IP IEEE802.3		(Maximu	Label In m Current	dication t with All (	Options)	Maximum Current Without Options				
Termina	Class	48V	48VDC		27VDC		48VDC		27VDC	
ITK-6D-1 TEL	Class 1	75mA	3.6W	-	-	75mA	3.6W	-	-	
ITK-12D-1 TEL	Class 1	77mA	3.7W	-	-	77mA	3.7W	-	-	
ITK-8LCX-1 TEL	Class 1	78mA	3.75W	-	-	78mA	3.75W	-	-	
ITK-24CG-1 TEL	Class 2	120mA	5.8W	210mA	5.7W	88mA	4.2W	152mA	4.1W	
ITK-8TCGX-1 TEL	Class 2	100mA	4.8W	160mA	4.32W	100mA	4.8W	160mA	4.32W	

Table 2-17 IP Terminal Power Factor Chart – DT900

Note:



|--|

IEEE802.3af	Minimum	Maximum
Class 4	_	_
Class 3	6.49W	12.95W
Class 2	3.84W	6.49W
Class 1	0.44W	3.84W
Class 0	0.44W	12.95W



# SECTION 7 SYSTEM REQUIREMENTS AND SPECIFICATIONS

## 7.1 Cabling

This section provides cabling requirements and specifications for various equipment used in the SV9100 system.

Figure 2-3 Connecting the DLC Using Twisted 2-Pair Cable is a diagram of the chassis connected with each of the multiline terminals and single line telephones by a separate twisted 1-pair cable or 2-pair cable (only for multiline terminals).





Refer to the following tables for cabling requirements and specifications.

- ➡ Table 2-19 Digital Multiline Terminals Cable Length on page 2-32
- ➡ Table 2-20 IP Multiline Terminals Cable Length on page 2-33
- ➡ Table 2-21 Cable Connection Between Analog Port and Single Line Equipment on page 2-34
- ➡ Table 2-23 Cabling Requirements on page 2-35

Table 2-19 Digital Multiline Terminals Cable Length

Terminal or Adapter	By Twisted 1-Pair Cable (without AC Adapter) 24 AWG
DTK-12D-1 TEL	1,969 ft (600m)
DTK-24D-1 TEL	1,969 ft (600m)
DTL-2E-1 TEL	1,969 ft (600m)
DTL-6DE-1 TEL	1,969 ft (600m)
DTL-12E-1 TEL	1,969 ft (600m)
DTL-8LD-1 TEL	1,969 ft (600m)
DTL-12BT-1 TEL	1,969 ft (600m)
DTL-12PA-1 TEL	1,969 ft (600m)
DTL-12D-1 TEL	1,969 ft (600m)



Terminal or Adapter	By Twisted 1-Pair Cable (without AC Adapter) 24 AWG
DTL-24D-1 TEL	1,969 ft (600m)
DTL-32D-1 TEL	1,969 ft (600m)
DTZ-2E-3 TEL	1,969 ft (600m)
DTZ-6DE-3 TEL	1,969 ft (600m)
DTZ-12D-3 TEL	1,969 ft (600m)
DTZ-24D-3 TEL	1,969 ft (600m)
DTZ-8LD-3 TEL	1,969 ft (600m)
DCL-60-1/DCZ-60-2/DCK-60-1 Console*	1,969 ft (600m)

Table 2-19 Digital Multiline Terminals Cable Length (Continued)

\* An AC Adapter is required.

Table 2-20 IP Multiline Terminals Cable Length

Terminal or Adapter	Ethernet Cable
ITK-6D-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITK-8LCX-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITK-8TCGX-1 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100m)
ITK-12D-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITK-24CG-1 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100m)
ITL-2E-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-6DE-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-8LDE-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-8LD-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-12D-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-12CG-3 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100m)



Terminal or Adapter	Ethernet Cable
ITL-12DG-3 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100m)
ITL-12PA-3 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-24D-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100 m)
ITL-32D-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-320C-1 TEL/ ITL-320C-2 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITY-6D-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITY-8LDX-1 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITY-8LCGX-1 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100m)
ITZ-8LD-3 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100 m)
ITZ-12D-3 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100 m)
ITZ-12CG-3 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100 m)
ITZ-12DG-3 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100 m)
ITZ-24D-3 TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100 m)
ITZ-8LDG-3 TEL	Cat 5e/Cat 6 Ethernet 328.1 ft (100 m)

Table 2-20 IP Multiline Terminals Cable Length (Continued)

Table 2-21	Cable Cor	nnection	Between	Analog	Port and	Single	Line Ec	quipment

Connected Equipment	Cable	Maximum Feet from Connected Equipment to Telephone
ADA-L UNIT	Twisted Pair	9.5 ft (2.89m)
APR-L UNIT	Twisted Pair	50 ft (15.24m)
PSA-L UNIT	Twisted Pair	1,700 ohms
GBA-L UNIT	Twisted Pair	N/A



Table 2-21	Cable C	Connection	Between J	Analog	Port and	Single	Line	Equipment	(Continued	)
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Connected Equipment	Cable	Maximum Feet from Connected Equipment to Telephone
LCA/LCF/LCG	Twisted Pair	600 ohms (Including the SLT) 3,281 ft (1,000m) with 26 AWG 4,920 ft (1,500m) with 24 AWG 8,202 ft (2,500m) with 22 AWG
OPX	Twisted Pair	1,500 ohms or less (Including the SLT) 13,123 ft (4,000m) with 26 AWG 20,997 ft (6,400m) with 24 AWG 14,777 ft (10,600m) with 22 AWG

Mixing digital and analog ports through the same 25-pair cable runs is not recommended.

Table 2-22 C	Cable Connection	Between the	ODT/DID	System
--------------	------------------	-------------	---------	--------

Connected Equipment	Cable	Maximum Feet from Connected Equipment to Telephone
ODT	Twisted Pair	1,500 ohms or less (Including the Internal Resistance of destination system) 13,123 ft (4,000m) with 26 AWG 20,997 ft (6,400m) with 24 AWG 34,777 ft (10,600m) with 22 AWG
DIOP(DID)	Twisted Pair	For PB (DTMF) Loop 1,500 ohms or less (Including the Internal Resistance of destination system) 13,123 ft (4,000m) with 26 AWG 20,997 ft (6,400m) with 24 AWG 34,777 ft (10,600m) with 22 AWG For DP Loop 3,000 ohms or less (Including the Internal Resistance of destination system.) 29,855ft (9,100m) with 26 AWG 47,375 ft (14,440m) with 24 AWG 78,084 ft (23,800m) with 22 AWG

## Table 2-23 Cabling Requirements

Connected Equipment	Cable	
Music on Hold and Background Music Sources	Hi-Fi Shielded Audio Cable	
External Amplifier	Hi-Fi Shielded Audio Cable	



Table 2-23 Cabling Requirements

Connected Equipment	Cable
ITK/ITY/ITZ/ITL Cabling	Cat 5 Straight Data Network Cable – 328.1 ft (100m) maximum distance
IP Video Doorphone	Maximum 100m (by LAN cable)

# 7.2 Power Requirements

A dedicated 100VAC/120VAC/220VAC/230 – 240VAC 50Hz/60Hz circuit located within seven feet of the chassis is required. A separate dedicated outlet for each chassis should be installed.



Double Pole/Neutral Fusing (power supply fuses are located at both the L and N side).

# 7.2.1 Power Supply Specifications

	-			
	110VAC	220VAC	230-240VAC	
Power Requirements	110VAC@15A Controlling/Base Chassis	220VAC@15A Controlling/Base Chassis	230-240VAC@15A Controlling/Base Chassis	
Power Consumption	Base Chassis = 259VA 4 Chassis total = 1036VA	Base Chassis = 262VA 4 Chassis total = 1048VA	Base Chassis = 276VA (1.15Ax240V) 4 Chassis total = 1104VA	
Input Voltage (Rated Voltage)	90VAC to 264VAC (100VAC/120VAC/220VAC/230-240VAC)			
Frequency	47Hz - 63	BHz (Rated Frequency:	50/60Hz)	
Phase and Wire	Sing	le Phase, 2 Line + PE	Туре	
Grounding Requirements	No.14 AWG Copper Wire			
Feeding Voltage	Dterm/OPX/DID: -48V SLT: 25mA/ -28V			
Output Power	Base Chassis = 130W 4 Chassis total = 520W	Base Chassis = 130W 4 Chassis total = 520W	Base Chassis = 130W 4 Chassis total = 520W	
AC Input I	Base Chassis = 2.35A 4 Chassis total = 9.4A	Base Chassis = 1.19A 4 Chassis total = 4.76A	Base Chassis = 1.15A 4 Chassis total = 4.6A	
VA@110V VA@220V VA@230-240V	Base Chassis = 259VA 4 Chassis total = 1036VA	Base Chassis = 262VA 4 Chassis total = 1048VA	Base Chassis = 276VA (1.15Ax240V) 4 Chassis total = 1104VA	
KWh@AC Input I x 110V/1000 KWh@AC Input I x 220V/1000 KWh@AC Input I x 230-240V/1000	Base Chassis = 0.259 KWh 4 Chassis total = 1.036 KWh	Base Chassis = 0.262 KWh 4 Chassis total = 1.048 KWh	Base Chassis = 0.276 KWh (1.15Ax240V) 4 Chassis total = 1.104 KWh	
BTU (KWh x 3413)	Base Chassis = 884 BTU 4 Chassis total = 3536 BTU	Base Chassis = 894 BTU 4 Chassis total = 3577 BTU	Base Chassis = 942 BTU 4 Chassis total = 3768 BTU	

Table 2-24	Power Supply	y Specifications



## 7.2.2 Power Supply Consumption

Table 2-25 Chassis Power Consumption provides power consumption information for the SV9100 chassis.

Chassis	Voltage	Maximum RMS Current	Watts Used (Idle)	Watts Used (Maximum)
Basic Chassis – GCD-CP10 or GCD-CP20 Chassis	110VAC	2.35A		
	220VAC	1.19A	96	130
	230-240VAC	1.15A		
Basic Chassis + Expansion Chassis	110VAC	4.7A		
	220VAC	2.38A	192	260
	230-240VAC	2.3A		
Basic Chassis + 2 Expansion Chassis	110VAC	7.05A		
	220VAC	3.57A	288	390
	230-240VAC	3.45A		
Basic Chassis + 3 Expansion Chassis	110VAC	9.4A		
	220VAC	4.76A	384	520
	230-240VAC	4.6A		

Table 2-25	Chassis	Power	Consumption
	01123313	1 00001	Consumption


# 7.3 Environmental Conditions

The equipment operating temperature and humidity conditions are provided in this section. Recommended long term environmental conditions are also provided.

# 7.3.1 Temperature and Humidity

# Chassis, Telephones, BCH, BHA, 16LK, Console, ADA, APR

- **Operating Temperature:**  $+32^{\circ}F \sim +104^{\circ}F (0^{\circ}C \sim 40^{\circ}C)$
- Recommended Long Term Temperature: -4°F ~ +140°F (-20°C ~ 60°C)
- Operating Humidity: 10 ~ 90% RH (non-condensing)
- □ Recommended Long Term Humidity: 10 ~ 90% RH

# Blades – GPZ-BS10 or GPZ-BS20, GPZ-BS11, GCD-8DLCA with GPZ-8DLCB Daughter Board, GCD-16DLCA

- $\Box$  Operating Temperature: +32°F ~ +104°F (0°C ~ 40°C)
- Recommended Long Term Temperature: -4°F ~ +140°F (-20°C ~ 60°C)
- □ Humidity: 10 ~ 90% RH (non-condensing)
- □ Recommended Long Term Humidity: 10 ~ 90% RH

# Blades – GCD-4LCA with GPZ-4LCA Daughter Board, GCD-8LCA with GPZ-8LCE Daughter Board, GCD-4COTB or GCD-4COTB-A with GPZ-4COTF or GPZ-4COTF-A Daughter Board, GCD-PRTA

- $\Box$  Operating Temperature: +32°F ~ +104°F (0°C ~ 40°C)
- □ Recommended Long Term Temperature:  $-4^{\circ}F \sim +140^{\circ}F$ (-20°C ~ 60°C)
- Operating Humidity: 10 ~ 90% RH (non-condensing)
- Recommended Long Term Humidity: 20 ~ 90% RH

### **Door Box**

- $\Box$  Operating Temperature:  $-4^{\circ}F \sim +140^{\circ}F$  ( $-20^{\circ}C \sim 60^{\circ}C$
- Operating Humidity: 20 ~ 80% (non-condensing)

## SV9100 Power Supply – MPS7101

- $\Box$  Operating Temperature: +32°F ~ +104°F (0°C ~ +40°C)
- Recommended Long Term Temperature:  $-4^{\circ}F \sim 167^{\circ}F$ (-40°C ~ 75°C)
- Operating Humidity: 20 ~ 95% RH (non-condensing)
- □ Recommended Long Term Humidity: 10 ~ 95% RH



# **Video Doorphone**

- $\Box$  Operating Temperature: +14°F ~ +113°F (-10°C ~ +45°C)
- Storage Temperature:  $-4^{\circ}F \sim 140^{\circ}F (-20^{\circ}C \sim +60^{\circ}C)$
- Operating Humidity: 90% or less (non-condensing)
- **Storage Humidity:** 90% or less (non-condensing)

# 7.4 Outside Line Types

The following outside lines can be used with the UNIVERGE SV9100 system.

- O 2-wire, Loop Start or Ground Start Trunks
- O 2-wire, 2-way DID Lines (Dial Pulse or DTMF)
  - ► DID feature is not available for Europe and Australia market.
- O 4-wire, E&M Tie Lines (Type I or V, Dial Pulse, or DTMF)
- Digital Trunk T1/FT1 (Loop Start, Ground Start, Tie Line (E&M), or DID Signaling)
- O Digital Trunk E1
- O ISDN-BRI Trunks
- O ISDN-PRI Trunks
- O VoIP Trunks (Internet Protocols)

# 7.5 Product Reliability

Refer to Table 2-26 Mean Time Between Failure for product MTBF information.

Category	Description	MTBF (Years)	
	CHS2UG	6.49	
Chassis	CHS2UG B	10	
	CHS2UG E	10	
	GCD-CP10	7	
Blade	GPZ-BS10	31.1	
	GCD-CP20	7	
	GPZ-BS20	20	

Table 2-26 Mean Time Between Failure



Category	Description	MTBF (Years)	
	GPZ-BS11	71.1	
	GPZ-IPLE	59.1	
	GCD-8DLCA	22.89	
	GCD-16DLCA	16.61	
	GPZ-8DLCB	43.08	
	GCD-LTA	23.3	
	GCD-4LCA	33.8	
	GCD-8LCA	24.2	
	GPZ-4LCA	75.1	
	GPZ-8LCE	39.9	
	GCD-4COTB	31.2	
	GCD-4COTB-A	31.9	
	GPZ-4COTF	38.8	
Blade (Cont.)	GPZ-4COTF-A	38.8	
	GCD-2BRIA	10.74	
	GPZ-2BRIA	10.08	
	GCD-PRTA	12.7	
	GCD-4DIOPA	21	
	GCD-40DTA	23	
	GCD-RGA	6	
	GCD-ETIA	9	
Blade (Cont.)	GCD-VM00	11	
	DTK-12D-1	7.8	
	DTK-24D-1	7.8	
	DTZ-2E-3	29.5	
	DTZ-6DE-3	29.2	
Digital Terminals	DTZ-12D-3	22.5	
	DTZ-24D-3	22.5	
	DTZ-8LD-3	19.0	
	DTL-12PA-1	12.6	
	DTI -12BT-1	9.1	

Table 2-26 Mean Time Between Failure (Continued)



Category	Description	MTBF (Years)	
	ITK-6D-1	8	
	ITK-8LCX-1	7.8	
IP Terminals	ITK-8TCGX-1	7.8	
	ITK-12D-1	8	
	ITK-24CG-1	7.8	
	ITL-2E-1	9.5	
	ITL-6DE-1	8.4	
	ITL-8LDE-1	7.8	
	ITZ-12D-3	7.8	
	ITZ-24D-3	7.8	
	ITZ-8LD-3	6.4	
IP Terminals	ITZ-12DG-3	7.8	
	ITZ-24DG-3P	7.8	
	ITZ-8LDG-3	6.4	
	ITZ-12CG-3	6.5	
	ITZ-24CG-3A	6.5	
	ITL-12PA-1	7	
	ITL-320C-2	6	
	DCK-60-1	37	
DSS Console	DCZ-60-2	37	
	APR-L	89.62	
Terminal Options	ADA-L	70.85	
	8LK	400	

Table 2-26 Mean Time Between Failure (Continued)



# 7.6 Transmission, Network, and Control Specifications

# 7.6.1 Transmission

Data Length:

From multiline terminal to GCD-8DLCA: 23 bits

From GCD-8DLCA to multiline terminal: 23 bits

**Data Transmission Rates:** 

Between GCD-8DLCA and multiline terminal: 184K bps (voice and signaling)

**Scanning Time for each multiline terminal:** 32ms.

# 7.6.2 Network

Time Division Multiplexing (TDM) allows transmission of data and voice simultaneously over one communications medium. The specifications that the UNIVERGE SV9100 system uses for switching, clock, data bus, and timeframe are shown below.

- □ TDM Switching: PCM (µ Law)
- TDM Clock: 2.048 MHz
- **TDM Data Bus: 8-bit**
- **TDM** Timeframe: 125 μs.

# 7.6.3 Control

This section indicates the speed or capacity:

- Control: Stored program with distributed processing
- Central Processor: 32-bit microprocessor
- Clock: P1015 processor 533 MHz for GCD-CP10, 667 MHz for GCD-CP20
- □ Interface Blade: 8- or 16-bit microprocessor
- Optional Blades: 16- or 32-bit microprocessor
- **Multiline Terminal (TDM):** 8-bit microprocessor
- **Multiline Terminal (IP): 32-bit microprocessor**
- □ IP Adapter: 32-bit microprocessor
- Attendant Console: 4-bit microprocessor
- □ SLT Adapter: 4-bit microprocessor



# 7.7 Dialing Specifications

# 7.7.1 Dial Pulse Address Signaling

Dial Pulse Address Signaling uses dial pulses (regular momentary interruptions) to signal the equipment. The following Dial Pulse specifications are used In the UNIVERGE SV9100 system.

- Pulse Rate: 10 ± 0.5 pps/20 ± 1.0 pps
- Percent Break: 60 ± 1.5%
- □ Interdigit Interval: 0 pps/20 pps 770ms. ~ 830ms.

# 7.7.2 Dual-Tone Multifrequency (DTMF) Address Signaling

DTMF signaling includes push button or Touchtone dialing. When a key on a telephone is pushed, two tones (one high frequency and one low frequency) are provided. In the UNIVERGE SV9100 system, the following DTMF specifications are used.

**Frequencies** 

Two sinusoidal frequencies are provided, one from the high frequency group and one from the low frequency group.

- □ Frequency Deviation: Less than ±1.5%
- □ Signal Level:

Nominal level per frequency:  $-6 \sim -4 \text{ dBm}$ 

Minimum level per frequency

Low Group: -10 dBm

High Group: -8 dBm

Maximum level per frequency: 0 dBm

- **Rise Time:** Within 5ms.
- Duration of Dual Frequency Signal:

110 ms. default/60ms. minimum

Interdigital Time: 140ms. default/45ms. minimum



#### Nominal **High** Group Frequencies (Hz)

	1209	1336	1477
697	1	2	3
770	4	5	6
852	7	8	9
941	Q	0	#

# 7.7.3 External Equipment Connection

Nominal **Low** Group Frequencies (Hz)

- Door Phone or TV Door Phone
- External Speaker via amplifier
- External music source for MOH and BGM
- □ Tape recorder for voice recording via PGD(2)-U10 ADP
- Door Lock/Release or General Purpose Relay via PGD(2)-U10 ADP
- Printer for SMDR by LAN
- PC by LAN
- 7.7.4 Music Source for Music on Hold via Chassis
  - Auxiliary Input: 0.6V PPS Signal Level
  - $\Box$  Input Impedance: 600  $\Omega$
- 7.7.5 Music Source for Station Background Music via ACI
  - Auxiliary Input: 0.6V PPS Signal Level
  - $\Box$  Input Impedance: 600  $\Omega$
- 7.7.6 External Paging (Audio)
  - Output Power: -10 dBm Signal Level
  - $\Box$  Output Impedance: 600  $\Omega$
  - Relay Contact Rating: 500 mA, 24 Vdc

# 7.7.7 External Tone Ringer/Night Chime Output

- Output Level: -10 dBm
- $\Box$  Output Impedance: 600  $\Omega$
- Relay Contact Rating: 500 mA, 24 Vdc



# 7.7.8 SMDR Output

- Female Connector (LAN)
- 7.7.9 PC Connection
  - Female Connector (LAN)
- 7.7.10 Relay Contact
  - All Relay Contact Ratings: 500 mA, 24Vdc

# 7.8 Battery Backup

The UNIVERGE SV9100 system has battery backup functions for system backup and for memory backup.

# 7.8.1 System Backup (Optional)

During a power failure, the CHS2UG can be backed up using the CHS2UG BATT MTG KIT for a backup time of 10 minutes or one of the CHSG LARGE BATT SETs for a backup time ranging from 45~180 minutes. The CHS2UG GW can be backed up using the CHS2UG B SMALL BATT BOX for a backup time of 10 minutes.

# 7.8.2 Memory Backup

The GCD-CP10 or GCD-CP20 Blade battery retains the Clock/Calender and Last Number Redial (LNR) buffers for each station when the GCD-CP10 or GCD-CP20 Blade encounters a power loss. With a fully charged battery, the settings are retained for about three years. The System Programmed memory (Customer Database) is stored in non-volatile Memory and can be erased only by a First Initialization. After power is restored, the system Blade returns to normal operation.

# 7.9 Weights and Dimensions

Table 2-27 SV9100 Weights and Dimensions shows the shipping weight, height, width and depth of each SV9100 digital multiline terminal, IP multiline terminal, *D*<sup>term</sup>, chassis, assorted blades and adapters.

Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
SV9100				
CHS2UG	278.7 oz	3.47 in	16.9 in	16.08 in
	(7.9 kg)	(88 mm)	(430 mm)	(409 mm)
CHS2UG GW	158.7 oz	4.57 in	8.47 in	14.53 in
	(4.5 kg)	(116 mm)	(215 mm)	(369 mm)

### Table 2-27 SV9100 Weights and Dimensions



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
CHS2UG B	158.7 oz	4.57 in	8.47 in	14.53 in
	(4.5 kg)	(116 mm)	(215 mm)	(369 mm)
CHS2UG E	158.7 oz	4.57 in	8.47 in	14.53 in
	(4.5 kg)	(116 mm)	(215 mm)	(369 mm)
GCD-CP10	7.06 oz	0.98 in	5.71 in	7.09 in
	(0.2 kg)	(25 mm)	(145 mm)	(180 mm)
GCD-CP20	8.82 oz	0.98 in	5.71 in	7.09 in
	(0.25 kg)	(25 mm)	(145 mm)	(180 mm)
GCD-LTA	6.70 oz	0.98 in	5.71 in	7.09 in
	(0.19 kg)	(25 mm)	(145 mm)	(180 mm)
CHSG LARGE BATT BOX	458.6 oz	5.24 in	16.93 in	14.3 in
	(13 kg)	(133 mm)	(430 mm)	(363 mm)
CHSG LARGE BATT SET	194 oz	6.69 in	5.91 in	4.33 in
	(5.5 kg)	(170 mm)	(150 mm)	(110 mm)
CHS2UG B SMALL BATT BOX	14.11 oz	1.42 in	10.87 in	8.45 in
(without batteries installed)	(0.4 kg)	(36 mm)	(276 mm)	(214.7 mm)
CHS2UG B SMALL BATT SET	31.2 oz	5 in	5.75 in	4.75 in
	(0.88 kg)	(127 mm)	(146 mm)	(120.6 mm)
Common				
MPS7101	42.33 oz	2.36 in	7.08 in	6.10 in
	(1.2 kg)	(60 mm)	(180 mm)	(155 mm)
GPZ-BS10	2.29 oz	0.91 in	2.17 in	7.28 in
	(.065 kg)	(23 mm)	(55 mm)	(185 mm)
GPZ-BS20	3.88 oz	0.91 in	2.17 in	7.28 in
	(.011 kg)	(23 mm)	(55 mm)	(185 mm)
GPZ-BS11	1.975 oz	0.91 in	2.17 in	7.28 in
	(0.056 kg)	(23 mm)	(55 mm)	(185 mm)
GPZ-IPLE	1.76 oz	0.71 in	2.6 in	5.4 in
	(0.05 kg)	(18 mm)	(66 mm)	(138 mm)
GCD-8DLCA	5.89 oz	0.98 in	5.71 in	7.09 in
	(0.167 kg)	(25 mm)	(145 mm)	(180 mm)
GPZ-8DLCB	4.41 oz	0.60 in	4.72 in	5.12 in
	(0.125 kg)	(15 mm)	(120 mm)	(130 mm)
GCD-16DLCA	7.831 oz	1.89 in	9.45 in	7.68 in
	(0.222 kg)	(48 mm)	(240 mm)	(195 mm)
GCD-4COTB	6.35 oz	1.89 in	9.45 in	7.68 in
	(0.18 kg)	(48 mm)	(240 mm)	(195 mm)
GCD-4COTB-A	9.03 oz	1.89 in	9.45 in	7.68 in
	(0.25kg)	(48 mm)	(240 mm)	(195 mm)



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
GPZ-4COTF	3.53 oz	1.89 in	9.45 in	5.12 in
	(0.10 kg)	(48 mm)	(240 mm)	(130 mm)
GPZ-4COTF-A	6.70 oz	1.89 in	9.45 in	5.12 in
	(0.19 kg)	(48 mm)	(240 mm)	(130 mm)
GCD-4LCA	5.99 oz	0.98 in	9.45 in	7.68 in
	(0.17 kg)	(25 mm)	(240 mm)	(195 mm)
GPZ-4LCA	3.10 oz	0.60 in	9.45 in	7.68 in
	(0.09 kg)	(15 mm)	(240 mm)	(195 mm)
GCD-8LCA	6.46 oz	0.98 in	9.45 in	7.68 in
	(0.183 kg)	(25 mm)	(240 mm)	(195 mm)
PZ-8LCE	3.70 oz	0.60 in	9.45 in	5.12 in
	(0.105 kg)	(15 mm)	(240 mm)	(130 mm)
GCD-4LCF	5.99 oz	0.98 in	9.45 in	7.68 in
	(0.17 kg)	(25 mm)	(240 mm)	(195 mm)
GCD-8LCF	6.46 oz	0.98 in	9.45 in	7.68 in
	(0.183 kg)	(25 mm)	(240 mm)	(195 mm)
GPZ-4LCF	3.10 oz	0.60 in	9.45 in	7.68 in
	(0.09 kg)	(15 mm)	(240 mm)	(195 mm)
GPZ-8LCF	3.70 oz	0.60 in	9.45 in	7.68 in
	(0.105 kg)	(15 mm)	(240 mm)	(195 mm)
GCD-2BRIA	5.99 oz	0.98 in	9.45 in	7.68 in
	(0.17 kg)	(25 mm)	(240 mm)	(195 mm)
GPZ-2BRIA	4.02 oz	0.60 in	4.72 in	7.68 in
	(0.114 kg)	(15 mm)	(120 mm)	(195 mm)
GCD-PRTA	5.5 oz	0.98 in	9.45 in	3.94 in
	(0.156 kg)	(25 mm)	(240 mm)	(100 mm)
GCD-CCTA	5.5 oz	0.98 in	9.45 in	7.68 in
	(0.156 kg)	(25 mm)	(240 mm)	(195 mm)
GCD-40DTA	8.25 oz	0.98 in	9.45 in	7.68 in
	(0.234 kg)	(25 mm)	(240 mm)	(195 mm)
GCD-RGA	10.05 oz	0.98 in	5.71 in	7.68 in
	(0.285 kg)	(25 mm)	(145 mm)	(195 mm)
GCD-VM00	7.76 oz	0.98 in	9.45 in	7.68 in
	(0.22 kg)	(25 mm)	(240 mm)	(195 mm)
GCD-PVAA	10.05 oz	0.98 in	5.71 in	7.68 in
	(0.285 kg)	(25 mm)	(145 mm)	(195 mm)
GCD-ETIA	12.17 oz	0.98 in	5.71 in	7.68 in
	(0.345 kg)	(25 mm)	(145 mm)	(195 mm)



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
GCD-4DIOPA	7.73 oz	0.98 in	9.45 in	7.68 in
	(0.219 kg)	(25 mm)	(240 mm)	(195 mm)
GCD-SVR2	16.0 oz	0.98 in	5.71 in	7.68 in
	(0.454 kg)	(25 mm)	(145 mm)	(195 mm)
GCD-SVR3	16.0 oz	0.98 in	5.512 in	7.087 in
	(0.454 kg)	(25 mm)	(140 mm)	(180 mm)
CHS BASE UNIT	352.7 oz	4.72 in	19.69 in	14.37 in
	(10 kg)	(120 mm)	(500 mm)	(365 mm)
CHS2UG BLANK SLOT COVER KIT	1.76 oz	2.32 in	1.57 in	1.57 in
	(0.05 kg)	(60 mm)	(40 mm)	(40 mm)
CHS L BATT BOX RACK MOUNT BRACKET	352.7 oz	18.5 in	14.6 in	2.76 in
	(10 kg)	(470 mm)	(370 mm)	(70 mm)
CHS2UG INT BATT SET	95.24 oz	4.33 in	2.76 in	3.15 in
	(2.7 kg)	(110 mm)	(70 mm)	(80 mm)
CHS2UG RACK MOUNT KIT	17.6 oz	0.91 in	9.65 in	3.35 in
	(0.5 kg)	(23 mm)	(245 mm)	(85 mm)
CHS1UG/2UG WALL MOUNT KIT	35.27 oz	1.18 in	13.8 in	1.77 in
	(1 kg)	(30 mm)	(350 mm)	(45 mm)
CHS2UG MOVABLE WALL MOUNT KIT	98.8oz	5.17 in	14.5 in	8.8 in
	(2 kg)	(131.3 mm)	(367.6 mm)	(222.8 mm)
CHS2UG JOINT BRACKET KIT	7.06 oz	0.19 in	5.91 in	1.7 in
	(0.2 kg)	(3 mm)	(150 mm)	(43 mm)
CHS2UG BATT MTG KIT 6 Slot	106 oz	2.95 in	4.45 in	4.13 in
	(3.0 kg)	(75 mm)	(113 mm)	(105 mm)
IP5D-RACK MOUNT BAR SET	45.86 oz	2.40 in	18.9 in	0.47 in
	(1.3 kg)	(61 mm)	(480 mm)	(12 mm)
Digital Multiline Terminal				
DTK-12D-1 TEL	35.27 oz	5.63 in	7.12 in	9.60 in
	(1.0 kg)	(143 mm)	(181 mm)	(244 mm)
DTK-24D-1 TEL	35.27 oz	5.63 in	7.12 in	9.60 in
	(1.0 kg)	(143 mm)	(181 mm)	(244 mm)
DTL-2E-1 TEL	35.27 oz	4.41 in	7.05 in	8.86 in
	(1.0 kg)	(112 mm)	(179 mm)	(225 mm)
DTL-6DE-1 TEL	38.8 oz	4.41 in	7.05 in	8.86 in
	(1.1 kg)	(112 mm)	(179 mm)	(225 mm)
DTL-12E-1 TEL	35.27 oz	4.41 in	7.05 in	8.86 in
	(1.0 kg)	(112 mm)	(179 mm)	(225 mm)
DTL-8LD-1 TEL	45.6 oz	4.41 in	7.05 in	10.39 in
	(1.3 kg)	(112 mm)	(179 mm)	(264 mm)



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
DTL-12BT-1 TEL	45.6 oz	4.29 in	7.6 in	10.16 in
	(1.3 kg)	(109 mm)	(183 mm)	(258 mm)
DTL-12PA-1 TEL	45.6 oz	4.41 in	7.6 in	10.16 in
	(1.3 kg)	(112 mm)	(183 mm)	(258 mm)
DTL-12D-1 TEL	42.33 oz	4.39 in	7.05 in	10.16 in
	(1.2 kg)	(111.7 mm)	(179 mm)	(258 mm)
DTL-24D-1 TEL	42.33 oz	4.39 in	7.05 in	10.16 in
	(1.2 kg)	(111.7 mm)	(179 mm)	(258 mm)
DTL-32D-1 TEL	45.6 oz	4.39 in	8.1 in	10.16 in
	(1.3 kg)	(111.7 mm)	(205.8 mm)	(258 mm)
DTZ-2E-3 TEL	35.27 oz	4.41 in	7.05 in	8.86 in
	(1.0 kg)	(112 mm)	(179 mm)	(225 mm)
DTZ-6DE-3 TEL	38.8 oz	4.41 in	7.05 in	8.86 in
	(1.1 kg)	(112 mm)	(179 mm)	(225 mm)
DTZ-12D-3 TEL	42.33 oz	4.39 in	7.05 in	10.16 in
	(1.2 kg)	(111.7 mm)	(179 mm)	(258 mm)
DTZ-24D-3 TEL	42.33 oz	4.39 in	7.05 in	10.16 in
	(1.2 kg)	(111.7 mm)	(179 mm)	(258 mm)
DTZ-8LD-3 TEL	45.6 oz	4.41 in	7.05 in	10.39 in
	(1.3 kg)	(112 mm)	(179 mm)	(264 mm)
IP Multiline Terminal				
ITK-6D-1 TEL	28.22 oz	5.28 in	7.13 in	9.57 in
	(0.8 kg)	(134 mm)	(181 mm)	(243 mm)
ITK-8LCX-1 TEL	31.75 oz	5.28 in	7.13 in	8.70 in
	(0.9 kg)	(134 mm)	(181 mm)	(243 mm)
ITK-8TCGX-1 TEL	31.75 oz	5.28 in	7.13 in	8.70 in
	(0.9 kg)	(134 mm)	(181 mm)	(243 mm)
ITK-12D-1 TEL	28.22 oz	5.28 in	7.13 in	9.57 in
	(0.8 kg)	(134 mm)	(181 mm)	(243 mm)
ITK-24CG-1 TEL	35.27 oz	5.98 in	7.13 in	10.0 in
	(1.0 kg)	(152 mm)	(181 mm)	(254 mm)
ITL-2E-1 TEL	35.27 oz	4.41 in	7.05 in	8.86 in
	(1.0 kg)	(112 mm)	(179 mm)	(225 mm)
ITL-6DE-1 TEL	38.8 oz	4.41 in	7.05 in	8.86 in
	(1.1 kg)	(112 mm)	(179 mm)	(225 mm)
ITL-8LDE-1 TEL	63.66 oz	4.41 in	7.05 in	8.86 in
	(1.98 kg)	(112 mm)	(179 mm)	(225 mm)
ITL-8LD-1 TEL	45.6 oz	4.41 in	7.05 in	10.39 in
	(1.3 kg)	(112 mm)	(179 mm)	(264 mm)



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
ITL-12D-1 TEL	42.33 oz	4.41 in	7.05 in	10.16 in
	(1.2 kg)	(112 mm)	(179 mm)	(258 mm)
ITL-12CG-3 TEL	49.38 oz	4.41 in	7.05 in	10.94 in
	(1.4 kg)	(112 mm)	(179 mm)	(278 mm)
ITL-12DG-3 TEL	45.86 oz	4.41 in	7.05 in	10.16 in
	(1.3 kg)	(112 mm)	(179 mm)	(258 mm)
ITL-12PA-3 TEL	45.6 oz	4.41 in	7.59 in	10.16 in
	(1.3 kg)	(112 mm)	(193 mm)	(258 mm)
ITL-24D-1 TEL	42.33 oz	4.41 in	7.05 in	10.16 in
	(1.2 kg)	(112 mm)	(179 mm)	(258 mm)
ITL-32D-1 TEL	45.6 oz	4.41 in	8.1 in	10.16 in
	(1.3 kg)	(112 mm)	(205.8 mm)	(258 mm)
ITL-320C-1 TEL/ITL-320C-2 TEL	56.44 oz	4.41 in	8.94 in	9.84 in
	(1.6 kg)	(112 mm)	(227 mm)	(250 mm)
ITY-6D-1 TEL	35.27 oz	5.24 in	7.01 in	8.46 in
	(1.0 kg)	(133.1 mm)	(178.1 mm)	(214.9 mm)
ITY-8LDX-1 TEL	37.74 oz	5.24 in	7.01 in	8.70 in
	(1.07 kg)	(133.1 mm)	(178.1 mm)	(221.0 mm)
ITY-8LCGX-1 TEL	35.27 oz	5.24 in	7.01 in	8.70 in
	(1.0 kg)	(133.1 mm)	(178.1 mm)	(221.0 mm)
ITZ-8LD-3 TEL	45.6 oz	4.41 in	7.05 in	10.39 in
	(1.3 kg)	(112 mm)	(179 mm)	(264 mm)
ITZ-8LDG-3 TEL	45.6 oz	4.41 in	7.05 in	10.39 in
	(1.3 kg)	(112 mm)	(179 mm)	(264 mm)
ITZ-12D-3 TEL	42.33 oz	4.41 in	7.05 in	10.16 in
	(1.2 kg)	(112 mm)	(179 mm)	(258 mm)
ITZ-12CG-3 TEL	49.38 oz	4.41 in	7.05 in	10.94 in
	(1.4 kg)	(112 mm)	(179 mm)	(278 mm)
ITZ-12DG-3 TEL	45.86 oz	4.41 in	7.05 in	10.16 in
	(1.3 kg)	(112 mm)	(179 mm)	(258 mm)
ITZ-24D-3 TEL	42.33 oz	4.41 in	7.05 in	10.16 in
	(1.2 kg)	(112 mm)	(179 mm)	(258 mm)
Single Line Telephones		•		
AT-50	19.75 oz	3.03 in	5.83 in	8.62 in
	( 0.56 kg)	(77 mm)	(148 mm)	(219 mm)
AT-55	22.58 oz	3.03 in	5.83 in	8.62 in
	( 0.64 kg)	(77 mm)	(148 mm)	(219 mm)
ITX-1615-1W	26.1oz	3.0 in	7.3 in	8.23 in
	(0.74 kg)	(76.2 mm)	(184.5 mm)	(209 mm)



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
Optional				
8LK-K UNIT	3.53 oz	1.53 in	1.26 in	8.70 in
	(0.1 kg)	(39 mm)	(32 mm)	(222 mm)
8LK-L UNIT	7.05 oz	1.77 in	1.15 in	8.82 in
	(0.2 kg)	(45 mm)	(29.3 mm)	(224 mm)
8LK-Z UNIT	7.05 oz	1.77 in	1.15 in	8.82 in
	(0.2 kg)	(45 mm)	(29.3 mm)	(224 mm)
ADA-L UNIT	2.82 oz	0.98 in	2.56 in	2.84 in
	(0.08 kg)	(25 mm)	(65 mm)	(72 mm)
APR-L UNIT	5.29 oz	0.98 in	2.56 in	2.84 in
	(0.15 kg)	(25 mm)	(65 mm)	(72 mm)
BCH-L UNIT	31.75 oz	4.41 in	3.19 in	8.8 in
	(0.9 kg)	(112 mm)	(81 mm)	(223 mm)
BHA-L UNIT	3.53 oz	0.98 in	2.56 in	2.84 in
	(0.1 kg)	(25 mm)	(65 mm)	(72 mm)
BCA-Z UNIT	2.82 oz	0.98 in	2.56 in	2.84 in
	(0.08 kg)	(25 mm)	(65 mm)	(72 mm)
IPLA-R UNIT	2.82 oz	0.98 in	2.24 in	3.94 in
	(0.08 kg)	(25 mm)	(57 mm)	(100 mm)
IPv6-Adapter	2.82 oz	0.98 in	2.56 in	2.84 in
	(0.08 kg)	(25 mm)	(65 mm)	(72 mm)
PGD(2)-U10 ADP	12.4 oz	1.58 in	6.81 in	4.13 in
	(0.35 kg)	(40 mm)	(173 mm)	(105 mm)
DCK-60-1 CONSOLE	17.64 oz	4.75 in	5.55 in	9.45 in
	(0.5 kg)	(116 mm)	(141 mm)	(240 mm)
DCL-60-1 CONSOLE	21.16 oz	3.23 in	5.39 in	8.82 in
	(0.6 kg)	(82 mm)	(137 mm)	(224 mm)
DCZ-60-2 CONSOLE	27.50 oz	3.15 in	8.27 in	9.84 in
	(0.78 kg)	(80 mm)	(210 mm)	(250mm)
DP-D-1A Doorphone	7.05 oz	5.12 in	3.89 in	1.12 in
	(0.2 kg)	(130 mm)	(98 mm)	(28.5 mm)
PSA-L UNIT	10.58 oz	3.15 in	2.91 in	8.8 in
	(0.3 kg)	(80 mm)	(74 mm)	(223 mm)
GBA-L UNIT	23.99 oz	5.9 in	7.05 in	6.34 in
	(0.68 kg)	(150 mm)	(179 mm)	(161 mm)
WFA-Z Adapter	2.82 oz	0.98 in	2.56 in	2.84 in
	(0.08 kg)	(25 mm)	(65 mm)	(72 mm)
AC-L UNIT	12 oz	1.10 in	1.77 in	3.98 in
	(0.34 kg)	(28 mm)	(45 mm)	(101 mm)



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
AC-Z UNIT	9.9 oz	1.34 in	1.9 in	4.3 in
	(0.28 kg)	(34 mm)	(48 mm)	(109 mm)
WM-L UNIT	1.58 oz	0.996 in	3.996 in	4.92 in
	(0.045 kg)	(25.3 mm)	(101.5 mm)	(125 mm)
DSS WM-L UNIT	1.41 oz	0.99 in	3.4 in	4.92 in
	(0.04 kg)	(25.3 mm)	(86.5 mm)	(125 mm)
G955 Wireless Handset	3.13 oz	4.96 in	1.77 in	0.78 in
	(0.08 kg)	(126 mm)	(45 mm)	(20 mm)
1-Port Digital Call Logging Unit	3.53 oz	1.00 in	3.00 in	4.33 in
	(0.1 kg)	(25 mm)	(75 mm)	(110 mm)
4-Port Digital Call Logging Unit	24 oz	0.984 in	2.835 in	3.30 in
	(0.680 kg)	(25 mm)	(72 mm)	(84 mm)
ML440	169.6 oz	9.4 in	17.2 in	8.0 in
	(4.81 kg)	(238.8 mm)	(436.9 mm)	(203.2 mm)
AP20 Base Unit	179.2 oz	9.5 in	12.6 in	14.0 in
	(5.08 kg)	(241.3 mm)	(320 mm)	(355.6 mm)
IVR External Server	160.0 oz	1.7 in	17.2 in	9.8 in
	(4.54 kg)	(43 mm)	(437 mm)	(249 mm)
AP300/400 Base Unit	10.65 oz	6.85 in	5.75 in	1.69 in
	(0.302 kg)	(174 mm)	(146 mm)	(43 mm)
G266 Wireless Handset	4.06 oz	5.28 in	1.97 in	0.79 in
	(0.115 kg)	(134 mm)	(50 mm)	(20 mm)
Charger	2.75 oz	3.03 in	3.03 in	2.40 in
	(0.078 kg)	(77 mm)	(77 mm)	(61 mm)
AC Adapter	0.88 oz	2.25 in	1.5 in	1.03 in
	(0.025 kg)	(57.15 mm)	(38.1 mm)	(26.16 mm)
G566 Wireless Handset	4.34 oz	5.63 in	1.97 in	0.79 in
	(0.123 kg)	(143 mm)	(50 mm)	(20 mm)
Charger	4.06 oz	3.03 in	3.03 in	2.40 in
	(0.115 kg)	(77 mm)	(77 mm)	(61 mm)
AC Adapter	4.06 oz	2.25 in	1.5 in	1.03 in
	(0.115 kg)	(57.15 mm)	(38.1 mm)	(26.16 mm)
IP Video Doorphone	11.29 oz	5.9 in	3.94 in	2.1 in
	(0.32 kg)	(150 mm)	(100 mm)	(53.5 mm)
UT880	35.3 oz	5.9 in	7.55 in	8.55 in
	(1.0 kg)	(150.0 mm)	(192.0 mm)	(225.0 mm)
DTL-8R-1 Cordless	148.8 oz	12.75 in	13.75 in	8.5 in
	(4.22 kg)	(323.8 mm)	(349.2 mm)	(215.9 mm)
DTZ-8R-1 Cordless	148.8 oz	12.75 in	13.75 in	8.5 in
	(4.22 kg)	(323.8 mm)	(349.2 mm)	(215.9 mm)



Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
1766 Wireless Handset	4.34 oz	5.71 in	2.17 in	0.95 in
	(0.123 kg)	(145 mm)	(55 mm)	(24 mm)

1 Shipping weight includes the shipping carton.

# 7.9.1 Tone Patterns

Table 2-28 Tone Patterns lists the frequency and the pattern for the tones. Tones are used to inform UNIVERGE SV9100 station users of system functions such as dial tone, busy tone, or ringback tone.

# 7.9.2 Multiline Terminal LED Flash Patterns

The UNIVERGE SV9100 system has several colored LEDs installed. Green is used primarily for I-Use conditions and for outside calls. Red is used primarily for Other Use conditions and internal calls.

The Large LED provides the user a variety of programmable colors and preferences. Refer to Table 2-29 Multiline Terminal LED Flash Pattern.



#### Table 2-28 Tone Patterns **System Tone** Frequency (Hz) Intermit Cycle (Fixed) (Fixed) (Default) 0.5 sec **Busy Tone** 480/620 60 IPM 0.5 sec 0.5 sec **Call Waiting Tone** 440 60 IPM 0.5 sec 0.25 sec 0.25 sec Second Dial Tone 350/440 120 IPM 2400 Modulation Continuous Howler Tone (16 Hz) Internal Dial Tone 350/440 Continuous 1 sec 1 sec On Internal Ringback Tone 440/480 2 sec Off 2 sec LCR Dial Tone 440 Continuous 0.25 sec 120 IPM Reorder Tone 480/620 0.25 sec Service Set Tone 440 Continuous 0.125 sec Special Dial Tone 440 240 IPM 0.125 sec 1 sec Tone Burst 1 Tone 440 Continuous 1 sec Continuous Tone Burst 2 Tone 620 2 sec On 2 sec Tie/DID Ringback Tone 440/480 4 sec Off 4 sec Camp-On Tone 0.7 sec **Call Alert Notification** 440 Continuous Attendant Tone Override 0.5 sec **DIT Alert Tone** 480/620 Continuous Call Forward Alert Tone 0.25 sec ON x 2~3 Call Forward 350/440 120 IPM **Configuration Tone**



# Table 2-29 Multiline Terminal LED Flash Pattern

LED	Condition	Color	Flash Patterns
Line Key	I-Use Busy Incoming Call I-Hold Call Hold Hold Recall Transfer Recall Live Monitoring Mode Message Waiting on Line Key	Green Red Green Red Green Green Green Red	
Microphone	ON	Red	
Mic	ON (Series i)	Red	
Large LED <sup>1</sup>	Incoming Internal Call Incoming Outside Call Message from Attendant Voice Mail Message	Red Green Green Red	
Speaker	ON System Data Entry	Red Red	
Answer	Incoming Trunk Exclusive Hold User Ringing Line Preference Voice Over with Broker's Call	Red Green Red Green	
Feature	Callback Set Auto Repeat Set ON (to set function) Call FWD - All Calls Set	Red Red Red Red	
BLF or DSS Key	Use, Hold DND, Call FWD-All Calls Set Special Mode (while pressing Feature or going off-line)	Red Red Red	
		(	0 0.5 1.0 1.5 2.0 sec.

1 The Large LED provides the user a variety of programmable colors and preferences.



# SECTION 8 TRAFFIC CAPACITY

Table 2-30 Traffic Capacity Chart provides information about the traffic capacity for the basic system package and expanded system package.

# Table 2-30 Traffic Capacity Chart

Traffic Capacity	Basic System Package	Expanded System Package
Traffic Capacity (GCD-CP10 or GCD-CP20)	9200 BHCA (Maximum)	9200 BHCA (Maximum)

The GCD-CP10 or GCD-CP20 provides:

- **d** 400 trunk ports maximum
- □ 896 extension ports maximum

896 ports digital/IP extensions maximum

368 analog ports maximum (896 in a NetLink environment)

- **512** virtual extensions
- Connection for GPZ-IPLE VoIP Daughter Board
- Connection for Voice Mail SD Card (SD-A1/SD-B1/SD-A2/SD-B2)
- Supports TAPI 2.x
- One Green Status LED
- Four Red Status LEDs
- Five diagnostic LEDs which indicate the status of various system functions
- During normal operation, the RUN LED is flashing and the remaining LEDs are off.
- **700x700** Time Division Multiplex Switch (TDM Switch)
- Digital Phase Locked Loop (DPLL)

Issue 10.0



# Installing the SV9100 Chassis

# Chapter 3

# SECTION 1 GENERAL INFORMATION

This chapter contains information to help the technician install the chassis for the SV9100 system. The technician should be familiar with this section *before installing* any equipment.

# SECTION 2 SITE PREPARATION AND MDF/IDF CONSTRUCTION

Pre-installation planning is essential. Advanced planning minimizes installation time, cost, and disruption of the customer business activities.

# 2.1 Precautionary Information:



Observe the following warnings during installation.

- O Never install telephone wiring during a lightning storm.
- O Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- O Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- O Use caution when installing or modifying telephone lines.
- O To avoid shock or equipment damage, do not plug in or turn the system power on before completing the installation process.
- O Avoid working with the equipment during electrical storms.
- O Use only commercial AC power to prevent shock or fire.
- O Use the power cord supplied for the chassis.
- O To prevent overheating, do not bundle AC power cords together.
- O Make sure the chassis has a proper earth ground.
- O Install batteries with the correct polarity to prevent damaging equipment.
- O To avoid damage, the chassis should not be placed on unstable surfaces.



- O Although it is recommended to install the blades with the system power **off**, all blades can be installed hot, *except for the following*:
  - GCD-CP10 or GCD-CP20
  - GPZ-BS10, GPZ-BS11 and GPZ-BS20

# 2.2 Surveying the Customer Site

In most cases, a survey of the customer site is necessary to determine the proper placement of the Main Distribution Frame (MDF), the exact dimensions of the area selected for the MDF, cabling requirements, and possible Intermediate Distribution Frame (IDF) locations.

The information obtained at the customer site can permit the installer to partially assemble the MDF before installation at the customer premise. This can reduce the time spent installing at the customer site and reduce downtime.

# 2.3 Selecting the Best Location for Proper Installation

# 2.3.1 Selecting the Chassis Installation Site

When selecting an installation site for the chassis, consider the following conditions to ensure proper installation:

- Chassis are normally rack mounted to protect against accident or flooding.
- The chassis should not be located directly beneath pipes. Leaks or condensation could damage the UNIVERGE SV9100 system equipment.
- The area where the chassis is located must be free of corrosive and inflammable gases, excessive chemical or industrial dusts, and other materials that could cause a hazard to personnel or to the proper functioning of the equipment.
- The operating ambient temperature and humidity must be within the limits specified in 7.3 Environmental Conditions on page 2-39 in Chapter 2 System Specifications.
- The operation of the system is virtually noiseless and allows wide selection of installation sites. Take care to ensure the chassis or cabling does not present a hazard to office traffic. To minimize cabling costs, a centralized location must be chosen.
- □ Locate the chassis at a site where a dedicated AC power source can be easily accessed.
- Connect the chassis to a dedicated AC receptacle that is **not being used** for any other device.



# 2.3.2 Selecting a Permanent MDF Location

When selecting a permanent site for the MDF, the technician may encounter some of the following conditions:

- Limited space is available but must be used.
- The available space may pose one or more environmental hazards.
- The proposed location has limitations such as insufficient lighting or the lack of a suitable ground for the chassis.
- The technician that encounters these conditions must provide the best possible solution for installing the equipment. This document cannot cover all possible situations, precautions, and actions.

# 2.3.3 Selecting a Site for Installing the Telephones

When a site is being selected for telephone installation, consider the following conditions to ensure proper installation:

- Ensure cable length and line resistance (loop), between the chassis and telephones, comply with the specifications listed.
- Select a place where devices that require an external power supply can be connected easily to an AC outlet.

# 2.4 Constructing the Main Distribution Frame (MDF)

The Main Distribution Frame (MDF) has two different standard quick-connect terminal blocks that are mounted on a 3/4-inch plywood backboard. Mounting these blocks on standoffs for ease of access is recommended. The recommended blocks are 66B50 for termination of the MDF Cable Assembly and 66M50 for termination of the station cables.

The Intermediate Distribution Frame (IDF) requires the 66M50 blocks only.

Both the MDF and the IDF use standard bridging clips for each terminal block. The bridging clips mate the left half of the terminal block (terminated cable run) to the right half of the terminal block (cross connection wire) to the terminal block (cross connection wire). The bridging clips are also useful during troubleshooting to help isolate the cable runs and terminals/telephones from the central equipment and the Central Office Network from the system.

The CHS2UG chassis can be mounted on the wall, the floor, a stand or in a rack. The CHS2UG GW chassis can be mounted on the wall, a stand or in a rack. Plywood should first be installed on the wall where the chassis will be positioned, to allow for secure anchoring. It has a bracket, which can be used to secure each chassis in any installation. Ensure that enough space is available to allow the installation of the additional chassis above and below the Controlling Chassis.



The system requires a 3-prong dedicated 100 - 240 VAC 50/60 Hz circuit located within seven feet of the AC receptacle. Telco should install the RJ21X to the right of the Controlling Chassis. Extension blocks should be installed to the left of the Controlling Chassis.

Chassis are shipped fully assembled. The following are included with the chassis:

19" Chassis (CHS2UG)

- O One black 3-prong power cord (packed outside the chassis)
- O CHS2UG RACK MOUNT KIT

9.5" Gateway Chassis (CHS2UG GW)

- O One black 3-prong power cord (packed outside the chassis)
- O Wall Mount Kit
- O Stand Mount Kit

9.5" Base and Expansion Chassis (CHS2UG B and CHS2UG E)

- O One black 3-prong power cord (packed outside the chassis)
- O Wall Mount Kit
- O Stand Mount Kit

# 2.5 Power Failure Transfer

The Power Failure Transfer relays are located on the GCD-4COTB or GCD-4COTB-A blades (CN3). When selecting a Single Line Telephone for power failure transfer, make sure it matches the CO line dialing type (10 pps, 20 pps, or DTMF) where it is connected. Each GCD-4COTB or GCD-4COTB-Ablade supports two power failure transfer connections. During a power failure condition, CO Ports 1 and 2 on the GCD-4COTB or GCD-4COTB-A Blade are used for Power Failure Transfer relays 1 and 2 consecutively. Table 3-1 Power Failure Transfer Connections is a relay diagram. The relay is shown with the power ON.



Power Failure and FAX Branch Connection do not function simultaneously on the same port. Use Program 14-02-21 (Fax Branch Connection) to enable this feature per trunk.

 Table 3-1 Power Failure Transfer Connections

Pin Number	Description	Pin Number	Description
1	Not in Use	2	Not in Use
3	Tip for Circuit 2	4	Ring for Circuit 1
5	Tip for Circuit 1	6	Ring for Circuit 2



Pin Number	Description	Pin Number	Description
7	Not in Use	8	Not in Use

# 2.6 Fax CO Branch Connection

The Fax Branch Connection feature uses the Power Failure Transfer relays located on the COT Blades (CN3). Each COT Blade supports two Fax CO Branch Connections.



Power Failure and FAX Branch Connection do not function simultaneously on the same port. Use Program 14-02-21 (Fax Branch Connection) to enable this feature per trunk.

## Table 3-2 Power Failure Transfer Connections (Fax CO)

Pin Number	Description	Pin Number	Description
1	Not in Use	2	Not in Use
3	Tip for Circuit 2	4	Ring for Circuit 1
5	Tip for Circuit 1	6	Ring for Circuit 2
7	Not in Use	8	Not in Use

# SECTION 3 INSTALLING THE CHASSIS

# 3.1 Unpacking the Equipment

Inspect the equipment for any physical damage. If you are not sure about the function of a component, review the associated information within this manual. Contact your authorized NEC Sales Representative if you have additional questions. Note that the chassis does not initially contain any blades.

Make sure you have appropriate tools for the job, including: a test set, a punch down tool, and a digital voltmeter.

Ensure that you have a building plan showing common equipment, extensions, the Telco demarcation and earth ground location before you start installation. Be sure to properly plan your installation site and that you are familiar with the installation safety precautions. If you have not done that, please do so now. Refer to Section 2 Site Preparation and MDF/IDF Construction on page 3-1.



# 3.2 Before Installation

Before installing the chassis check the following:

- Ensure that the MPS7101(Power Supply Unit) is OFF and that the power cord is disconnected from the AC outlet.
- O When installing the blades, *do not touch* the soldered surfaces as this may cause damage.
- O Follow safety precautions indicated in section 2.1 Precautionary Information: on page 3-1.
- O Determine the type of mounting (wall, floor, stand or rack) to be used.

# 3.3 Installing the 19" (CHS2UG) Chassis

The CHS2UG chassis has six universal blade slots for legacy line/trunk blade (Single Line Telephone Interface, Digital multiline terminal Interface, Central Office Trunk, ISDN PRI Interface, etc.). In-skin Application Blades (In-skin UMS, In-Skin Router, etc.). It also houses the BUS Interface Blade, Power Supply Unit (PSU) and Cooling Fan.

When the GCD-CP10 or GCD-CP20 blade is installed in the first 19" chassis, it is called the controlling chassis. Additional chassis, called expansion chassis, can be installed to increase the capacity of the system to meet the customer's business needs. Each chassis (Expansion or Controlling), is powered by an MPS7101 power supply.

Before proceeding with installation of chassis, ensure site preparation is completed. The CHS2UG chassis can be:

- Wall-mounted refer to 4.1 Wall Mounting the 19" (CHS2UG) Chassis on page 3-38.
- Floor-mounted refer to 5.1 Floor Mounting the 19" (CHS2UG) Chassis on page 3-68.
- Stand-mounted refer to 6.1 Stand Mounting the 19" (CHS2UG) Chassis on page 3-72.
- Rack-mounted refer to 7.1 Rack Mounting the 19" (CHS2UG) Chassis on page 3-82.











# 3.3.1 Installing the 19" Controlling Chassis

1. Ensure the chassis is powered down.



2. Align the GCD-CP10 or GCD-CP20 blade with the Slot 1 guides of the Controlling Chassis.





3. Slide the GCD-CP10 or GCD-CP20 blade into the chassis until resistance (back plane) is felt.





4. Gently push until the blade seats. Tighten the two retaining screws on front of the blade.







# 3.3.2 Installing Expansion Blades in the 19" Chassis (Optional)

When adding additional chassis to the system to expand the capacity, a GPZ-BS10 or GPZ-BS20 must be installed in the Controlling Chassis and a GPZ-BS11 must be installed in all Expansion Chassis. This connection is required with any multiple-chassis setup.

The GPZ-BS10 or GPZ-BS20 connects the Controlling Chassis to the Expansion Chassis by connecting to a GPZ-BS11, which is installed on each Expansion Chassis. These Expansion Interface Units allow the CPU to transmit/receive data as required to the additional chassis.

The GPZ-BS10 or GPZ-BS20 is installed in the Expansion bay Controlling Chassis which is equipped with a CPU blade. The GPZ-BS11 is installed in the Expansion bay of the Expansion Chassis, which does not have a CPU.

The Expansion cable connects the Controlling Chassis and its GPZ-BS10 or GPZ-BS20 interface to the second, third, and fourth GPZ-BS11 interface.

Use only the CAT 5 cables provided by NEC to make the connections between the Controlling and Expansion Chassis.

The GPZ-BS10 provides:

- Communication Processor Interface for data handling through Communication Channel (24 slots maximum)
- 64 Channels for Telephony Resource (e.g., DTMF Tone Receiver, Call Progress Tone Detector, MFC Tone Receiver, Caller ID Receiver, Caller ID Signal Sender)
- DSP Resource Management

The GPZ-BS20 provides:

- Communication Processor Interface for data handling through Communication Channel (24 slots maximum)
- 48 Channels for Telephony Resource (e.g., DTMF Tone Receiver, Call Progress Tone Detector, MFC Tone Receiver, Caller ID Receiver, Caller ID Signal Sender)
- DSP Resource Management



# 3.3.2.1 Connector Pin-Out on GPZ-BS10/GPZ-BS20/GPZ-BS11

RJ-61 Cable Connector GPZ-BS10/GPZ-BS20 – CN2, CN3, CN 4 GPZ-BS11 – CN3			
	Pin No.	Connection	
	1	HW_UP (+)	
12345678	2	HW_UP (-)	
	3	HW_DWN (+)	
	4	FS (+)	
	5	FS (-)	
	6	HW_DWN (-)	
	7	CK8M (+)	
	8	CK8M (-)	

Table 3-3 GPZ-BS10/GPZ-BS20/GPZ-BS11 Connector Pin-Out

# 3.3.2.2 Install the GPZ-BS10/GPZ-BS20 Expansion Base Blade in the CHS2UG Controlling Chassis

# Figure 3-6 GPZ-BS10/GPZ-BS20 Components





Do not remove or install this blade with the power on.

- 1. Ensure the chassis is powered down.
- Locate the door positioned on the left end (expansion bay) of the Controlling Chassis (refer to Figure 3-7 GPZ-BS10/ GPZ-BS20 Expansion Bay in Controlling Chassis on page 3-11).



# Figure 3-7 GPZ-BS10/GPZ-BS20 Expansion Bay in Controlling Chassis



3. From the left side of the chassis, pull cover outward to expose the expansion bay.



Figure 3-8 Open Base Chassis Cover

- 4. Pull the cover toward you to remove.
  - ➡ Cover must be removed prior to installation of GPZ-BS10/ GPZ-BS20 blade.



5. Align the GPZ-BS10/GPZ-BS20 blade with the guides located in the expansion bay.

Figure 3-9 GPZ-BS10/GPZ-BS20 Blade Guides



6. Slide the GPZ-BS10/GPZ-BS20 blade into the chassis until resistance (back plane) is felt.

Figure 3-10 Installing GPZ-BS10/GPZ-BS20 Blade in Expansion Bay



- 7. Gently push until the blade seats and install the supplied retaining screw.
- 8. Align the door tabs with hinges and reattach the cover (refer to Figure 3-11 GPZ-BS10/GPZ-BS20 Blade Installed on page 3-13).



Figure 3-11 GPZ-BS10/GPZ-BS20 Blade Installed



9. Close the GPZ-BS10/GPZ-BS20 cover.

Figure 3-12 GPZ-BS10/GPZ-BS20 Installed (Cover Closed)



# 3.3.2.3 Install the GPZ-BS11 Expansion Blade in the CHS2UG Expansion Chassis





For the Expansion Chassis to function, the GPZ-BS10/GPZ-BS20 blade must be installed in Controlling Chassis.



WARNING Do not remove or install this blade with the power on.

- 1. Ensure the chassis is powered down.
- 2. Locate the door positioned on the left end (expansion bay) of the Expansion Chassis.

Figure 3-14 GPZ-BS11 Expansion Bay in Expansion Chassis



3. From the left side of the chassis, pull cover outward to expose the expansion bay (refer to Figure 3-15 Open Expansion Chassis Cover on page 3-14).



- 4. Pull the cover toward you to remove.
  - ► Cover must be removed to install GPZ-BS11 blade.



5. Align the GPZ-BS11 blade with the guides located within the expansion bay.

Figure 3-16 GPZ-BS11 Blade Guides



6. Slide the GPZ-BS11 blade into the chassis until resistance (back plane) is felt.

Figure 3-17 Installing GPZ-BS11 Blade in Expansion Chassis



7. Gently push until the blade seats and install the supplied retaining screw.



8. Align the door tabs with hinges and reattach the cover.

Figure 3-18 GPZ-BS11 Blade Installed

Hinges Retaining Screw

9. Close the GPZ-BS11 blade cover.

Figure 3-19 GPZ-BS11 Installed (Cover Closed)




## 3.3.2.4 Connect the Controlling and Expansion Chassis



Installment of the GPZ-BS10/GPZ-BS20 blade and GPZ-BS11 blade(s) must be completed prior to installation of the provided (CAT 5) expansion cabling



- 1. Ensure Controlling and Expansion chassis are powered down.
- Using the NEC provided CAT5 straight-through cable(s), attach one end to each Expansion Chassis CN2 connector on the GPZ-BS11 blade (see Figure 3-21 System Expansion Cabling on page 3-18). Attach the opposite end to the CN2, CN3 or CN4 connector on the GPZ-BS10/GPZ-BS20 of the Controlling Chassis.





Figure 3-21 System Expansion Cabling

3. Repeat for additional Expansion Chassis.



## 3.3.3 Install Grounding on 19" Chassis

From the factory, the SG, ETH and PBXG grounds are located inside the chassis and are connected to the FG ground (frame ground) on the back of the chassis.

Each chassis (CHS2UG) in the system must be grounded separately using the procedure listed below.

- 1. Ensure each Chassis is powered down and unplugged.
- 2. Ground **each** chassis by connecting a 14 AWG wire from the FG lug on the back side of the chassis to an electrical service ground (such as a cold water pipe).



Figure 3-22 Chassis Grounding Lug

## 3.3.4 Install Grounding on Multiple 19" Chassis (Optional)

From the factory, the SG, ETH and PBXG grounds are located inside the chassis and are connected to the FG ground (frame ground) on the back of the chassis.

Each chassis (CHS2UG) in the system must be grounded separately using the procedure listed below.

- 1. Ensure all Controlling and Expansion Chassis are powered down and unplugged.
- 2. Ground **each** chassis by connecting a 14 AWG wire from the FG lug on the back side of the chassis to an electrical service ground (such as a cold water pipe). Refer to Figure 3-23 19" Chassis Grounding Lug (Multiple-Chassis) on page 3-20 for grounding illustration.



Figure 3-23 19" Chassis Grounding Lug (Multiple-Chassis)



## 3.3.5 Install AC Power Cords on 19" Chassis

1. Locate the supplied AC power cord and attach to the AC Inlet located on the back of the Controlling Chassis.



Figure 3-24 Install the AC Power Cord



## 3.3.6 Install AC Power Cords on Multiple 19" Chassis (Optional)

To install the AC power cords, locate the supplied AC power cords and attach to the AC Inlets located on the back of the Controlling and Expansion Chassis.



Figure 3-25 Install 19" AC Power Cords (Multiple-Chassis)

## 3.3.7 Install Additional Blades 19" Chassis

Refer to Chapter 4, 2.1 Installation and Safety Precautions on page 4-4.

3.3.8 Apply Power to the 19" Chassis

Refer to Chapter 4, 2.6 Powering Up the SV9100 System on page 4-9.



## 3.4 Installing the 9.5" Base (CHS2UG B) Chassis

The CHS2UG B chassis has three universal blade slots for station, trunk and optional blades.

Before proceeding with installation of chassis, ensure site preparation is completed. The chassis can be:

- O Wall-mounted refer to 4.2 Wall Mounting the 9.5" Chassis on page 3-46.
- O Stand-mounted refer to 6.2 Stand Mounting the 9.5" CHS2UG B Chassis on page 3-78.

From the factory, the SG, ETH and PBXG grounds are located inside the chassis and are connected to the FG (frame ground) on the back of the chassis.





## 3.4.1 Install Grounding on 9.5" Chassis

- 1. Ensure the 9.5" chassis is powered off and the AC power cord is unplugged.
- 2. Ground the chassis by connecting a 14 AWG wire from the FG lug on the back side of the chassis to an electrical service ground (such as a cold water pipe). Refer to Figure 3-27 9.5" Chassis (Rear View) on page 3-22.
- 3.4.2 Install AC Power Cord 9.5" Chassis

Locate the supplied AC power cord and attach to the AC Inlet located on the back of the chassis [refer to Figure 3-27 9.5" Chassis (Rear View) on page 3-22].

3.4.3 Install Additional Blades 9.5" Chassis

Refer to Chapter 4, 2.1 Installation and Safety Precautions on page 4-4.

3.4.4 Apply Power to the 9.5" Chassis

Refer to Chapter 4, 2.6 Powering Up the SV9100 System on page 4-9.



## 3.5 Installing the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis

The CHS2UG B and CHS2UG E chassis combined have six universal blade slots for legacy line/trunk blade (Single Line Telephone Interface, Digital multiline terminal Interface, Central Office Trunk, ISDN PRI Interface, etc.), In-skin Application Blades (In-skin UMS, In-Skin Router, etc.). It also houses the BUS Interface Blade and Power Supply Unit (PSU).

When the GCD-CP10 or GCD-CP20 blade is installed in slot 1 of the 9.5" Base Chassis, it is called the controlling chassis. Additional chassis, (9.5" Expansion Chassis) can be installed to increase the capacity of the system to meet the customer's business needs.

Before proceeding with installation of chassis, ensure site preparation is completed. The combined chassis can be:

- Wall-mounted refer to 4.2.1.1 Wall Mounting the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-54.
- O Rack-mounted refer to 7.2 Rack Mounting the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-84.







The 9.5" Base chassis provides up to 16 trunk ports or 32 extension ports. An Expansion Chassis can be installed to the right of the Controlling or Base Chassis providing an additional 48 ports (40 trunk/ 80 stations maximum) and can include any combination of stations and trunks below this number. With a maximum of four Base and four Expansion chassis the system will provide up to 184 trunks and 320 extensions. With IP connections, a maximum of 400 trunk ports (maximum of 256 talk paths supported depending on the IPLE daughter board installed) and 896 station ports is possible.

- ► A license is required to support the expanded ports.
- 3.5.1 Connecting the 9.5" Base and Expansion Chassis
  - 1. Ensure the 9.5" chassis (Base and Expansion) is powered off and the AC power cord is unplugged.
  - 2. Remove the screw, then the Backboard Cover located on the right side of the Base chassis (refer to Figure 3-29 Removing Backboard Cover).





 Match the Joint Bracket with screw holes A, B, C and D on the side of the Base Chassis (refer to Figure 3-30 Installing the Expansion Bracket), and install with four M4 x 14 screws.



4. From the Expansion Chassis, loosen and remove screws d and e from the top cover (refer to Figure 3-31 Remove Expansion Chassis Cover). Slide cover toward rear of chassis and lift to remove.





5. Align the Backboard Connector on the Expansion and Base chassis (refer to Figure 3-32 Connecting the Base and Expansion Chassis), and push the two chassis together.



6. Secure the Base and Expansion chassis using four screws in holes D and E on the top (refer to Figure 3-33 Securing the Expansion Chassis to the Expansion Bracket), and holes F and G on the bottom.



7. Slide the Expansion Chassis cover into place. Using two screws in holes d and e (refer to Figure 3-34 Install Expansion Chassis Cover on page 3-28) secure the Expansion Chassis cover.





8. Using two screws, secure the Base and Expansion chassis together with the metal reinforcement bracket provided.



Be sure to mount the Reinforcement Bracket with the 9.5 inch Base and Expansion Chassis in the vertical position.



The Reinforcement Bracket and two screws are provided with the 9.5 inch Chassis.





# 3.5.2 Installing Expansion Blades in the 9.5" Base and Expansion Chassis (Optional)

When adding additional chassis to the system to expand the capacity, a GPZ-BS10/GPZ-BS20 must be installed in the Controlling Chassis and a GPZ-BS11 must be installed in all Expansion Chassis. This connection is required with any multiple-chassis setup.

The GPZ-BS10/GPZ-BS20 connects the Controlling Chassis to the Expansion Chassis by connecting to a GPZ-BS11, which is installed on each Expansion Chassis. These Expansion Interface Units allow the CPU to transmit/receive data as required to the additional chassis.

The GPZ-BS10/GPZ-BS20 is installed in the Expansion bay of the Controlling Chassis which is equipped with a CPU blade. The GPZ-BS11 is installed in the Expansion bay of the Expansion Chassis, which does not have a CPU.

The Expansion cable connects the Controlling Chassis and its GPZ-BS10/ GPZ-BS20 interface to the second, third, and fourth GPZ-BS11 interface.

Use only the CAT 5 cables provided by NEC to make the connections between the Controlling and Expansion Chassis.

The GPZ-BS10 provides:

- Communication Processor Interface for data handling through Communication Channel (24 slots maximum)
- 64 Channels for Telephony Resource (e.g., DTMF Tone Receiver, Call Progress Tone Detector, MFC Tone Receiver, Caller ID Receiver, Caller ID Signal Sender)
- DSP Resource Management

The GPZ-BS20 provides:

- Communication Processor Interface for data handling through Communication Channel (24 slots maximum)
- 48 Channels for Telephony Resource (e.g., DTMF Tone Receiver, Call Progress Tone Detector, MFC Tone Receiver, Caller ID Receiver, Caller ID Signal Sender)
- DSP Resource Management



### 3.5.2.1 Connector Pin-Out on GPZ-BS10/GPZ-BS20/GPZ-BS11

Table 3-4	GPZ-BS10/GPZ-BS20/GPZ-BS11	Connector Pin-Out

	RJ-61 Cable Connector GPZ-BS10/GPZ-BS20 – CN2, CN3, CN 4 GPZ-BS11 – CN3	
	Pin No.	Connection
	1	HW_UP (+)
	2	HW_UP (-)
	3	HW_DWN (+)
	4	FS (+)
12345678	5	FS (-)
	6	HW_DWN (-)
	7	CK8M (+)
	8	CK8M (-)

#### 3.5.2.2 Install the GPZ-BS10/GPZ-BS20 Expansion Base Blade in the CHS2UG B Controlling Chassis

#### Figure 3-36 GPZ-BS10/GPZ-BS20 Components





- 1. Ensure the chassis is powered down.
- 2. Locate the door positioned on the left end (expansion bay) of the Controlling Chassis.
- From the right side of the door, pinch the Door Clip and pull the cover outward to expose the expansion bay (refer to Figure 3-37 CHS2UG B Expansion Bay on page 3-31).



#### Figure 3-37 CHS2UG B Expansion Bay



4. Pull the cover toward you to remove.



Cover must be removed prior to installation of GPZ-BS10/GPZ-BS20 blade.

- 5. Remove knockout in center of cover.
- 6. Align the GPZ-BS10/GPZ-BS20 blade with the guides located in the expansion bay.
- 7. Slide the GPZ-BS10/GPZ-BS20 blade into the chassis until resistance (back plane) is felt (refer to Figure 3-38 Installing the GPZ-BS10/GPZ-BS20 on page 3-32).





- 8. Install the supplied retaining screw (refer to Figure 3-38 Installing the GPZ-BS10/GPZ-BS20).
- 9. Insert tabs a, b and c into holes A, B and C (refer to Figure 3-39 Completing the Installation) and close the cover.

Figure 3-39 Completing the Installation





# 3.5.2.3 Install the GPZ-BS11 Expansion Blade in the CHS2UG B Expansion Chassis



Figure 3-41 CHS2UG B Expansion Bay



4. Pull the cover toward you to remove.



Cover must be removed prior to installation of GPZ-BS11 blade.

5. Remove knockout in center of cover.



- 6. Align the GPZ-BS11 blade with the guides located in the expansion bay.
- 7. Slide the GPZ-BS11 blade into the chassis until resistance (back plane) is felt.





- 8. Install the supplied retaining screw.
- 9. Insert tabs a, b and c into holes A, B and C (refer to Figure 3-43 Completing the Installation) and close the cover.

Figure 3-43 Completing the Installation





## 3.5.2.4 Connect the Controlling and Expansion Chassis



Installment of the GPZ-BS10/GPZ-BS20 blade and GPZ-BS11 blade(s) must be completed prior to installation of the provided (CAT 5) expansion cabling

- 1. Ensure Controlling and Expansion chassis are powered down.
- Using the NEC provided CAT5 straight-through cable(s), attach one end to each Expansion Chassis CN2 connector on the GPZ-BS11 blade (see Figure 3-44 System Expansion Cabling). Attach the opposite end to the CN2, CN3 or CN4 connector on the GPZ-BS10/GPZ-BS20 of the Controlling Chassis.

Figure 3-44 System Expansion Cabling





## EXAMPLE:

0 CHS2UG (19" Chassis) & 4 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

1 CHS2UG (19" Chassis) & 3 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

2 CHS2UG (19" Chassis) & 2 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

3 CHS2UG (19" Chassis) & 1 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

4 CHS2UG (19" Chassis) & 0 CHS2UG B/CHS2UG E (9.5" Base Chassis/9.5" Expansion Chassis)

3. Repeat for additional Expansion Chassis.

## 3.5.3 Installing Grounding on 9.5" Base and Expansion Chassis

- 1. Ensure the 9.5" chassis is powered off and the AC power cord is unplugged.
- 2. Ground the chassis [refer to Figure 3-45 9.5" Chassis (Rear View)] by connecting a 14 AWG wire from the FG lug on the back side of the chassis to an electrical service ground (such as a cold water pipe).
  - ➡ The CHS2UG E (9.5" expansion chassis) does not have an FG lug.



Figure 3-45 9.5" Chassis (Rear View)



## 3.5.4 Install Grounding on Multiple 9.5" Base and Expansion Chassis

From the factory, the SG, ETH and PBXG grounds are located inside the chassis and are connected to the FG ground (frame ground) on the back of the chassis.

Each chassis (CHS2UG B) in the system must be grounded separately using the procedure listed below.

- ► The CHS2UG E (9.5" expansion chassis) does not have an FG lug.
- 1. Ensure all Controlling and Expansion Chassis are powered down and unplugged.
- Ground each chassis [refer to Figure 3-45 9.5" Chassis (Rear View) on page 3-36] by connecting a 14 AWG wire from the FG lug on the back side of the chassis to an electrical service ground (such as a cold water pipe).

## 3.5.5 Install AC Power Cord on 9.5" Base and Expansion Chassis

Locate the supplied AC power cord and attach to the AC Inlet located on the back of the chassis [refer to Figure 3-45 9.5" Chassis (Rear View) on page 3-36].

→ The CHS2UG E (9.5" expansion chassis) does not have an AC Inlet.

# 3.5.6 Install AC Power Cord on Multiple 9.5" Base and Expansion Chassis

Locate the supplied AC power cords and attach to the AC Inlets located on the back of the Controlling and Expansion Chassis.

- ► The CHS2UG E (9.5" expansion chassis) does not have an AC Inlet.
- 3.5.7 Install Additional Blades in the 9.5" Base and Expansion Chassis

Refer to Chapter 4, 2.1 Installation and Safety Precautions on page 4-4.

3.5.8 Applying Power to the 9.5" Base and Expansion Chassis

Refer to Chapter 4, 2.6 Powering Up the SV9100 System on page 4-9.



# SECTION 4 WALL MOUNTING THE CHASSIS

## 4.1 Wall Mounting the 19" (CHS2UG) Chassis

When wall mounting the chassis, ensure the wall can support the weight of the chassis (55 lbs per system chassis – including blades, cords, power supply, etc.). The chassis is secured to the wall with a wall mount bracket. Ensure that enough space is available to allow the installation of additional expansion chassis.

## 4.1.1 CHS2UG Chassis Wall Mount Installation



- Plywood should first be installed on the wall where the chassis will be positioned. This allows secure anchoring of the screws which support the weight of the chassis.
- Due to chassis weight, NEC recommends only a single CHS2UG chassis per wall mount.
- 1. Use the template shown in Figure 3-46 Wall Mount Spacing Guide (19" Chassis) on page 3-39 for required spacing before drilling.







Figure 3-46 Wall Mount Spacing Guide (19" Chassis)

- 2. Mark and drill the six holes required for a wall installation.
- 3. Align screw holes in wall mount brackets with drilled holes.
- 4. Using six screws, secure the two wall mount brackets to the wall.









5. Using four screws, secure the metal fittings on the Left and Right sides of the 19" chassis.

Figure 3-48 Securing Metal Fittings to Chassis with Screws





6. Align the metal fitting with the upper wall mount bracket. The lower metal fitting rests against the lower wall mount bracket. Secure the metal fitting and upper wall mount bracket with a single screw.

Figure 3-49 Secure Metal Fitting to Upper Wall Mount Bracket with a Screw





7. Using two screws, secure the metal fitting to the lower wall mount bracket. Refer to Figure 3-50 Secure Metal Fitting to Lower Wall Mount Bracket with Screws for screw location.

Figure 3-50 Secure Metal Fitting to Lower Wall Mount Bracket with Screws



 Attach the supplied cable support bracket to either end of the lower wall mount bracket with a single screw (refer to Figure 3-51 Attach Cable Support Bracket to Lower Wall Mount Bracket on page 3-44).





Figure 3-51 Attach Cable Support Bracket to Lower Wall Mount Bracket



9. The cable support bracket can be installed any of the four corners of the 19" chassis (refer to Figure 3-52 Attachment Locations of Cable Support Bracket on page 3-45).



- Connect the ground wire to all chassis. Refer to 3.3.3 Install Grounding on 19" Chassis on page 3-19 for complete details on grounding the system.
- Refer to 3.3.5 Install AC Power Cords on 19" Chassis on page 3-20 to continue installation of the chassis or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



# 4.2 Wall Mounting the 9.5" Chassis

When wall mounting the chassis, ensure the wall can support the weight of the chassis and (25 lbs per system chassis ---- including blades, cords, power supply, etc.). The chassis is secured to the wall with a wall mount bracket.

Optional wall mounting procedures exist for the 9.5" chassis. **Option 1**: the mounting bracket is secured to the wall and the chassis is attached to the bracket. **Option 2** attaches the bracket to the 9.5" chassis and then, using the key-holes as a guide, the assembled unit slides over screws secured to the wall using the template shown in

- O To wall mount the Base and Expansion chassis as a combined unit, refer to 4.2.1.1 Wall Mounting the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-54.
- O To wall mount the CHS2UG B with the external battery installed, refer to 4.2.2.2 Wall Mounting the CHS2UG B with the CHS2UG B Small Batt Box on page 3-63.
- 4.2.1 Option 1 Wall Mounting the 9.5 inch Base (CHS2UG B) Chassis
  - When mounted, clearance between the wall and the CHS2UG B/ CHS2UG E chassis is approximately 1.7 in (43mm) due to height of the wall mounting bracket.
  - The chassis must be mounted horizontally with the slot (front) side on the right.



Figure 3-53 Wall Mount Positioning for 9.5" Base/Expansion Chassis

O Due to EXIFU cable length, a maximum of 2 (1 CHS2UG B and 1 CHS2UG E) chassis can be wall mounted. If additional chassis are to be mounted, consider using the floor mounting procedure.



O When mounting the Expansion chassis, leave a space of approximately 0.4 in (10mm) between the two for the EXIFU cable.



1. Use the template shown in Figure 3-54 Wall Mount Spacing Guide (9.5" Chassis) for required spacing before drilling.



Plywood should first be installed on the wall where the chassis will be positioned. This allows secure anchoring of the screws, which support the weight of the chassis.

- 2. Mark and drill four holes marked **A**, **B**, **C** and **D**.
- 3. Mount Anchor bolts (locally procured), in holes **A** and **B** drilled in step 2.
  - Because the bracket (upper) will be hooked onto the head of the anchor bolts, allow the head to protrude approximately 0.14 to 15 in (3.5 to 4.0mm) from the wall (refer to (Figure 3-55 Anchor Bolt from Wall (9.5" Chassis) on page 3-48).







Align the upper bracket holes a and b with the heads of anchor bolts
A and B mounted on the wall and slide downward (refer to Figure 3-56 Align Bracket on Wall (9.5" Chassis)).



Figure 3-56 Align Bracket on Wall (9.5" Chassis)

 Install anchor bolts in holes C and D (refer to Figure 3-54 Wall Mount Spacing Guide (9.5" Chassis) on page 3-47). Tighten all four anchor bolts.



6. Align holes **E** and **F** on the MV bracket (upper) with holes on the 9.5 inch Basic Chassis (CHS2UG B). Install 2 M4 x 14 screws.

2 M4 x 14 screws are provided with the CHS2UG - MOVABLE WALL MOUNT KIT.



- 7. Install the screws in the holes closest to the wall side of the bracket (refer to Figure 3-57 Install Upper Bracket (9.5" Chassis)).
- 8. If the CHS2UG B SMALL BATT BOX is mounted on the 9.5 inch chassis, install the screws in the holes on the left edge of the bracket (refer to Figure 3-58 Optional Small Battery Box (9.5" Chassis) on page 3-50).





9. Align holes **G** and **H** on the MV bracket (lower) with holes on the 9.5 inch Basic Chassis (CHS2UG B). Install 2 M4 x 14 screws.

2 M4 x 14 screws are provided with the CHS2UG - MOVABLE WALL MOUNT KIT.

Figure 3-59 Install Lower Bracket (9.5" Chassis)





10. Remove the tape preventing the pin washers from falling off the bottom of the wall mounting bracket. Align the pins shown in step 4 above, with the hinges on the upper and lower brackets mounted on the 9.5 inch Base (CHS2UG B) chassis.



11. Ensure the 2 washers are installed on the lower pin on the wall mounted bracket.



Figure 3-61 Washer Location (9.5" Chassis)



12. Attach the shaft from the mounted wall bracket to the lower bracket and secure using the supplied retaining washer.



13. Using the 2 M3 x 6 spring washer screws supplied, install the stopper between the chassis and the wall mounted bracket.



Figure 3-63 Install the Stopper (9.5" Chassis)


14. Lift the shaft and close the 9.5 inch chassis. To secure the chassis to the wall, tighten the knurled screws located on the upper and lower brackets.



- 15. Connect grounding wire to chassis. Refer to Chapter 4 paragraph 3.5 Installing the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-24 for complete details on grounding the system.
- Refer to 3.5.5 Install AC Power Cord on 9.5" Base and Expansion Chassis on page 3-37 for installation of the power cord or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



## 4.2.1.1 Wall Mounting the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis



Figure 3-65 Wall Mount Spacing Guide (Base and Expansion Chassis)

1. Use the template shown in Figure 3-65 Wall Mount Spacing Guide (Base and Expansion Chassis) for required spacing before drilling.

TIP

Plywood should first be installed on the wall where the chassis will be positioned. This allows secure anchoring of the screws, which support the weight of the chassis.

- 2. Mark and drill four holes marked **A**, **B**, **C** and **D**.
- 3. Mount Anchor bolts (locally procured), in holes **A** and **B** drilled in step 2.
  - Because the bracket (upper) will be hooked onto the head of the anchor bolts, allow the head to protrude approximately 0.14 to 15 in (3.5 to 4.0mm) from the wall (refer to (Figure 3-66 Anchor Bolt from Wall (9.5" Chassis) on page 3-55).







 Remove the M4 x 8 screws from the wall mount bracket. Use the screw holes marked with the number 2 on the upper and lower brackets.







## 5. Turn the support 90° and install the M4 x 8 screws previously removed.

Figure 3-68 Install Support Bracket (Base and Expansion Chassis)



 Attach the MV bracket (upper and lower) to the 9.5 inch Base and Expansion chassis. Refer to section 4.2.1 Option 1 – Wall Mounting the 9.5 inch Base (CHS2UG B) Chassis steps 4 through 14 for bracket installation. Or





- Connect grounding wire to chassis. Refer to Chapter 4 paragraph 3.5 Installing the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-24 for complete details on grounding the system.
- 8. Refer to 3.5.5 Install AC Power Cord on 9.5" Base and Expansion Chassis on page 3-37 for installation of the power cord or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.





# 4.2.2 Option 2 – Wall Mounting the 9.5 inch Base (CHS2UG B) Chassis

1. Use the template shown in Figure 3-54 Wall Mount Spacing Guide (9.5" Chassis) for required spacing before drilling.



Plywood should first be installed on the wall where the chassis will be positioned. This allows secure anchoring of the screws, which support the weight of the chassis.

- 2. Mark and drill four holes marked A, B, C and D.
- 3. Mount Anchor bolts (locally procured), in holes **A** and **B** drilled in step 2.
  - Because the bracket (upper) will be hooked onto the head of the anchor bolts, allow the head to protrude approximately 0.14 to 15 in (3.5 to 4.0mm) from the wall (refer to (Figure 3-71 Anchor Bolt from Wall (9.5" Chassis) on page 3-59).



Figure 3-71 Anchor Bolt from Wall (9.5" Chassis)



## 4.2.2.1 Wall Mounting the CHS2UG B without the CHS2UG B Small Batt Box

1. Align the bracket halves (refer to Figure 3-72 Wall Mounting Brackets (Option 2)).

Figure 3-72 Wall Mounting Brackets (Option 2)





2. Align holes E and F on the MV bracket (upper) with holes on the 9.5 inch Basic Chassis (CHS2UG B). Install 2 M4 x 14 screws. M4 x 14 screws are provided with the WALL MOUNT BRACKET.



3. Align holes G and H on the MV bracket (lower) with holes on the 9.5 inch Basic Chassis (CHS2UG B). Install 2 M4 x 14 screws. M4 x 14 screws are provided with the WALL MOUNT BRACKET.





4. Align the upper and lower bracket holes with the heads of anchor bolts mounted on the wall and slide downward (refer to Figure 3-75 Install Screws (Option 2)).



Or

 Attach the MV bracket (upper and lower) to the 9.5 inch Base and Expansion chassis. Refer to section 4.2.2.1 Wall Mounting the CHS2UG B without the CHS2UG B Small Batt Box on page 3-59 steps 1 through 4 for bracket installation.





Figure 3-76 Wall Mount Spacing Guide – 9.5" Base and Expansion Chassis

- Connect grounding wire to chassis. Refer to Chapter 4 paragraph 3.5 Installing the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-24 for complete details on grounding the system.
- Refer to 3.5.5 Install AC Power Cord on 9.5" Base and Expansion Chassis on page 3-37 for installation of the power cord or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



## 4.2.2.2 Wall Mounting the CHS2UG B with the CHS2UG B Small Batt Box

To install the CHS2UG B SMALL BATT BOX refer to section 8.3 Installing the CHS2UG B SMALL BATT BOX on the 9.5" CHS2UG B Chassis on page 3-104

1. Align the bracket halves (refer to Figure 3-72 Wall Mounting Brackets (Option 2)).

Figure 3-77 Wall Mounting (Small Batt Box)



2. Turn the brackets upside down and remove four screws (refer to Figure 3-78 Brackets (Small Batt Box) on page 3-64).









3. Align the holes marked as **R** and **F**.



4. Install the four screws previously removed.

Figure 3-80 Install Screws (Small Batt Box)



5. Align the brackets with the holes on the sides of the 9.5 inch Basic Chassis (CHS2UG B). Install 2 M4 x 14 screws.

Figure 3-81 Wall Mount – Upper Side (Small Batt Box)





Figure 3-82 Wall Mount – Lower Side (Small Batt Box)



- 6. Align the upper and lower bracket holes with the heads of anchor bolts mounted on the wall and slide downward.
- Connect grounding wire to chassis. Refer to Chapter 4 paragraph 3.5 Installing the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-24 for complete details on grounding the system.
- 8. Refer to 3.5.5 Install AC Power Cord on 9.5" Base and Expansion Chassis on page 3-37 for installation of the power cord or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



### SECTION 5 FLOOR MOUNTING THE CHASSIS

#### 5.1 Floor Mounting the 19" (CHS2UG) Chassis

The CHS2UG controlling and expansion chassis can be mounted on the floor using the CHS BASE UNIT and the CHS2UG JOINT BRACKET KIT.

#### 5.1.1 CHS2UG Chassis Installation

1. Use the template shown in Figure 3-83 Floor Mount Spacing Guide for required spacing before drilling holes for 0.39" (10mm) anchor bolts (locally procured).





- 2. Mark and drill the four holes required to install the CHS BASE UNIT.
- 3. Using anchor bolts, secure the CHS BASE UNIT to the floor. Refer to Figure 3-84 Secure CHS BASE UNIT with Anchor Bolts for screw location.







4. Install the five rubber feet to the bottom of the chassis.



5. Position the chassis on top of the CHS BASE UNIT.



6. Secure the chassis to the CHS BASE UNIT using eight screws supplied with the CHS2UG JOINT BRACKET KIT.



Figure 3-86 Install CHS2UG JOINT BRACKET KIT

- Connect the ground wire to all chassis. Refer to 3.3.3 Install Grounding on 19" Chassis on page 3-19 for complete details on grounding the system.
- Refer to 3.3.5 Install AC Power Cords on 19" Chassis on page 3-20 to continue installation of the chassis or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



#### 5.1.2 Multiple CHS2UG Chassis Installation

Expansion chassis can be secured to the CHS BASE UNIT and require an additional CHS2UG JOINT BRACKET KIT per chassis.

1. Install the five rubber feet to the bottom of each chassis.



2. Using supplied screws in the CHS2UG JOINT BRACKET KIT, attach metal brackets to both ends of the 19" chassis and the CHS BASE UNIT. Refer to Figure 3-88 Install Metal Brackets with Screws.





- Connect the ground wire to all chassis. Refer to 3.3.3 Install Grounding on 19" Chassis on page 3-19 for complete details on grounding the system.
- Refer to 3.3.5 Install AC Power Cords on 19" Chassis on page 3-20 to continue installation of the chassis or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.

#### SECTION 6 STAND MOUNTING THE CHASSIS

#### 6.1 Stand Mounting the 19" (CHS2UG) Chassis

A single or multiple chassis can be stand mounted. Controlling and Expansion chassis can be stand mounted using the CHS2UG STAND KIT (K) and CHS2UG STAND KIT (EXT).

#### 6.1.1 CHS2UG Chassis Installation

1. Using the supplied screws, assemble the CHS2UG STAND KIT (K) and CHS2UG STAND KIT (EXT) (refer to Figure 3-89 Assemble Stand Mount with Screws).



Figure 3-89 Assemble Stand Mount with Screws

 Secure the CHS2UG chassis to the assembled CHS2UG STAND KIT (K), see Figure 3-90 Secure CHS2UG Chassis to CHS2UG STAND KIT (K) with Screws on page 3-73.





#### Figure 3-90 Secure CHS2UG Chassis to CHS2UG STAND KIT (K) with Screws

3. Using supplied screws, secure the CHS2UG STAND KIT (K) to the floor (refer to Figure 3-91 Secure Stand Mount to Floor with Screws on page 3-74).



To prevent possible damage to the 19" chassis due to falling, NEC recommends screws be installed in the stand mount brackets as soon as possible.





- 4. Connect the ground wire to all chassis. Refer to 3.3.3 Install Grounding on 19" Chassis on page 3-19 for complete details on grounding the system.
- Refer to 3.3.5 Install AC Power Cords on 19" Chassis on page 3-20 to continue installation of the chassis or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



#### 6.1.2 Multiple CHS2UG Chassis Installation

Expansion chassis (maximum of three) can be added to the CHS2UG STAND KIT (K) and require an additional CHS2UG STAND KIT (EXT) per chassis.

1. Install the five rubber feet to the bottom of each chassis.



 Each additional chassis requires a CHS2UG STAND KIT (EXT) to be installed (refer to Figure 3-93 Install Additional CHS2UG STAND KIT (EXT) on page 3-76).





 Metal brackets from the CHS2UG JOINT BRACKET KITs are required to secure the top end of the chassis with screws. See Figure 3-94 Install Additional Brackets from CHS2UG JOINT BRACKET KIT on page 3-77.





Figure 3-94 Install Additional Brackets from CHS2UG JOINT BRACKET KIT

 Using supplied screws, secure the CHS2UG STAND KIT (K) to the floor (refer to Figure 3-94 Install Additional Brackets from CHS2UG JOINT BRACKET KIT).



- Connect the ground wire to all chassis. Refer to 3.3.3 Install Grounding on 19" Chassis on page 3-19 for complete details on grounding the system.
- Refer to 3.3.5 Install AC Power Cords on 19" Chassis on page 3-20 to continue installation of the chassis or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



#### 6.2 Stand Mounting the 9.5" CHS2UG B Chassis

The 9.5" chassis can be stand mounted using the brackets supplied. The following section describes this procedure.



This bracket is not for use with a combined Base (CHS2UG B) and Expansion (CHS2UG E) chassis. A combined Base and Expansion chassis should only be rack or wall mounted.



Using the chassis stand unit (stand/floor mounting), will increase the height of the chassis by 50 mm.

- 1. Position the 9.5" Base Chassis so that the EXIFU slot is on top.
- 2. Align the Base unit with holes **A**, **B**, **C** and **D** on the lower side of the CHS2UG B chassis. Attach with the provided M4 x 14 screws.







When attaching the stand unit to the 9.5" Base chassis, ensure the shape of the stand unit aligns with the shape of the 9.5" chassis



3. Install tab slots **D**, **E**, **F**, **G**, **H** and **I** of either bracket (stand unit brackets can be mounted on the left or right side), on tabs **d**, **e**, **f**, **g**, **h** and **i** of the stand unit.





4. Install tab slots J, K, L, M, N and O of the remaining bracket on tabs j, k, l, m, n and o on the opposite side of the stand unit.



5. Align the support bracket with holes **P** and **Q** on the stand unit brackets and secure using the two M3 x 8 screws provided.





6. Turn the 9.5 inch chassis over and place in the location to be installed.





7. Secure the 9.5" assembly to a flat surface with the four screws supplied.



To prevent possible damage to the 19" chassis due to falling, NEC recommends screws be installed in the stand mount brackets as soon as possible.

- 8. Connect grounding wire to chassis. Refer to Chapter 4 paragraph 3.4 Installing the 9.5" Base (CHS2UG B) Chassis on page 3-22 for complete details on grounding the system.
- 9. Refer to 3.3.5 Install AC Power Cords on 19" Chassis on page 3-20 for installation of the power cord or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



### SECTION 7 RACK MOUNTING THE CHASSIS

#### 7.1 Rack Mounting the 19" (CHS2UG) Chassis

A single or multiple chassis can be rack mounted. Controlling and Expansion chassis can be racked mounted by stacking them horizontally.

 The 19" chassis requires two rack mount brackets per chassis for mounting. Each 19" chassis requires its own set of rack mount bracket(s). Refer to Figure 3-101 CHS2UG Rack Mount Brackets.



Stacking additional chassis (without rack mount brackets) on top of one rack mounted chassis is not recommended.

Figure 3-101 CHS2UG Rack Mount Brackets



- 2. Line up the Rack Mount Bracket(s) with the pre-drilled holes on each side of the 19" chassis.
- 3. Secure the brackets to the chassis using the supplied screws. Refer to Figure 3-102 Rack Mount Bracket Installed 19" CHS2UG on page 3-83 for the 19" chassis.



Repeat for additional chassis mounting.

Figure 3-102 Rack Mount Bracket Installed 19" CHS2UG



4. Carefully slide the chassis into desired location in the rack. Make sure the hooks on the mounting bracket are inserted into the back of the chassis, securing it in place. Note that the cabling is run through the front of the rack for ease of access.



Each CHS2UG chassis will require approximately 3.5" of height within the rack.

5. Secure the brackets to the rack using the screws supplied.

Repeat for additional chassis mounting.

Figure 3-103 Rack Mount 19" CHS2UG





Single CHS2UG Rack Mount

Single CHS2UG Rack Mount with Three Expansion Chassis

6. Connect the ground wire to all chassis. Refer to 3.3.3 Install Grounding on 19" Chassis on page 3-19 for complete details on grounding the system.



- 7. Refer to 3.3.5 Install AC Power Cords on 19" Chassis on page 3-20 to continue installation of the chassis or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.
- 7.2 Rack Mounting the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis

To rack mount the combined Base (CHS2UG B) and Expansion (CHS2UG E) chassis, the IP5D-RACK MOUNT BAR SET is required.



Controlling and Expansion chassis must be installed vertically for proper air circulation.

 Attach the metal rack mount brackets to each side of the chassis using the screws provided (refer to Figure 3-104 Attach Rack Mount Brackets to 9.5" Chassis).







2. Attach the two horizontal rack bars at the correct positions on the rack with the screws provided. The bars are used to secure the chassis vertically in the rack.



3. Secure the (CHS2UG B) and (CHS2UG E) chassis to the horizontal bars using two screws at each point (refer to Figure 3-106 Attach (CHS2UG B) and (CHS2UG E) Chassis to Rack on page 3-86).



Controlling and Expansion chassis must be installed vertically for proper air circulation.





Figure 3-106 Attach (CHS2UG B) and (CHS2UG E) Chassis to Rack

- 4. Connect grounding wire to chassis. Refer to paragraph 3.5.4 Install Grounding on Multiple 9.5" Base and Expansion Chassis on page 3-37 for complete details on grounding the system.
- 5. Refer to 3.5.5 Install AC Power Cord on 9.5" Base and Expansion Chassis on page 3-37 for installation of the power cord or, Chapter 4 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades.



### SECTION 8 BATTERY CONNECTION

Two types of battery connection provide battery life during a power failure, the internal battery and an external battery with CHSG LARGE BATT BOX.

### 8.1 Installing the Internal Batteries 19" (CHS2UG) Chassis

An internal battery source using two batteries can be installed using the CHS2UG BATT MTG KIT (mounting kit) and CHS2U BATT CABLE INT (internal cabling).

CHS2UG BATT MTG KIT (Backup time = 10 Minutes/24 Terminals)

1. Power down the CHS2UG chassis



- 2. Disconnect AC power and grounding cable from rear of chassis.
- 3. Remove screws from battery access panel on rear of chassis.



Figure 3-107 Removing Battery Access Panel



4. Remove access panel containing the fan. Refer to Figure 3-108 Removing Access Panel and Figure 3-109 Access Panel Removed.








5. Using tie wraps, secure CHS2U BATT CABLE INT in cable guide bracket.



6. With supplied screw, install cable guide in chassis.



Figure 3-111 Installing Cable Support Guide

 Install two 2.3 AH-12V batteries (locally procured) into the CHS2UG BATT MTG KIT (refer to Figure 3-112 Installing Two Batteries on page 3-90).



The first battery must be installed on the left side, then slid to the right due to an installation tab on the mounting kit.





- 8. Using the supplied screws, secure the brackets to the CHS2UG BATT MTG KIT (refer to Figure 3-112 Installing Two Batteries).
- 9. Connect the provided battery cables to the batteries.





#### 10. Connect CHS2U BATT CABLE INT to battery connector.



Figure 3-114 Connecting CHS2U BATT CABLE INT

11. Install CHS2UG BATT MTG KIT into CHS2UG chassis and tighten the retaining screws.



Figure 3-115 Installing Battery Tray into CHS2UG Chassis



12. Reinstall access panel containing the fan and secure with supplied screw.



13. Connect grounding and AC power cable.

## 8.2 Installing the External Batteries 19" (CHS2UG) Chassis

An optional (locally procured), external battery source can be used to provide power during a power failure.

CHSG LARGE BATT BOX (Backup time = Three Hours for 30 Terminals)

Configuration SV9100	Battery Capacity (Number of Batteries)	Number of CHSG LARGE BATT BOX		
2U x 1	21AH (=3 sets of [2x12V-7AH])	1		
2U x 2	42AH (=6 sets of [2x12V-7AH])	2		
2U x 3	63AH (=9 sets of [2x12V-7AH])	3		
2U x 4	84AH (=12 sets of [2x12V-7AH])	4		

Table 3-5 CHSG LARGE BATT BOX Capacity



#### 8.2.1 Floor Mounting the CHSG LARGE BATT BOX



1. Use the template shown in Figure 3-117 Floor Mount Spacing Guide for required spacing before drilling holes for 0.39" (10mm) anchor bolts (locally procured).



Figure 3-117 Floor Mount Spacing Guide

2. Mark and drill the four holes required to install the CHS BASE UNIT.



- Align bolt holes in CHS BASE UNIT (see Figure 3-117 Floor Mount Spacing Guide on page 3-93) with holes drilled in floor and secure using four anchor bolts.
- 4. Align and install the CHSG LARGE BATT BOX on top of the CHS BASE UNIT.

Figure 3-118 Installing the CHSG LARGE BATT BOX using the CHS2UG JOINT BRACKET KIT



 Secure the CHSG LARGE BATT BOX to the CHS BASE UNIT using the CHS2UG JOINT BRACKET KIT. Refer to Figure 3-118 Installing the CHSG LARGE BATT BOX using the CHS2UG JOINT BRACKET KIT.

#### 8.2.2 Battery Installation

1. Loosen screw on front of CHSG LARGE BATT BOX.

Figure 3-119 Removing CHSG LARGE BATT BOX Cover



2. Swing cover outward and detach from CHSG LARGE BATT BOX.



3. Remove two screws from front of Battery Tray Suppressor.



Figure 3-120 Removing Battery Tray Suppressor

- 4. Slide Battery Tray Suppressor outward to remove.
- 5. Slide Battery Tray(s) out of CHSG LARGE BATT BOX.
- 6. Loosen two screws and remove the Battery Tray Cover.

Figure 3-121 Removing Battery Tray Cover





7. Remove two screws and remove the Battery Tray Bracket.

Figure 3-122 Removing Battery Tray Bracket



8. Refer to Figure 3-123 Battery Cable Connection Guide for connection of battery cable to battery terminals. Repeat for additional battery connection.



Incorrect Installation Of Batteries May Damage The Fuse Unit Or Cause Possible Fire.



9. Install batteries into Battery Tray. Refer to Figure 3-124 Installing Battery Connection Cable.



10. Using two screws, install the Battery Tray Bracket. Refer to Figure 3-122 Removing Battery Tray Bracket on page 3-96.



Figure 3-124 Installing Battery Connection Cable

- 11. Insert Battery Connection Cable into cable guides. Refer to Figure 3-124 Installing Battery Connection Cable.
- 12. Install the Battery Tray Cover and tighten the two screws. Refer to Figure 3-124 Installing Battery Connection Cable.
- 13. Slide the Battery Trays into the CHSG LARGE BATT BOX.
- Install the Battery Tray Suppressor while pulling the Battery Connection Cable(s) through the cutouts provided. Refer to Figure 3-125 Connecting Battery Cables on page 3-98. Secure with two screws.
- 15. Plug the Battery Connection Cable(s) into the Fuse Unit. Refer to Figure 3-125 Connecting Battery Cables on page 3-98.





16. Insert tabs on cover into holes on CHSG LARGE BATT BOX. Slide the cover left until seated and tighten the screw.



#### 8.2.3 CHSG LARGE BATT BOX to CHS2UG Connection

1. Power down the CHS2UG chassis.



2. Disconnect AC power cable from rear of chassis.



3. Remove fan access panel from rear of CHS2UG chassis.



Figure 3-127 Removing Fan Access Panel

4. Connect one end of Battery Connection Cable to Battery Connector on rear of Basic and Expansion chassis.



5. Connect other end of cable to Battery Connector on rear of CHSG LARGE BATT BOX chassis. Refer to Figure 3-129 Single CHSG LARGE BATT BOX Connection or Figure 3-130 Dual CHSG LARGE BATT BOX Connection on page 3-100.





Figure 3-130 Dual CHSG LARGE BATT BOX Connection





6. Insert the access panel tab into the rear of the CHS2UG chassis running the Battery Connection Cable through the cutout. Secure panel with the retaining screw.



- 7. Connect grounding and AC power cables.
- 8. Apply power to chassis (refer to Chapter 4, 2.6 Powering Up the SV9100 System on page 4-9).

#### 8.2.4 CHSG LARGE BATT BOX Fuse Replacement

1. Loosen screw on front of CHSG LARGE BATT BOX.



Figure 3-132 Removing CHSG LARGE BATT BOX Cover



2. Remove two screws from front of Battery Tray Suppressor (Refer to Figure 3-133 Removing Battery Tray Suppressor).



Figure 3-133 Removing Battery Tray Suppressor

- 3. Slide Battery Tray Suppressor outward to remove.
- 4. Disconnect the Battery Connection Cables from the Fuse Unit.



Figure 3-134 Disconnecting Battery Cables

- 5. Loosen two screws and pull Fuse Unit out of the CHSG LARGE BATT BOX.
- 6. Refer to Figure 3-135 CHSG LARGE BATT BOX Fuse Unit on page 3-103 for replacement of 8A or 30A fuses.





- 7. Slide the Fuse Unit into the and tighten the two screws (refer to Figure 3-134 Disconnecting Battery Cables on page 3-102).
- 8. Plug the Battery Connection Cables into the Fuse Unit.



Figure 3-136 Connecting Battery Cables



9. Insert tabs on cover into holes on CHSG LARGE BATT BOX. Slide the cover left until seated and tighten the screw.



# 8.3 Installing the CHS2UG B SMALL BATT BOX on the 9.5" CHS2UG B Chassis

An optional, CHS2UG B SMALL BATT BOX can be installed to provide external battery power to the CHS2UG GW and CHS2UG B chassis during a power failure. The short-term battery box will power the system for approximately 10 minutes.

#### 8.3.1 CHS2UG B SMALL BATT BOX Installation

1. Power down the CHS2UG GW or CHS2UG B chassis.



Ensure the CHS2UG GW or CHS2UG B chassis is powered OFF.

- 2. Disconnect AC power cable from rear of chassis.
- 3. Align the Small Battery cable assembly with the grooves underneath the Base (CHS2UG B) chassis. Use the two M3 x 8 screws provided to secure the cable assembly in place (refer to Figure 3-138 Installing Battery Cable Assembly on page 3-105).







4. Remove the battery connector cap on the Base chassis and connect the battery connection cable.







5. Remove the two M3 x 8 screws from the Small Battery Box, then remove the battery cover (refer to Figure 3-140 Removing Battery Cover).



6. Place the two batteries into the Small Battery Box (refer to Figure 3-141 Installing Batteries on page 3-107).





7. Route battery cables **a** and **b** under the Small Battery Box tabs and connect to connectors **A** and **B**.



 Insert tabs c and d of the battery cover into slots C and D of the Small Battery Box. Secure the cover using two M3 x 8 screws (refer to Figure 3-143 Installing Battery Cover on page 3-108).





9. Pull the battery lock of the Small Battery Box forward to unlock it.



Figure 3-144 Unlocking the Small Battery Box



10. Align the Small Battery Box with the grooves at the top and bottom of the Base chassis and slide into position.





11. Push the battery lock in, then connect the battery cable.



Figure 3-146 Locking the Small Battery Box



- 12. Connect grounding wire to chassis. Refer to Chapter 4 paragraph 3.5 Installing the 9.5" Base (CHS2UG B) and Expansion (CHS2UG E) Chassis on page 3-24 for complete details on grounding the system
- Refer to 3.5.5 Install AC Power Cord on 9.5" Base and Expansion Chassis on page 3-37 for installation of the power cord or, Chapter 6 paragraph 2.1 Installation and Safety Precautions on page 4-4 for installation of blades
- 14. To power on the 9.5" chassis, refer to Chapter 4, 2.6 Powering Up the SV9100 System on page 4-9.

#### 8.3.2 CHS2UG B SMALL BATT BOX Fuse Replacement



Only replace fuses of the same rating.
Fuses may be hot, use caution when replacing them.

1. Correct the issue which caused the fuse problem.



Replacing fuses without first correcting the issue could cause a fire and/or electric shock hazard.

2. Disconnect AC power cable from rear of chassis.



Make sure to unplug the unit from the electrical outlet prior to removing the connection cables in the battery box unit.

3. Unplug battery cables **a** and **b** from connectors **A** and **B** of the Small Battery Box.

Figure 3-147 Disconnecting the Battery Cables





4. Remove and replace the fuse as needed.



- 5. Reconnect battery cables **a** and **b** to connectors **A** and **B**.
- 6. To replace the battery, refer to section 8.3.1 CHS2UG B SMALL BATT BOX Installation on page 3-104.

# 8.4 Installing the External Batteries (CHSG LARGE BATT BOX) to the 9.5" Gateway (CHS2UG GW) or Base (CHS2UG B) Chassis

An optional, CHSG LARGE BATT BOX can be installed to provide external battery power to the CHS2UG GW chassis during a power failure. The long-term battery box powers the system for approximately three hours.



- Because of injury from falling equipment, wall mounting the CHSG LARGE BATT BOX is not recommended.
- Mounting the CHSG LARGE BATT BOX directly on the floor is not recommended.
- Due to possible water damage, floor mounting the 9.5" chassis is not recommended by NEC.



The CHS BASE UNIT raises the height of the CHSG LARGE BATT BOX 120mm (4.72").

#### 8.4.1 CHSG LARGE BATT BOX Installation

To install the batteries in the CHSG LARGE BATT BOX, refer to Chapter 3, section 8.2.2 Battery Installation on page 3-94.



#### 8.4.2 CHSG LARGE BATT BOX to 9.5" Gateway (CHS2UG GW) or Base (CHS2UG B) Chassis Connection

1. Power down the CHS2UG GW or CHS2UG B chassis.



Ensure the CHS2UG GW or CHS2UG B chassis is powered OFF.

- 2. Disconnect AC power cable from rear of chassis.
- From the back of the 9.5" chassis, remove the black plastic square covering the two-prong battery terminal leads (refer to Figure 3-149 9.5" Chassis (Rear View)).



Figure 3-149 9.5" Chassis (Rear View)

- 4. Connect one end of Battery Connection Cable to Battery Connector on rear of 9.5" chassis.
- Connect other end of cable to Battery Connector on rear of CHSG LARGE BATT BOX chassis (refer to Figure 3-150 CHSG LARGE BATT BOX to CHS2UG GW or CHS2UG B Connection on page 3-113).





Figure 3-150 CHSG LARGE BATT BOX to CHS2UG GW or CHS2UG B Connection

- 6. Reconnect AC power cable to rear of 9.5" chassis.
- 7. To power on the 9.5" chassis, refer to Chapter 4, 2.6 Powering Up the SV9100 System on page 4-9.

#### 8.4.3 CHSG LARGE BATT BOX Fuse Replacement

To replace the fuse(s) in the CHSG LARGE BATT BOX, refer to Chapter 3, section 8.2.4 CHSG LARGE BATT BOX Fuse Replacement on page 3-101.

#### SECTION 9 POWER SUPPLY



Do not attempt to replace the power supply on the CHS2UG B or CHS2UG GW chassis. The MPS7101 is not a field replaceable part. If the power supply fails, contact NEC.



# SECTION 10 REMOVE AND INSTALL COOLING FAN

If required, the cooling fan installed in the CHS2UG chassis can be removed and replaced. Follow the procedure below for the CHS2UG chassis.

## 10.1 CHS2UG Chassis

#### 10.1.1 Remove Cooling Fan



To reduce the possibility of electrical shock or damage to equipment, NEC recommends powering off the chassis and disconnecting the AC cable from the power source before removing the chassis cover.

1. Ensure the chassis is powered down.



To reduce the possibility of damage to equipment, the installer must wear a grounded wrist strap to protect the equipment from static electricity.

2. Loosen retaining screw from chassis access panel.

Figure 3-151 19" Chassis Access Panel



3. Swing access panel outward and unplug fan power cable.

Figure 3-152 Opening Chassis Access Panel (19" Chassis)





- 4. Remove chassis access panel from rear of chassis.
- 5. Remove cabling from retention clips.





6. Remove two screws securing fan to access cover. Keep screws for use when installing replacement fan [refer to Figure 3-153 Chassis Access Panel Removed (19" Chassis)].

#### 10.1.2 Install Cooling Fan

- 1. Align replacement fan with holes and secure with two screws [refer to Figure 3-153 Chassis Access Panel Removed (19" Chassis)].
- 2. Install cabling into retention clips [refer to Figure 3-153 Chassis Access Panel Removed (19" Chassis) on page 3-115].
- 3. Insert access panel hinges into slots on rear of chassis.
- 4. Plug fan power cable into three prong plug [refer to Figure 3-152 Opening Chassis Access Panel (19" Chassis) on page 3-114].
- 5. Reinstall access cover and secure with retaining screw (refer to Figure 3-151 19" Chassis Access Panel on page 3-114).

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# Installing the SV9100 Blades

# Chapter 4

# SECTION 1 GENERAL INFORMATION

This chapter contains information to help the technician install the blades for the UNIVERGE SV9100 system. The technician should be familiar with this section before installing any equipment.

#### 1.1 Slot Locations

Each CHS2UG has six slots. In the Controlling Chassis, the GCD-CP10 or GCD-CP20 (for Key Systems) must be installed in the first slot (slot 1). In the CHS2UG GW and CHS2UG B, the GCD-CP10 or GCD-CP20 must be installed in the first slot (slot 1).

Slot Locations in the CHS2UG (19" Controlling Chassis):

- O Slot 1 dedicated for the CPU
- O Slots 2~6 universal

Slot Locating in the CHS2UG (19" Expansion Chassis):

 Slots 1~6 are universal. (i.e., any type of blade except the CPU can be installed in these slots).

Slot Locations in the CHS2UG GW and CHS2UG B Base (9.5" Chassis):

- O Slot 1 CPU
- O Slots 2 and 3 universal

Slot Locations in the 9.5" CHS2UG B and CHS2UG E (Controlling Chassis with CPU):

- O Slot 1 CPU
- O Slots 2~6 universal

Slot Locations in the 9.5" CHS2UG B and CHS2UG E (Expansion Chassis no CPU):

O Slots 1~6 – universal

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Figure 4-1 19" Chassis CPU and Expansion Slot Locations





Figure 4-2 9.5" Base and Expansion Chassis CPU Location



# SECTION 2 INSTALLATION

Pre-installation planning is essential. Advanced planning minimizes installation time, cost, and disruption of the customer business activities.

## 2.1 Installation and Safety Precautions



Observe the following precautions when installing the blades to avoid static electricity damage to hardware or exposure to hazardous voltages.

- O Never install telephone wiring during a lightning storm.
- O Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- O Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- O Use caution when installing or modifying telephone lines.
- O Ground the Controlling and Expansion chassis before installing or removing the blades.
- O The Expansion Chassis *must be installed with the system power OFF*.
- O *Do not* touch the blade components.
- Carry the blade in a conductive polyethylene bag to prevent static electricity until ready to install the blade.
- O When installing or removing the blades from the chassis, the installer must wear a grounded wrist strap to protect the blade from static electricity.
- Although it is recommended to install the blades with the system power OFF, most blades can be installed hot except for the following that must be installed with the power OFF:
  - GCD-CP10 or GCD-CP20
  - GPZ-BS10/GPZ-BS20 and GPZ-BS11



## 2.2 Installing an Extension or Trunk Blade

#### 2.2.1 Installing the Blades

To install an extension/trunk blade with the system running:

- 1. Insert the blade in the guide rail and push it securely into position. Tighten the thumb screw on either side of the blade.
- 2. The Status LED starts flashing when the blade starts processing (15 seconds).

Figure 4-3 Inserting Blades in the 19" Chassis



Figure 4-4 Inserting Blades in the 9.5" Chassis





#### 2.2.2 Order of Installing Extension Blades

The order in which the station blades (GCD-8DLCA with GPZ-8DLCB, GCD-16DLCA, GCD-4LCA, and GCD-8LCA with GPZ-8LCE) are physically inserted determines the numbering plan.



To avoid unexpected extension/trunk numbering if the VoIP or Voice Mail daughter board registers with the system first, install these boards <u>after</u> the other extension and trunk blades are installed.

For example, when a digital station blade (GCD-16DLCA) is in Slot 1 (ext. 101~116) and three additional digital station blades are installed *in the following order,* the numbering plan below in Table 4-1 Extension Blade Installation Order Example applies.

Order of Installation	Blade Slot Number	Blade	Extension Numbers
1	1	GCD-16DLCA	101~116
2	2	GCD-16DLCA	117~132
3	4	GCD-8DLCA GPZ-8DLCB	133~148
4	3	GCD-8DLCA	149~156

After the initial powering up of the system, subsequent powering up or reset does not change the slot identification. Program 90-05 must be performed to change the slot identification.

Adding any daughter board to increase the available ports or go to a higher capacity blade (e.g., GCD-16DLCA) may require that the slot be deleted in programming and the blade reinstalled. In the following example, to add a daughter board to slot 2, the blade must be removed, deleted in Program 90-05-01 or through WebPro Blade Configuration, then reinstalled with the daughter board attached, otherwise the additional ports are not recognized. This however, uses new ports for the combined blade – the initial ports (ports 17~24 using the example below) are not used.



Table 4-2 Adding Daughter Board to Chassis Example						
Blade Slot #	Blade	Extension Numbers		Blade Slot #	Blade	Extension Numbers
1	GCD-16DLCA	101~116		1	GCD-16DLCA	101~116
2	GCD-8DLCA (no daughter board)	117~124		2	_	Ι
3	GCD-16DLCA	125~140		3	GCD-16DLCA	125~140
_	_	_		4	GCD-8DLCA (with daughter board)	141~156

The system automatically recognizes each blade installed in the system. *If a blade was installed previously* in a slot and another type of blade is to be installed in that same slot, the blade must first be removed from the chassis and then the slot definition removed using Program 90-05 or deleted through WebPro Blade Configuration prior to installing the new blade.

This same condition applies to extensions and other devices connected to the system. For example, if a port was used previously for a telephone and a DSS Console is to be installed in that same port, the telephone must be undefined in Program 10-03 before the console is connected.

#### 2.2.3 Order of Installing Trunk Blades

# 2.2.3.1 Installing GCD-4COTB or GCD-4COTB-A, GCD-4DIOPA, GCD-4ODTA or GCD-2BRIA Blades

The order in which trunk blades are physically inserted determines the numbering plan.



To avoid unexpected extension/trunk numbering if the VoIP or Voice Mail daughter board registers with the system first, install these boards <u>after</u> the other extension and trunk blades are installed.



For example, if four blades are installed *in the following order*, the numbering plan below applies.

Order of Installation	Blade Slot Number	Blade	Line Circuits
1	4	GCD-4COTB or GCD-4COTB-A with GPZ-4COTF or GPZ-4COTF-A	1~8
2	5	GCD-4COTB or GCD-4COTB-A	9~12
3	7	GCD-40DTA	13~16
4	6	GCD-40DTA	17~20

Table 4-3 Trunk Blade Installation Order Example

#### 2.2.3.2 Installing GCD-PRTA (T1/E1/PRI) Blades

The GCD-PRTA (T1/E1/PRI) Interface blade uses the first block of 24 consecutive trunks.

For example, if a GCD-4COTB or GCD-4COTB-A blade with GPZ-4COTF or GPZ-4COTF-A daughter board is installed for trunks 1~8, the GCD-PRTA (T1/E1/PRI) blade automatically uses trunks 9~32. If GCD-4COTB or GCD-4COTB-A with GPZ-4COTF or GPZ-4COTF-A is installed for trunks 1~8 and 17~24, the GCD-PRTA (T1/E1/PRI) blade uses trunks 25~48. The GCD-PRTA (T1/E1/PRI) blade cannot use trunks 9~16 (even if available) since they are not part of a consecutive block of 24 trunks.

#### 2.3 Remove an Extension or Trunk Blade

Any blade, **EXCEPT** the ones listed below can be removed while the system is powered up. To remove any blade listed below, the system *must first be powered down*.

- O GCD-CP10 or GCD-CP20
- O GPZ-BS10/GPZ-BS20 and GPZ-BS11

To remove an extension/trunk blade with the system running:

- 1. When LED 2 is extinguished, all extensions/trunks are idle.
- 2. Loosen the thumb screw on either side of the blade and pull it out of the chassis.


# 2.4 Uninstalling a Blade Slot Through Software

The installer can turn off (busy out) and delete (remove from software) blade slots in the Controlling and Expansion Chassis in programming for port renumbering or to replace it with a different blade. Deleting a blade may affect blade slot programming ability. Refer to Program 90-05 in the UNIVERGE SV9100 Programming Manual for detailed information.

# 2.5 Blade Capacities

The universal architecture of the UNIVERGE SV9100 provides flexibility when installing blades. With the exception of the GCD-CP10 or GCD-CP20, GPZ-BS10/GPZ-BS20, and GPZ-BS11 blades, any blade can be installed in any slot. Table 2-6 SV9100 Maximum Blade Capacities – CHS2UG Chassis on page 2-13 and Table 2-7 SV9100 Maximum Blade Capacities – CHS2UG B and CHS2UG E Chassis on page 2-15 provide a list of the blades and the maximum capacities with various chassis configurations.

# 2.6 Powering Up the SV9100 System

# 2.6.1 Performing a Cold Start

This section describes the process for starting the system (19" and 9.5" chassis) for the first time or starting a system that has been turned off.



### **IMPORTANT CONSIDERATIONS**

- System software is loaded from flash memory, and customer data is from RAM memory.
- To avoid extension and trunk renumbering, if certain blades are recognized first, remove them from their respective slots until the system has been reset. Then, slot the blade cards in the correct order to retain the proper system numbering. (Use Program 10-03 prior to performing a cold start to record the current slot definitions.)

To perform a cold start:

- 1. Turn the system power off.
- 2. Once the system has powered down, push in and hold the **Load** button.
- 3. Turn the power switch back on to power the system back up.
  - With a multi-chassis system, turn on the Expansion Chassis power supply, then the Controlling Chassis power supply.
- 4. Continue holding the **Load** button for approximately three seconds or until LED 2 starts flashing red.
- 5. Release the **Load** button.
- 6. When the system has completed reloading the software (two minutes), the Status LED is flashing on the GCD-CP10/GCD-CP20.



# 2.6.2 Performing a Hot Start

The section describes how to load system software from flash memory and customer data from RAM memory.



**IMPORTANT CONSIDERATIONS** 

System software is loaded from flash memory, and customer data is from RAM memory.

- 1. Turn the system power off.
- 2. After it has powered down, press the button again to power the system back up. Wait approximately two minutes.
- 3. When the system has completed reloading the software, the Status LED is flashing on the GCD-CP10/GCD-CP20.

# 2.6.3 Resetting the System

This section describes resetting a system that is running. Observe the important information listed below.

To reset the system:

### 2.6.3.1 Initial Programming

The system can be programmed using three methods:

- Programming using a multiline terminal
- PC Programming
- U Web Programming

To program using a multiline terminal, enter programming mode:

- 1. Go to any working display telephone.
- 2. Do not lift the handset.
  - In a newly installed system, use extension (port 1).
- 3. Press Speaker.
- 4. Press #\*#.

#### Password

5. Dial the system password + Transfer.



### 2.6.3.2 Port Defaults

With the default settings, the ports are assigned as follows:

	Table 4-4 Default Port Settings			
Station Ports:		Port 1~99 : 101~199 Port 100~199 : 3101~3200 Port 200~960 : 3201~3961		
	Virtual Station Ports:	Port 1~99 : 201~299 Port 100~512 : No Setting		
	Trunk Ports:	1~400		

In the initial configuration:

- All Programmable Function keys are line keys (e.g., key 1 is line 1).
- All trunks are loop start DTMF.

# 2.6.3.3 Setting Up Extension Circuit Types

Run Program 10-03 to set up extension circuit types as required. The system automatically detects and assigns most circuit types when the device is connected.

- 1. Dial 10-03-01.
- 2. Press TRANSFER to Select the slot, port or channel (with DLC Blades) to be programmed.
- 3. Set the terminal type or option as needed.
  - ➡ If the system has DSS Consoles, Program 30-02 must be used to define DSS extension assignments.

As the system recognizes the extension devices automatically, when replacing the connected device, it must be undefined in Program 10-03 prior to connecting the new device. For example, if a port was previously used for a telephone and a DSS Console is to be installed in that same port, the telephone must first be undefined in Program 10-03 before the console is connected.

### 2.6.3.4 Saving Your Configuration

When programming is completed, to exit out of the program option and save changes to the GCD-CP10/GCD-CP20:

- 1. Press **EXIT** to exit the program options, if needed.
- Press Speaker. Saving System Data is displayed if changes were made to system programming.
- 3. The display shows Complete Data Save when completed and the telephone becomes idle.



# 2.6.3.5 Backing Up/Restoring a Database

As a precaution, it is recommended that the customer database be saved prior to updating the system software. There are two methods to save the database - either use the PCPro application or save directly to USB Memory on the GCD-CP10 or GCD-CP20. Using PCPro, download the database and save the file on the PC hard drive. To save the database using a blank USB Memory, insert the USB Memory into the USB Port on the GCD-CP10 or GCD-CP20 blade and, using Program 90-03, save the software. Due to the file naming structure, note that a USB Memory can hold only one customer database (each database is saved to a directory called DATA – this directory is overwritten if a second database is saved to the same card). Each database to be saved requires its own separate card (unless you choose to rename the directory after it is saved, then rename it back to DATA when you need to access the database).

If the customer data needs to be reloaded, the method for restoring the database is determined by how the database was saved. Using PCPro, the customer database is uploaded using the Upload option in the application. If the database is stored on a USB Memory, use Program 90-04, with the database to be restored installed in the USB Port on the GCD-CP10 or GCD-CP20 blade.

When restoring a database file, as the slot definitions may be different, remove all blades from the system except the GCD-CP10 or GCD-CP20 and the GCD-8DLCA/GCD-16DLCA in slot 2. After the system is reset, blades can be installed again. Program 10-03 or Program 90-04 can be used prior to updating to record the current slot definitions. If the blades are not removed, the trunk and extension port assignments may be reassigned, depending on which blade syncs up with the system first.

After reloading the customer data to the system, exit programming mode (this could take a minute or more to save the database), **then reset the system by powering down and back up.** If the system is not reset, not all the uploaded programming changes are in effect. Wait a few minutes for the programming to take affect before accessing any line or special system feature. Otherwise, some unusual LED indications may be experienced. To prevent the USB Memory from possibly being overwritten, remove the card after reloading the database.



# 2.6.4 Performing a Software Upgrade

This section describes the procedure to perform a software upgrade on the GCD-CP10 or GCD-CP20.



#### **IMPORTANT CONSIDERATIONS**

- To save customer data prior to updating, a blank USB Memory is required. Insert the USB Memory into the USB Port on the GCD-CP10 or GCD-CP20 blade. Use Program 90-03 to save the software to the USB Memory. Note that a USB Memory can hold only one customer database. Each database to be saved requires its own separate USB Drive. Use Program 90-04, with the database to be restored installed in the GCD-CP10 or GCD-CP20, to reload the customer data if necessary.
- After uploading programming data to the system using Program 90-04, exit programming mode (this could take a minute or more to save the database), then reset the system by powering down and back up. Wait a few minutes for the programming to take affect before accessing any line or special system feature. Otherwise some unusual LED indications may be experienced. To prevent the USB Memory from possibly being overwritten, remove the USB Memory after downloading the database.
- When restoring a database file, as the slot definitions may be different, remove all blades from the system except the GCD-CP10 or GCD-CP20 and GCD-8DLCA/GCD-16DLCA in slot 2. After the system is reset, the blades can be reinstalled. Use Program 10-03 prior to updating to record the current slot definitions.

To perform a system software and firmware upgrade:

- 1. Turn the system power off.
- 2. After the system powers down, insert the USB Memory containing the software upgrade into the USB port on the GCD-CP10 or GCD-CP20.
- 3. Push in and hold the **Load** button.
- 4. Turn the system power on.
- Continue holding the Load button for approximately 10 seconds or until Status LED D30 begins flashing red.
- 6. Release the **Load** button.
- 7. Wait until the Status LEDs on the GCD-CP10 or GCD-CP20 have the following indications (approximately two minutes):

LED D28: Flashing Red LED D29: Flashing Red LED D30: Flashing Red LED D32: Steady Red

8. Turn the system power off and remove the USB Memory.



- 9. Turn the system power back on.
- 10. When the system has completed reloading the software, the Status LED begins flashing on the GCD-CP10 or GCD-CP20. The remaining four LEDs are off.
  - O To confirm the new software version is installed, press the FEATURE + 3 keys on any display multiline terminal to view the system version number.
  - The existing system software in the flash memory is replaced, but the customer data (stored in the RAM) is saved.



# SECTION 3 COMMON CONTROL BLADES

The blades described in this section control the common functions of the chassis.

# 3.1 GCD-CP10 (SV9100 Central Processing Unit)









Figure 4-6 GCD-CP10 Blade with Daughter Boards Installed

## 3.1.1 Description

The GCD-CP10 controls all the functions and operations of the SV9100 system using the system software loaded into the GCD-CP10 memory. The system software can be upgraded as new software becomes available.

One GCD-CP10 blade must be installed in the Controlling Chassis.

The GCD-CP10 functions are:

- Music on Hold tone Circuit, External Source Control Circuit
- Voice Mail/VRS Interface Circuit
- VM recording time
  - SD-A1 memory card: 15 hours
  - SD-B1 memory card: 120 hours
- Number of mail boxes: 896
- System Program and System Data Storing Memory Circuit
- □ SD Card/USB Interface Circuit
- Ethernet Interface Circuit





- GPZ-BS10/GPZ-BS11 Interface Circuit
- Main Processing 32-Bit CPU Circuit (P1015 @ 533 MHz)
- Time Switch, Optional Blade Control Circuit
- Backboard Interface Circuit

### The GCD-CP10 provides:

- **400** trunk ports maximum
- **B** 896 extension ports maximum
  - O 896 ports digital/IP extensions maximum
  - O 368 analog ports maximum
- □ 512 virtual extensions
- Connection for GPZ-IPLE Daughter Board
- □ Supports TAPI 2.x
- One Green Status LED
- Four Red Status LEDs
- Five diagnostic LEDs which indicate the status of various system functions
- During normal operation, the RUN LED is flashing and the remaining LEDs are off
- Time Division Multiplex Switch (TDM Switch)
- Digital Phase Locked Loop (DPLL)
- Tone Generator
- Tone Processing DSP
- Connection for Memory Module
- Digital Signal Processor (DSP)
- DTMF Tone Sender
- DTMF Tone Receiver
- Dial Tone Generator (DTG)
- The GPZ-BS10 provides 64 channels for Telephony Resource (e.g., DTMF Receiver, Caller ID Receiver, and Call Progress Tone Detection)
- **\_** System Tone Sender
- MF Receiver
- □ MF Sender
- □ MFC Tone Sender



- **MF** Signal Sender (Sends caller information to CO for E911)
- Call Progress Tone Detection
- C-Channel Control
- Conference Circuits: 64 Channel (when built-in modem is enabled) or 96 Channel (when built-in modem is disabled)
- Caller ID Receiver: 80 Channels
- A load switch which is used for initial system startup, resetting the system, or when upgrading system software
- One Serial Port (NEC production use only)
- One SD/SDHC Card (VM) connector
- One USB Port USB 1.1/USB 2.0
  - Memory size minimum of 32MB (normally 512MB or 1GB) should be used.
  - ► USB device power consumption is less than 200mA (1W).
- One Gbit Ethernet Port for VoIP function
- Background Music/EXSP Control Port
- Status LED
- Two Audio Input/Output Terminals
- One Music On Hold External Source
- High-Level Data Link Control (HDLC) Packet Processing
- Real Time Clock (tolerance 30 seconds/month)
- Call Control Server (ex: Conference Bridge Server, Voice Mail Server, SIP Server, RTP Forwarding, VoCoder Conversion)
- One lithium battery (CR2032) which provides battery back-up of system data and RAM memory for approximately 30 months.

The GCD-CP10 functions provided are:

- Call Control Server
- Conference Bridge Server
- □ Voice Mail Server (voice mail requires proper licensing)
- □ SIP Server
- **RTP** Forwarding
- VoCoder Conversion



# 3.1.2 Installation

Each SV9100 system *must have the* GCD-CP10 *installed in Slot 1* of the Controlling Chassis.



#### **IMPORTANT CONSIDERATIONS**

- The chassis power must be off when installing or removing the GCD-CP10.
- After removing a previously installed GCD-CP10, handle the blade, carefully, from the edges. If certain solder points/ resistors are touched on the back of the blade, some RAM/ temporary memory may be lost (e.g., time, date, user-defined settings, etc.)
- Do not remove the CPU chip installed on the GCD-CP10 blade.

### 3.1.2.1 Battery Installation and Removal

### **Battery Installation**



- Keep away from open flame. Avoid excessive heat.
- Verify polarity (+, -) when installing battery.
- Do not short the electrodes (+, -) with metals such as wire.
- Do not puncture, crush or solder the battery.
- 1. Install the battery (CR2032 3.0V coin-type lithium battery) onto the GCD-CP10. The polarity + symbol must be on top as illustrated in Figure 4-7 GCD-CP10 Battery Installation.

Figure 4-7 GCD-CP10 Battery Installation





2. Push down on the battery, opposite from the plus (+) symbol (refer to Figure 4-7 GCD-CP10 Battery Installation).

**Battery Removal** 



1. Ensure backup of SRAM data on GCD-CP10.

CAUTION

The following SRAM data types are important for the client. If stored, this procedure must be used to restore the data.

- **o** Billing memory
- SMDR Billing data

When removing the backup battery, SRAM data and system clock are initialized. Use the following to store the SRAM data (Reconfigure the system clock after replacing the battery).

Table 4-5	SRAM	Data	Types
-----------	------	------	-------

SRAM Data	Measure		
Fault Information	Read the fault information using the PCPro "Fault Display" menu.		
OAI FLF Memory	Save the memory by specifying "DBM data (PHS/OAI)" in the PCPro "System Data Save/Load Verify" menu.		
Billing Memory	Print the billing memory using an external printer.		
SMDR Billing Data	Delete the billing data using SMDR/CR1000.		

- 2. Power off the system and remove the GCD-CP10 from the chassis.
- 3. Carefully lift the battery from the socket.
- 4. Install the replacement battery (refer to 3.1.2.1 Battery Installation and Removal on page 4-19).
- 5. Install the blade into the chassis and power on the system.
- 6. Reset the system (press RESET on the front of the GCD-CP10 blade).
- 7. Configure the system clock using the PCPro "Quick Setup" menu or the command (CM02).



 Load the SRAM data saved in step 1, above.
 From the PCPro "System Data Save/Load/Verify" menu load the data from the specified file.

- OAI FLF Memory

Battery replacement is complete.

### 3.1.2.2 GPZ-IPLE Daughter Board Installation

- 1. Refer to Figure 4-13 Installing the GPZ-IPLE Daughter Board on page 4-39 to install the GPZ-IPLE daughter board, if required.
- 2. Ensure the power supply is **OFF**, then slide the GCD-CP10 into Slot 1 in the Controlling Chassis.

### 3.1.2.3 SD-A1/SD-B1 Installation

- 1. Refer to Figure 4-5 GCD-CP10 Blade Layout on page 4-15 to install the SD-A1 or SD-B1 SD card, if required.
- 2. Ensure the power supply is **OFF**, then slide the SD card (label side up) into the slot until it clicks.

To remove: Carefully push on the SD card until it clicks and release. Card can be removed from the slot.

### 3.1.2.4 Background Music (BGM) or Music on Hold (MOH)

- 1. If external Background Music (BGM) or Music on Hold (MOH) is being installed, plug the cable into the AUX1 or AUX2 pin jack connector on the GCD-CP10. The other end of the cable plugs into the music source.
  - Refer to the PGD(2)-U10 ADP in Chapter 9, section 2.1 Using a PGD(2)-U10 ADP on page 9-1 for details on connecting to a music source.
  - When the system software is upgraded, the flash memory is updated with the new software version.
     Either the Hot or Cold start-up method can be used or the system can be upgraded using system software.
     Refer to 2.6.1 Performing a Cold Start on page 4-9, 2.6.2 Performing a Hot Start on page 4-10, or 2.6.4 Performing a Software Upgrade on page 4-13.
  - Customer information is stored in the RAM memory which is restored after a power failure is cleared. The lithium battery in the system saves the RAM memory when power is lost.



# 3.1.3 Switch Settings

Refer to Table 4-6 GCD-CP10 Switch Settings for system restart/system reset and with system power on. Figure 4-5 GCD-CP10 Blade Layout on page 4-15 shows the location of the LOAD (S5) switch on the GCD-CP10 blade.

	USB Memory Status	Operation			
	With a system restart or a system reset while holding the LOAD (S5) switch:				
Switch	When USB Memory is not installed:	Cold Start occurs.    Database default occurs			
S5 – LOAD Switch	When USB Memory is installed:	USB Memory contents loaded.			
	When an unauthorized USB device is installed:	System does not start and an Illegal USB device is connected alarm is recorded.			

Table 4-6 GCD-CP10 Switch Settings

# Table 4-7 GCD-CP10 Switch 4/6 Settings

	Configuration	Notes
SW4-1	ON	Not Used
SW4-2	OFF	Test Mode ON = Test Mode OFF = Normal
SW4-3	OFF	RS232C Select ON = Use OFF = Not Used
SW4-4	ON	Reset Configuration ON = Normal OFF = ICE Mode
S6	SENSE Switch	Not Used



# 3.1.4 LED Indications

The LEDs on the GCD-CP10 indicate the following:

- **RUN** (D23) = The CPU is operating (green)
- $\square$  D20, and D21 = Alarms (red)
- D22 = SD Memory Card access/Alarm indication (red)
- D25 = The USB memory connection status (red) (LED off when no USB memory installed)
- D24 = Not Used
- Refer to Program 90-10: System Alarm Setup for details on assigning alarm LEDs.

Table 4-8 GCD-CP10 LED Indications provides a list of each LED and associated operation and status indications. Refer to Figure 4-5 GCD-CP10 Blade Layout on page 4-15 for the location of the LEDs on the GCD-CP10.

Table 4-8	GCD-CP10 LED Indications

	LED Indication				Statua	
RUN (D23)	D20	D21	D22	D25	Status	
Blinking	Off	Off	Off	On Steady When USB Memory is Installing	System operating normally	
Off	Off	Off	Off	Blinking	Boot is starting	
Off	On	Off	Off	Off	Initializing the disk or formatting	
Blinking	Blinking	Off	Access Blink	On Steady When USB Memory is Installing	Boot program is initializing in the flash memory	
Off	On	On	Access Blink	On Steady When USB Memory is Installing	Reading system software	
Off	On	Off	Access Blink	On Steady When USB Memory is Installing	Upgrading system software	
On	Blinking	Blinking	Blinking	On Steady When USB Memory is Installing	Finish formatting (SRAM, Flash)	
Blinking	Off	Off	Off	Off	DRAM error	



		Statua				
RUN (D23)	D20	D21	D22	D25	Status	
Blinking	Off	Off	On	On Steady When USB Memory is Installing	FPGA version error	
Blinking	Off	On	Off	On Steady When USB Memory is Installing	SRAM error	
Blinking	Off	On	On	On Steady When USB Memory is Installing	SD memory booting error	
Blinking	On	On	On	On Steady When USB Memory is Installing	SD memory data error	
Blinking	Blinking	Blinking	Blinking	On Steady When USB Memory is Installing	Reading error of system program	
Blinking	On	Off	Off	On Steady When USB Memory is Installing	Error: Major alarm occurred	
Blinking	Blinking	Off	Off	On Steady When USB Memory is Installing	Error: Minor alarm occurred	
On	Off	Off	Off	Off	System starting up	

# Table 4.9. CCD CD10 | ED Indigations (Continued)

#### 3.1.5 Connectors

Table 4-9 GCD-CP10 Connections describes each connector on the GCD-CP10, Table 4-10 GCD-CP10 RJ45 Cable Connector Pin-Outs describes the pin-outs for connectors on the GCD-CP10. Refer to Figure 4-5 GCD-CP10 Blade Layout on page 4-15 for the location of the connections on the GCD-CP10 blade.

Connector	Connector Description USB Memory Connection (used for upgrading software or downloading system data)	
J13		
J4	Ethernet Cable Connection (for PCPro or WebPro, CTI, ACD MIS, IP Phone)	



Connector	Connector Description		
AUX1/AUX2	Pin Jack for External Source Connection (External MOH, External Speaker, etc.)		
J10	External Source Control Connection		
J6/S4	Used for Debug		
J7	SD Memory Card Connection		
J9	Backboard Connection		
J14	GPZ-IPLE Connection		
J28	Lithium Battery Socket - for backup of SRAM data and RTC (Real Time Clock) data		
LOAD (S5)	Load Switch		
S6	SENSE Switch		

Table 4-9 GCD-CP10 Connections (Continued)

Table 4-10 GCD-CP10 RJ45 Cable Connector Pin-Outs

USB Cable Connector – J13 (Type A, Female) (USB 1.1/2.0 Standard)				
	Pin No.	Signal		
	1	Vcc		
	2	-D		
	3	+D		
	4	GND		

Ethernet Cable Connector – J4 (RJ-45) (10Base-T/100Base-TX/1000Base-T Port)					
	Pin No.	Connection			
	1	Tx+			
	2	Tx-			
	3	Rx+			
	4	_			
	5	_			
	6	Rx-			
	7	-			
	8	_			
Pin Jack – AUX1/AUX2 (Polarity)					
	Pin No.	Signal			
	1	EXT1			
	2	EXT2			
RJ-45 Cable Connector – J10 (External Source Control) (No Polarity)					
	Pin No.	Connection			
	1	NC			
	2	NC			
	3	EXCNT2			
	4	EXCNT1			
	5	EXCNT1			
	6	EXCNT2			
	7	NC			
		NC			

# Table 4-10 GCD-CP10 RJ45 Cable Connector Pin-Outs (Continued)



# 3.2 GCD-CP20 (SV9100 Central Processing Unit) R10 or Higher



#### Figure 4-8 GCD-CP20 Blade Layout







Figure 4-9 GCD-CP20 Blade with Daughter Boards Installed

## 3.2.1 Description

The GCD-CP20 controls all the functions and operations of the SV9100 system using the system software loaded into the GCD-CP20 memory. The system software can be upgraded as new software becomes available.

One GCD-CP20 blade must be installed in the Controlling Chassis.

The GCD-CP20 functions are:

- Music on Hold tone Circuit, External Source Control Circuit
- Voice Mail/VRS Interface Circuit
- VM recording time
  - O SD-A2 memory card: 40 hours
  - SD-B2 memory card: 230 hours
- Number of mail boxes: 896
- System Program and System Data Storing Memory Circuit
- SD Card/USB Interface Circuit
- Ethernet Interface Circuit





- GPZ-BS20/GPZ-BS11 Interface Circuit
- Main Processing 32-Bit CPU Circuit (P1015 @ 667 MHz)
- Time Switch, Optional Blade Control Circuit
- Backboard Interface Circuit

### The GCD-CP20 provides:

- **400** trunk ports maximum
- **B** 896 extension ports maximum
  - O 896 ports digital/IP extensions maximum
  - O 368 analog ports maximum
- 512 virtual extensions
- Connection for GPZ-IPLE Daughter Board
- □ Supports TAPI 2.x
- One Green Status LED
- Four Red Status LEDs
- During normal operation, the RUN LED is flashing and the remaining LEDs are off
- Time Division Multiplex Switch (TDM Switch)
- Digital Phase Locked Loop (DPLL)
- Digital Signal Processor (DSP)
- DTMF Tone Sender
- DTMF Tone Receiver: 105 channels maximum
- Call Progress Tone Sender
- Call Progress Tone Receiver
- MF Receiver
- □ MF Sender
- Caller ID Signal Sender
- Caller ID Signal Receiver
- C-Channel Control
- Conference Circuits: 96 Channel
- □ A load switch which is used for initial system startup, resetting the system, or when upgrading system software



- One USB Port USB 1.1/USB 2.0
  - ➤ Memory size minimum of 32MB (normally 512MB or 1GB) should be used.
  - → USB device power consumption is less than 200mA (1W).
- One Gbit Ethernet Port for VoIP function
- Background Music/EXSP Control Port
- Two Audio Input/Output Terminals
- One Music On Hold External Source
- High-Level Data Link Control (HDLC) Packet Processing
- Real Time Clock (tolerance 30 seconds/month)
- Call Control Server (ex: Conference Bridge Server, Voice Mail Server, SIP Server, VoCoder Conversion)
- One lithium battery (BR2032) which provides battery back-up of system data and RAM memory for approximately 30 months.

The GCD-CP20 functions provided are:

- Call Control Server
- Conference Bridge Server
- □ Voice Mail Server (voice mail requires proper licensing)
- □ SIP Server
- □ VoCoder Conversion

# 3.2.2 Installation

Each SV9100 system *must have the* GCD-CP20 *installed in Slot 1* of the Controlling Chassis.



#### **IMPORTANT CONSIDERATIONS**

- The chassis power must be off when installing or removing the GCD-CP20.
- After removing a previously installed GCD-CP20, handle the blade, carefully, from the edges. If certain solder points/ resistors are touched on the back of the blade, some RAM/ temporary memory may be lost (e.g., time, date, user-defined settings, etc.)
- Do not remove the CPU chip installed on the GCD-CP20 blade.



#### 3.2.2.1 **Battery Installation and Removal**

### **Battery Installation**



- Keep away from open flame. Avoid excessive 0 heat.
- *Verify polarity* (+, -) *when installing battery.* 0
- Do not short the electrodes (+, -) with metals 0 such as wire.
- Do not puncture, crush or solder the battery. 0
- 1. Install the battery (BR2032 3.0V coin-type lithium battery) onto the GCD-CP20. The polarity + symbol must be on top as illustrated in Figure 4-10 GCD-CP20 Battery Installation.

Figure 4-10 GCD-CP20 Battery Installation



2. Push down on the battery, opposite from the plus (+) symbol (refer to Figure 4-10 GCD-CP20 Battery Installation).

**Battery Replacement** 



When removing the backup battery, System clock is initialized. Configure the system

• Before removing the GCD-CP20 from the chassis to install or replace a battery, ensure

clock after battery replacement.

the system is powered Off.



Replace the battery every 3 years.

Contact the reseller where you bought the product for a replacement battery.

- 1. Power off the system and remove the GCD-CP20 from the chassis.
- 2. Carefully lift the battery from the socket.
- 3. Install the replacement battery (refer to 3.2.2.1 Battery Installation and Removal on page 4-31).



- 4. Install the blade into the chassis and power on the system.
- 5. Configure the system clock using the PCPro "Quick Setup" menu or the command (CM02).
- 6. Battery replacement is complete.

### 3.2.2.2 GPZ-IPLE Daughter Board Installation

- 1. Refer to Figure 4-13 Installing the GPZ-IPLE Daughter Board on page 4-39 to install the GPZ-IPLE daughter board, if required.
- 2. Ensure the power supply is **OFF**, then slide the GCD-CP20 into Slot 1 in the Controlling Chassis.

### 3.2.2.3 SD-A2 or SD-B2 Installation

- 1. Refer to Figure 4-8 GCD-CP20 Blade Layout on page 4-27 to install the SD-A2 or SD-B2 SD card, if required.
- Ensure the power supply is OFF, then slide the SD card (label side up) into the slot until it clicks.
   To remove: Carefully push on the SD card until it clicks and release. Card can be removed from the slot.



### **IMPORTANT CONSIDERATIONS**

- SD-A1 or SD-B1 card cannot be used on the GCD-CP20.
- Once the SD Card (SD-A2 or SD-B2) is used with a CPU (GCD-CP20) or the SD Card with a CPU is used on the secondary system for the Netlink, Hardware Key Code of the CPU is automatically recorded and the SD Card becomes the exclusive use with the CPU blade. In any case, the used SD Card will not function properly when used on another CPU blade. Do not exchange the Used SD Card from another CPU blade.
- If the CPU (GCD-CP20) blade must be exchanged, arrange a new SD Card from NEC. The license must also be arranged for the new CPU's Hardware Key Code.



Figure 4-11 GCD-CP20 to GCD-CP20 SD Card Exchange Not Allowed



## 3.2.2.4 Background Music (BGM) or Music on Hold (MOH)

- 1. If external Background Music (BGM) or Music on Hold (MOH) is being installed, plug the cable into the AUX1 or AUX2 pin jack connector on the GCD-CP20. The other end of the cable plugs into the music source.
  - Refer to the PGD(2)-U10 ADP in Chapter 9, section 2.1 Using a PGD(2)-U10 ADP on page 9-1 for details on connecting to a music source.
  - When the system software is upgraded, the flash memory is updated with the new software version. Either the Hot or Cold start-up method can be used or the system can be upgraded using system software. Refer to 2.6.1 Performing a Cold Start on page 4-9, 2.6.2 Performing a Hot Start on page 4-10, or 2.6.4 Performing a Software Upgrade on page 4-13.
  - Customer information is stored in the RAM memory which is restored after a power failure is cleared. The lithium battery in the system saves the RAM memory when power is lost.

# 3.2.3 Switch Settings

Refer to Table 4-11 GCD-CP20 Switch Settings for system restart/system reset and with system power on. Figure 4-8 GCD-CP20 Blade Layout on page 4-27 shows the location of the LOAD (S5) switch on the GCD-CP20 blade.

	0				
	USB Memory Status	Operation			
Switch S5 – LOAD Switch	With a system restart or a system reset while holding the LOAD (S5) switch:				
	When USB Memory is not installed:	Cold Start occurs.  Database default occurs			
	When USB Memory is installed:	USB Memory contents loaded.			
	When an unauthorized USB device is installed:	System does not start and an Illegal USB device is connected alarm is recorded.			

Table 4-11 GCD-CP20 Switch Settings



# 3.2.4 LED Indications

The LEDs on the GCD-CP20 indicate the following:

- □ RUN (D4) = The CPU is operating (green)
- $\square$  D28, and D29 = Alarms (red)
- D30 = SD Memory Card access/Alarm indication (red)
- D32 = The USB memory connection status (red) (LED off when no USB memory installed)
- Refer to Program 90-10: System Alarm Setup for details on assigning alarm LEDs.

Table 4-12 GCD-CP20 LED Indications provides a list of each LED and associated operation and status indications. Refer to Figure 4-8 GCD-CP20 Blade Layout on page 4-27 for the location of the LEDs on the GCD-CP20.

LED Indication				01-14-1		
RUN (D4)	D28	D29	D30	D32	Status	
Blinking	Off	Off	Off	On Steady When USB Memory is Installing	System operating normally	
Off	Off	Off	Off	Blinking	Boot is starting	
Off	On	Off	Off	Off	Initializing the disk or formatting	
Blinking	Blinking	Off	Access Blink	On Steady When USB Memory is Installing	Boot program is initializing in the flash memory	
Off	On	On	Access Blink	On Steady When USB Memory is Installing	Reading system software	
Off	On	Off	Access Blink	On Steady When USB Memory is Installing	Upgrading system software	
On	Blinking	Blinking	Blinking	On Steady When USB Memory is Installing	Finish formatting (SRAM, Flash)	
Blinking	Off	Off	Off	Off	DRAM error	
Blinking	Off	Off	On	On Steady When USB Memory is Installing	FPGA version error	

Table 4-12 GCD-CP20 LED Indications



LED Indication					Status	
RUN (D4)	D28	D29	D30	D32	Status	
Blinking	Off	On	Off	On Steady When USB Memory is Installing	SRAM error	
Blinking	Off	On	On	On Steady When USB Memory is Installing	SD memory booting error	
Blinking	On	On	On	On Steady When USB Memory is Installing	SD memory data error	
Blinking	Blinking	Blinking	Blinking	On Steady When USB Memory is Installing	Reading error of system program	
Blinking	On	Off	Off	On Steady When USB Memory is Installing	Error: Major alarm occurred	
Blinking	Blinking	Off	Off	On Steady When USB Memory is Installing	Error: Minor alarm occurred	
On	Off	Off	Off	Off	System starting up	

# Table 4-12 GCD-CP20 LED Indications (Continued)

# 3.2.5 Connectors

Table 4-13 GCD-CP20 Connections describes each connector on the GCD-CP20, Table 4-14 GCD-CP20 RJ45 Cable Connector Pin-Outs describes the pin-outs for connectors on the GCD-CP20. Refer to Figure 4-8 GCD-CP20 Blade Layout on page 4-27 for the location of the connections on the GCD-CP20 blade.

Table 4-13 GCD-CP20 Connections

Connector	Connector Description
J13	USB Memory Connection (used for upgrading software or downloading system data)
J4	Ethernet Cable Connection (for PCPro or WebPro, CTI, ACD MIS, IP Phone)
J11/J12	Pin Jack for External Source Connection (External MOH, External Speaker, etc.)
J10	External Source Control Connection



Table 4-13 GCD-CP20 Conne	ctions (Continued)
---------------------------	--------------------

Connector	Connector Description		
J7	SD Memory Card Connection		
J9	Backboard Connection		
J14	GPZ-IPLE Connection		
J28	Lithium Battery Socket - for backup of SRAM data and RTC (Real Time Clock) data		
LOAD (S5)	Load Switch		

Table 4-14 GCD-CP20 RJ45 Cable Connector Pin-Outs

USB Cable Connector – J13 (Type A, Female) (USB 1.1/2.0 Standard)				
	Pin No.	Signal		
	1	Vcc		
	2	-	D	
	3	+	·D	
	4	G	ND	
Ethernet Cable Connector – J4 (RJ-45)				
	Pin No.	10Base-T/ 100Base-T	1000Base-T	
	1	Tx+	TR0+	
	2	Tx-	TR0-	
	3	Rx+	TR1+	
	4	-	TR2+	
	5	_	TR2-	
	6	Rx-	TR1-	
	7	_	TR3+	
	8	-	TR3-	



Pin Jack – AUX1/AUX2 (Polarity)					
	Pin No.	Signal			
	1	EXT1			
	2	EXT2			
RJ-45 Cable Connector – J10 (External Source Control) (No Polarity)					
	Pin No.	Connection			
	1	NC			
	2	NC			
	3	EXCNT2			
	4	EXCNT1			
	5	EXCNT1			
	6	EXCNT2			
	7	NC			
	8	NC			

Table 4-14 GCD-CP20 RJ45 Cable Connector Pin-Outs (Continued)



# 3.3 GPZ-IPLE (Voice over IP Daughter Board)

Figure 4-12 IPLE Daughter Board



# 3.3.1 Description

The current GPZ-IPLE daughter board requires a single DSP IP address.



• With SV9100 software and GPZ-IPLE daughter board installed, half-duplex connections are not supported.

• For troubleshooting purposes, a managed switch capable of port mirroring is required to capture packet data from the SV9100 IPLE Ethernet port.

The IPLE daughter board provides:

**256** (GPZ-IPLE) channels

Refer to the following tables for maximum upgrade capacities of the GPZ-IPLE daughter board:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- □ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

When installing an IPLE daughter board, the system allocates the maximum number of trunk ports for the blade being installed.

The IPLE does not have any DSP limitations based on CODEC settings.



# 3.3.2 Installation

## To install GPZ-IPLE on the GCD-CP10 or GCD-CP20:



Do not remove or install the GCD-CP10 or GCD-CP20 with the power on.

- 1. Turn off system power, and remove the GCD-CP10 or GCD-CP20.
- 2. Install the IPLE daughter board on the GCD-CP10 or GCD-CP20 blade (refer to Figure 4-13 Installing the GPZ-IPLE Daughter Board).





- 3. Insert the GCD-CP10 or GCD-CP20 into slot 1 in the Controlling Chassis.
  - Refer to Figure 3-3 19" Controlling Chassis Guides Slot 1 on page 3-8 for more details.
- 4. Connect the IPLE daughter board to the CD-RTB or to an external switching hub using an Ethernet cable.
- 5. Refer to the UNIVERGE SV9100 Programming Manual for detailed programming instructions.

# 3.3.3 Switch Settings

This daughter board does not have any switch that needs to be set and does not require any hardware setting.



# 3.3.4 LED Indications

LED indications for the GPZ-IPLE Daughter Board are indicated in Table 4-15 IPLE Daughter Board LED Indications on page 4-40. Each LED is listed with its associated function and LED and Operational status. Refer to Figure 4-6 GCD-CP10 Blade with Daughter Boards Installed on page 4-16 for the location of the LEDs on the blades.

LED	Function	LED Status	Operation Status
Link 10 (D103)	10 Base-TX link speed indicator	On Red	10 Base-TX link up
LINK 100 (D102)	100 Base-T link speed indicator	On Red	100 Base-T link up
LINK 1000 (D101)	1000 Base-T link speed indicator	On Yellow	1000 Base-T link up
ACT (D100)	Link activity or data transmission and reception	On Green	LED lights when link up is completed. LED flashes when data is transmitting or receiving.

Table 4-15 IPLE Daughter Board LED Indications

Table 4-16 IPLE Daughter Board LED CN1 Transmit/Receive Data Indications shows the LED indication when transmitting or receiving data on CN1.

v				
LED			Operation Status	
АСТ	Link1000	Link100	Link10	Operation Status
Off	Off	Flash	Flash	Internal Error (Hardware Error)
Off	On	Flash	Flash	
On	On	Flash	Flash	
On	Off	Flash	Flash	State of half-duplex transmission (Not supported) Change HUB etc. to full-duplex transmission.
Flash	Flash Blinking one by one			The firmware is being updated.

Table 4-16 IPLE Daughter Board LED CN1 Transmit/Receive Data Indications

→ The IPLE only supports full-duplex transmission.



Refer to Figure 4-14 IPLE LED Interface for a functional display of the LED interface when installed on a GCD-CP10 or GCD-CP20.



### Figure 4-14 IPLE LED Interface

# 3.3.5 Connectors

Figure 4-15 VoIP Connections on page 4-42 shows a typical connection layout. Figure 4-16 Connecting an IPLE Daughter Board to a Network/PC on page 4-43 illustrates how to connect a VoIP Daughter Board to a Network or PC.



Figure 4-15 VoIP Connections **Connection Description** GPZ-IPLE (CN1 is not installed on an IPLE) LAN/WAN **Ethernet Cable** (10/100 Base) **Ethernet Cable** (10/100/1000 Base) IP telephone, PC, etc. GCD-CP10 or GCD-CP20 GCD-8DLCA/GCD-16DLCA (PCM Time Division Switch) Back Board of Chassis (PCM Highway)

Digital Terminal Telephone (KTS)



# Figure 4-16 Connecting an IPLE Daughter Board to a Network/PC





# SECTION 4 STATION BLADES

# 4.1 GCD-8DLCA/GCD-16DLCA (Digital Station Interface)






#### 4.1.1 Description

The GCD-8DLCA and the GCD-16DLCA are both discussed in this section. Any differences between the two are noted. These blades provide:

- 8 (GCD-8DLCA) OR 16 (GCD-16DLCA) digital extension circuits (used for digital telephones, DSS consoles, SLT(1)-U() ADP, PGD(2)-U10 ADP adapters)
- **These ports provide -48V feeding.**
- Two blade status LEDs One Live LED, One Busy/Idle LED

Refer to the following tables for maximum upgrade capacities of the GCD-8DLCA/GCD-16DLCA blades:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- □ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

#### 4.1.2 Installation

The GCD-8DLCA/GCD-16DLCA blade can be installed in any universal slot in the system and up to a maximum of 23 DLCA blades can be installed per system, providing up to 368 digital ports.

To install the GPZ-8DLCB/GCD-16DLCA:

- 1. If installing the GCD-8DLCA and the GPZ-8DLCB daughter board is to be attached, do it now. Refer to 4.2.2 Installation on page 4-49.
- 2. Each CNx01 connector (CN101, CN201, CN301, CN401) is used to connect up to four digital extensions.

#### 4.1.3 LED Indications

LEDs for the GCD-8DLCA/GCD-16DLCA are described in Table 4-17 GCD-8DLCA/GCD-16DLCA LED Indications on page 4-46. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-17 GCD-8DLCA/GCD-16DLCA Blade on page 4-44 for the location of the LEDs on the blades.



LED Indication					
Live LED (Green)	Busy LED (Red)	Operation Status		Remarks	
On	On	Sy	stem Initializing	_	
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.	
	Flash (1s)	Trouble four	nd during self-diagnostics.	_	
Flash	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	-	
(100ms)	Off	Operation	All channels are idle.	-	
Off	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-	
	Off		All channels are idle.	-	
	Flash 80ms (On/Off) x 3/ 400ms Off	Downloading firmware.		-	

# Table 4-17 GCD-8DLCA/GCD-16DLCA LED Indications

#### 4.1.4 Connectors

The CNx01 connectors provide connection to four digital station ports. With the GCD-16DLCA blade, the CN101, CN201, CN301, and CN401 connectors are available. With the GCD-8DLCA blade the CN301 and CN401connectors are removed from the blade.



Any cabling to the DLCA blade must be in the building - no outside cabling is permitted.

Table 4-18 GCD-8DLCA/GCD-16DLCA/ RJ-61 Cable Connector Pin-Outs on page 4-47 show the pin-outs for the RJ-61 connector. Refer to Figure 4-17 GCD-8DLCA/GCD-16DLCA Blade on page 4-44 for the location of the connectors on the DLC blades.



Table 4-18 GCD-8DLCA/GCD-16DLCA/ RJ-61 Cable Connector Pin-Outs

RJ-61 Cable Connector GCD-8DLCA – CN101 (ports 1~4), CN201 (ports 5~8) GCD-16DLCA – CN101 (ports 1~4), CN201 (ports 5~8), CN301 (ports 9~12), CN401 (ports 13~16)				
	Pin No.	Connection		
	1	T4 (Tip for port 4)		
	2	T3 (Tip for port 3)		
	3	T2 (Tip for port 2)		
12345678	4	R1 (Ring for port 1)		
	5	T1 (Tip for port 1)		
	6	R2 (Ring for port 2)		
	7	R3 (Ring for port 3)		
	8	R4 (Ring for port 4)		



# 4.2 GPZ-8DLCB (Digital Station Daughter Board)



#### Figure 4-18 GPZ-8DLCB Daughter Board

#### 4.2.1 Description

The GPZ-8DLCB daughter board provides eight digital extensions. This daughter board is installed on the GCD-8DLCA and expands the port capacity for the combined blades to 16.



Refer to the following tables for maximum upgrade capacities of the GPZ-8DLCB daughter board:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- ➡ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

#### 4.2.2 Installation

The GPZ-8DLCB is installed on the GCD-8DLCA. To install:

- 1. Connect the GPZ-8DLCB to the CN2 connector on the GCD-8DLCA blade. Refer to Figure 4-17 GCD-8DLCA/GCD-16DLCA Blade on page 4-44 for the location of the connectors on the blade.
- 2. Install the GCD-8DLCA into a slot.
- 3. Each CNx01 connector (CN101, CN201, CN301, CN401) is used to connect up to four digital extensions.

#### 4.2.3 GPZ-8DLCB Daughter Board Cable Connection

The GPZ-8DLCB blade has connections for CN301 and CN401. Refer to Figure 4-17 GCD-8DLCA/GCD-16DLCA Blade on page 4-44 for connector locations.

The following tables show the cable connections of the two RJ-61 connectors on the GPZ-8DLCB.

RJ-61 Cable Connector CN301 (ports 9~12)				
	Pin No.	Connection		
	1	(T4) Tip for port 12		
	2	(T3) Tip for port 11		
	3	(T2) Tip for port 10		
12345678	4	(R1) Ring for port 9		
	5	(T1) Tip for port 9		
	6	(R2) Ring for port 10		
	7	(R3) Ring for port 11		
	8	(R4) Ring for port 12		

Table 4-19 GPZ-8DLCB RJ-61 Cable Connector Pin-Outs



RJ-61 Cable Connector CN401 (ports 13~16)				
	Pin No.	Connection		
	1	(T4) Tip for port 16		
	2	(T3) Tip for port 15		
	3	(T2) Tip for port 14		
12345678	4	(R1) Ring for port 13		
	5	(T1) Tip for port 13		
	6	(R2) Ring for port 14		
	7	(R3) Ring for port 15		
	8	(R4) Ring for port 16		

Table 4-19 GPZ-8DLCB RJ-61 Cable Connector Pin-Outs (Continued)



# 4.3 GCD-4LCA/GCD-8LCA (4-Port/8-Port Single Line Interface)

Figure 4-19 GCD-4LCA/GCD-8LCA Blade



#### 4.3.1 Description

The GCD-4LCA/GCD-8LCA blade provides four analog (SLIU) extension ports or eight analog (SLIU) extension ports (used for on-premise analog telephones, fax machines, and analog modems).



The GCD-4LCA and GCD-8LCA are not rated for OPX use. A GCD-4DIOPA blade should be used instead (it supports the analog DID and single line telephone interface functions, such as Off-Premise Extensions).

- One extension status LED
- One blade status LEDs
- Constant current type battery feeding (25mA / -28Vdc)
- **Feeding Polarity Reverse Ability**
- Connector for GPZ-4LCA/GPZ-8LCE Daughter Board
- Ring Generator
- **Caller ID Sending Ability**
- □ Message Wait Lamp Ability (Controlling Voltage:-110Vdc) for all ports

The GCD-8LCA consumes eight ports ranging between ports 001~256. The CN3 and CN5 connectors each provide connection to four analog station ports. The CNx connectors are not polarity sensitive.

Refer to the following tables for maximum upgrade capacities of the GCD-4LCA/GCD-8LCA SLIU blades:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- ➡ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

#### 4.3.2 Installation



- When connecting a fax machine or analog modem, make sure to set Program 15-03-03 to 1 (special terminal) to avoid communication problems.
- The GCD-4LCA/GCD-8LCA blade and the GPZ-4LCA/ GPZ-8LCE daughter board are categorized as TNV2. With this designation, off-premise wiring is not acceptable. Any cabling to these blades or daughter boards must be in the building – no outside cabling is permitted.
- Branch connection is not acceptable.

Install the GCD-4LCA/GCD-8LCA blade in any available universal slot.

► If the GPZ-4LCA/GPZ-8LCE is used, install it prior to inserting the GCD-8LCA into the chassis.

# 4.3.3 LED Indications

LED indications for the GCD-4LCA/GCD-8LCA are listed in Table 4-20 GCD-4LCA/GCD-8LCA LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-19 GCD-4LCA/GCD-8LCA Blade on page 4-51 for the location of the LEDs on the blades.

LED Indication				
Live LED (Green)	Busy LED (Red)	Operation Status		Remarks
On	On	S	ystem Initializing	-
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		-
Flash	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	-
(100ms)	Off	Operation	All channels are idle.	-
0."	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
OII	Off	All channels are idle.		-
	Flash 80ms (On/ Off) x 3/400ms Off	Downloading firmware.		-

Table 4-20 GCD-4LCA/GCD-8LCA LED Indications

# 4.3.4 Connectors

Table 4-21 GCD-4LCA/GCD-8LCA RJ-61 Cable Connector Pin-Outs on page 4-54 show the pin-outs for the RJ-61 connector. Figure 4-19 GCD-4LCA/GCD-8LCA Blade on page 4-51 shows the location of the connectors and the pin number locations on the GCD-4LCA/GCD-8LCA blades.



RJ-61 Cable Connector GCD-4LCA – CN2 (ports 1~4) GCD-8LCA – CN2 (ports 1~4) CN3 (ports 5~8)				
	Pin No.	Connection		
	1	T4 (Tip for port 4)		
	2	T3 (Tip for port 3)		
	3	T2 (Tip for port 2)		
12245678	4	R1 (Ring for port 1)		
	5	T1 (Tip for port 1)		
	6	R2 (Ring for port 2		
	7	R3 (Ring for port 3)		
	8	R4 (Ring for port 4)		

Table 4-21 GCD-4LCA/GCD-8LCA RJ-61 Cable Connector Pin-Outs



# 4.4 GPZ-4LCA/GPZ-8LCE (4-Port/8-Port SLI Daughter Board)



Figure 4-20 Installing the GPZ-4LCA/GPZ-8LCE Daughter Board

#### 4.4.1 Description

The GPZ-4LCA and GPZ-8LCE daughter boards are mounted on the GCD-4LCA/GCD-8LCA. These boards provide:

- 4-Port Single Line and 8-Port Single Line analog extension ports (used for on-premise analog telephones, fax machines, and analog modems).
  - The GCD-4LCA/GCD-8LCA is not rated for OPX use. A GCD-4DIOPA blade should be used instead (it supports the analog DID and single line telephone interface functions, such as Off-Premise Extensions).
- Connector for GCD-4LCA and GCD-8LCA Blades
- Ring Generator
- Caller ID Sending Ability
- Message Wait Lamp Ability (Controlling Voltage:-110Vdc) for all ports
- Constant current type battery feeding (25mA / -28Vdc)
- **—** Feeding Polarity Reverse Ability



Each CN2 (GPZ-4LCA/GPZ-8LCE) or CN3 (GPZ-8LCE only) connector provides connection to four analog station ports and is not polarity sensitive. The GPZ-8LCE consumes eight ports ranging between ports 001~256 (remember that the GCD-8LCA consumes eight ports).

Refer to the following tables for maximum upgrade capacity of the GPZ-4LCA/GPZ-8LCE SLI daughter board:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- ➡ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15
- 4.4.2 Installation



- When connecting a fax machine or analog modem, make sure to set Program 15-03-03 to 1 (special terminal) to avoid communication problems.
- The GCD-4LCA/GCD-8LCA blade and the GPZ-4LCA/ GPZ-8LCE daughter board are categorized as TNV2. With this designation, off-premise wiring is not acceptable. Any cabling to these blades or daughter boards must be in the building – no outside cabling is permitted.
- Branch connection is not acceptable.

This daughter board can be installed on the GCD-4LCA or GCD-8LCA blade.

To install the GPZ-4LCA/GPZ-8LCE:

- Four plastic spacers are Included with the GPZ-4LCA/GPZ-8LCE. Install the plastic spacers on either the GCD-4LCA or GCD-8LCA. Make sure to attach the spacers so that they extend out on the side of the daughter board which has the CN1 connector. Refer to Figure 4-20 Installing the GPZ-4LCA/GPZ-8LCE Daughter Board on page 4-55.
- Position the GPZ-4LCA/GPZ-8LCE CN1 connector over the CN4 connector on the GCD-4LCA/GCD-8LCA blade. Press the blade and board together, ensuring the plastic spacers lock in place. Refer to Figure 4-20 Installing the GPZ-4LCA/GPZ-8LCE Daughter Board on page 4-55.
- 3. Install the GCD-4LCA/GCD-8LCA blade in the slot in the chassis.

#### 4.4.3 Connectors

Table 4-22 GPZ-4LCA/GPZ-8LCE/ RJ-61 Cable Connector Pin-Outs on page 4-57 show the pin-outs for the RJ-61 connector. Figure 4-20 Installing the GPZ-4LCA/GPZ-8LCE Daughter Board on page 4-55 shows the location of the connectors on the GPZ-4LCA/GPZ-8LCE daughter boards.



Table 4-22	GPZ-4LCA/GPZ-8LCE/ RJ-61 Cable Connector Pin-O	uts

RJ-61 Cable Connector – GPZ-4LCA – CN2 (ports 9~12) GPZ-8LCE – CN2 (ports 9~12) CN3 (ports 13~16)				
	Pin No.	Connection		
	1	T4 (Tip for port 4)		
	2	T3 (Tip for port 3)		
	3	T2 (Tip for port 2)		
12345678	4	R1 (Ring for port 1)		
	5	T1 (Tip for port 1)		
	6	R2 (Ring for port 2)		
	7	R3 (Ring for port 3)		
	8	R4 (Ring for port 4)		



# 4.5 GCD-4LCF/GCD-8LCF (4-Port/8-Port Single Line Interface)

Figure 4-21 GCD-4LCF/GCD-8LCF Blade



#### 4.5.1 Description

The GCD-4LCF/GCD-8LCF blade provides four analog (SLIU) extension ports or eight analog (SLIU) extension ports (used for on-premise analog telephones, fax machines, and analog modems).



The GCD-4LCF and GCD-8LCF are not rated for OPX use. A GCD-4DIOPA blade should be used instead (it supports the analog DID and single line telephone interface functions, such as Off-Premise Extensions).

- One extension status LED
- One blade status LEDs
- Constant current type battery feeding (25mA / -28Vdc)
- Feeding Polarity Reverse Ability
- Connector for GPZ-4LCF/GPZ-8LCF Daughter Board
- Ring Generator (16Hz, 75Vrms, -10Vdc)
- Caller ID Sending Ability
- Message Wait Lamp Ability (-110Vdc)

The GCD-8LCF consumes eight ports ranging between ports 1~1536. The J3 and J4 connectors each provide connection to four analog station ports. The Jx connectors are not polarity sensitive.

Refer to the following tables for maximum upgrade capacities of the GCD-4LCF/GCD-8LCF SLIU blades:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

#### 4.5.2 Installation



- When connecting a fax machine or analog modem, make sure to set Program 15-03-03 to 1 (special terminal) to avoid communication problems.
- The GCD-4LCF/GCD-8LCF blade and the GPZ-4LCF/ GPZ-8LCF daughter board are categorized as TNV2. With this designation, off-premise wiring is not acceptable. Any cabling to these blades or daughter boards must be in the building – no outside cabling is permitted.
- Branch connection is not acceptable.

Install the GCD-4LCF/GCD-8LCF blade in any available universal slot.

► If the GPZ-4LCF/GPZ-8LCF is used, install it prior to inserting the GCD-8LCF into the chassis.



# 4.5.3 LED Indications

LED indications for the GCD-4LCF/GCD-8LCF are listed in Table 4-23 GCD-4LCF/GCD-8LCF LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-21 GCD-4LCF/GCD-8LCF Blade on page 4-58 for the location of the LEDs on the blades.

LED Indication				
Live LED (Green)	Busy LED (Red)	Operation Status		Remarks
On	On	Sy	stem Initializing	_
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble four	nd during self-diagnostics.	-
Flash	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	_
(100ms)	Off	Operation	All channels are idle.	-
Off	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
	Off		All channels are idle.	-
	Flash 100ms (On/Off)	Downloading firmware.		-

Table 4-23 GCD-4LCF/GCD-8LCF LED Indications

#### 4.5.4 Connectors

Table 4-24 GCD-4LCF/GCD-8LCF RJ-61 Cable Connector Pin-Outs on page 4-61 show the pin-outs for the RJ-61 connector. Figure 4-21 GCD-4LCF/GCD-8LCF Blade on page 4-58 shows the location of the connectors and the pin number locations on the GCD-4LCF/GCD-8LCF blades.



RJ-61 Cable Connector GCD-4LCF – J3 (ports 1~4) GCD-8LCF – J3 (ports 1~4), J4 (ports 5~8)				
	Pin No.	Connection		
	1	T4 (Tip for port 4)		
	2	T3 (Tip for port 3)		
	3	T2 (Tip for port 2)		
12345678	4	R1 (Ring for port 1)		
	5	T1 (Tip for port 1)		
	6	R2 (Ring for port 2		
	7	R3 (Ring for port 3)		
	8	R4 (Ring for port 4)		



# 4.6 GPZ-4LCF/GPZ-8LCF (4-Port/8-Port SLI Daughter Board)



#### Figure 4-22 Installing the GPZ-4LCF/GPZ-8LCF Daughter Board

#### 4.6.1 Description

The GPZ-4LCF and GPZ-8LCF daughter boards are mounted on the GCD-4LCF/GCD-8LCF. These boards provide:

- 4-Port Single Line and 8-Port Single Line analog extension ports (used for on-premise analog telephones, fax machines, and analog modems).
  - ➤ The GCD-4LCF/GCD-8LCF is not rated for OPX use. A GCD-4DIOPA blade should be used instead (it supports the analog DID and single line telephone interface functions, such as Off-Premise Extensions).
- Connector for GCD-4LCF and GCD-4LCF Blades
- Ring Generator
- Caller ID Sending Ability
- Message Wait Lamp Ability
- Constant current type battery feeding (25mA / -28Vdc)
- Feeding Polarity Reverse Ability



Each J3 (GPZ-4LCF/GPZ-8LCF) or J4 (GPZ-8LCF only) connector provides connection to four analog station ports and is not polarity sensitive. The GPZ-8LCF consumes eight ports ranging between ports 1~1536 (remember that the GCD-8LCF consumes eight ports).

Refer to the following tables for maximum upgrade capacity of the GPZ-4LCF/GPZ-8LCF SLI daughter board:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- ➡ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

#### 4.6.2 Installation



- When connecting a fax machine or analog modem, make sure to set Program 15-03-03 to 1 (special terminal) to avoid communication problems.
- The GCD-4LCF/GCD-8LCF blade and the GPZ-4LCF/ GPZ-8LCF daughter board are categorized as TNV2. With this designation, off-premise wiring is not acceptable. Any cabling to these blades or daughter boards must be in the building – no outside cabling is permitted.
- Branch connection is not acceptable.

This daughter board can be installed on the GCD-4LCF or GCD-8LCF blade.

To install the GPZ-4LCF/GPZ-8LCF:

- Four plastic spacers are Included with the GPZ-4LCF/GPZ-8LCF. Install the plastic spacers on either the GCD-4LCF or GCD-8LCF. Make sure to attach the spacers so that they extend out on the side of the daughter board which has the CN1 connector. Refer to Figure 4-22 Installing the GPZ-4LCF/GPZ-8LCF Daughter Board on page 4-62.
- Position the GPZ-4LCF/GPZ-8LCF J1 connector over the J2 connector on the GCD-4LCF/GCD-8LCF blade. Press the blade and board together, ensuring the plastic spacers lock in place. Refer to Figure 4-22 Installing the GPZ-4LCF/GPZ-8LCF Daughter Board on page 4-62.
- 3. Install the GCD-4LCF/GCD-8LCF blade in the slot in the chassis.

#### 4.6.3 Connectors

Table 4-25 GPZ-4LCF/GPZ-8LCF/ RJ-61 Cable Connector Pin-Outs on page 4-64 show the pin-outs for the RJ-61 connector. Figure 4-22 Installing the GPZ-4LCF/GPZ-8LCF Daughter Board on page 4-62 shows the location of the connectors on the GPZ-4LCF/GPZ-8LCF daughter boards.



RJ-61 Cable Connector – GPZ-4LCF – J3 (ports 9~12) GPZ-8LCF – J3 (ports 9~12), J4 (ports 13~16)				
	Pin No.	Connection		
	1	T4 (Tip for port 4)		
	2	T3 (Tip for port 3)		
	3	T2 (Tip for port 2)		
12345678	4	R1 (Ring for port 1)		
	5	T1 (Tip for port 1)		
	6	R2 (Ring for port 2)		
	7	R3 (Ring for port 3)		
	8	R4 (Ring for port 4)		

Table 4-25 GPZ-4LCF/GPZ-8LCF/ RJ-61 Cable Connector Pin-Outs



# 4.7 GCD-LTA (*D<sup>term</sup>*/SLT Combination)

Figure 4-23 GCD-LTA Blade



#### 4.7.1 Description

The Digital Station/SLT Combination blade provides eight Digital Station ports and two analog ports. This blade allows either a GPZ-4COTF or GPZ-4COTF-A analog trunk daughter board or GPZ-2BRIA daughter board to be installed.



The blade provides:

- **Eight Digital Station ports**
- Two analog extension ports support Caller ID Circuit, Message Waiting Lamp Control (Controlling Voltage:-110Vdc) for all ports
- Two status LEDs

Refer to the following tables for maximum upgrade capacities of the GCD-LTA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

#### 4.7.2 Installation

Install the GCD-LTA blade in any available universal slot.



- When connecting a fax machine or analog modem, make sure to set Program 15-03-03 to 1 (special terminal) to avoid communication problems.
- The GCD-LTA is categorized as TNV2. With this designation, off-premise wiring is not acceptable.
- Branch connection is not acceptable.



# 4.7.3 LED Indications

LED indications for the GCD-LTA are indicated in Table 4-26 GCD-LTA LED Indications. Each LED is listed with its associated function and LED and Operational status. Refer to Figure 4-23 GCD-LTA Blade on page 4-65 for the location of the LEDs on the blade.

Table 4-26 GCD-LTA LED Indications				
LED Indication				
Live LED (Green)	Busy LED (Red)	Operation Status		Remarks
On	On	System Initializing		-
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		-
Flash	On	A Channel is busy (use another from CH1 ~ CHx).		-
(100ms)	) Off Operation	Operation	All channels are idle.	-
On Unit Busy		Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
Οπ	Off		All channels are idle.	-
	Flash 80ms (On/ Off) x 3/400ms Off	Downloading firmware.		-



#### 4.7.4 Connectors

Table 4-27 GCD-LTA RJ11 Cable Connector Pin-Outs shows the pin-outs for the RJ-61 connector. Refer to Figure 4-23 GCD-LTA Blade on page 4-65 for an illustration showing the location of the connectors on the GCD-LTA blade.

Table 4-27 GCD-LTA RJ11 Cable Connector Pin-Outs				
RJ11 Cable Connector DLCA: CN101 (ports 1~4) DLCA: CN102 (ports 5~8)				
	Pin No.	Connection		
	1	T4/T8 (Tip for port 4 or 8)		
	2	T3/T7 (Tip for port 3 or 7)		
	3	T2/T6 (Tip for port 2 or 6)		
12345678	4	R1/R5 (Ring for port 1 or 5)		
	5	T1/T5 (Tip for port 1 or 5)		
	6	R2/R6 (Ring for port 2 or 6)		
	7	R3/R7 (Ring for port 3 or 7)		
	8 R4/R8 (Ring for port 4 or 8			
RJ11 Cable Connector LCA: CN201 (ports 1~2)				
	LCA: CN201 (p	orts 1~2)		
	LCA: CN201 (po Pin No.	orts 1~2) Connection		
	LCA: CN201 (po Pin No.	Connection –		
	LCA: CN201 (po Pin No. 1 2	Connection – –		
	LCA: CN201 (po Pin No. 1 2 3	Connection - T2 (Tip for port 2)		
12345678	LCA: CN201 (po Pin No. 1 2 3 4	Connection - T2 (Tip for port 2) R1 (Ring for port 1)		
12345678	Pin No.   1   2   3   4   5	Connection - T2 (Tip for port 2) R1 (Ring for port 1) T1 (Tip for port 1)		
12345678	LCA: CN201 (po Pin No. 1 2 3 4 5 6	Connection - T2 (Tip for port 2) R1 (Ring for port 1) T1 (Tip for port 1) R2 (Ring for port 2)		
12345678	LCA: CN201 (po Pin No. 1 2 3 4 5 6 7	Connection - T2 (Tip for port 2) R1 (Ring for port 1) T1 (Tip for port 1) R2 (Ring for port 2) -		



# SECTION 5 TRUNK BLADES

5.1 GCD-4COTB or GCD-4COTB-A (4 Loop and Ground Start Interface)







#### 5.1.1 Description

The GCD-4COTB or GCD-4COTB-A blade provides:

- GCD-4COTB or GCD-4COTB-A: Four analog loop start/ground start trunk circuits
- One trunk status LED
- One Blade status LED
- **Four Caller ID Circuits**
- Two Power Failure Transfer Circuits
- Connection for GPZ-4COTF or GPZ-4COTF-A Daughter Board

The GCD-4COTB or GCD-4COTB-A blade consumes four trunk ports ranging between ports 001~400. The CN2 connector provides connection to four analog trunk ports, *which are polarity sensitive (tip-to-tip, ring-to-ring)*. The power failure circuits (CN3), however, are not polarity sensitive.



 When using the GCD-4COTB or GCD-4COTB-A blade for ground start trunks, the PBX ground must be connected as described in Chapter 3, section 3.3.3 Install Grounding on 19" Chassis on page 3-19 for the trunks to function correctly.

- The trunk ports are polarity sensitive. Be careful when wiring the trunks.
- When connecting the RJ-61 cables to the GCD-4COTB or GCD-4COTB-A blades, note the position of the Power Failure connector (CN3). Do not confuse this connector as the trunk connector (CN2).
- Switching from Loop Start to Ground Start is set in system programming.
- Do not wire an RJ-11 directly to the GCD-4COTB or GCD-4COTB-A interface. Use the appropriate RJ-61 wiring when connecting to the GCD-4COTB or GCD-4COTB-A.



When using the GCD-4COTB-A with Ground Start lines it is required to set the following: PRG 81-01-03 > 38 PRG 81-01-18 > 50

Refer to the following tables for maximum upgrade capacities of the GCD-4COTB or GCD-4COTB-A blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15



#### 5.1.2 Installation

Install the GCD-4COTB or GCD-4COTB-A blade into an available slot in the chassis. (Refer to Figure 4-24 GCD-4COTB or GCD-4COTB-A Blade on page 4-69 for a layout of the blade.)

► If the GPZ-4COTF or GPZ-4COTF-A is to be used, install this prior to inserting the GCD-4COTB or GCD-4COTB-A blade into the chassis.

#### 5.1.3 LED Indications

LED indications for the GCD-4COTB or GCD-4COTB-A are listed in Table 4-28 GCD-4COTB or GCD-4COTB-A LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-24 GCD-4COTB or GCD-4COTB-A Blade on page 4-69 for the location of the LEDs on the blades.

LED Indication				
Live LED (Green)	Busy LED (Red)	Operation Status		Remarks
On	On	System Initializing		-
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		-
Flash	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	-
(100ms)	Off	Operation	All channels are idle.	-
0"	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
Οπ	Off		All channels are idle.	-
	Flash 80ms (On/ Off) x 3/400ms Off	Downloading firmware.		-

#### Table 4-28 GCD-4COTB or GCD-4COTB-A LED Indications

#### 5.1.4 Connectors

Table 4-29 GCD-4COTB or GCD-4COTB-A RJ-61 Cable Connector Pin-Outs on page 4-72 shows the pin-outs for the RJ-61 connector. Refer to Figure 4-24 GCD-4COTB or GCD-4COTB-A Blade on page 4-69 for an illustration showing the location of the connectors on the GCD-4COTB or GCD-4COTB-A blades.



RJ-61 Cable Connector – CN2, Trunks The CN2 connector is <i>polarity sensitive</i> (tip-to-tip, ring-to-ring)			
	Pin No.	Connection	
	1	Circuit 4 – Tip	
	2	Circuit 3 – Tip	
	3	Circuit 2 – Tip	
12345678	4	Circuit 1 – Ring	
	5	Circuit 1 – Tip	
	6	Circuit 2 – Ring	
	7	Circuit 3 – Ring	
	8	Circuit 4 – Ring	
RJ-61 Cable Connector	– CN3, SLT Interfa	ce for Power Failure	
	Pin No.	Connection	
	1	_	
	2	_	
	3	Circuit 2 – Tip	
12345678	4	Circuit 1 – Ring	
	5	Circuit 1 – Tip	
	6	Circuit 2 – Ring	
	7	-	
	8	_	

Table 4-29 GCD-4COTB or GCD-4COTB-A RJ-61 Cable Connector Pin-Outs



# 5.2 GPZ-4COTF or GPZ-4COTF-A (4 Loop and Ground Start Interface Daughter Board)

Figure 4-25 Installing the GPZ-4COTF or GPZ-4COTF-A Daughter Board



#### 5.2.1 Description

The GPZ-4COTF or GPZ-4COTF-A daughter board provides:

- Four analog loop start/ground start trunk circuits
- Four Caller ID Circuits
- Connector for GCD-4COTB or GCD-4COTB-A Blade



When using the GCD-4COTB-A with Ground Start lines it is required to set the following: PRG 81-01-03 > 38 PRG 81-01-18 > 50

Connector for GCD-LTA

The GPZ-4COTF or GPZ-4COTF-A consumes four trunk ports ranging between ports 001~400. The CN2 connector provides connection to four analog trunk ports, *which are polarity sensitive (tip-to-tip, ring-to-ring).* The power failure circuits (CN3), however, are not polarity sensitive.



A combination of the GCD-4COTB/GCD-LTA and GPZ-4COTF-A is not supported. The GPZ-4COTF-A blade does not function.



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When using the GPZ-4COTF or GPZ-4COTF-A daughter board for ground start trunks, the PBX ground must be connected as described in Chapter 3, section 3.3.3 Install Grounding on 19" Chassis on page 3-19 for the trunks to function correctly.

- The trunk ports are polarity sensitive. Be careful when wiring the trunks.
- When connecting the RJ-61 cable to the GPZ-4COTF or GPZ-4COTF-A daughter board, note the position of the Power Failure connector (CN3). Do not confuse this connector as the trunk connector (CN2).
- Switching from Loop Start to Ground Start is set in system programming.
- Do not wire an RJ-11 directly to the GPZ-4COTF or GPZ-4COTF-A interface. Use the appropriate RJ-61 wiring when connecting to the GCD-4COTB or GCD-4COTB-A.

Refer to the following tables for maximum upgrade capacities of the GPZ-4COTF or GPZ-4COTF-A COI daughter board:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

# 5.2.2 Installation

To install the GPZ-4COTF or GPZ-4COTF-A:

- 1. Four spacers are included with the GPZ-4COTF or GPZ-4COTF-A. Install the plastic spacers on the GCD-4COTB/GCD-4COTB-A or GCD-LTA blade. Make sure to attach the spacers so that they extend out on the side of the daughter board which has the CN1 connector.
- Position the GPZ-4COTF or GPZ-4COTF-A CN1 connector over the CN4 connector on the GCD-4COTB/GCD-4COTB-A or GCD-LTA. Press the blade and board together, ensuring the plastic spacers lock in place.
- Install the GPZ-4COTF or GPZ-4COTF-A blade (refer to Figure 4-25 Installing the GPZ-4COTF or GPZ-4COTF-A Daughter Board on page 4-73).

#### 5.2.3 Connectors

Table 4-30 GPZ-4COTF or GPZ-4COTF-A RJ-61 Cable Connector Pin-Outs on page 4-75 shows the pin-outs for the RJ-61 connector. Figure 4-25 Installing the GPZ-4COTF or GPZ-4COTF-A Daughter Board on page 4-73 shows the location of the connectors on the GPZ-4COTF or GPZ-4COTF-A daughter board.



Table 4-30	GPZ-4COTE o	or GPZ-4COTF-A RJ-61	Cable Connector Pin-Outs
10010 1 00			

RJ-61 Cable Connector CN2, Trunks – Connecting to GCD-4COTB/GCD-4COTB-A Blade The CN2 connector is <i>polarity sensitive</i> (tip-to-tip, ring-to-ring)					
	Pin No.	Connection			
	1	Circuit 8 – Tip			
	2	Circuit 7 – Tip			
	3	Circuit 6 – Tip			
12345678	4	Circuit 5 – Ring			
	5	Circuit 5 – Tip			
	6	Circuit 6 – Ring			
	7	Circuit 7 – Ring			
	8	Circuit 8 – Ring			
	RJ-61 Cable Connector CN2, Trunks – Connecting to GCD-LTA Blade The CN2 connector is <i>polarity sensitive</i> (tip-to-tip, ring-to-ring)				
R. CN2, Trunks The CN2 connector is	I-61 Cable Connecto – Connecting to GCI <i>polarity sensitive</i> (ti	r D-LTA Blade p-to-tip, ring-to-ring)			
R. CN2, Trunks The CN2 connector is	I-61 Cable Connecto – Connecting to GCI <i>polarity sensitive</i> (ti Pin No.	r D-LTA Blade p-to-tip, ring-to-ring) Connection			
R. CN2, Trunks The CN2 connector is	I-61 Cable Connecto – Connecting to GCI <i>polarity sensitive</i> (ti Pin No. 1	r D-LTA Blade p-to-tip, ring-to-ring) Connection Circuit 4 – Tip			
R. CN2, Trunks The CN2 connector is	P-61 Cable Connecto – Connecting to GCI polarity sensitive (ti Pin No. 1 2	r D-LTA Blade p-to-tip, ring-to-ring) Connection Circuit 4 – Tip Circuit 3 – Tip			
R. CN2, Trunks The CN2 connector is	P-61 Cable Connecto – Connecting to GCI polarity sensitive (ti Pin No. 1 2 3	r D-LTA Blade p-to-tip, ring-to-ring) Connection Circuit 4 – Tip Circuit 3 – Tip Circuit 2 – Tip			
R. CN2, Trunks The CN2 connector is	P-61 Cable Connecto – Connecting to GCI polarity sensitive (ti Pin No. 1 2 3 4	r D-LTA Blade p-to-tip, ring-to-ring) Connection Circuit 4 – Tip Circuit 3 – Tip Circuit 2 – Tip Circuit 1 – Ring			
R. CN2, Trunks The CN2 connector is	P-61 Cable Connecto – Connecting to GCI polarity sensitive (ti Pin No. 1 2 3 4 5	r D-LTA Blade p-to-tip, ring-to-ring) Connection Circuit 4 – Tip Circuit 3 – Tip Circuit 2 – Tip Circuit 1 – Ring Circuit 1 – Tip			
R. CN2, Trunks The CN2 connector is	P-61 Cable Connecto – Connecting to GCI polarity sensitive (ti Pin No. 1 2 3 4 5 6	r D-LTA Blade p-to-tip, ring-to-ring) Connection Circuit 4 – Tip Circuit 3 – Tip Circuit 2 – Tip Circuit 1 – Ring Circuit 1 – Tip Circuit 2 – Ring			
R. CN2, Trunks The CN2 connector is	P-61 Cable Connecto - Connecting to GCI polarity sensitive (ti Pin No. 1 2 3 4 5 6 7	r D-LTA Blade p-to-tip, ring-to-ring) Connection Circuit 4 – Tip Circuit 3 – Tip Circuit 2 – Tip Circuit 1 – Ring Circuit 1 – Tip Circuit 2 – Ring Circuit 3 – Ring			



# 5.3 GCD-2BRIA (2 Basic Rate Interface)

Figure 4-26 GCD-2BRIA Blade



#### 5.3.1 Description

This unit is an interface unit that accommodates an ISDN (Basic Rate) circuit.



The BRI blade provides:

- Two (GCD-2BRIA) 2-Channel Circuits (2B + D) configured as T-Bus
- 64Kb/s Clear B-Channel and 16Kb/s D-Channel
- Two Status LEDs
- Connector for GPZ-2BRIA

These trunk circuits can be connected to either ISDN trunks or ISDN telephones, depending on the switch setting in system programming. All ISDN telephone circuits (#1-2 and #3-4 with the BRI daughter board) are supplied DC power from the system.

The BRI Interface blade uses a single universal slot. Each blade connects to the network via an NTI Network Termination.

To block new calls on the blade, system programming must be used. This program prevents new calls from being established on the blade, but it does not terminate any existing call.

With the maximum number of blades installed, the following can be provided:

➡ The 2BRI provides 30 BRI circuits and 60 BRI channels. (Port Consumption: T-Bus=4 ports)

Refer to the following tables for maximum upgrade capacities of the GCD-2BRIA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- ➡ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

# 5.3.2 Installation

To install the GCD-2BRIA:

- 1. Plug the GCD-2BRIA blade into the system chassis.
- Before proceeding to Step 3, wait to verify that the STATUS LED starts to flash. (Refer to Figure 4-26 GCD-2BRIA Blade on page 4-76 for the location of the LEDs on the blade.)



- With normal operation, the status LED flashes fast. If trouble was found during the self diagnostics routine, the status LED flashes slow.
- Once connected, the PKG LED will not be indicated for the status of Layer 1 Link.



 Connect the cable from the NT1 Network Termination cable to the CN7 or CN8 connector on the GCD-2BRIA blade and/or GPZ-2BRIA daughter board. (Refer to Figure 4-26 GCD-2BRIA Blade on page 4-76 for the location of the connectors on the blade.)

#### 5.3.3 LED Indications

LED indications for the GCD-2BRIA are listed in Table 4-31 GCD-2BRIA LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-26 GCD-2BRIA Blade on page 4-76 for the location of the LEDs on the blade.

#### Table 4-31 GCD-2BRIA LED Indications

LED Indication				
Live LED (Green)	Busy LED (Red)	Operation Status		Remarks
On	On	System Initializing		-
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		-
Flash	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	-
(100ms)	Off	Operation	All channels are idle.	-
0."	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
Oπ	Off		All channels are idle.	-
	Flash 80ms (On/ Off) x 3/400ms Off	Downloading firmware.		_



#### 5.3.4 Connectors

Table 4-32 GCD-2BRIA RJ-61 Cable Connector Pin-Outs show the pin-outs for the RJ-61 cable connector for T-Bus connections. Figure 4-26 GCD-2BRIA Blade on page 4-76 shows the location of the connectors on the GCD-2BRIA blade.

RJ-61 Cable Connector – CN7, CN8 T-Bus Connection			
	Pin No.	Connection	
	1		
	2	_	
	3	TA	
12345678	4	RA	
	5	RB	
	6	ТВ	
	7		
	8		

Table 4-32 GCD-2BRIA RJ-61 Cable Connector Pin-Outs



# 5.4 GPZ-2BRIA (2 Basic Rate Interface Daughter Board)



#### 5.4.1 Description

This daughter board provides two BRI circuits and is installed on the GCD-2BRIA blade. This board provides:

- Two (GCD-2BRIA) 2-Channel Circuits (2B + D) configured as T-Bus
- **G4Kb/s Clear B-Channel and 16Kb/s D-Channel**
- Connection point for GCD-2BRIA
- Connection point for GCD-LTA

These trunk circuits can be connected to ISDN trunks or ISDN telephones, depending on the switch setting in system programming. All ISDN telephone circuits [#1-2 (BRI blade) and #3-4 (with the BRI daughter board)] are supplied DC power from the UNIVERGE SV9100 system.

System programming must be used to block new calls on the blade. This program prevents new calls from being established on the blade, but does not terminate any existing call.


Refer to the following tables for maximum upgrade capacities of the GPZ-2BRIA daughter board:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- ➡ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

## 5.4.2 Installation

To install the GPZ-2BRIA on the GCD-2BRIA:

- → Attach the GPZ-2BRIA daughter board to the GCD-2BRIA blade by lining up the CN5 connectors and pressing the boards together. (Refer to Figure 4-27 Installing the GPZ-2BRIA Daughter Board on page 4-80.)
- 1. Install the GCD-2BRIA blade into the system chassis.
- 2. Before proceeding to Step 3, wait to verify that the STATUS LED starts to flash.



• With normal operation, the status LED flashes fast. If trouble was found during the self diagnostics routine, the status LED flashes slow.

• Once connected, the PKG LED is not indicated for the status of Layer 1 Link.

Connect the cable from the NT1 Network Termination cable to the CN7 or CN8 connector on the GCD-2BRIA and/or GPZ-2BRIA daughter board.

## 5.4.3 Connectors

Table 4-33 GPZ-2BRIA RJ-61 Cable Connector Pin-Outs on page 4-82 shows the pin-outs for the RJ-61 cable connector for T-Bus connections. Figure 4-27 Installing the GPZ-2BRIA Daughter Board on page 4-80 shows the location of the connectors on the GPZ-2BRIA daughter board.



RJ-61 Cable Connector – CN7, CN8 T-Bus Connection				
	Pin No.	Connection		
	1			
	2			
	3	TA		
12345678	4	RA		
	5	RB		
	6	ТВ		
	7	—		
	8	—		

Table 4-33 GPZ-2BRIA RJ-61 Cable Connector Pin-Outs



# 5.5 GCD-4DIOPA (DID/OPX Interface)

Figure 4-28 GCD-4DIOPA Blade



## 5.5.1 Description

The GCD-4DIOPA supports the analog DID and single line telephone interface functions (such as Off-Premise Extension). The function type is assigned in programming for each port. The circuit types, however, should be grouped together. For example, with three DID circuits and one OPX circuit, they should be grouped as DID, DID, DID and OPX and not DID, DID, OPX and DID.



The GCD-4DIOPA provides:

- Four DID trunk circuits or four OPX circuits
- Two Blade status LEDs
- □ -48VDC

Refer to the following tables for maximum upgrade capacities of the GCD-4DIOPA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

## 5.5.2 Installation

The GCD-4DIOPA can be installed in any universal slot.

#### 5.5.3 LED Indications

LED indications for the GCD-4DIOPA are listed in Table 4-34 GCD-4DIOPA LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-28 GCD-4DIOPA Blade on page 4-83 for the location of the LEDs on the blade.

LED Indication				
Live LED (Green)	Busy LED (Red)	Operation Status		Remarks
On	On	Sy	stem Initializing	-
Flash (1s)	On	The assignm	nent of the unit is refused.	When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble foun	d during self-diagnostics.	-
Flash (100ms) Of	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	-
	Off	Operation	All channels are idle.	-

Table 4-34 GCD-4DIOPA LED Indications



#### Table 4-34 GCD-4DIOPA LED Indications (Continued)

LED Indication				
Live LED (Green)	Busy LED (Red)	Op	peration Status	Remarks
0"	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
Οπ	Off		All channels are idle.	-
	Flash 80ms (On/ Off) x 3/400ms Off	Downloading firmware.		-

#### 5.5.4 Connectors

The CN2 connector provides connection to four analog DID trunk ports, *which are polarity sensitive (tip-to-tip, ring-to-ring)*. The OPX circuits, however, are not polarity sensitive. The GCD-4DIOPA requires one universal slot. (Refer to Figure 4-28 GCD-4DIOPA Blade on page 4-83.) If Program 10-03-01 has OPX defined, note that the blade consumes four (GCD-4DIOPA) trunks and extension ports when installed. If OPX is not defined, then only trunks ports are consumed.

Table 4-35 GCD-4DIOPA RJ-61 Cable Connector Pin-Outs shows the pin-outs for the RJ-61 connector. Figure 4-28 GCD-4DIOPA Blade on page 4-83 shows the location of the connectors on the GCD-4DIOPA blade.

RJ-61 Cable Connector – CN2				
	Line No.	Pin No.	Connection	
	1	5	Tip	
		4	Ring	
12345678	2	3	Tip	
		6	Ring	
	3	2	Tip	
		7	Ring	
	4	1	Tip	
		8	Ring	

Table 4-35 GCD-4DIOPA RJ-61 Cable Connector Pin-Outs



# 5.6 GCD-PRTA (T1/E1/ISDN PRI Interface)

Figure 4-29 GCD-PRTA Blade



## 5.6.1 Description

The GCD-PRTA T1/E1/ISDN PRI blade provides an interface for T1/E1 and ISDN Primary Rate Interface (PRI) applications. This blade has a single 24-channel 64Kb per second digital signal circuit that can be configured for either T1 trunks or PRI. Each blade connects to the network via an NTI Network Termination. Or, this blade has a single 30-channel 64kb per second digital signal circuit than can be configured for either E1 trunks or ETSI ISDN PRI.



If set for T1, the PRTA blade provides 24 trunks in a single universal slot. These trunks can be one of the following:

- Loop Start
- Ground Start
- 🗇 DID
- E&M Trunks
- ANI/DNIS E&M Trunks

T1 provides advanced digital trunking and conserves universal slots. For example, a system with 12 loop start trunks, two tie lines and six DID trunks uses up to five universal slots. With T1, all these trunks are available in a single universal slot. This frees up four additional universal slots for other uses.

If set for E1, this blade provides 30 trunks in a single universal slot.

If set for National ISDN PRI (for North America area), each PRTA blade provides 24 PRI (23 B & 1 D) channels running at 1.544Mbps with 64Kb/s clear channel.

If set for ETSI ISDN PRI (for ASIA, LASC, Oceania, and EU area), each PRTA blade provides 30B & 2D channels running at 2.048Mbps with 64Kbp/s clear channel.

This blade supports the following PRI services:

- Basic PRI Call Control (BCC)
- Display of incoming caller's name and number (when allowed by the telco)
- Speech and 3.1 KHz audio

When installed, GCD-PRTA uses the first block of 24 consecutive trunk ports. For example, if a COIU blade is installed for trunks 1~8, the GCD-PRTA automatically uses trunks 9~32. If the COIU blades are installed for trunks 1~8 and 17~24, GCD-PRTA uses trunks 25~48. The GCD-PRTA cannot use trunks 9~16 (even if available) since they are not part of a consecutive block of 24 trunks. Each GCD-PRTA requires 24 ports in the system, even if not all the ports are used, otherwise the blade does not function.

Refer to the following tables for maximum upgrade capacities of the GCD-PRTA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15



## 5.6.2 Installation

To install the GCD-PRTA:

- 1. Plug the GCD-PRTA into any universal slot in the chassis.
- 2. Use Program 10-51-01 (PRI/T1/E1) to set the GCD-PRTA blade to either PRI, T1 or E1.



With normal operation, LED 1 flashes green.

 Connect the cable from the NT1 Network Termination cable to the CN2 connector on the GCD-PRTA. Figure 4-30 PRI Layout for NT-1 Network is a cabling diagram.)



 The CSU connects to the network through an 8-pin RJ-45/RJ48C connector. Use either the RJ48C plug-to-RJ48C plug, which ships with the CSU or an RJ-45/48C plug-to RJ-45/48C plug straight through or CAT5 cable to connect the T1/E1 to the CSU. (Refer to Table 4-39 GCD-PRTA RJ48C Connector Pin-outs on page 4-91.)

- In addition to T1/E1/PRI interface ETUs, PRI also requires a CSU/DSU unit and interconnecting cables to interface with the telco.
- With PRI Networking, a crossover cable must be used on the master system T1/E1/PRI blade or CSU to the telco demarcation. If the systems are networked side by side and not through telco, a straight-through cable is used.

Figure 4-30 PRI Layout for NT-1 Network





## 5.6.3 LED Indications

LED indications for the GCD-PRTA are listed in Table 4-36 GCD-PRTA LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-29 GCD-PRTA Blade on page 4-86 for the location of the LEDs on the blade.

LED Indication				
Live LED (Green)	Busy LED (Red)	C	peration Status	Remarks
On	On	S	ystem Initializing	-
Flash (1s)	On	The assign	ment of the unit is refused.	When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		-
Flash	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	-
(100ms)	Off	Operation	All channels are idle.	-
0"	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
Οπ	Off		All channels are idle.	-
	Flash 80ms (On/ Off) x 3/400ms Off	Downloading firmware.		-

Table 4-36 GCD-PRTA LED Indications



Refer to Figure 4-31 GCD-PRTA LED Indication Pattern of Layer 1 on T1 Unit for LED pattern information. LED indications for the T1 are listed in Table 4-37 T1 LED Indications.

Figure 4-31 GCD-PRTA LED Indication Pattern of Layer 1 on T1 Unit



<sup>1</sup>cycle 3.8 sec (120ms X 32 = 3840ms)

#### Table 4-37 T1 LED Indications

Alarm	Details of the Alarm	LED Indication Pattern
LOS	Loss of Signal (Red Alarm) No Signal (Analog Interface)	Following an alarm blink (red, green, red, green) a Red LED lights.
AIS	Alarm Indication Signal (Blue Alarm)	Following an alarm blink (red, green, red, green) a Red LED slowly flashes On and Off twice.
OOF	Out Of Frame (Red Alarm)	Following an alarm blink (red, green, red, green) a Red LED and Green LED flash On and Off three times simultaneously.
RAI	Remote Alarm Indication (Yellow Alarm)	Following an alarm blink (red, green, red, green) a Green LED flashes On and Off twice.
No Alarm	The system does the LED control.	·

• The order of priority is set up to alarm in the order  $LOS \rightarrow AIS \rightarrow OOF \rightarrow RAI$ .



## 5.6.4 Connectors

Table 4-38 GCD-PRTA RJ-45 Cable Connector Pin-Outs shows the pin-outs for the T-Bus RJ-45 connections. Figure 4-29 GCD-PRTA Blade on page 4-86 shows the location of the connectors on the PRT blade.

Table 4-38 GCD-PRTA RJ-45 Cable Connector Pin-Outs			
RJ-45 Cable Connector – CN2 T-Bus Connection			
	Pin No.	Connection	
	1	RA	
12345678	2	RB	
	3	—	
	4	TA	
	5	ТВ	
	6	_	
	7	—	
	8		

Table 4-39 GCD-PRTA RJ48C Connector Pin-outs shows the pin-outs for the 8-pin RJ48C connector for the network and terminal interfaces.

Network Interface Pin-out for the 8-Pin RJ48C Connector			Tern Pin-o RJ4	ninal Interface out for the 8-Pin 8C Connector
Pin No.	Connection	For connection to T1 network: Use	Pin No.	Connection
1	RxD (R1)	ABAM cable or	1	RxD (R)
2	RxD (T1)	equivalent	2	RxD (T)
4	TxD (R)	shielded twisted	4	TxD (R1)
5	TxD (T)	pair, rated at 100	5	TxD (T1)
3, 6	No Connection	onms at 1 MHz).	3, 6	No Connection
7, 8	No Connection		7, 8	No Connection

Table 4-39 GCD-PRTA RJ48C Connector Pin-outs



# 5.7 GCD-40DTA (4-Port Tie Line Interface Blade)

Figure 4-32 GCD-40DTA Blade





## 5.7.1 Description

The GCD-4ODTA Tie Line blade is an out band dial type analog tie line interface blade. This blade supports system connections to either 2-wire (four lead, tip/ring) or 4-wire (six lead, tip/ring/tip 1/ring 1) E&M signaling tie lines (determined in Program 10-13). System programming is used also to select the connection types with Type I or Type V. The GCD-4ODTA consumes four ports ranging between ports 001~400 (SV9100). Each blade requires one universal slot and provides:

- Four analog 4-circuit tie line interfaces
- Two Blade status LEDs
- One switch per circuit to determine the circuit type



Limitation depends on the connecting Router, Multiplexer or Exchange. If the UNIVERGE SV9100 is connected to another UNIVERGE SV9100 directly, there is up to 1,500 ohms loop resistance (including system).

Refer to the following tables for maximum upgrade capacities of the GCD-4ODTA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15
- 5.7.2 Installation



• When a router or multiplexer is connected instead of a trunk, the SG terminal of the router or multiplexer must be connected to the FG grounding terminal on the UNIVERGE SV9100 chassis. When a tie line trunk is connected, the FG terminal must be connected to the ground. If the FG terminal is not connected correctly, the signal may fail.

• When tie lines are connected to the system, be careful of the Tip and Ring polarity.

Install the GCD-4ODTA into a slot in the chassis.



## 5.7.3 LED Indications

LED indications for the GCD-4ODTA are listed in Table 4-40 GCD-4ODTA LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-32 GCD-4ODTA Blade on page 4-92 for the location of the LEDs on the blade.

LED Indication				
Live LED (Green)	Busy LED (Red)	0	peration Status	Remarks
On	On	S	ystem Initializing	_
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		-
Flash	On	Normal	A Channel is busy (use another from CH1 ~ CHx).	-
(100ms)	Off	Operation	All channels are idle.	
0.11	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	-
Оff	Off		All channels are idle.	-
	Flash 80ms (On/ Off) x 3/400ms Off	Downloading firmware.		-

Table 4-40 GCD-40DTA LED Indications

## 5.7.4 Connectors

Table 4-41 GCD-4ODTA RJ-61 Cable Connector Pin-Outs on page 4-95 shows the pin-outs for the RJ-61 connector. Figure 4-32 GCD-4ODTA Blade on page 4-92 shows the location of the connectors on the ODT blade.



RJ-61 Cable Connector – 2-Wire E&M, CN1A~CN1D				
	Pin No.	Connection	Description	
	1	_	Not Used	
	2	М	Control signal to trunk	
	3	_	Not Used	
12345678	4	R	Voice signal both ways	
	5	Т	Voice signal both ways	
	6		Not Used	
	7	E	Control signal from trunk	
	8	—	Not Used	
RJ-61 Cat	ole Connecto	or – 4-Wire E&N	I, CN100~CN400	
	Pin No.	Connection	Description	
	1	_	Not Used	
	2	М	Control signal to trunk	
	3	R	Voice signal to trunk	
12345678	4	R1	Voice signal from trunk	
	5	T1	Voice signal from trunk	
	6	Т	Voice signal to trunk	
	7	E	Control signal from trunk	
	8	—	Not Used	
→ Using Type I or	r Type V, a syst	em loopback test	can be performed by	
connecting E&	MI to $E&M2$ .			
<2-Wire Ed	&M>	<4-Wire E&M>		
$ \begin{array}{c} \underline{E\&MI} \\ E \end{array} \rightarrow $	<u>Е&amp;M2</u> М	<u>Е&amp;МІ</u> Е →	<u>E&amp;M2</u> M	
$M \rightarrow P$	E	$M \rightarrow D$	E T1	
$ \begin{array}{ccc} & \kappa & \rightarrow \\ & T & \rightarrow \end{array} $	I R	$\begin{array}{ccc} \kappa & \rightarrow \\ T & \rightarrow \end{array}$	R1	
		$R_1 \rightarrow$	T	
		$11 \rightarrow$	Λ	

Table 4-41 GCD-40DTA RJ-61 Cable Connector Pin-Outs



## 5.7.5 Connections

Figure 4-33 Voice Signal Connection for Type I And V and Figure 4-34 Control Signal Connection on page 4-97 show the signaling methods for circuit types.

Figure 4-33 Voice Signal Connection for Type I And V

#### (1) Voice signal connection for type I and V.









#### SECTION 6 **OPTIONAL BLADES**

#### 6.1 GCD-VM00 (Voice Mail and Server)

Figure 4-35 GCD-VM00 Blade



Memory

#### 6.1.1 Description

This blade is a PC platform installed in the UNIVERGE SV9100 that contains data storage for voice recording and application software supporting a maximum of 16 ports.

A digital signal processor/voice processing section handles the following functions:

- **DTMF** detection
- **DTMF** generation
- General tone detection
- FAX CNG tone detection
- PCM compression for audio recording/playback



- Two USB 1.0 ports for USB keyboard support, database backup and software upgrades
- One 15-pin VGA connector for VHA monitor support

## 6.1.2 Installation

Only one GCD-VM00 can be installed per system.



- Handle the CF drive carefully. To prevent damage, do not drop the drive or apply pressure to it.
- This unit makes extensive use of CMOS technology and is very susceptible to static; extreme care must be taken to avoid static discharge when handling
- 1. Wear a grounding strap while handling the GCD-VM00 and lay it on a flat workspace.
- 2. Mount the CR-2032 battery with the + side up in the BATT slot on the GCD-VM00 (refer to Figure 4-36 Install the CR-2032 Battery).

Figure 4-36 Install the CR-2032 Battery



- 3. To Install the SO-DIMM memory on the GCD-VM00 blade, insert the end with the brass connectors into the CN14 1 slot first.
- 4. Push the other end down until the lock on both sides locks into place (refer to Figure 4-37 Install the SO-DIMM Memory on page 4-100).



Figure 4-37 Install the SO-DIMM Memory



5. Install the Compact Flash drive into slot CN7, make sure the drive is fully seated in the slot (refer to Figure 4-38 Install the Compact Flash Drive).

CompactFlash 1 GB 2.cr Uonu





#### 6.1.3 LED Indications

#### 6.1.3.1 Active LED – Green

The Active LED is controlled by the DSP and indicates the board operational status.

- Off: Power off.
- On: Reset.
- Slow Flash: Board is running but not in sync with the chassis yet.
- Fast Flash: Board is in sync with the chassis and operating normally.



#### 6.1.3.2 Busy LED – Red

The Busy LED is controlled by the DSP and indicates the port status.

- Off: Power off or idle.
- On: Reset.

#### 6.1.3.3 Application LED – Red/Green (Dual Color)

The Application LED is controlled by the DSP indicates the state of the software running on the APSU.

- Off: Power off.
- Solid Red/Green (Yellow): Reset.
- Flashing Green: OS is running, application not started.
- Solid Green: Application running.
- Solid Red: Application problem.

#### 6.1.3.4 CompactFlash Card Activity LED – Red

The CompactFlash Card Activity LED is controlled by the IDE controller and indicates read/write activity on the CompactFlash card.

#### 6.1.4 Connectors

The following sections go into detail on each user interface.

#### 6.1.4.1 RS-232 Interface

The RJ-11 connector with DB9 adapter (part number 1091014) is used for connection to an external PMS Application or the PMS-U10. The cable used for a PC type DTE connection is a standard line cord shown in Figure 4-39 Straight RJ-11 Pin Out on page 4-102.

#### 6.1.4.2 DB9 to 6-pin Modular RS-232 Adapter

For PMS integration to the UM8000 Mail the PMS/VM adapter, stock number Q24-FR000000112976 / 670534, must be used.



## 6.1.4.3 Straight RJ-11 Pin Out

Figure 4-39 Straight RJ-11 Pin Out



#### 6.1.4.4 USB Interface

The APSU provides two USB interfaces that can be used for the following devices:

- USB Keyboard
- USB Memory Device

#### 6.1.4.5 VGA Display Interface

The APSU card provides a VGA display interface through a standard DB-15 connector.

#### 6.1.4.6 10 Base-T/100 Base-TX Ethernet Interface

The APSU card provides a 10 Base-T/100 Base-TX Ethernet interface through an RJ-45 connector. Some possible uses for the Ethernet port are the following:

- Unified Messaging (Email)
- Software Update
- Application Configuration
- Text to Speech and Speech Recognition using an external server
- Network Attached Storage (NAS)



# The RJ-45 connector pin-out is shown in Table 4-42 Ethernet Connector Pin-Out.

Table 4-42	Ethernet Connector Pin-Out

View	Pin No.	Signal	Note
	1	Tx+	
PIN1 PIN8	2	Tx-	10 Base-T/100 Base-TX port
	3	Rx+	(RJ-45 connector)
	4	NC	
pr .d	5	NC	
	6	Rx-	
	7	NC	
	8	NC	



## 6.2 GCD-PVAA (Packet Voice Application)

Figure 4-40 GCD-PVAA Blade



## 6.2.1 Description

The Packet Voice Application, GCD-PVAA blade is an optional interface that supports the Application Package PVA PMS. This blade can be assigned as an IVR package to support the Interactive Voice Response Application supporting a maximum of 16 ports or as a PMS application to support Hotel/Motel PMS integration.

A digital signal processor/voice processing section handles the following functions:

- **DTMF** detection
- DTMF generation
- General tone detection
- Automatic Gain Control (AGC)



#### Basic Support Package

Each blade installed with the Interactive Voice Response Application (IVR) accounts for up to 16 Extension Ports of the Total Port capacity (One PVA IVR blade maximum). If used for PMS (PVA PMS) no ports are used.

Refer to the following tables for maximum upgrade capacities of the GCD-PVAA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- □ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15

## 6.2.2 Installation

To install the GCD-PVAA:

- Install CompactFlash on GCD-PVAA
- **Plug the blade into any universal slot on the chassis**
- Refer to Program 10-55-01 to configure the IP Address of the GCD-PVAA
- Refer to Program 10-55-04 to configure the Subnet Mask of the GCD-PVAA
- Refer to Program 10-55-05 to configure the Gateway of the GCD-PVAA
- ☐ The GCD-PVAA blade is hot swappable and can be removed from the chassis without powering down the blade or the SV9100 system
- When the SV9100 requires system reset, this blade comes back on line

## 6.2.3 Switch Settings

The GCD-PVAA blade has the following switches:

Reset Switch SW3

This switch allows the technician to reset the GCD-PVAA without having to remove and reinsert the blade into the chassis.

#### 6.2.4 LED Indications

#### Active LED - Green

The Active LED is controlled by the DSP and indicates the board operational status.

- Off: Power off
- On: Reset



- Slow Flash: Board is running but not in sync with the chassis
- **T** Fast Flash: Board is in sync with the chassis and operating normally

Busy LED - Red

On: Application problem

CompactFlash Card Activity LED - Red

CompactFlash Card Activity LED is controlled by the IDE controller and indicates read/write activity on the CompactFlash card.

#### 6.2.5 Connectors

#### Ethernet Connector

This connector is a single 10 Base-T/100 Base-T-X Mbps Ethernet connector. This port has Auto-Medium Dependent Interface Crossover (MDIX) to select either a straight-through or crossover Ethernet cable for connection to a PC.



## 6.3 GCD-CCTA (CCIS Trunk Interface)

Figure 4-41 GCD-CCTA Blade



#### 6.3.1 Description

The Common Channel Handler Interface blade is a digital trunk ETU that terminates FT1 trunks (up to 24 DS-0 channels) providing a common channel signal interface.

The GCD-CCTA (Common Channel Handler) is an optional blade that provides a common channel signal through the GCD-CCTA to a K-CCIS network and controls the signaling between the KTS and the CP00. Each GCD-CCTA blade supports one K-CCIS links. Four GCD-CCTA blades can be installed per system.



The T1 interface has a single 24 channel 64kb/s digital signal circuit which can be configured either for T1 trunking.

Refer to the following tables for maximum upgrade capacities of the GCD-CCTA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- □ Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15
- 6.3.2 Installation

Install the GCD-CCTA in any universal slot.

## 6.3.3 LED Indications

LED indications for the GCD-CCTA are listed in Table 4-43 GCD-CCTA LED Indications. Each LED is listed with its associated function and LED and Operational status.

Refer to Figure 4-42 GCD-CCTA LED Indication Pattern of Layer 1 on T1 Unit on page 4-109 for LED pattern information.

Alarm	Details of the Alarm	LED Indication Pattern	
LOS	Loss of Signal (Red Alarm) No Signal (Analog Interface)	Following an alarm blink (red, green, red, green) a Red LED lights.	
AIS	Alarm Indication Signal (Blue Alarm)	Following an alarm blink (red, green, red, green) a Red LED slowly flashes On and Off twice.	
OOF	Out Of Frame (Red Alarm)	Following an alarm blink (red, green, red, green) a Red LED and Green LED flash On and Off three times simultaneously.	
RAI	Remote Alarm Indication (Yellow Alarm)	Following an alarm blink (red, green, red, green) a Green LED flashes On and Off twice.	
No Alarm	The system does the LED control.		

Table 4-43 GCD-CCTA LED Indications

• The order of priority is set up to alarm in the order  $LOS \rightarrow AIS \rightarrow OOF \rightarrow RAI$ .





#### Figure 4-42 GCD-CCTA LED Indication Pattern of Layer 1 on T1 Unit

# 6.3.4 Connectors

Table 4-44 GCD-CCTA RJ-45 Cable Connector Pin-Outs shows the pin-outs for the RJ-45 connector. Figure 4-41 GCD-CCTA Blade on page 4-107 shows the location of the connectors on the GCD-CCTA blade.

RJ-45 Cable Connector – CN2				
	Pin No.	Connection		
	1	RA		
	2	RB		
	3	—		
12345678	4	TA		
	5	ТВ		
	6	—		
	7	—		
	8	—		

Table 4-44 GCD-CCTA RJ-45 Cable Connector Pin-Outs



## 6.4 GCD-RGA (Application Gateway)

Figure 4-43 GCD-RGA Blade



#### 6.4.1 Description

The GCD-RGA blade is a 4-port switch and router which complies with the Ethernet specification for 10 Base-T, 100 Base-TX and 1000 Base-TX. This blade is compatible in LAN applications using 10Mbps, 100Mbps and 1000Mbs. All ports automatically identify and switch 10 Base-T, 100 Base-TX, 1000 Base-TX and Full/Half-Duplex.

Each GCD-RGA blade comes with a built-in router application that provides the following features:

- VoIP Gateway
- WAN Router:
  - O DHCP
  - O PPPoE
  - Static IP
- Dynamic DNS
- Virtual Private Network (VPN)



- **Quality of Service (QOS):** 
  - O DiffServ
  - **o** 802.1p
  - O 802.1Q
  - O Traffic Shaping for Upstream and Downstream traffic
- **Firewall**:
  - O Denial of Service (DoS) Protection
  - O Black WAN Ping Requests
  - O Multicast Pass Through
  - O VPN Pass Through
  - O Block Web Features (Java, Cookies, Active X, HTTP Proxy)
  - o DMZ
  - Universal Plug and Play (UPnP)
  - IP Forwarding (1-1 NAT)
  - Port Forwarding
  - O Port Range Forwarding
  - O IP Based Access Restriction
  - Access Policy
- **G** Services Management:
  - o FTP
  - o SSH
  - o Telnet
  - O SMTP
  - o HTTP
  - O Custom Service
- **4**-Port Gigabit Ethernet Switch:
  - Switch Management
  - O 64 VLANs
  - Port Mirroring
  - O Link Aggregation
- USB Connection used for on-site software updates and future expansion, based on future applications and features.
- Web-Based Administration
- Compact Flash Interface

The GCD-RGA compact flash interface is used to support the following application. Refer to the entry for this application for more information:



## Multimedia Conference Application

The VoIPDB is required for IP telephones to communicate with non-VoIP UNIVERGE SV9100 telephones, and to place or receive outside calls, must be connected to either an external switching hub or to the Router blade.

The GCD-RGA blade plugs into a universal slot and does not consume any port unless the conference application is licensed. Each blade provides four RJ-45 port connectors for LAN terminals. Depending on the type of LAN terminal, the blade may not detect the difference between straight cable and crossover cable automatically. If auto-crossover is not functioning, use straight cable for that terminal connection.

## 6.4.2 Installation

Only one GCD-RGA can be installed per system.

Refer to Table 2-11 Blade Power Factor Chart on page 2-26, Table 2-12 Maximum Number of Packages Installed – CHS2UG on page 2-26 and Table 2-13 Maximum Number of Packages Installed – CHS2UG B/CHS2UG E on page 2-27 for limitations.



Due to a potential overheating condition:

• The GCD-RGA blade cannot be installed in the same CHS2UG B-US or CHS2UG E chassis as the server blade (CD-SVRU, CD-SVR2 or GCD-SVR2).



Do not plug the RGA LAN into a customer's existing network without first verifying the RGA's DHCP server will not cause a conflict. If needed, connect the support PC directly to the RGA to make configuration changes before connecting the existing network.

- 1. Install CompactFlash on GCD-RGA.
- 2. In SV9100 Program 10-54-01, assign the appropriate number of RGA Conference license 6300 to the universal slot the GCD-RGA blade is installed in.
- 3. Plug the GCD-RGA blade into any universal slot.
- 4. Refer to the UNIVERGE SV9100 RGA Multimedia Conference Solution Installation and Configuration Guide for additional programming.



## 6.4.3 Switch Settings

The Reset Switch allows the technician to:

- Initialize Factory Defaults: Hold the reset button (PB) for five seconds during a power-on of the GCD-RGA.
- Reset the GCD-RGA: While GCD-RGA is running hold the reset button for more than 1 second.
- Upgrade: With the GCD-RGA unseated insert a USB memory device in the USB Interface. Then hold the reset button and insert the GCD-RGA into the system. The USB will be checked for a valid SW package. If a compatible SW package is found, the CPU will copy it from the USB memory device. If the USB memory device does not contain a valid SW package, the GCD-RGA will boot normally.

## 6.4.4 Status LEDs

The table below shows the user-level description of the front panel LEDs in RGA mode.

#### Table 4-45 GCD-RGA Status LEDs

	Reset	Reset Just Released	Booting OS	OS Running	Running with 0 License Apps	Licensed APP on RGA	Licensed APP is Running	Licensed App has Port Busy
Bus LED	Red	Red	Green	Green	Green	Off	Off	Red
Run LED	Orange	SF	SF	MF	FF	MF	FF	FF
SF MF FF	Slow Flash Medium Flash Fast Flash							

#### 6.4.5 LED Indications

Active LED - Red/Green

The Active LED is controlled by the DSP and indicates the board operational status. The LED has red/green capability.

- **Reset:** red solid on, green solid on.
- GCD-CP10 or GCD-CP20 not detected: solid green.
- DSP waiting for application code download: flash green once per second.
- **Router application running: flash green twice per second.**
- □ Voice processor not running: flash red and green (orange) twice per second.
- Third party application running: flash green five times per second.



Busy/App LED – Red/Green

The Busy/App LED is controlled by the main processor and indicates the port status. The LED has red/green capability.

- Reset or main processor boot problem: red solid on, green solid on (orange).
- □ Main processor booting: solid green.
- **Router** application communicating on backplane: off.
- One or more ports active after third party application running: solid red.

## 6.4.6 Connectors

10/100/1000 BASE-TX Ethernet Interface

The GCD-RGA card provides five 10/100/1000 Ethernet interfaces. The LAN ports are used for the local area network connections. The WAN port is used for connecting to other networks or ISP (refer to Table 4-46 GCD-RGA Ethernet Connector Pin-Outs).

#### Table 4-46 GCD-RGA Ethernet Connector Pin-Outs

View	Pin No.	10/100 Signal	1000 Signal	Note
	1	Tx+	A+	
	2	Tx-	A-	
	3	RX+	B+	
	4	NC	C+	
	5	NC	C-	TUBASE-1/TUUBASE-1//TUUBASE-1 puit
	6	RX-	B-	
	7	NC	D+	
	8	NC	D-	

## 6.5 GCD-ETIA (Gigabit PoE Switch)





#### 6.5.1 Description

The GCD-ETIA blade is a managed 8-port gigabit Ethernet PoE switch. Ports 1 and 8 are the default uplink ports. All the user management and stacking are based on this setup. This blade provides:

- B Gigabit Ethernet (10 Base-T/100 Base-TX/1000 Base-T) Ports
- Per Port Status LED Indicating Link, Speed and Activity
- 802.3af PoE on All Ports Providing up to 15.4W of Power- Selectable level per port via web-based management interface
- Auto-MDI/MDI-X Auto Crossover (when auto-negotiation is available)
- Layer 2 Switching
- 🗖 QoS
- 802.1Q VLANs
- 802.1p Priority Queuing



- Port Mirroring
- 802.3x Flow Control
- Independent VLAN Learning Support
- **TCP/IP Networking Stack**
- Multi-Unit Stacking (multiple blades in a system are managed from the same user interface)
- Dynamic PoE Control (allows setting the proper PoE classifications for each port to stay within the system power budget)
- Switch Management Through Web-Based GUI
- Software Upgrades Via TFTP

Refer to the following tables for maximum upgrade capacities of the GCD-ETIA blade:

- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13
- Table 2-6 SV9100 Maximum Blade Capacities CHS2UG Chassis on page 2-13

## 6.5.2 Installation

#### 6.5.2.1 Stacking Architecture

Stacking allows the user to manage the multiple Gigabit Switch Unit (GSWU) cards in one system as one switch, instead of individual units and IP addresses. For example, a set of three blades would appear to the UI as a 24 port switch instead of three 8-port switches. Stacking works by assigning a Master Management Card which provides all the GUI information for all the blades in the same stack. The CCPU assigns the Master by issuing an IP address via PAW/PRW. All other GSWU cards detected in the system are assigned as Slave blades.

A single system can have up to 12 GSWU cards per system. However, only three GSWU units can be grouped together forming a single 20 port switch. When more than three GSWU units are present in a system, the additional units do not have any software feature specified in this document. They behave as an unmanaged Gigabit Ethernet switch.

The three GSWU boards can be categorized into one **Main** board, with two **Add-on** boards.


#### 6.5.2.2 GCD-CP10 or GCD-CP20 IP Address Assignment

The GSWU Main board is provided with an IP address from the back plane CPU during the initialization sequence. The provision of an IP address from the back plane identifies the Main board. If the IP address is set to **0** by the CPU during initialization, the blade is determined to be an **Add-on**.

The IP address for the GSWU is assigned in Program 10-55 on the system. It contains the settings for the IP Address, Subnet Mask and Gateway IP Address.

#### 6.5.2.3 Group Formation

When a GSWU determines that it is an **Add-on** board due to the lack of an IP address from the backplane, it sends a broadcast P2P message (defined in separate documentation) to all the GSWU units in the system until it receives an acknowledge message from the Main board.

The Main board receiving this broadcast message acknowledges by sending port identification information to the Add-on board.

#### 6.5.2.4 Port Number Determination

When a Main board is initialized, the board assigns the first eight ports as port  $1 \sim 8$ . When subsequent Add-on boards' broadcast messages are received, the Main board assigns port numbers on a first-come, first-serve basis.

To have deterministic port assignment, it is recommended that the Add-on boards be inserted sequentially starting with the desired lower port numbers first.

When a board is removed, the port numbers are not automatically removed. The operator, however, can remove any assignment by accessing the Main board GUI.

Example:

Main board is inserted in slot 3, one Add-on board inserted in slot 5. Main board has ports  $1 \sim 8$ ; Add-on board has ports  $9 \sim 16$ .

- 1. User inserts a new Add-on board in slot 2.
  - $\Box$  The new board gets assigned ports 17 ~ 24.
- 2. User removes Add-on board and moves it to slot 6.
  - □ The re-inserted board automatically gets ports 17 ~ 24 (9 ~ 16 are unavailable)
    - ➡ User can erase the ports 9 ~ 16.
    - ➡ Then reinsert the board in slot 6 to get ports 9 ~ 16.



- 3. User relocates the Main board to slot 4.
  - None of the port numbers change. However, the programming in Program 10-55 must be changed to reflect this move

The grouping of the three GSWU units to form a 20 port switch is restricted to reside in a single system location. The grouping is not allowed where the GSWU units are placed as part of the NetLink feature in the Univerge SV9100 system.

#### 6.5.2.5 Unmanaged Switch Functions

In the unmanaged mode, a GSWU unit has the following functions only:

- 10 Base-T/100 Base-TX/1000 Base-T) Ethernet ports (x8)
- PoE Class 3 (lowest power class)

#### 6.5.3 LED Indications

 Table 4-47 GCD-ETIA LED Indications lists the LEDs and provides a describes what the LED indicates.

Port State	LED Display
1000Mbps Link	Green Solid
10/100Mbps Link	Yellow Solid
No Link	Off
Port Activity	LED Blinking

Table 4-47 GCD-ETIA LED Indications

#### 6.5.4 Connectors

Backplane Connector – J1 connection to system CPU board and other boards in the chassis.



# 6.6 GCD-SVR2 (Server Blade)

Figure 4-45 GCD-SVR2 Blade



#### 6.6.1 Description

The Server is a customized single board computer, with a solid state hard drive (SSD) and memory module.

Depending on installed licensing, the GCD-SVR2 blade can support various applications.

The GCD-SVR2 specifications are:

- Physical size: Standard SV9100 blade form-factor
- Processor: Intel Atom N2800 1.86GHz Dual Core
- Memory: SO-DIMM socket for DDR3 SDRAM. Maximum of 4GB is supported. 800/1066Mhz, 204 pin.
- SSD: SATA (mini-PCle form factor)
- Video: VGA Maximum of 2048x1536 resolution



- Ethernet: Two 10Base-T/100Base-TX/1000Base-T Ethernet RJ45 ports
- USB: Four USB 2.0 ports
- Shutdown Button: This is a momentary push button switch for a graceful shutdown of the GCD-SVR2. (It is also used for restarting the GCD-SVR2).
- LEDs: Four Front Panel indicators
  - Power LED
  - Application1 LED
  - Application2 LED
  - SSD Active LED
- Power: 6W maximum

For maximum upgrade capacities of the GCD-SVR2 blade, refer to Table 2-6 SV9100 Maximum Blade Capacities – CHS2UG Chassis on page 2-13 and Table 2-7 SV9100 Maximum Blade Capacities – CHS2UG B and CHS2UG E Chassis on page 2-15.

#### 6.6.2 Installation

Refer to Table 2-11 Blade Power Factor Chart on page 2-26, Table 2-12 Maximum Number of Packages Installed – CHS2UG on page 2-26 and Table 2-14 Terminal Power Factor on page 2-27 for limitations.



Due to a potential overheating condition:

- Only one server blade (CD-SVRU, CD-SVR2 or GCD-SVR2) can be installed in the CHS2UG B and CHS2UG E chassis.
- The server blade cannot be installed in the same CHS2UG B or CHS2UG E chassis as the GCD-RGA blade.
- *Refer to* Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15.

A maximum of three GCD-SVR2s can be installed per CHS2UG chassis.



This unit makes extensive use of CMOS technology and is very susceptible to static; extreme care must be taken to avoid static discharge when handling.

- 1. Wear a grounding strap while handling the GCD-SVR2.
- Install the GCD-SVR2 into a slot in the chassis.



#### 6.6.3 LED Indications

6.6.3.1 Power LED

Power LED Indicates power is present.

6.6.3.2 Application1 and Application 2 LEDs

Application1 and 2 LEDs are for use by the Application. Each Application (UCB, Desktop Suite, etc.) defines their use and meaning.

6.6.3.3 SSD Active LED

SSD Active LED Indicates activity (read/write) on the solid state drive (SSD).

#### 6.6.4 Connectors

The following sections provide detail on each user interface.

#### 6.6.4.1 USB Interface

The GCD-SVR2 provides four USB interfaces that can be used for the following type of devices:

- USB Keyboard and mouse
- USB Memory Device
- 6.6.4.2 VGA Display Interface

The GCD-SVR2 blade provides a VGA display interface through a standard DB-15 connector.

#### 6.6.4.3 10 Base-T/100 Base-TX/1000 Base-T Ethernet Interface

The GCD-SVR2 blade provides two 10 Base-T/100 Base-TX/ 1000 Base-T Ethernet interfaces through two RJ-45 connectors (one per port).

Table 4-48 GCD-SVR2 ETH 0/ETH 1 Connector Pin-Outs on page 4-122 shows the pin-outs for the RJ-45 connector.



ETH 0/ETH 1 Connector								
	Pin No.	10/100	1000					
	1	Tx+	BI_DA+					
	2	Tx-	BI_DA-					
	3	Rx+	BI_DB+					
	4	NC	BI_DC+					
	5	NC	BI_DC-					
	6	Rx-	BI_DB-					
	7	NC	BI_DD+					
	8	NC	BI_DD-					

Table 4-48 GCD-SVR2 ETH 0/ETH 1 Connector Pin-Outs



# 6.7 GCD-SVR3 (Server Blade)

Figure 4-46 GCD-SVR3 Blade



#### 6.7.1 Description

The GCD-SVR3 is a customized server board for the SV9100 system. Depending on the installed applications and licensing, the GCD-SVR3 can support various high end features such as Unified Communications, Voice Mail, Conference Bridge, etc.

The GCD-SVR3 specifications are:

- Physical size: Standard SV9100 blade form-factor
- Processor: Celeron N2807 1.58GHz Dual Core
- Memory: 4GB DDR3-L RAM
- SSD: SATA III, M2 form factor
- Video: VGA Display Port (1920 x 1080) with mini DP connector



- Ethernet: Two 10Base-T/100Base-TX/1000Base-T RJ45 ports
- USB: One USB 3.0 port, four USB 2.0 ports
- Shutdown Button: This is a momentary push button switch for a graceful shutdown of the GCD-SVR3. (It is also used for restarting the GCD-SVR3).
- LEDs: Four Front Panel indicators
  - Application1 LED
  - Application2 LED
  - SSD Active LED
  - Power LED
- Battery: Standard CR2032 Lithium Manganese Dioxide (non rechargeable). Replacement battery must be the same type with a temperature rating of 70 degrees C or higher.

For maximum upgrade capacities of the GCD-SVR3 blade, refer to Table 2-6 SV9100 Maximum Blade Capacities – CHS2UG Chassis on page 2-13 and Table 2-7 SV9100 Maximum Blade Capacities – CHS2UG B and CHS2UG E Chassis on page 2-15.

#### 6.7.2 Installation

Refer to Table 2-11 Blade Power Factor Chart on page 2-26, Table 2-12 Maximum Number of Packages Installed – CHS2UG on page 2-26 and Table 2-14 Terminal Power Factor on page 2-27 for limitations.



- Due to a potential overheating condition:
- Only one server blade (CD-SVRU, CD-SVR2, GCD-SVR2 or GCD-SVR3) can be installed in the CHS2UG B and CHS2UG E chassis.
- The server blade cannot be installed in the same CHS2UG B or CHS2UG E chassis as the GCD-RGA blade.
- Refer to Table 2-7 SV9100 Maximum Blade Capacities CHS2UG B and CHS2UG E Chassis on page 2-15.



The GCD-SVR3 blade must be shut down before removal from the chassis. If the blade is removed from the chassis without first being properly shut down, damage could occur or data files could potentially be corrupted.

A maximum of three GCD-SVR3s can be installed per CHS2UG chassis (i.e., the metal chassis, which has a fan).



This unit makes extensive use of CMOS technology and is very susceptible to electro-static discharge (ESD); extreme care must be taken to avoid ESD when handling.

- 1. Wear a grounding strap while handling the GCD-SVR3.
- Install the GCD-SVR3 into a slot in the chassis.



#### 6.7.3 Remove and Replace the Battery



The GCD-SVR3 blade must be shut down before removal from the chassis. If the blade is removed from the chassis without first being properly shut down, damage could occur or data files could potentially be corrupted.

#### 6.7.3.1 Battery Removal



Before removing the GCD-SVR3 from the chassis to install or replace a battery, ensure the blade is powered Off.

- IMPORTANT
- Replace the battery every 5 years (recommended).
- Contact the reseller where you bought the product for a replacement battery.
- 1. Carefully squeeze the silver retention latch (refer to Figure 4-46 GCD-SVR3 Blade on page 4-123).
- 2. The battery will pop out of the socket.

#### 6.7.3.2 Battery Replacement



- Keep away from open flame. Avoid excessive heat.
- Verify polarity (+, -) when installing battery.
- Do not short the electrodes (+, -) with metals such as wire.
- Do not puncture, crush or solder the battery.
- 1. Install the battery (CR2032 3.0V coin-type lithium battery) into the socket on the GCD-SVR3 opposite side of the retention latch first. The polarity + symbol must be on top.
- 2. Push down on the battery, near the retention latch until it clicks.
- 3. Battery replacement is complete.
- 4. Install the blade into the chassis and power on the GCD-SVR3.

#### 6.7.4 LED Indications

6.7.4.1 Power LED

Power LED Indicates power is present.

6.7.4.2 Application1 and Application 2 LEDs

Application1 and 2 LEDs are for use by the Application. Each Application (UC, Conference Bridge, etc.) defines their use and meaning.



#### 6.7.4.3 SSD Active LED

SSD Active LED Indicates activity (read/write) on the solid state drive (SSD).

#### 6.7.4.4 Ethernet Port LEDs

Each Ethernet port has two LEDs. The LED on the left indicates the connection speed (orange = 1 Gb/s; green = 100 Mb/s; off = 10 Mb/s). The LED on the right indicates link and activity (off = no link; on = link up; flashing indicates activity).

#### 6.7.5 Connectors

The following sections provide detail on each user interface.

#### 6.7.5.1 Display Port Video Interface

The GCD-SVR3 blade provides one DisplayPort (DP) interface for connection to a standard computer monitor. This port is labeled "DP" on the front panel and has a standard Mini DP connector.

You will need an adapter cable or dongle for connecting GCD-SVR3 to your monitor. There are various options, such as:

- Mini DP to full size DP adapter dongle or cable (available for purchase from NEC Corporation of America).
- Mini DP to VGA adapter dongle or cable (available for purchase from NEC Corporation of America).

HDMI and VGA adapter/cables can be "active" or "passive" type. Passive HDMI type does not work with the SVR3. Active types are known to work better with the SVR3. Typically, the active type are marked as "active".

#### 6.7.5.2 USB Interface

The GCD-SVR3 provides four USB 2.0 ports on the front panel, and one internal USB 3.0 port that can be used for the following types of devices:

- USB Keyboard and mouse
- USB Memory Device



#### 6.7.5.3 10 Base-T/100 Base-TX/1000 Base-T Ethernet Interface

The GCD-SVR3 blade provides two 10 Base-T/100 Base-TX/ 1000 Base-T Ethernet ports (RJ-45 connectors) labeled as ETH 0 and ETH 1.

Table 4-49 GCD-SVR3 ETH 0/ETH 1 Connector Pin-Outs on page 4-127 shows the pin-outs for the RJ-45 connector.

ETH 0/ETH 1 Connector									
	Pin No.	10/100	1000						
	1	Tx+	BI_DA+						
	2	Tx-	BI_DA-						
	3	Rx+	BI_DB+						
	4	NC	BI_DC+						
	5	NC	BI_DC-						
	6	Rx-	BI_DB-						
	7	NC	BI_DD+						
	8	NC	BI_DD-						

Table 4-49 GCD-SVR3 ETH 0/ETH 1 Connector Pin-Outs

#### 6.7.6 Jumper and DIP Switches

#### 6.7.6.1 Jumper J\_CMOS1

This jumper is for clearing the CMOS settings (resetting the BIOS). However, it is not normally necessary to clear the CMOS settings. For normal operation this jumper must be installed on pins 1 and 2 (away from the board edge). The SVR3 will not operate normally if the jumper is removed or is installed on pins 2 and 3. The jumper has 3 pins. Pin 3 is the one closest to the board edge. To clear the CMOS, move the jumper to pins 2-3 and boot the board, then remove the board and move the jumper back to pins 1-2. The jumper must be on pins 1 and 2 for normal operation.

#### 6.7.6.2 DIP Switches – Reserved

There is no defined function at this time. The factory default position is OFF.



# SECTION 7 CABLING AND MDF CONNECTION

# 7.1 Connection Requirements

The chassis is connected to each multiline terminal, single line telephone, optional equipment, GCD-PVAA, DID/OPX, E&M Tie lines and digital trunks by a separate twisted-pair cable through the Main Distribution Frame (MDF). The E&M Tie lines are T1/FT1/E1 lines and require multiple twisted pair cabling.

# 7.2 Cabling Precautions

When selecting cables and the MDF, future expansion or assignment changes should be given due consideration. Avoid running cables in the following places:

- O A place exposed to the wind or rain.
- A place near heat radiating equipment or where the PVC covering could be affected by gases or chemicals.
- O An unstable place subject to vibration.

## 7.3 Wiring Between the Chassis and the MDF

#### 7.3.1 Chassis Cables

The chassis is equipped with two MDF Cable Assemblies. NEC recommends that the MDF Cable Assembly be used to connect the multiline terminals, single line telephones (except PFT), PVAA and DID/ OPX lines. Refer to Figure 4-47 MDF Pin-Out (Connectors 1~6) and Table 4-51 MDF Cable Connections (Station) on page 4-129 or Table 4-52 MDF Cable Connections (Trunk) on page 4-131. When installing E&M Tie lines, single line telephones with PFT, and other optional equipment with the GCD-8DLCA/GCD-16DLCA, the connector and cabling must be locally provided.





1									
Pin			Cable	Colors					
Outs	1	2	3	4	5	6			
1	BR–WH	GN–RD	BR–BK	BL–YL	SL–YL	BR–VI			
2	GN–WH	OR-RD	BL–BK	SL–BK	BR–YL	GN–VI			
3	OR–WH	BL–RD	SL-RD	BR–GN	GN–YL	OR–VI			
4	WH-BL	WH-SL	RD-BR	BK–GN	YL–OR	VI–BL			
5	BL–WH	SL–WH	BR–RD	GN–BK	OR-YL	BL–VI			
6	WH-OR	RD-BL	RD–SL	GN–BR	YL–GN	VI–OR			
7	WH–GN	RD–OR	BK–BL	BK–SL	YL–BR	VI–GN			
8	WH–BR	RD–GN	BK–OR	YL–BL	YL–SL	VI–BR			

Table 4-50 MDF Cable Colors

#### Table 4-51 MDF Cable Connections (Station)

MDF D	Statio		DL	СА	LCA	LCA/LCF		LTA			
r	r Pin g Cable	g Cable	Cable DTL	8	16	4	8	DLCA	LCA	BRI	сотв
	26	WH–BL	GN	T	T	T	T	T	T	TA–1	T
	1	BL–WH	RD	R	R	R	R	R	R	TB–1	R
1	27	WH–OR	GN	T	T	T	T	T	T	RA–1	T
	2	OR–WH	RD	R	R	R	R	R	R	RB–1	R
	28 3	WH–GN GN–WH	GN RD	T R	T R	T R	T R	T R	T R	TA–2 TB–2	T R
	29 4	WH–BR BR–WH	GN RD	T R	T R	T R	T R	T R	T R	RA–2 RB–2	T R
	30	WH–SL	GN	T	T	T	T	T	T	TA–1	T
	5	SL–WH	RD	R	R	R	R	R	R	TB–1	R
2	31	RD–BL	GN	T	T	T	T	T	T	RA–1	T
	6	BL–RD	RD	R	R	R	R	R	R	RB–1	R
2	32	RD–OR	GN	T	T	T	T	T	T	TA–2	T
	7	OR–RD	RD	R	R	R	R	R	R	TB–2	R
	33	RD–GN	GN	T	T	T	T	T	T	RA–2	T
	8	GN–RD	RD	R	R	R	R	R	R	RB–2	R



Connecto	MDF	Dunnin	Statio	DL	CA	LCA	/LCF		Ľ	ΓA	
r	Pin No.	g Cable	n Cable DTL	8	16	4	8	DLCA	LCA	BRI	сотв
	34	RD–BR	GN	T	T	T	T	T	T	TA–1	T
	9	BR–RD	RD	R	R	R	R	R	R	TB–1	R
2	35	RD–SL	GN	T	T	T	T	T	T	RA–1	T
	10	SL–RD	RD	R	R	R	R	R	R	RB–1	R
3	36	BK–BL	GN	T	T	T	T	T	T	TA–2	T
	11	BL–BK	RD	R	R	R	R	R	R	TB–2	R
	37	BK–OR	GN	T	T	T	T	T	T	RA–2	T
	12	OR–BK	RD	R	R	R	R	R	R	RB–2	R
	38	BK–GN	GN	T	T	T	T	T	T	TA–1	T
	13	GN–BK	RD	R	R	R	R	R	R	TB–1	R
4	39	BK–BR	GN	T	T	T	T	T	T	RA–1	T
	14	BR–BK	RD	R	R	R	R	R	R	RB–1	R
4	40	BK–SL	GN	T	T	T	T	T	T	TA–2	T
	15	SL–BK	RD	R	R	R	R	R	R	TB–2	R
	41	YL–BL	GN	T	T	T	T	T	T	RA–2	T
	16	BL–YL	RD	R	R	R	R	R	R	RB–2	R
	42	YL–OR	GN	T	T	T	T	T	T	TA–1	T
	17	OR–YL	RD	R	R	R	R	R	R	TB–1	R
-	43	YL–GN	GN	T	T	T	T	T	T	RA–1	T
	18	GN–YL	RD	R	R	R	R	R	R	RB–1	R
5	44	YL–BR	GN	T	T	T	T	T	T	TA–2	T
	19	BR–YL	RD	R	R	R	R	R	R	TB–2	R
	45	YL–SL	GN	T	T	T	T	T	T	RA–2	T
	20	SL–YL	RD	R	R	R	R	R	R	RB–2	R
	46	VI–BL	GN	T	T	T	T	T	T	TA–1	T
	21	BL–VI	RD	R	R	R	R	R	R	TB–1	R
6	47	VI-OR	GN	T	T	T	T	T	T	RA–1	T
	22	OR-VI	RD	R	R	R	R	R	R	RB–1	R
6	48 23	VI-GN GN-VI	GN RD	T R	T R	T R	T R	T R	T R	TA–2 TB–2	T R
	49 24	VI–BR BR–VI	GN RD	T R	T R	T R	T R	T R	T R	RA–2 RB–2	T R
	50	-	-	_	_	_	_	-	_	-	_
	25	_	_	_	_	_	_	_	_	-	_

Table 4-51 MDF Cable Connections (Station) (Continued)



Connect	MDF	Runni	Stati	CO	ТВ	DIC	OPA	PR	TA	DDI	COT
or	Pin No.	ng Cable	on Cable DTL	4	8	DID	ΟΡΧ	PRI	T1/ E1	A	A
	26 1	WH– BL BL– WH	GN RD	T R	T R	T R	T R	RA RB	RA RB	TA– 1 TB– 1	RA RB
1	27 2	WH- OR OR- WH	GN RD	T R	T R	T R	T R	– TA	– TA	RA– 1 RB– 1	– TA
	28 3	WH– GN GN– WH	GN RD	T R	T R	T R	T R	TB -	TB –	TA- 2 TB- 2	TB -
	29 4	WH– BR BR– WH	GN RD	T R	T R	T R	T R	_	_	RA- 2 RB- 2	-
	30 5	WH– SL SL– WH	GN RD	T R	T R	T R	T R	RA RB	RA RB	TA– 1 TB– 1	RA RB
	31 6	RD-BL BL-RD	GN RD	T R	T R	T R	T R	– TA	– TA	RA– 1 RB– 1	– TA
2	32 7	RD- OR OR- RD	GN RD	T R	T R	T R	T R	ТВ -	ТВ —	TA– 2 TB– 2	TB -
	33 8	RD- GN GN- RD	GN RD	T R	T R	T R	T R	-	-	RA- 2 RB- 2	-

Table 4-52 MDF Cable Connections (Trunk)



Connect	MDF	Runni	Stati	cc	ТВ	DIC	OPA	PR	TA	PDI	ССТ
or	Pin No.	ng Cable	Cable DTL	4	8	DID	ΟΡΧ	PRI	T1/ E1	A	A
	34 9	RD BR BR RD	GN RD	T R	T R	T R	T R	RA RB	RA RB	TA– 1 TB– 1	RA RB
3	35 10	RD–SL SL–RD	GN RD	T R	T R	T R	T R	– TA	– TA	RA– 1 RB– 1	– TA
3	36 11	BK–BL BL–BK	GN RD	T R	T R	T R	T R	ТВ _	ТВ _	TA- 2 TB- 2	ТВ _
	37 12	BK– OR OR– BK	GN RD	T R	T R	T R	T R	-		RA- 2 RB- 2	
	38 13	BK– GN GN– BK	GN RD	T R	T R	T R	T R	RA RB	RA RB	TA– 1 TB– 1	RA RB
	39 14	BK–BR BR–BK	GN RD	T R	T R	T R	T R	– TA	– TA	RA– 1 RB– 1	– TA
4	40 15	BK–SL SL–BK	GN RD	T R	T R	T R	T R	ТВ -	ТВ —	TA- 2 TB- 2	ТВ —
	41 16	YL–BL BL–YL	GN RD	T R	T R	T R	T R	-	-	RA- 2 RB- 2	_

Table 4-52 MDF Cable Connections (Trunk) (Continued)



Connect	MDF	Runni	Stati	cc	тв	DIC	<b>DPA</b>	PR	TA	PDI	ССТ
or	Pin No.	ng Cable	on Cable DTL	4	8	DID	ΟΡΧ	PRI	T1/ E1	A	A
	42 17	YL-OR OR-YL	GN RD	T R	T R	T R	T R	RA RB	RA RB	TA– 1 TB– 1	RA RB
5	43 18	YL-GN GN-YL	GN RD	T R	T R	T R	T R	– TA	– TA	RA- 1 RB- 1	– TA
5	44 19	YL–BR BR–YL	GN RD	T R	T R	T R	T R	ТВ —	ТВ —	TA– 2 TB– 2	TB -
	45 20	YL–SL SL–YL	GN RD	T R	T R	T R	T R	_	_	RA- 2 RB- 2	
	46 21	VI-BL BL-VI	GN RD	T R	T R	T R	T R	RA RB	RA RB	TA– 1 TB– 1	RA RB
G	47 22	VI-OR OR-VI	GN RD	T R	T R	T R	T R	– TA	– TA	RA– 1 RB– 1	– TA
6	48 23	VI-GN GN-VI	GN RD	T R	T R	T R	T R	ТВ _	ТВ _	TA– 2 TB– 2	TB –
	49 24	VI-BR BR-VI	GN RD	T R	T R	T R	T R	-	-	RA- 2 RB- 2	-
	50	_	_	_	_	_	_	_	_	_	_
	25	_	_	_	_	_	-	_	_	_	_

 Table 4-52
 MDF Cable Connections (Trunk) (Continued)



# 7.3.2 Outside Lines

An RJ-61 connector is authorized by the FCC for connection of CO lines. The lines are connected in sequence in this termination block. Therefore, the lines must be ordered in the appearance order best suited to the user. Refer to Table 4-51 MDF Cable Connections (Station) on page 4-129 or Table 4-52 MDF Cable Connections (Trunk) on page 4-131 for information about the MDF Connector Assembly Cable positions, the cable number, and lead functions.

Ground Start and/or Loop Start, Loop Dial, DID/OPX, E&M Tie lines, and T1/E1 can be connected to this system. Using only twisted-pair wiring to cross connect the lines from the RJ-61 termination block to the MDF is recommended.

# Installing DT Series Digital, IP Terminals and Single Line Telephones



# SECTION 1 GENERAL DESCRIPTION

This chapter provides information about the DT series Digital and IP terminals in addition to the single line telephones, cordless telephones and wireless telephones.

Only the DT series, single line telephones, cordless telephones and wireless telephones discussed in the document can be installed on the SV9100 system.



To avoid damage to equipment, do not install the  $D^{term}70$  on the SV9100 system. The  $D^{term}70$  (DTU/DTP) terminal uses -24V and has no protection from the -48V power supply used by the SV9100 system.

Table 5-1 Terminal Category Reference Chart provides a quick reference of the DT series Digital and IP multiline terminals.

Series N	lame	Equipment ID	Comments
DT300 Series Digital Terminal (TDM)	DT310	DTL-2E-( ) DTL-6DE-( ) DTL-12E-( )	<ul> <li>Economical terminal providing access to basic telephony and messaging service</li> <li>Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features</li> <li>2-button terminal is non-display</li> <li>6-button terminal equipped with LCD and full-featured keypad</li> <li>12-button terminal is non-display</li> <li>Available in black</li> </ul>
	DT330	DTL-8LD-( ) DTL-12D-( ) DTL-24D-( ) DTL-32-D-( )	<ul> <li>8-button Self-Labeling LCD telephone</li> <li>Also available are 12-, 24-, 32-button LCD telephones</li> <li>Provides access to more sophisticated system features and allowing room for growth</li> <li>All DT 330s come with a standard LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and 1-button access to extensions, trunks, and system features</li> <li>Available in black and white</li> </ul>
		DTL-12BT()	O Bluetooth available in black
		DTL-12PA()	<ul> <li>Power Save Adapter provides backup for analog trunk connection</li> </ul>

<b>T</b> / / <b>E</b> /	<b>T</b> · ·	<u> </u>	<b>D</b> (	~ .
Table 5-1	Terminal	Category	Reference	Chart



Series N	lame	Equipment ID	Comments
DT400 Series Digital Terminal (TDM)	DT410	DTZ-2E-( ) DTZ-6DE-( )	<ul> <li>Economical terminal providing access to basic telephony and messaging service</li> <li>Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features</li> <li>2-button terminal is non-display</li> <li>6-button terminal equipped with LCD and full-featured keypad</li> <li>Available in black</li> </ul>
	DT430	DTZ-8LD-( ) DTZ-12D-( ) DTZ-24D-( )	<ul> <li>8-button Self-Labeling LCD telephone</li> <li>Also available are 12-, 24-, 32-button LCD telephones</li> <li>Provides access to more sophisticated system features and allowing room for growth</li> <li>All DT 430s come with a standard LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and 1-button access to extensions, trunks, and system features</li> <li>Available in black and white</li> </ul>
DT500 Series Digital Terminal (TDM)	DT500	DTK-12D-( ) DTK-24D-( )	<ul> <li>12-, 24-button LCD telephones</li> <li>Provides access to more sophisticated system features and allowing room for growth</li> <li>All DT 500s come with a standard LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and 1-button access to extensions, trunks, and system features</li> <li>Available in black and white</li> </ul>

## Table 5-1 Terminal Category Reference Chart (Continued)



Series N	lame	Equipment ID	Comments
DT700 Series IP Terminals	DT710 DT730	ITL-2E-( ) ITL-6DE-( ) ITL-8LDE-( ) ITL-8LD-( ) ITL-8LD-( )	<ul> <li>Economical terminal providing access to basic telephony and messaging service</li> <li>Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features</li> <li>2-button terminal is non-display</li> <li>6-button terminal equipped with LCD and full-featured keypad</li> <li>8-button terminal equipped with LCD and full-featured keypad</li> <li>Available in black</li> <li>IP formatted terminal has a dual port, supports compression, full-duplex handsfree operation</li> <li>8-button Self-Labeling LCD telephone</li> <li>Also available are 12-, 24-, 32-button LCD telephones</li> </ul>
		ITL-24D-( ) ITL-32-D-( )	<ul> <li>or Provides access to more sophisticated system reactives allowing room for growth</li> <li>All DT 730s come with a standard backlit LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Available in black and white</li> <li>Expands the capability by providing XML display to provide more productivity enhanced applications to the users</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and 1-button access to extensions, trunks, and system features</li> </ul>
		ITL-12PA()	<ul> <li>Power Save Adapter provides backup for analog trunk connection</li> </ul>
	DT730G	ITL-12CG-( ) ITL-12DG-( )	<ul> <li>Provides access to more sophisticated system features allowing room for growth</li> <li>DT 730G terminals come with a standard back-lit LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Available in black only</li> <li>Expands the capability by providing XML display to provide more productivity enhanced applications to the users</li> <li>12CG equipped with color LCD display</li> <li>12CG/12DG support Gigabit Ethernet</li> </ul>
	DT750	ITL-320C-( )	<ul> <li>IP terminal provides a 5" color touch panel</li> <li>Features of the telephone provide easy use of NEC Unified communications and third-party telephony XML applications</li> <li>Access to 32 telephony feature lines across an IP backbone, built-in full duplex speakerphone and DESI-Less line key labeling are standard</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and one-button access to extensions, trunks, and system features</li> </ul>
Wireless Hands	set	G955	SIP DECT
		G266	SIP DECT
		G566	SIP DECT
		1766	SIP DECT
		ML440	SIP DECT
Cordless		DTL-8R-1	Cordless DECT
		DTZ-8R-1	Cordless DECT

Table 5-1 Terminal Category Reference Chart (Continued)

Series N	lame	Equipment ID	Comments
DT800 Series IP Terminals	DT820	ITY-6D-() ITY-8LDX-() ITY-8LCGX-()	<ul> <li>6-button terminal equipped with LCD and full-featured keypad</li> <li>8-button Self-Labeling LCD telephone</li> <li>All DT 820s come with a standard backlit LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Available in black only</li> <li>8-button Self-Labeling color LCD telephone</li> </ul>
	DT830	ITZ-8LD-( ) ITZ-8LDG-( ) ITZ-12D-( ) ITZ-24D-( )	<ul> <li>8-button Self-Labeling LCD telephone</li> <li>Also available are 12-, 24-, 32-button LCD telephones</li> <li>Provides access to more sophisticated system features allowing room for growth</li> <li>All DT 830s come with a standard backlit LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Available in black and white</li> <li>Expands the capability by providing XML display to provide more productivity enhanced applications to the users</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and 1-button access to extensions, trunks, and system features</li> </ul>
	DT830G	ITZ-12CG-( ) ITZ-12DG-( )	<ul> <li>Provides access to more sophisticated system features allowing room for growth</li> <li>DT 830G terminals come with a standard back-lit LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>Available in black only</li> <li>Expands the capability by providing XML display to provide more productivity enhanced applications to the users</li> <li>12CG equipped with color LCD display</li> <li>12CG/12DG support Gigabit Ethernet</li> </ul>

#### Table 5-1 Terminal Category Reference Chart (Continued)



Series N	lame	Equipment ID	Comments
DT900 Series IP Terminals	DT920	ITK-6D-( ) ITK-12D-( )	<ul> <li>Economical terminal providing access to basic telephony and messaging service</li> <li>10 Base-T/100 Base-TX network interface</li> <li>1000 Base-T network interface for G model</li> <li>Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features</li> <li>6 or 12-button terminal equipped with 168 x 41 monochrome LCD and full-featured keypad</li> </ul>
	DT920	ITK-8LCX-()	<ul> <li>Self-Labeling line keys displays eight line keys or eight line keys with four pages</li> <li>3.5 inch(320 x 240) Color LCD with cursor keys</li> <li>10 Base-T/100 Base-TX network interface</li> <li>1000 Base-T network interface for G model</li> <li>Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features</li> <li>Expands the capability by providing XML display to provide more productivity enhanced applications to the users</li> </ul>
	DT930	ITK-8TCGX-()	<ul> <li>4.3 inch (480 x 272) color capacitive touch screen with cursor keys</li> <li>Eight line keys or eight line keys with four pages displayed on screen</li> <li>10 Base-T/100 Base-TX network interface</li> <li>1000 Base-T network interface for G model</li> <li>Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features</li> <li>Expands the capability by providing XML display to provide more productivity</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and 1-button access to extensions, trunks and system features</li> </ul>
	DT930	ITK-24CG-()	<ul> <li>24-button LCD telephones</li> <li>4.3 inch (480 x 272) Color LCD</li> <li>10 Base-T/100 Base-TX/1000 BASE-T network interface</li> <li>Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features</li> <li>Available in black and white</li> <li>Expands the capability by providing XML display to provide more productivity</li> <li>Optional 60-button DSS Console provides 60 programmable keys and provides users a Busy Lamp Field (BLF) and 1-button access to extensions, trunks, and system features</li> </ul>

 Table 5-1
 Terminal Category Reference Chart (Continued)

The DT300, DT400, DT700 and DT800 Series offers a line up of modular telephones. This modular design allows the telephones to be upgraded and customized. Optional LCD panels, keypads, handset cradles, face plates and colored side panels can easily be snapped on and off.

The easy-to-use adjustable footplate allows a variety of height positions.

Several easy-to-read LCD displays are available, including a new large color touch panel LCD.



Table 5-2 Terminal and Adapter Compatibility (DT300/DT700), Table 5-3 Terminal and Adapter Compatibility (DT400/DT800) on page 5-7 and Table 5-4 Terminal and Adapter Compatibility (DT500/DT900) on page 5-8 show the compatibility between the terminals and adapters used in the system.

#### Table 5-2 Terminal and Adapter Compatibility (DT300/DT700)

Townships	Adapter Unit								
Ierminai	ADA-L	APR-L	ILPA	PSA-L	BCH-L	BHA-L	GBA-L	IPv6-L	
Digital Terminals: DT300									
DTL-2E-1 (BK) TEL	_	_		_		_	_		
DTL-6DE-1 (BK) TEL		—		—	—		—	—	
DTL-12E-1 (BK) TEL							—		
DTL-8LD(BK)/(WH) TEL	$\checkmark$	$\checkmark$	—	$\checkmark$	$\checkmark$	$\checkmark$	—	—	
DTL-12BT-1 (BK) TEL	—	—	_	—	—	—	—	—	
DTL-12D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	-	$\checkmark$	$\checkmark$	$\checkmark$	—	—	
DTL-12PA-1 (BK) TEL	✓	$\checkmark$		$\checkmark$	—	—	—	_	
DTL-24D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$		$\checkmark$	✓	$\checkmark$	—	—	
DTL-32D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$		$\checkmark$	$\checkmark$	$\checkmark$	—	_	
IP Terminals: DT700									
ITL-2E-1 (BK) TEL		—	$\checkmark$	-	_	—	✓	—	
ITL-6DE-1 (BK) TEL	—	-	$\checkmark$	-	—	—	$\checkmark$	—	
ITL-8LDE-1 (BK) TEL	—	—	$\checkmark$	—	—	—	$\checkmark$	—	
ITL-8LD-1 (BK)/(WH) TEL	$\checkmark$	—	$\checkmark$	$\checkmark$	—	—	$\checkmark$	$\checkmark$	
ITL-12D-1 (BK)/(WH) TEL	$\checkmark$	—	$\checkmark$	$\checkmark$	—	—	$\checkmark$	$\checkmark$	
ITL-12CG-3 (BK) TEL	$\checkmark$	—	$\checkmark$	$\checkmark$	_	—	Note <sup>2</sup>	$\checkmark$	
ITL-12DG-3 (BK) TEL	$\checkmark$	_	$\checkmark$	$\checkmark$	_	—	Note <sup>2</sup>	$\checkmark$	
ITL-12PA-1 (BK) TEL	$\checkmark$	_	$\checkmark$	$\checkmark$	_	—	$\checkmark$	$\checkmark$	
ITL-24D-1 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$	$\checkmark$	_	—	$\checkmark$	$\checkmark$	
ITL-32D-1 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$	$\checkmark$	_	—	$\checkmark$	$\checkmark$	
ITL-320C-1 (BK) TEL/ ITL-320C-2 (BK) TEL	~	_	~	~		—	~	~	
Console:									
DCL-60-1 (BK)/(WH) CONSOLE			_	_	_	_	_	_	



Table 5-2 Terminal and Adapter Compatibility (DT300/DT700) (Continued)

Terminal	Adapter Unit							
	ADA-L	APR-L	ILPA	PSA-L	BCH-L	BHA-L	GBA-L	IPv6-L

— = Option Not Available

✓ = Optional Available

 $^{1}$  = When the ILPA-R is connected to a 12CG/12DG terminal, maximum connection speed drops to 100Mbps.

<sup>2</sup> = The 12CG/12DG terminals support Gigabit Ethernet, GBA-L Unit not required.

<b>₹</b> and at	Adapter Unit						
Ierminal	ADA-L	APR-L	ILPA*	BHA-Z	BCA-Z		
Digital Terminals: DT400							
DTZ-2E-3 (BK) TEL	—	_	—	_	—		
DTZ-6DE-3 (BK) TEL	—	_	—	_	—		
DTZ-12D-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	—	$\checkmark$	$\checkmark$		
DTZ-24D-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	—	$\checkmark$	$\checkmark$		
DTZ-8LD-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	_	$\checkmark$	$\checkmark$		
IP Terminals: DT800							
ITY-6D-1 (BK) TEL	—	—	—	—	—		
ITY-8LDX-1 (BK) TEL	—	_	_	_	_		
ITY-8LCGX-1 (BK) TEL	—	_	_	_	_		
ITZ-8LD-3 (BK) TEL	$\checkmark$	_	$\checkmark$	—	$\checkmark$		
ITZ-12D-3 (BK)/(WH) TEL	$\checkmark$	—	$\checkmark$	—	$\checkmark$		
ITZ-24D-3 (BK)/(WH) TEL	$\checkmark$	—	$\checkmark$	—	$\checkmark$		
ITZ-12CG-3 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$	_	$\checkmark$		
ITZ-12DG-3 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$	_	$\checkmark$		
ITZ-8LDG-3 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$	—	$\checkmark$		
Console:		·	•	•	•		
DCZ-60-2 (BK)/(WH) CONSOLE	_			$\checkmark$	_		

Table 5-3 Terminal and Adapter Compatibility (DT400/DT800)

\* = When the ILPA-R unit is used, 1000 BASE-T is not available.



Table 5-4	Terminal and	Adanter (	Compatibility	/	(DT500/DT900)	)
	i enniñai anu	Auapier	Joinpaubility	V (	D1300/D1900/	1

Tormain al	Adapter Unit				
Terminal	ADA-L	APR-L			
Digital Terminals: DT500					
DTK-12D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$			
DTK-24D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$			
IP Terminals: DT900					
ITK-6D-1 (BK) TEL	_	_			
ITK-6DG-1 (BK) TEL	_	—			
ITK-12D-1 (BK) TEL					
ITK-12DG-1 (BK) TEL					
ITK-8LCX-1 (BK) TEL	_				
ITK-32LCG-1 (BK) TEL					
ITK-8TCGX-1 (BK) TEL	_				
ITK-24CG-1 (BK)/(WH) TEL	$\checkmark$	_			
ITK-32TCG-1 (BK) TEL					
Console:					
DCK-60-1 (BK)/(WH) CONSOLE	_				

— = Option Not Available

✓ = Optional Available



#### Table 5-5 Firmware Compatibility Matrix

		BCH-L Unit Lot Number		
		xxxDxx or lower	xxxExx or higher	
Terminal Lot	xxx I xx or lower (Version 8.10 and 1, E0 or lower)	Supported	Supported	
DT-330	xxxJxx or higher (Version 2.20 or higher)	Not supported	Supported	

► BCH Support may differ based on terminal firmware. To verify both DT-330 terminal and BCH-L Unit firmware, hold down keypad buttons 1, 2 and 3 while plugging the line cord into the terminal.

#### Table 5-6 DT330 Compatibility Settings

ADA L Unit Switch	Terminal Lot Number DT-330						
Settings	xxx I Lx or lower (Version 1.E0 or lower)	xxx I Mx (Version 8.10)	xxxJSx or higher (Version 2.20 or higher)				
ADA Connection for Recording Only.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.				
ADA Connection for Sending Recorded Calls to the Telephone.	Dip switches 2, 3, 5, 7 and 8 are OFF. Switches 1, 4 and 6 are ON.	Dip switches 2, 3, 5, 7 and 8 are OFF. Switches 1, 4 and 6 are ON.	Dip switches 2, 3, 5, 7 and 8 are OFF. Switches 1, 4 and 6 are ON.				
To Send and Receive to the Terminal	Not supported	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.				

Lot Numbers: I, J – Hardware Revision Lot Numbers: L, M, S – Software Revision

➡ To verify DT-330 terminal firmware, hold down keypad buttons 1, 2 and 3 while plugging the line cord into the terminal.



Table 5-7 Terminal and Line Key/LCD Compatibility (DT300/DT700) and Table 5-8 Terminal and Line Key/LCD Compatibility (DT400/DT800) on page 5-11 show the compatibility between the terminals and Line Key or LCD used in the system.

Townsings	Line Key/LCD							
Ierminal	8 LK-L	8LKD(LD)-L	8LKI(LD)-L	12LK-L	LCD (BL)-L	DCL-60		
Digital Terminals: DT300								
DTL-2E-1 (BK) TEL			_		—	_		
DTL-6DE-1 (BK) TEL	—	—	_	_	—			
DTL-12E-1 (BK) TEL	—	—	—	_	—			
DTL-8LD(BK)/(WH) TEL	$\checkmark$	—	—	_	_	$\checkmark$		
DTL-12BT-1 (BK) TEL	$\checkmark$	✓	_	$\checkmark$	✓	$\checkmark$		
DTL-12D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	—	$\checkmark$	$\checkmark$	$\checkmark$		
DTL-12PA-1 (BK) TEL	$\checkmark$	$\checkmark$	—	$\checkmark$	$\checkmark$	$\checkmark$		
DTL-24D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	—		✓	$\checkmark$		
DTL-32D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	—		$\checkmark$	$\checkmark$		
IP Terminals: DT700								
ITL-2E-1 (BK) TEL	—	—	—	—	—			
ITL-6DE-1 (BK) TEL	—	—	—	-	_	—		
ITL-8LDE-1 (BK) TEL	—	—	—	—	_	—		
ITL-8LD-1 (BK)/(WH) TEL	$\checkmark$	_	_	_	—	$\checkmark$		
ITL-12D-1 (BK)/(WH) TEL	✓	—	✓	$\checkmark$	—	$\checkmark$		
ITL-12CG-3 (BK) TEL	$\checkmark$	_	_	$\checkmark$	—	$\checkmark$		
ITL-12DG-3 (BK) TEL	✓	_	_	$\checkmark$	—	$\checkmark$		
ITL-12PA-1 (BK) TEL	$\checkmark$	_	✓	$\checkmark$	—	$\checkmark$		
ITL-24D-1 (BK)/(WH) TEL	$\checkmark$	—	✓	—	—	$\checkmark$		
ITL-32D-1 (BK)/(WH) TEL	✓		✓	_	—	$\checkmark$		
ITL-320C-1 (BK) TEL/ ITL-320C-2 (BK) TEL	$\checkmark$	_	_		—	$\checkmark$		

#### Table 5-7 Terminal and Line Key/LCD Compatibility (DT300/DT700)

— = Option Not Available

✓ = Optional Available



Townsings	Line Key/LCD					
Terminal	8 LK-Z	16LK-Z	DCL-60			
Digital Terminals: DT400						
DTZ-2E-3 (BK) TEL	—	—	—			
DTZ-6DE-3 (BK) TEL	—	_	—			
DTZ-12D-3 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$			
DTZ-24D-3 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$			
DTZ-8LD-3 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$			
IP Terminals: DT800						
ITY-6D-1 (BK) TEL	—	—	—			
ITY-8LDX-1 (BK) TEL	—	_	—			
ITY-8LCGX-1 (BK) TEL	—	_	_			
ITZ-8LD-3 (BK) TEL	_	_				
ITZ-12D-3 (BK)/(WH) TEL	_	_				
ITZ-24D-3 (BK)/(WH) TEL	—	_				
ITZ-12CG-3 (BK)/(WH) TEL	$\checkmark$	_	$\checkmark$			
ITZ-12DG-3 (BK)/(WH) TEL	$\checkmark$		$\checkmark$			
ITZ-8LDG-3 (BK)/(WH) TEL	$\checkmark$		$\checkmark$			

# Table 5-8 Terminal and Line Key/LCD Compatibility (DT400/DT800)

— = Option Not Available
 ✓ = Optional Available



Table 5-9 Terminal and Ten Key Kit Compatibility (DT300/DT700) and Table 5-10 Terminal and Ten Key Kit Compatibility (DT400/DT800) on page 5-13 show the compatibility between the terminals and Ten Key kits used in the system.

	Ten Key Kit						
Terminal	BS(F)-L	BS(S)-L	BS (Braille)- KIT	BS(Retro)-I	BS (S-Hotel)		
Digital Terminals: DT300							
DTL-2E-1 (BK) TEL	—			$\checkmark$	—		
DTL-6DE-1 (BK) TEL	—	_	_	✓	—		
DTL-12E-1 (BK) TEL	—		_	$\checkmark$			
DTL-8LD(BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	_		
DTL-12D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	_		
DTL-12BT-1 (BK) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	_		
DTL-12PA-1 (BK) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	_		
DTL-24D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	_		
DTL-32D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$			
IP Terminals: DT700							
ITL-2E-1 (BK) TEL	—	_	_	$\checkmark$	_		
ITL-6DE-1 (BK) TEL	—	_	_	$\checkmark$	—		
ITL-8LDE-1 (BK) TEL	—	_	_				
ITL-8LD-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	—		
ITL-12D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	—		
ITL-12CG-3 (BK) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	—		
ITL-12DG-3 (BK) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	_		
ITL-12PA-1 (BK) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	_		
ITL-24D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	✓	_		
ITL-32D-1 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	—		
ITL-320C-1 (BK) TEL/ ITL-320C-2 (BK) TEL	~	$\checkmark$	$\checkmark$	✓	~		

Table 5-9 Terminal and Ten Key Kit Compatibility (DT300/DT700)



Table 5-9 Terminal and Te	n Key Kit C	ompatibility	(DT300/DT700)	(Continued)	
		Compatibility (DT300/DT700) (Continued) Ten Key Kit L BS(S)-L BS (Braille)- KIT BS(Retro)-I BS (S-Hotel)			
Terminal	Terminal BS(F)-L BS(S)-L BS (Braille)- KIT BS(Re	BS(Retro)-I	BS (S-Hotel)		
— = Option Not Available					

✓ = Optional Available

► The BS (Braille)-L KIT kit consists of stickers to be installed.

			Ten Key	Kit	
Terminal	BS(F)-Z	BS(S)-Z	BS(ACD)-Z	Sticker- Braille-Z KIT	BS (Retro-F)-Z
Digital Terminals: DT400					
DTZ-2E-3 (BK) TEL		_		-	$\checkmark$
DTZ-6DE-3 (BK) TEL	_	_	_	_	$\checkmark$
DTZ-12D-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
DTZ-24D-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
DTZ-8LD-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
IP Terminals: DT800					
ITY-6D-1 (BK) TEL		_	_	_	—
ITY-8LDX-1 (BK) TEL		_	_	_	—
ITY-8LCGX-1 (BK) TEL		_	_	_	—
ITZ-8LD-3 (BK) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
ITZ-12D-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
ITZ-24D-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
ITZ-12CG-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
ITZ-12DG-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
ITZ-8LDG-3 (BK)/(WH) TEL	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$

Table 5-10 Terminal and Ten Key Kit Compatibility (DT400/DT800)

\_\_\_ = Option Not Available

✓ = Optional Available

► The Sticker-Braille-Z kit consists of stickers to be installed.



Table 5-11 Terminal and Optional Equipment Compatibility (DT300/DT700) on page 5-14 and Table 5-12 Terminal and Optional Equipment Compatibility (DT400/DT800) on page 5-15 show the compatibility between the terminals and optional equipment used in the system.

	Equipment					
Terminal	PSA-L	WM-L <b>*</b> 1	PANEL-L			
Digital Terminals: DT300						
DTL-2E-1 (BK) TEL	—	~	~			
DTL-6DE-1 (BK) TEL	_	~	~			
DTL-12E-1 (BK) TEL		~	~			
DTL-8LD (BK)/(WH) TEL	~	~	~			
DTL-12BT-1 (BK) TEL	_	~	~			
DTL-12D-1 (BK)/(WH) TEL	~	~	~			
DTL-12PA-1 (BK) TEL	_	~	~			
DTL-24D-1 (BK)/(WH) TEL	~	V	~			
DTL-32D-1 (BK)/(WH) TEL	~	V	~			
IP Terminals: DT700						
ITL-2E-1 (BK) TEL	—	~	2			
ITL-6DE-1 (BK) TEL	_	~	~			
ITL-8LDE-1 (BK) TEL		~	~			
ITL-8LD-1 (BK)/(WH) TEL	~	~	~			
ITL-12D-1 (BK)/(WH) TEL	~	~	~			
ITL-12CG-3 (BK) TEL	~	~	~			
ITL-12DG-3 (BK) TEL	~	V	~			
ITL-12PA-1 (BK) TEL	—	~	~			
ITL-24D-1 (BK)/(WH) TEL	~	~	~			
ITL-32D-1 (BK)/(WH) TEL	~	~	~			

Table 5-11	Terminal and C	optional Equ	ipment Com	patibilitv	(DT300/DT700)
10010 0 11	ronnan ana c	phonia Equ		outionity	D 1 0 0 0 / D 1 1 0 0 /



Tormain al	Equipment				
Terminal	PSA-L	WM-L*1	PANEL-L		
ITL-320C-1 (BK) TEL/ITL-320C-2 (BK) TEL	~	~	~		
Console:					
DCL-60-1 (BK)/(WH) CONSOLE *2	_	~	_		

Table 5-11 Terminal and Optional Equipment Compatibility (DT300/DT700) (Continued)

— = Option Not Available

✓ = Optional Available

\*1 The WM-L is required if the ADA-L UNIT or APR-L UNIT is installed on the telephone.

\*2 DCL-60-1 = DSS Wall Mount

	Equipment		
Ierminal	WM-L*1	PANEL-L	
Digital Terminals: DT400			
DTZ-2E-3 (BK) TEL	~	~	
DTZ-6DE-3 (BK) TEL	~	~	
DTZ-12D-3 (BK)/(WH) TEL	~	~	
DTZ-24D-3 (BK)/(WH) TEL	~	~	
DTZ-8LD-3 (BK)/(WH) TEL	~	~	
IP Terminals: DT800			
ITZ-8LD-3 (BK) TEL	~	v	
ITZ-12D-3 (BK)/(WH) TEL	~	~	
ITZ-24D-3 (BK)/(WH) TEL	~	~	
ITZ-12CG-3 (BK)/(WH) TEL	~	~	
ITZ-12DG-3 (BK)/(WH) TEL	~	~	
ITZ-8LDG-3 (BK)/(WH) TEL	~	~	

Table 5-12 Terminal and Optional Equipment Compatibility (DT400/DT800)



Table 5-12         Terminal and Optional Equipment Compatib	ility (DT400/L	OT800) (Cont	inu
<b>T</b> sector	Equipment		
Ierminai	WM-L*1	PANEL-L	
Console:			
DCZ-60-2 (BK)/(WH) CONSOLE *2	~	—	

— = Option Not Available

✓ = Optional Available

\*1 The WM-L is required if the ADA-L UNIT or APR-L UNIT is installed on the telephone.

\*2 DCZ-60-2 = DSS Wall Mount



# SECTION 2 DT300/DT400/DT500 SERIES DIGITAL MULTILINE TERMINALS

The DT300/DT400/DT500 Series offers a new exciting line up of digital telephones. These telephones (except economy), have a modular design that allows the telephone to be upgraded and customized. Optional LCD panels, dial pads, feature key kits, handset cradles, face plates and colored side panels can easily be snapped on and off to upgrade and customize as the customer desires.

- ► The DT300 Series Digital multiline terminals are supported by the Electra Elite IPK II system (similar to the D<sup>term</sup> Series i Telephones) with optional Retro key pad installed.
- 2.1 DT300 Series Digital Multiline Terminals

## 2.1.1 DTL-2E-1 (BK) TEL

This digital economy non-display multiline terminal has two programmable line keys and is available in black only. The terminal features:

- Non-modular design
- Four-step adjustable base
- Half-duplex speaker phone
- Two line keys (Red, Green)
- Three-color LED

Figure 5-1 DTL-2E-1 TEL





# 2.1.2 DTL-6DE-1 (BK) TEL

This digital economy multiline terminal has six line keys with display and is available in black only. The terminal features:

- Non-modular design
- Four-step adjustable base
- Half-duplex speaker phone
- □ Six line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- 24 X 3 character LCD display

Figure 5-2 DTL-6DE-1 TEL




### 2.1.3 DTL-12E-1 (BK) TEL

This digital economy non-display multiline terminal has 12 programmable line keys and is available in black only. The terminal features:

- Non-modular design
- **Four-step adjustable base**
- Half-duplex speaker phone
- □ 12 line keys (Red, Green)
- Three-color LED for message waiting and incoming calls

Figure 5-3 DTL-12E-1 TEL





### 2.1.4 DTL-8LD (BK)/(WH) TEL

This digital value multiline terminal has eight line keys with display and is available in both black and white. The terminal features:

- Modular design
- **Four step adjustable base**
- Full-duplex speaker phone
- **Eight line keys (Red, Green)**
- Four Softkeys (Help, Exit)
- Self-Labeling line key displays eight lines per page (four pages of eight lines available using scroll key)
- Three color LED
- Two 168 X 55 dot matrix backlit LCDs with cursor keys
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation

Figure 5-4 DTL-8LD-1 TEL





#### 2.1.5 DTL-12BT-1 (BK) TEL

This digital value multiline terminal has 12 line keys and is available in black only. The terminal features:

- Keyset-like Handset
- □ 12 Line Buttons
- Function Button
- Dial Button
- Display
- All multiline terminal functions with Main Unit
- Cradle Charges Handset
- Base Side RF Block (50 meters, Class 1)
- Bluetooth Distance: 50 Meters
- Full-duplex handsfree operation

Figure 5-5 DTL-12BT-1 TEL





### 2.1.6 DTL-12D-1 (BK)/(WH) TEL

This digital value multiline terminal has 12 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Full-duplex speaker phone
- □ 12 line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- □ 168 X 58 dot matrix LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation

Figure 5-6 DTL-12D-1 TEL





### 2.1.7 DTL-12PA-1 (BK) TEL

This digital value multiline terminal with Analog Power Failure adapter has 12 line keys and is available in black only. The terminal features:

- Modular design
- Four-step adjustable base
- **—** Full-duplex speaker phone
- □ 12 line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- □ 168 X 58 dot matrix LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- PSA-L adapter

Figure 5-7 DTL-12PA-1 TEL





### 2.1.8 DTL-24D-1 (BK)/(WH) TEL

This digital value multiline terminal has 24 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Full-duplex speaker phone
- □ 24 line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- □ 168 X 58 dot matrix LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation

Figure 5-8 DTL-24D-1 TEL





#### 2.1.9 DTL-32D-1 (BK)/(WH) TEL

This digital value multiline terminal has 32 line keys (24 line keys plus eight line key LK Unit) and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Full-duplex speaker phone
- □ 32 line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- **168** X 58 dot matrix LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation

Figure 5-9 DTL-32D-1 TEL





### 2.2 DT400 Series Digital Multiline Terminals

### 2.2.1 DTZ-2E-3 (BK) TEL

This digital economy non-display multiline terminal has two programmable line keys and is available in black only. The terminal features:

- Non-modular design
- **Four-step adjustable base**
- Half-duplex speaker phone
- □ Two line keys (Red, Green)
- Three-color LED

Figure 5-10 DTZ-2E-3 TEL





#### 2.2.2 DTZ-6DE-3 (BK) TEL

This digital economy multiline terminal has six line keys with display and is available in black only. The terminal features:

- Non-modular design
- Four-step adjustable base
- ☐ Half-duplex speaker phone
- □ Six line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- 24 X 3 character LCD display

Figure 5-11 DTZ-6DE-3 TEL





### 2.2.3 DTZ-12D-3 (BK)/(WH) TEL

This digital value multiline terminal has 12 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Full-duplex speaker phone
- □ 12 line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- □ 168 X 58 dot matrix LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation

Figure 5-12 DTZ-12D-3 TEL





### 2.2.4 DTZ-24D-3 (BK)/(WH) TEL

This digital value multiline terminal has 24 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- **—** Full-duplex speaker phone
- □ 24 line keys (Red, Green)
- Four Softkeys (Help, Exit)
- Three-color LED
- □ 168 X 58 dot matrix LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- **Full-duplex handsfree operation**

Figure 5-13 DTZ-24D-3 TEL





### 2.2.5 DTZ-8LD-3 (BK)/(WH) TEL

This digital value multiline terminal has eight line keys with display and is available in both black and white. The terminal features:

- Modular design
- Four step adjustable base
- Full-duplex speaker phone
- **Eight line keys (Red, Green)**
- Four Softkeys (Help, Exit)
- Self-Labeling line key displays eight lines per page (four pages of eight lines available using scroll key)
- Three color LED
- Two 168 X 55 dot matrix backlit LCDs with cursor keys
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation

Figure 5-14 DTZ-8LD-3 TEL





# 2.3 DT500 Series Digital Multiline Terminals

The DT500 terminals have a newly designed cosmetic face, new layout button and a five-step adjustable tilt base.

### 2.3.1 DTK-12D-1 (BK)/(WH) TEL

This digital multiline terminal has 12 line keys and is available in both black and white. The terminal features:

- **Fully functional keypad providing standard business functions such** as hold, transfer, speaker, microphone and other features
- 168 X 58 dot matrix LCD
- □ 12 line keys (Red, Green)
- Backlit LCD for easy viewing
- Seven-color LED for Incoming calls
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- Five step adjustable base
- Headset jack
- EHS interface

Figure 5-15 DTK-12D-1 TEL





### 2.3.2 DTK-24D-1 (BK)/(WH) TEL

This digital multiline terminal has 24 line keys and is available in both black and white. The terminal features:

- Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features
- 168 X 58 dot matrix LCD
- □ 24 line keys (Red, Green)
- Backlit LCD for easy viewing
- Seven-color LED for Incoming calls
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- **T** Five step adjustable base
- Headset jack
- EHS interface

Figure 5-16 DTK-24D-1 TEL





# SECTION 3 DT700/DT800/DT900 SERIES IP MULTILINE TERMINALS

The DT700/DT800/DT900 offers a new exciting line up of IP telephones. These telephones (except economy), have a modular design that allows the telephones to be upgraded and customized. Optional LCD panels, dial pads, feature key kits, handset cradles, face plates and colored side panels can easily be snapped on and off to upgrade and customize as the customer desires.

### 3.1 DT700 Series IP Multiline Terminals

### 3.1.1 ITL-2E-1 (BK) TEL

This IP economy non-display multiline terminal has two programmable line keys and is available in black only. The terminal features:

- Non-modular design
- Four-step adjustable base
- **—** Full-duplex speaker phone
- Three-color LED
- □ IEEE 802.3af compliant
- □ XML open interface (limited)
- □ 10 Base-T/100 Base-TX network interface
- Remote Login and Maintenance

Figure 5-17 ITL-2E-1 TEL





### 3.1.2 ITL-6DE-1 (BK) TEL

This IP economy multiline terminal has six line keys with display and is available in black only. The terminal features:

- Non-modular design
- Four-step adjustable base
- Remote login and maintenance
- Full-duplex speaker phone
- Three-color LED for message waiting
- □ 168 X 41 full dot black and white LCD with cursor keys
- □ IEEE 802.3af compliant
- □ XML open interface (limited)
- □ 10 Base-T/100 Base-TX network interface

Figure 5-18 ITL-6DE-1 TEL





### 3.1.3 ITL-8LDE-1 (BK) TEL

This IP economy multiline terminal has eight line keys with display and is available in black only. The terminal features:

- Non-Modular design
- Four-step adjustable base
- **Full-duplex speaker phone**
- Self-Labeling line key displays eight lines.
- **Function key changes from HOME to Self-Labeling screen**
- Three-color LED for message waiting
- 224 x 96 dot matrix gray scale backlit LCD
- □ IEE 802.af compliant
- □ XML open interface (limited)
- □ 10 Base-T/100 Base-TX network interface
- Wide Band Handset

Figure 5-19 ITL-8LDE-1 TEL





### 3.1.4 ITL-8LD-1 (BK)/(WH) TEL

This IP value multiline terminal has eight line keys with display and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Full-duplex speaker phone
- Self-Labeling line key displays eight lines per page (four pages of eight lines available using scroll key)
- Protection button (lock)
- Seven-color LED for incoming calls
- Two 224 X 96 full dot gray scale LCDs with cursor keys
- Backlit Numbered Keypad for easy viewing
- **Full-duplex handsfree operation**
- Wideband handset
- IEEE 802.3af compliant
- □ XML open interface
- □ 10 Base-T/100 Base-TX network interface
- Backlit LCD

Figure 5-20 ITL-8LD-1 TEL





### 3.1.5 ITL-12D-1 (BK)/(WH) TEL

This IP value multiline terminal has 12 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- **—** Full-duplex speaker phone
- Protection button
- Seven-color LED for incoming calls
- 224 X 96 full dot gray scale LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- XML open interface
- □ 10 Base-T/100 Base-TX network interface
- Backlit LCD

Figure 5-21 ITL-12D-1 TEL





### 3.1.6 ITL-12CG-3 (BK) TEL

This IP value multiline terminal has 12 line keys and is available in black only. The terminal features:

- USB Connection (USB 2.0, 5V/500mA supply)
- Modular design
- Four-step adjustable base
- Full-duplex speaker phone
- Protection button
- Seven-color LED for message waiting
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- □ 480 x 272 pixel, 105.5 x 67.2mm color LCD
- □ IEEE 802.3at Type 1 compliant
- XML open interface
- □ 10 Base-T/100 Base-TX/1000 BASE-T network interface

Figure 5-22 ITL-12CG-3 TEL





## 3.1.7 ITL-12DG-3 (BK) TEL

This IP value multiline terminal has 12 line keys and is available in black only. The terminal features:

- USB Connection (USB 2.0, 5V/500mA supply)
- □ Modular design
- Four-step adjustable base
- **—** Full-duplex speaker phone
- Protection button
- Seven-color LED for incoming calls
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- 224 x 96 dot matrix gray scale backlit LCD
- □ IEEE 802.3at Type 1 compliant
- □ XML open interface
- 10 Base-T/100 Base-TX/1000 BASE-T network interface

Figure 5-23 ITL-12DG-3 TEL





### 3.1.8 ITL-12PA-1 (BK) TEL

This IP value multiline terminal with Analog Power Failure adapter has 12 line keys and is available in black only. The terminal features:

- Modular design
- **—** Four-step adjustable base
- Full-duplex speaker phone
- Protection button
- Seven-color LED for incoming calls
- 224 X 96 full dot gray scale LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- □ XML open interface
- □ 10 Base-T/100 Base-TX network interface
- Backlit LCD
- PSA Adapter for Power Failure

Figure 5-24 ITL-12PA-1 TEL





### 3.1.9 ITL-24D-1 (BK)/(WH) TEL

This IP value multiline terminal has 24 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- **—** Full-duplex speaker phone
- Protection button
- Seven-color LED for incoming calls
- 224 X 96 full dot gray scale LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- □ XML open interface
- □ 10 Base-T/100 Base-TX network interface
- Backlit LCD

Figure 5-25 ITL-24D-1 TEL





### 3.1.10 ITL-32D-1 (BK/WH) TEL

This IP value multiline terminal has 32 line keys (24 line keys plus an eight line key LK Unit) and is available in both black and white. The terminal features:

- Modular design
- **—** Four-step adjustable base
- Full-duplex speaker phone
- Protection button
- Seven-color LED for incoming calls
- 224 X 96 full dot gray scale LCD with cursor keys
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- XML open interface
- □ 10 Base-T/100 Base-TX network interface
- Backlit LCD

Figure 5-26 ITL-32D-1 TEL





### 3.1.11 ITL-320C-1 (BK) TEL/ITL-320C-2 (BK) TEL

This IP multiline terminal features a large color touch panel LCD and is available in black only. The terminal features:

- Modular design
- Four-step adjustable base
- **—** Full-duplex speaker phone
- Protection button
- Seven-color LED for incoming calls
- Large color touch LCD
- Menu/Softkey operation provided on the LCD
- Backlit Numbered Keypad for easy viewing
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- □ XML open interface
- □ 10 Base-T/100 Base-TX network interface
- Backlit LCD

Figure 5-27 ITL-320C-1 TEL/ITL-320C-2 TEL





### 3.2 DT800 Series IP Multiline Terminals

#### 3.2.1 ITY-6D-1 (BK) TEL

This IP entry multiline terminal has six line keys with display and is available in black only. The terminal features:

- Non-modular design
- Two-step adjustable base
- Two-color LED for Incoming calls
- □ 168 x 41 monochrome LCD with cursor keys
- □ 10 Base-T/100 Base-TX network interface
- **Full-duplex speaker phone**
- Narrowband handset
- □ IEEE 802.3at type 1 compliant
- PoE only
- Backlit LCD
- Headset Jack

Figure 5-28 ITY-6D-1 TEL





### 3.2.2 ITY-8LDX-1 (BK) TEL

This IP entry multiline terminal has eight line keys with display and is available in black only. The terminal features:

- Non-modular design
- Two-step adjustable base
- Two-color LED for Incoming calls
- □ 168 x 128 monochrome LCD with cursor keys
- Self-Labeling line key displays eight lines
- □ 10 Base-T/100 Base-TX network interface
- **—** Full-duplex speaker phone
- Narrowband handset
- □ IEEE 802.3at type 1 compliant
- PoE only
- Backlit LCD
- Headset Jack

Figure 5-29 ITY-8LDX-1 TEL





### 3.2.3 ITY-8LGCX-1 (BK) TEL

This IP entry multiline terminal has eight line keys with color display and is available in black only. The terminal features:

- Non-modular design
- Two-step adjustable base
- Two-color LED for Incoming calls
- 320 x 240 color LCD with cursor keys
- Self-Labeling line key displays eight lines
- □ 10 Base-T/100 Base-TX/1000 Base-T network interface
- Full-duplex speaker phone
- Narrowband handset
- □ IEEE 802.3at type 1 compliant
- PoE only
- Backlit LCD
- Headset Jack

Figure 5-30 ITY-8LCGX-1 TEL





#### 3.2.4 ITZ-8LD-3 (BK) TEL

This IP value multiline terminal has eight line keys with display and is available in black. The terminal features:

- Modular design
- Four-step adjustable base
- **—** Full-duplex hands-free operation
- Self-Labeling line key displays eight lines per page (four pages of eight lines available using scroll key)
- Seven-color LED for incoming calls
- Two 224 X 96 full dot gray scale LCDs with cursor keys
- Backlit Numbered Keypad for easy viewing
- Wideband handset
- □ IEEE 802.3af compliant
- □ XML open interface
- 10 Base-T/100 Base-TX network interface
- Backlit LCD

Figure 5-31 ITZ-8LD-3 TEL





### 3.2.5 ITZ-12D-3 (BK)/(WH) TEL

This IP value multiline terminal has 12 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Seven-color LED for incoming calls
- 224 X 96 full dot gray scale LCD with cursor keys
- Backlit Numbered Keypad for easy viewing
- □ 10 Base-T/100 Base-TX network interface
- □ 12 Line buttons
- Menu/Softkey operation provided on the LCD
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- □ XML open interface
- Backlit LCD

Figure 5-32 ITZ-12D-3 TEL





### 3.2.6 ITZ-12CG-3 (BK)/(WH) TEL

This IP value multiline terminal has 12 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Seven-color LED for incoming calls
- Color LCD
- Backlit Numbered Keypad for easy viewing
- 10 Base-T/100 Base-TX/1000 BASE-T network interface
- □ 12 Line buttons
- XML Open Interface support
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- Menu/Soft key Operation
- USB I/F
- □ EHS I/F (with R2 F/W)

Figure 5-33 ITZ-12CG-3 TEL





### 3.2.7 ITZ-12DG-3 (BK)/(WH) TEL

This IP value multiline terminal has 12 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Seven-color LED for incoming calls
- Monochrome LCD
- Backlit Numbered Keypad for easy viewing
- 10 Base-T/100 Base-TX/1000 BASE-T network interface
- □ 12 Line buttons
- XML Open Interface support
- **Full-duplex handsfree operation**
- □ IEEE 802.3af compliant
- Menu/Soft key Operation
- USB I/F
- □ EHS I/F (with R2 F/W)

Figure 5-34 ITZ-12DG-3 TEL





### 3.2.8 ITZ-24D-3 (BK)/(WH) TEL

This IP value multiline terminal has 24 line keys and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Seven-color LED for incoming calls
- 224 X 96 full dot gray scale LCD with cursor keys
- Backlit Numbered Keypad for easy viewing
- □ 10 Base-T/100 Base-TX network interface
- □ 24 Line buttons
- Menu/Softkey operation provided on the LCD
- Full-duplex handsfree operation
- □ IEEE 802.3af compliant
- □ XML open interface
- Backlit LCD

Figure 5-35 ITZ-24D-3 TEL





### 3.2.9 ITZ-8LDG-3 (BK)/(WH) TEL

This IP value multiline terminal has eight line keys with display and is available in both black and white. The terminal features:

- Modular design
- Four-step adjustable base
- Seven-color LED for incoming calls
- Two 224 X 96 full dot gray scale LCDs with cursor keys
- Self-Labeling line key displays eight lines per page (four pages of eight lines available using scroll key)
- Backlit Numbered Keypad for easy viewing
- 10 Base-T/100 Base-TX/1000 BASE-T network interface
- Full-duplex handsfree operation
- Wideband handset
- □ IEEE 802.3af compliant
- XML open interface
- Backlit LCD

Figure 5-36 ITZ-8LDG-3 TEL





# 3.3 DT900 Series IP Multiline Terminals

The DT900 terminals have a newly designed cosmetic face, new layout button and a five-step adjustable tilt base.

### 3.3.1 ITK-6D-1 (BK) TEL

This IP multiline terminal has six buttons with display and is available in black only. The terminal features:

- Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features
- □ 10 Base-T/100 Base-TX network interface
- 6-button terminal equipped with 168 x 41 monochrome LCD and full featured keypad
- □ XML Open interface support
- Backlit LCD
- Seven-color LED for Incoming calls
- Menu/Softkey Operation
- Full-duplex handsfree operation
- Wideband handset
- □ IEEE 802.3at type 1 compliant
- PoE only
- Five-step adjustable base
- Headset Jack
- EHS interface

Figure 5-37 ITK-6D-1 TEL





### 3.3.2 ITK-12D-1 (BK) TEL

This IP multiline terminal has 12 buttons with display and is available in black only. The terminal features:

- Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features
- □ 10 Base-T/100 Base-TX network interface
- 12-button terminal equipped with 168 x 41 Monochrome LCD and full featured keypad
- XML Open interface support
- Backlit LCD
- Seven-color LED for Incoming calls
- Menu/Softkey Operation
- **—** Full-duplex handsfree operation
- Wideband handset
- □ IEEE 802.3at type 1 compliant
- PoE only
- Five-step adjustable base
- Headset Jack
- EHS interface

Figure 5-38 ITK-12D-1 TEL




## 3.3.3 ITK-8LCX-1 (BK) TEL

This IP multiline terminal has 8 line keys with display and is available in black only. The terminal features:

- □ Self-labeling line key displays 8 line keys
- Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features
- □ 10 Base-T/100 Base-TX network interface
- 3.5 inch (320 x 240) Color LCD
- **XML** Open interface support
- Seven-color LED for Incoming calls
- Menu/Softkey Operation
- **Full-duplex handsfree operation**
- Wideband handset
- □ IEEE 802.3at type 1 compliant
- PoE only
- Five-step adjustable base
- Headset Jack
- EHS interface

Figure 5-39 ITK-8LCX-1 TEL





## 3.3.4 ITK-8TCGX-1 (BK) TEL

This IP multiline terminal has 8 line keys with color display and is available in black only. The terminal features:

- Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features
- 1000 Base-T network interface
- 8 line keys display on screen
- □ 4.3 inch (480 x 272) color capacitive touch screen
- □ XML Open interface support
- Optional 60-button DSS Console
- Seven-color LED for Incoming calls
- Backlit numbered keypad for easy viewing
- Full-duplex handsfree operation
- Wideband handset
- □ IEEE 802.3at type 1 compliant
- Bluetooth distance: 40 meters (open area, i.e. outdoors)
- **Five-step adjustable base**
- Headset Jack
- EHS interface

Figure 5-40 ITK-8TCGX-1 TEL





#### **Regulatory Information for Bluetooth Interface**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

#### FCC WARNING

Change or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The built-in wireless module has already been certified.

#### CANADA: NOTICE

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

The built-in wireless module has already been certified.

USA: NOTICE



## 3.3.5 ITK-24CG-1 (BK)/(WH) TEL

This IP multiline terminal has 24 line keys with display and is available in both black and white. The terminal features:

- Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features
- 1000 Base-T network interface
- □ 4.3 inch (480 x 272) color LCD
- □ 24 line buttons
- □ XML Open interface support
- □ Seven-color LED for Incoming calls
- Menu/Soft key operation
- Backlit numbered keypad for easy viewing
- Optional 60-button DSS Console
- Full-duplex handsfree operation
- Wideband handset
- □ IEEE 802.3at type 1 compliant
- **Five-step adjustable base**
- Headset Jack
- EHS interface

Figure 5-41 ITK-24CG-1 TEL





## SECTION 4 INSTALL MULTILINE TERMINALS

4.1 Connecting the DT300/DT400/DT500 Series Multiline Terminal to the System

This instruction applies to all DT300/DT400/DT500 series multiline terminals.

4.1.1 Connecting the Handset

Confirm the location of the handset connector on the bottom of the multiline terminal. Then, connect the handset to the multiline terminal using the steps shown below.

### 4.1.1.1 Handset Connection DT300

- 1. Install the modular plug (attached to the curl cord of the handset) into the handset connector at the back of terminal. Push until it snaps into place.
- 2. Lead the Handset cable through the applicable groove. Refer to Figure 5-42 Installing the Handset (DT300).



#### 4.1.1.2 Handset Connection DT400

- 1. Install the modular plug (attached to the curl cord of the handset) into the handset connector at the back of terminal. Push until it snaps into place.
- 2. Lead the Handset cable through the applicable groove. Refer to Figure 5-43 Installing the Handset (DT400) on page 5-60.





### 4.1.1.3 Handset Connection DT500

- 1. Install the modular plug (attached to the curl cord of the handset) into the handset connector at the back of terminal. Push until it snaps into place.
- 2. Lead the Handset cable through the applicable groove. Refer to Figure 5-44 Installing the Handset (DT500).

#### Figure 5-44 Installing the Handset (DT500)



### 4.1.2 Connecting the Line Cord

Confirm the location of the line connector on the bottom of the multiline terminal. Then, connect the line cord to the multiline terminal using the steps shown below.



### 4.1.2.1 Line Cord Connection DT300

1. Install the modular plug of the Line Cord into the Line Connector at the back of terminal. Push until it snaps into place. Refer to Figure 5-45 Installing the Line Cord (DT300).



2. Install the Line Cord in the groove. Refer to Figure 5-46 Line Cord Groove (DT300).



3. Turn the terminal over and place it so the Line Cord can be passed through the groove between the tilt legs. Refer to Figure 5-47 Line Cord Groove Back of Terminal (DT300).





## 4.1.2.2 Line Cord Connection DT400

 Install the modular plug of the Line Cord into the Line Connector at the back of terminal. Push until it snaps into place. Refer to Figure 5-48 Installing the Line Cord (DT400).



2. Install the Line Cord in the groove. Refer to Figure 5-49 Line



#### Cord Groove (DT400).



- 3. Turn the terminal over and place it so the Line Cord can be passed through the groove between the tilt legs. Refer to Figure 5-50 Line Cord Groove Back of Terminal (DT400).
- Figure 5-50 Line Cord Groove Back of Terminal (DT400)





#### 4.1.2.3 Line Cord Connection DT500

Install the modular plug of the Line Cord into the Line Connector at the back of terminal. Push until it snaps into place. Refer to Figure 5-51 Installing the Line Cord (DT500). 1.



2. Install the Line Cord in the groove. Refer to Figure 5-52 Line Cord Groove (DT500).



3. Turn the terminal over and place it so the Line Cord can be passed through the groove between the tilt legs. Refer to Figure 5-53 Line Cord Groove Back of Terminal (DT500).

Terminal





## 4.1.3 Removal and Replacement of Panel and Designation Label

## 4.1.3.1 Removal of Panel and Designation Label

1. Gently insert a pointed rod into the gap on the right side of the panel.



- 2. Lift up and remove the panel.
- 3. Remove the Designation label.
- 4.1.3.2 Replacement of Panel and Designation Label



1. Place Designation label in line with the phone button.



2. Align the panel with the buttons on the phone, then press the four corners until they click into place.

## 4.2 Applying Power to the DT700/DT800/DT900 Multiline Terminal

The DT700/DT800/DT900 series terminals support two different power sources:

O AC-2R/AC-3R

Plug the optional AC-2R/AC-3R AC Adapter input Jack in the terminal base unit, and plug the 2-prong wall plug of the AC Adapter in a standard 120 Vac wall outlet.

O In-Line Power/PoE (Power over Ethernet)

In-Line Power (sometimes called Power Over Ethernet) is a LAN technology that allows standard 10 Base-T/100 Base-TX/1000 Base-T data cables to pass electrical current from a power source to a requesting end device.

O ITL/ITZ/ITK Terminals

An AC-L/AC-Z Unit is required if using local power.



Insert the AC adapter plug into the connector for AC adapter on the back of the telephone before connecting the AC power plug into the power outlet.



# 4.3 Connecting the DT700/DT800/DT900 Series IP Multiline Terminal to the Network and PC

These instructions for connecting an IP multiline terminal to the Network and PC apply to DT700/DT800/DT900 series multiline terminals.

## 4.3.1 Connecting the DT700/DT800 Series IP Multiline Terminal to the Network and PC

Confirm the location of AC adapter and the LAN connector at the back of the multiline terminal. Then connect the multiline terminal using the steps shown below.

- Connect the LAN Network 10 Base-T/100 Base-TX cable to the LAN (=) connector.
- The IP terminal has a switching HUB to connect a PC to the LAN Network. Connect the 10 Base-T/100 Base-TX straight cable used for this connection to the PC(x) connector and to the PC.
- ➡ The ITL-12CG and ITL-12DG terminals also support a 1000BASE-T interface.

Refer to Figure 5-56 IP Terminal Connector Locations.







When using the PC port with a local power supply, depending on the LAN cable connector housing, the LAN cable connector may not fit. Remove the outer plastic covering from the LAN cable connector, or use the LAN cable with a thin connector.

## NEC



## 4.3.2 Connecting the DT900 Series IP Multiline Terminal to the Network and PC

Confirm the location of AC adapter and the LAN connector at the back of the multiline terminal. Then connect the multiline terminal using the steps shown below.

 Plug-In an AC Adapter to the AC Adapter connector on back of the Terminal. The AC Adapter Cord can be passed through the groove (Refer to Figure 5-58 Connect AC Adapter Cord – DT900).





- 2. Connect the LAN Network cable to the LAN (=) connector.
- The IP terminal has a switching HUB to connect a PC to the LAN Network. Connect the 10 Base-T/100 Base-TX/1000 Base-T straight cable used for this connection to the PC(x) connector and to the PC.

Refer to Figure 5-56 IP Terminal Connector Locations.





When using the PC port with a local power supply, depending on the LAN cable connector housing, the LAN cable connector may not fit. Remove the outer plastic covering from the LAN cable connector, or use the LAN cable with a thin connector.





## 4.3.3 Connecting a Bluetooth Device to the ITK-8TCGX-1 or ITK-32TCG-1 Terminal Bluetooth Interface

4.3.3.1 Technical Information

Bluetooth Interface Version: 5.0

Frequency Range (in MHz): 2402 - 2480 MHz

Max Output (EIRP): 7.95 dBm

#### 4.3.3.2 Selecting a Location

Before choosing a location for your new telephone, consider these important guidelines:

- 1. If multiple ITK-8TCGX-1 or ITK-32TCG-1 terminals are installed, keep terminals at least 3.3 feet (1 meter) apart.
- 2. Avoid installing the ITK-8TCGX-1 or ITK-32TCG-1 terminal near a metal, concrete wall or any other structure that could affect radio transmission, it may cause a Bluetooth communication failure.
- 3. A maximum of 16 devices can be installed on the same floor (approximately 10 meters).
- 4. Keep the ITK-8TCGX-1 or ITK-32TCG-1 terminal at least 16 feet (5 meters) away from any device listed below.



Because the ITK-8TCGX-1 and ITK-32TCG-1 terminals and the following devices use the same frequency band (2.4 GHz), radio interference may occur if used in the vicinity of this product, which may cause noise or disconnection.

- O Microwave ovens
- O Wireless LAN access points (AP)
- O Medical apparatus
- O RFID (apparatus operating in the 2.4GHz band)
- Manufacturing equipment, such as plasma strippers (LSI manufacturing)
- O Speedway electronic toll gates
- O Bluetooth devices
- O Digital Wireless terminal using 2.4 GHz band
- 5. The radio waves generated by Bluetooth devices may affect the operation of electronic medical devices. Follow the instructions of each medical institution for use inside the medical institution.



## 4.4 Adjusting the LCD on the Multiline Terminal

DT300/DT400/DT700/DT800 series display multiline terminals have an adjustable Liquid Crystal Display (LCD). The LCD can be adjusted by pulling up or pushing down as desired.



## 4.5 Adjusting the Height on the Multiline Terminal

## 4.5.1 Adjusting the Height on the DT300/DT400/DT700/DT800 Multiline Terminals

The height of the DT300/DT400/DT700/DT800 series multiline terminals can be adjusted by moving the legs attached to the bottom of the terminal.

- 1. Turn telephone over (button side down).
- 2. Adjust legs to desired height (refer to Figure 5-62 Adjust Height of DT Series Terminal).



Figure 5-62 Adjust Height of DT Series Terminal



3. Turn telephone over (button side up).

## 4.5.2 Adjusting the Height on the DT500/DT900 Multiline Terminals

Figure 5-63 Adjust Height of DT500/DT900 Series Terminal

The height of the DT500/DT900 series multiline terminals can be adjusted by moving the legs attached to the bottom of the terminal.



DT500/DT900 Series Multiline Terminal

1. Turn telephone over (button side down).



2. Adjust legs to desired height (refer to Figure 5-62 Adjust Height of DT Series Terminal).



3. Turn telephone over (button side up).

## 4.6 Removing or Installing the Tilt Legs on the Multiline Terminal

The Tilt Legs can be removed or installed on the DT300/DT400/DT700/DT800 series multiline terminal.

## 4.6.1 Remove Tilt Legs

- 1. Place the telephone on a flat surface (button side down).
- 2. Separate the Tilt Legs and place them flat against the telephone. Refer to Figure 5-65 Separating the Tilt Legs.

Figure 5-65 Separating the Tilt Legs





3. Push downward (two arrows) and slide downward (refer to Figure 5-66 Removing Tilt Legs from Multiline Terminal).



Figure 5-66 Removing Tilt Legs from Multiline Terminal

4. Lift and remove the Tilt Legs.

### 4.6.2 Install Tilt Legs

- 1. Place the telephone on a flat surface (button side down).
- 2. Lay the adjustable Tilt legs on top of the telephone. Refer to Figure 5-67 Attach Tilt Legs to DT Series Terminal.





- 3. Push the Tilt Legs upward until they snap into place.
- 4. Lift both ends of Tilt Legs until they come together (refer to Figure 5-68 Connecting the Tilt Legs on page 5-75).

Figure 5-68 Connecting the Tilt Legs



5. Snap legs together and adjust to desired height. Refer to Figure 5-69 Adjust Height of DT Series Terminal.

Figure 5-69 Adjust Height of DT Series Terminal





## 4.7 Adjusting the Tilt Legs on the DT820 Multiline Terminal

The terminal provides adjustable legs for angling the phone to best suit each user. The legs can be set for two different heights (Low/High).

## 4.7.1 Low Position Setting

- 1. Turn the terminal over (button side down).
- 2. Adjust the legs to desired height.



3. Lead the Line and Handset cords through the applicable grooves.

Figure 5-71 Cabling of Multiline Terminal



4. Turn the terminal over (button side up).



## 4.7.2 High Position Setting

- 1. Turn the terminal over (button side down).
- 2. Pull up the Leg Stoppers.





3. Adjust the leg to desired height.



- 4. Lead the Line and Handset cords through the applicable grooves. Refer to Figure 5-71 Cabling of Multiline Terminal on page 5-76.
- 5. Turn the terminal over (button side up).



## 4.8 Wall Mounting the Multiline Terminal

You can wall mount a DT series multiline terminal using the base cover or an optional wall mount unit. A wall mount unit must be used if adapters are installed on the multiline terminal.

- ➡ When optional adapters are used, the multiline terminal must be installed on the wall using the WM-L UNIT (refer to 5.2.18 WM-L UNIT on page 5-144).
- 4.8.1 Wall Mounting a DT300/DT400/DT700/DT800 Multiline Terminal using the Base Plate
  - 4.8.1.1 Adjusting the Hanger Hook
    - Figure 5-74 Removing the Hanger Hook on a DT Series Terminal Hanger Hook
    - 1. Remove the hook from the unit.

- 2. Turn the hook with the tab toward the top.
- 3. Slide the hook until it glides into position forming the hanger hook for the handset.

Figure 5-75 Sliding the Hanger Hook into Position



## 4.8.1.2 Wall Mounting the Multiline Terminal

1. Plug line cord in the wall receptacle. Leave about eight inches of cord and bundle the rest as shown in Figure 5-76 Bundling the Line Cord.

Figure 5-76 Bundling the Line Cord



- 2. Ensure the Tilt Legs are in the flat (unused position).
- 3. Plug the line cord into the multiline terminal as illustrated in Figure 5-77 Plugging in Line Cord.



Figure 5-77 Plugging in Line Cord

4. Align the two holes on the back of the multiline terminal with the two screws on the wall plate and slide downward (refer to Figure 5-78 Mount Multiline Terminal Wall on Wall Plate on page 5-80).





Figure 5-78 Mount Multiline Terminal Wall on Wall Plate

- 5. Push spare line cord behind the multiline terminal.
- 4.8.1.3 Removing the Multiline Terminal from the Wall Mounted Base Plate.

To remove the multiline terminal, push up on the terminal until it comes loose.

Figure 5-79 Removing the Multiline Terminal



### 4.8.1.4 Wall Mounting the Base on a Wall Plate

1. Locate the screw holes on the base and hang the cover over the screws on the wall plate as illustrated in Figure 5-80 Wall Mounting Base on Wall Plate.

Figure 5-80 Wall Mounting Base on Wall Plate



2. Hang the multiline terminal on the base.



Because of variation in wall plates, this method is not recommended.



## 4.8.2 Wall Mounting a DT500/DT900 Multiline Terminal using the Base Plate

### 4.8.2.1 Adjusting the Hanger Hook

- 1. Remove the hook from the unit.
- 2. Turn the hook with the tab toward the top.
- 3. Slide the hook until it glides into position forming the hanger hook for the handset.

Figure 5-82 Sliding the Hanger Hook into Position



#### 4.8.2.2 Wall Mounting the Multiline Terminal

1. Plug line cord in the wall receptacle. Leave about eight inches of cord and bundle the rest as shown in Figure 5-76 Bundling the Line Cord.

Figure 5-83 Bundling the Line Cord



- 2. Ensure the Tilt Legs are in the flat (unused) position.
- 3. Plug the line cord into the multiline terminal as illustrated in Figure 5-77 Plugging in Line Cord.







4. Align the two holes on the back of the multiline terminal with the two screws on the wall plate and slide downward (refer to Figure 5-85 Mount Multiline Terminal Wall on Wall Plate).



Figure 5-85 Mount Multiline Terminal Wall on Wall Plate

5. Push spare line cord behind the multiline terminal.



## 4.8.2.3 Removing the Multiline Terminal from the Wall Mounted Base Plate.

To remove the multiline terminal, push up on the terminal until it comes loose.

Figure 5-86 Removing the Multiline Terminal



## 4.8.2.4 Wall Mounting the Base on a Wall Plate

1. Locate the screw holes on the base and hang the cover over the screws on the wall plate as illustrated in Figure 5-80 Wall Mounting Base on Wall Plate.



Figure 5-87 Wall Mounting Base on Wall Plate



2. Hang the multiline terminal on the base.

Figure 5-88 Wall Mounted Multiline Terminal



Because of variation in wall plates, this method is not recommended.



## 4.9 WALL MOUNTING THE DT820 TERMINAL

The IP4WW-Wall Mount Unit is used to mount the DT820 terminals to the wall. This unit connects to the back of the terminal.

## 4.9.1 Wall Mounting the DT820

Use the template in Figure 5-89 IP4WW-Wall Mount Unit Spacing Guide for required spacing before drilling.





Space for Modular Terminal



Install two screws into wall. Leave about 0.12" (3mm) spacing between screw head and wall.





## 4.9.2 Adjusting the Hanger Hook

1. Remove the hanger hook from the unit.



2. Turn the hook with the tab toward the top.



3. Slide the hook until it glides into position forming the hanger hook for the handset.



## 4.9.3 Installing the IP4WW-Wall Mount Unit

1. From the back of the terminal, move the handset cable to the cable groove shown (refer to Figure 5-93 Relocating the Handset Cable).



Before moving the leg to the folded position, the handset cable must be installed in the cable groove shown to prevent damage to cable.





- 2. Move the leg to the folded position.
- 3. Attach the IP4WW-Wall Mount Unit to the terminal (refer to Figure 5-94 Installing the IP4WW-Wall Mount Unit).



4. Pass the LAN cable through bottom of the IP4WW-Wall Mount Unit and plug into the LAN port.

Figure 5-95 Installing the LAN Cable





## 4.9.4 Wall Mounting the DT820 Multiline Terminal

Using the screws previously installed, mount the terminal on the wall.




# SECTION 5 MULTILINE TERMINALS OPTIONAL EQUIPMENT

## 5.1 DT Series Terminal Options

The following charts provide a quick overview of the options available with the DT/IT Series terminals for UNIVERGE SV9100.

### Table 5-13 Connectivity of Options (DT300/DT700)

		I	P Terminals	Digital Terminals		
	Terminal Options	Sophisticated ITL-320C-1 TEL	Value ITL-8LD-1 ITL-12D-1 ITL- 12CG-3 ITL- 12DG-3 ITL- 24D-1 ITL- 32D-1	Economy ITL-2E-1 ITL- 6DE-1 ITL-8LDE-1	Value DTL-8LD-1 DTL-12D-1 DTL-24D-1 DTL-32D-1	Economy DTL-2E-1 DTL-6DE-1 DTL-12E-1
	Ten Key Kit	$\checkmark$	✓	✓	$\checkmark$	$\checkmark$
Koy Kit	12LK Kit	N/A (Built in)	✓ (Except 8LD- 1 Unit)	N/A	✓ (Except 8LD- 1 Unit)	N/A
Key Kil	8LK Unit	$\checkmark$	✓	N/A	✓	N/A
	EHS	$\checkmark$	✓ (Except 32D- 1 Unit)	N/A	✓ (Except 32D- 1 Unit)	N/A
	ADA: Analog Recording Adapter	$\checkmark$	✓	N/A	$\checkmark$	N/A
Common	PSA: PSTN Adapter for analog	$\checkmark$	✓	N/A	$\checkmark$	N/A
	DSS: 60-Button DSS Console	$\checkmark$	✓	Connect to Digital Port on KTS		
	APR: Analog Port adapter with Ringer				~	N/A
Digital	Self-Labeling LK/LCD Unit				(Except 8LD-1 Unit)	N/A
	Backlit LCD				✓ (Except 8LD-1 Unit)	N/A
IP	Self-Labeling LK/LCD Unit	N/A (Built in)	✓ (Except ITL-12CG-3 ITL-12DG-3)	N/A	N/	A



Table 5-14 Connectivity of Options (DT400/DT800)					
Terminal Options		IP <sup>-</sup>	Terminals	Digital Terminals	
		Entry ITY-6D-1 ITY-8LDX-1 ITY-8LCGX-1	Value ITZ-8LD-3 ITZ-8LDG-3 ITZ-12D-3 ITZ-24D-3 ITZ-12CG-3 ITZ-12DG-3	Value DTZ-8LD-3 DTZ-12D-3 DTZ-24D-3	Economy DTZ-2E-3 DTZ-6DE-3
	Ten Key Kit	N/A	$\checkmark$	$\checkmark$	$\checkmark$
	12LK Kit	N/A	ITZ-12CG/12DG only	$\checkmark$	N/A
Key Kit				(Except 8LD-3 Unit)	
	8LK Unit	N/A	$\checkmark$	$\checkmark$	N/A
Common	ADA: Analog Recording Adapter	N/A	$\checkmark$	$\checkmark$	N/A
Common	DSS: 60-Button DSS Console	N/A	$\checkmark$	Connect to Digita	al Port on KTS
Digital	APR: Analog Port adapter with Ringer			~	N/A

Table 5-15 Connectivity of Options (DT500/DT900)

Terminal Options		IP Terminals				Digital Terminals
		D920 ITK-6D-1 ITK-6DG-1 ITK-12D-1 ITK-12DG-1	DT920 ITK-8LCX-1 ITK-8LCG-1 ITK-32LCG-1	DT930 ITK-8TCGX-1 ITK-32TCG-1	DT930 ITK-24CG-1	DT500 DTK-12D-1 DTK-24D-1
Key Kit	8LK-K Unit	N/A	N/A	N/A	$\checkmark$	$\checkmark$
Common	ADA: Analog Recording Adapter	N/A	N/A	N/A	$\checkmark$	$\checkmark$
Common	DSS: 60-Button DSS Console	N/A	N/A	$\checkmark$	$\checkmark$	Connect to Digital Port on KTS
Digital	APR: Analog Port adapter with Ringer					$\checkmark$



### 5.2 Multiline Terminals Optional Equipment

### 5.2.1 8LK-L UNIT (BK/WH)

Provides eight additional line keys to DT300/DT400/DT700/DT800 series terminals (except Economy). The unit features:

- Mounts directly to right side of terminal
- Supports Red and Green LED colors

Figure 5-97 8LK-L UNIT



### 5.2.1.1 Installing the 8LK-L UNIT



To prevent possible damage to the 8LK-L UNIT or the DT Series multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DT Series multiline terminal.

- 1. Remove both plastic panels from the front of the multiline terminal.
- 2. Turn multiline terminal upside down.
  - Only one 8LK-L UNIT can be attached to the DT Series multiline terminal.
- 3. Pry the side panel from the multiline terminal.

Figure 5-98 Remove Side Panel from Multiline Terminal





- 4. Return the multiline terminal to the buttons side up position.
- 5. Fit the projections on the side of the 8LK-L UNIT into the guide holes on the side of the multiline terminal.
- 6. Secure the 8LK-L UNIT with the two screws provided.

Figure 5-99 Securing the 8LK-L UNIT with Screws



- 7. Turn the multiline terminal upside down.
- 8. Open the small door covering the side option connectors by pulling the cover handle to the front.



- Connect the cable from the 8LK-L UNIT to the side option connector (see Figure 5-100 Install the 8LK-L UNIT Cable) on the multiline terminal and close the cover.
- 10. Attach the side panel to the side of the 8LK-L UNIT.
- 11. Return the multiline terminal to the buttons side up.
- 12. Complete the installation by reattaching both plastic panels to the front of the multiline terminal.



### 5.2.2 8LK-K UNIT (BK/WH)

Provides eight additional line keys to DT500/DT900 series terminals. The unit features:

- Mounts directly to right side of terminal
- Supports Red and Green LED colors

Figure 5-101 8LK-K UNIT



### 5.2.2.1 Installing the 8LK-K UNIT



To prevent possible damage to the 8LK-K UNIT or the DT Series multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DT Series multiline terminal.

- 1. Turn multiline terminal upside down.
  - Only one 8LK-K UNIT can be attached to the DT Series multiline terminal.
- 2. Using the two screws supplied, secure the 8LK unit to the multiline terminal (refer to Figure 5-102 Install 8LK-K UNIT Using 2 Screws on page 5-96).





- Lift the small lid on the multiline terminal to access to cable connector (refer to Figure 5-103 Connect 8LK-K UNIT Cable on page 5-97).
- 4. Slide the black plastic covering toward the 8LK-K Unit to protect the exposed wires.
- 5. Carefully plug the 8LK unit's telephone connection cable into the connector on the multiline terminal.
- 6. Route the cables around the cross rib on the multiline terminal to hide the extra cable.
- 7. Insert the telephone connection cable into the groove of the 8LK unit and close the cover.





- 8. Turn the multiline terminal and 8LK over.
- 9. To replace the name strip, lift the function button panel using the indent at the bottom of the button panel (refer to Figure 5-104 Install Designation Label on page 5-98).
- 10. After replacing the designation label and button, press the panel down until it clicks into position.







### 5.2.3 8LKD (LD)-L UNIT (BK/WH)

Provides eight additional line keys to DT300 Series (DTL) terminals. The unit features:

- Mounts directly to top of terminal
- Supports Self-Labeling 2 LCD panels
- **Eight line keys by four pages**

NEC

Figure 5-105 8LKD (LD)-L UNIT

### 5.2.3.1 Installing the 8LKD (LD)-L UNIT



To prevent possible damage to the 8LKD (LD)-L UNIT or the DTL multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DTL multiline terminal.

- 1. Turn multiline terminal upside down.
  - Only one 8LKD (LD)-L UNIT can be attached to the DTL multiline terminal.



2. Pry the side panel from the multiline terminal.

Side Panel

Figure 5-106 Remove Side Panel from Multiline Terminal

- 3. Remove the screw (refer to Figure 5-106 Remove Side Panel from Multiline Terminal on page 5-100).
- 4. Carefully, return the multiline terminal to the buttons side up.
- 5. Remove the Softkeys and Line Key kit from the telephone.
- 6. Gently lift the small black bar on the ribbon cable connector (refer to Figure 5-107 Ribbon Cable Connector).



Figure 5-107 Ribbon Cable Connector



- 7. Plug ribbon cable on back of 8LKD (LD)-L UNIT into connector until pressure is felt.
- Press down on the black bar to lock the cable into place (refer to Figure 5-108 Ribbon Cable Installed on page 5-101).





- 9. Align the projections on the bottom of the 8LKD (LD)-L UNIT with the guide holes on top of the multiline terminal.
- 10. Slide the 8LKD (LD)-L UNIT toward the keypad buttons until snug (refer to Figure 5-109 8LKD (LD)-L UNIT Installed).



Figure 5-109 8LKD (LD)-L UNIT Installed



- 11. Holding the LCD in place, turn the multiline terminal button side down.
- 12. Install the screw (refer to Figure 5-110 Install Screw).



- 13. Attach the side panel to the side of the 8LKD (LD)-L UNIT (refer to Figure 5-116 Install Screw on page 5-106).
- 14. Return the multiline terminal to the buttons side up.
- 15. Connect the line cord/LAN cable and the AC/DC adapter to the DTL multiline terminal.



### 5.2.4 8LKI (LD)-L UNIT (BK/WH)

Provides eight additional line keys to DT700 Series (ITL) Self-Labeling terminals. The unit features:

- Mounts directly to top of terminal
- Supports Self-Labeling 2 LCD panels
- **Eight line keys by four pages**

Figure 5-111 8LKI (LD)-L UNIT

### 5.2.4.1 Installing the 8LKI (LD)-L UNIT



To prevent possible damage to the 8LKI (LD)-L UNIT or the ITL multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the ITL multiline terminal.

- 1. Turn multiline terminal upside down.
  - Only one 8LKI (LD)-L UNIT can be attached to the ITL multiline terminal.



2. Pry the side panel from the multiline terminal.

Side Panel

Figure 5-112 Remove Side Panel from Multiline Terminal

- 3. Remove the screw (refer to Figure 5-112 Remove Side Panel from Multiline Terminal).
- 4. Carefully, return the multiline terminal to the buttons side up.
- 5. Remove the Softkeys and Line Key kit from the telephone.
- 6. Gently lift the small black bar to open the ribbon cable connector.

Figure 5-113 Ribbon Cable Connector





- 7. Plug ribbon cable on back of 8LKI (LD)-L UNIT into connector (metal side down) until pressure is felt.
- 8. Press down on the black bar to lock the cable into place (refer to Figure 5-114 Ribbon Cable Installed).





- 9. Align the projections on the bottom of the 8LKI (LD)-L UNIT with the guide holes on top of the multiline terminal (refer to Figure 5-114 Ribbon Cable Installed on page 5-105).
- 10. Slide the 8LKI (LD)-L UNIT toward the keypad buttons until snug (refer to Figure 5-115 8LKI (LD)-L UNIT Installed).



Figure 5-115 8LKI (LD)-L UNIT Installed



- 11. Holding the LCD in place, turn the multiline terminal button side down.
- 12. Install screw (refer to Figure 5-116 Install Screw).



- 13. Attach the side panel to the side of the 8LKI (LD)-L UNIT (refer to Figure 5-116 Install Screw).
- 14. Return the multiline terminal to the buttons side up.
- 15. Connect the line cord/LAN cable and the AC/DC adapter to the ITL multiline terminal.

### 5.2.5 Installing Line Key Kit (12LK-L KIT)

The 12LK-L KIT Provides 12 additional buttons to ITL or DTL multiline terminals. The 12LK-L KIT kit:

- Mounts directly to top side of terminal
- Supports Red and Green LED colors

Figure 5-117 12LK-L Kit





### 5.2.5.1 Installing the 12LK-L KIT



To prevent possible damage to the 12LK-L KIT or the DTL/ITL multiline terminal during installation or removal, disconnect the line cord/ LAN cable and the AC/DC adapter from the DTL/ITL multiline terminal.

- 1. Turn multiline terminal upside down.
  - → Only one 12LK-L KIT can be attached to the DTL/ITL multiline terminal.
- 2. Pry the right side panel from the multiline terminal.
- 3. From the lower left or right corner, pry the Line Key Panel from the multiline terminal (refer to Figure 5-118 Removing the Line Key Panel).







4. Lift and remove the DESI sheet.

Figure 5-119 Removing the DESI Sheet

DESI Sheet

5. Press the right end of the Line Key placeholder and lift to remove (refer to Figure 5-120 Removing the Line Key Placeholder).







6. Install the 12LK-L KIT and slide until aligned with the Tab Hole.



7. Press on the right end of the 12LK-L KIT until a click is heard.

Figure 5-122 Installing the 12LK-L KIT





8. If desired, print and install the new DESI sheet.

Figure 5-123 Installing the DESI Sheet



9. Install the supplied Line Key Panel (refer to Figure 5-124 Installing the Line Key Panel). A variety of colors is now available for the 12 and 24 button LK Panels (refer to Chapter 1, Table 1-13 DT300/DT700 Series Optional Equipment List on page 1-12).



- 10. Install the side panel.
- 11. Connect the line cord/LAN cable and the AC/DC adapter to the DTL/ITL multiline terminal.



### 5.2.5.2 Configuring the Digital Telephone for the Correct Number of Line Keys

- 1. With the telephone not plugged in and the handset on-hook, press the 4 and 6 buttons on the numbered keypad and connect the telephone cable.
  - This places the telephone into Service Class Read/ Write (R/W) mode. The Message Waiting (MW) LED should be On.
- 2. Press 1 to enter the Line Key Type mode.
  - The Message Waiting LED should flash.
- Follow the directions below for the type of line key module 3. installed:

Line Key Type	Push
2-Button	1
6-Button	2
8-Button	3
12-Button	4
24-Button	5

- 4. Save to memory by pressing line key 2, 8, 14 or 20. The display changes back to the Service Class R/W mode and the Message Waiting (MW) LED is On Red.
- 5. Press Exit to return the telephone to idle.

### 5.2.5.3 Configuring the IP Telephone for the Correct Number of Line Keys

- 1. Press **Menu**, then **0** (Config) to enter the terminal program mode.
- 2. At the Login screen, enter the user name (default = ADMIN) and password (default = 6633222) and press the OK Softkey.
- Press 3 for Maintenance Setting. 3.
- 4. Press 4 for Adjust.
- 5. Press 2 for Key Kit Type.
- Press the Up/Down key to select the Key Kit. 6.

### Table 5-17 Ten Key Kit Type

Ten Key Kit Entry	Description
Kit1	Type A – Japan with cursor key
Kit2	Type A – US with cursor key

Table 5-16 Line Key Type



Table 5-17 Ten Key Kit Type (Continued)

Ten Key Kit Entry	Description
Kit3	Type B – US with cursor key
Kit4	
Kit8	32 Line Key without cursor key
Kit9	Type A – Japan without cursor key
Kit10	Type A – US without cursor key
Kit11	Type B – US without cursor key
Kit12	

### 7. Press Softkey **4** for Next.

- 8. Press the Up/Down key to select the Line Key kit.
  - → By default, the correct line key kit for the keypad kit selected above is highlighted.

Line Key Kit Entry	Description
Kit12	Enhanced 12-Button
Kit24	Enhanced 24-Button
Kit32	Enhanced 32-Button
Kit8	Self-Labeling
Kit6	Value 6-Button
Kit2	Value 2-Button
Kit0	IP-CTS

- 9. Press Softkey **4** for OK to complete.
- 10. Continue pressing Softkey **4** to exit (Exit-Exit-Save). The terminal resets automatically.



### 5.2.6 Installing the Directory Card on the DT300/DT700 series Multiline Terminal

A directory card can be attached to DT300/DT700 Series multiline terminals. The directory card can be used to record often dialed numbers or other important information.

1. After recording the information on the lined insert, reinsert it between the plastic panels of the directory card. Attach the directory card to the directory card holder as illustrated in Figure 5-125 Attaching Directory Card to Directory Card Holder on page 5-113. The open end slides into the directory card holder.



- Locate the two grooves on the top of the telephone as illustrated in Figure 5-126 Attaching Directory Card Holder to the Multiline Terminal. Push the directory card holder into the grooves on the multiline terminal until they snap into place.
  - To remove the directory card, press the two sides of the directory card holder inward until the tabs release and pull the holder out of the grooves.





Figure 5-126 Attaching Directory Card Holder to the Multiline Terminal



# 5.2.7 Installing the Directory Card (Directory Card Unit (L)) on the DT500 and DT900 Series Multiline Terminal

A directory card can be attached to DT500 and DT900 series multiline terminals. The directory card can be used to record often dialed numbers or other important information.

- 1. Insert the holder into the holder socket on the back of the multiline terminal.
- 2. A protective sheet is attached to the surface of the cover to prevent scratches. Peel off before attaching to the holder.
- 3. Insert the Directory Card into the cover and attach it to the holder.
- 4. The following is a representative picture using the CG DIRECTORY UNIT (L) and an ITK-24CG-1 terminal.

Figure 5-127 Installing Directory Card Holder to the Multiline Terminal





### 5.2.8 Removal and Replacement of the DT300/DT400/DT700/DT800 Series Numbered Keypad

The Numbered Keypad (in black or white), is commonly delivered in the Business/Standard Layout configuration (refer to Figure 5-128 Standard Numbered Keypad) and can be easily removed and replaced.

Figure 5-128 Standard Numbered Keypad



**Business Layout** 

### 5.2.8.1 Removing the Numbered Keypad



To prevent possible damage to the Numbered Keypad or the DTL/ITL multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DTL/ITL multiline terminal.

1. Remove the Numbered Keypad Panel. (Refer to paragraph Figure 5-129 Remove Plastic Panels.)



Figure 5-129 Remove Plastic Panels



 Pull down on the tab and lift the Numbered Keypad away from the telephone to remove the existing button. Refer to Figure 5-130 Removing Numbered Keypad from DT300/ DT700 Series Terminal.

Figure 5-130 Removing Numbered Keypad from DT300/DT700 Series Terminal



### 5.2.8.2 Installing the Numbered Keypad

1. Slide the replacement numbered keypad into the grooves located on the inside of the telephone, then press down on the keypad to snap it into place. Refer to Figure 5-131 Install New Numbered Keypad into DT300/DT700 Series Terminal.

Figure 5-131 Install New Numbered Keypad into DT300/DT700 Series Terminal





2. Install the Numbered Keypad Panel on the multiline terminal. Refer to Figure 5-132 Install Plastic Panels.



### 5.2.9 Removal and Replacement of the DT500/DT900 Series Numbered Keypad

The Numbered Keypad (in black or white), is commonly delivered in the Business/Standard Layout configuration (refer to Figure 5-133 DT500/DT900 Numbered Keypads) and can be easily removed and replaced.

### Figure 5-133 DT500/DT900 Numbered Keypads





### 5.2.9.1 Removing the Numbered Keypad Panel



To prevent possible damage to the Numbered Keypad or the DTL/ITL multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DTL/ITL multiline terminal.

1. Remove the Numbered Keypad Panel (refer to Figure 5-129 Remove Plastic Panels).





### 5.2.9.2 Installing the Numbered Keypad Panel

1. Align the four hooks on the face panel to the holes on front of the multiline terminal and press until it clicks into position (refer to Figure 5-135 Install Plastic Panels on page 5-120).





### 5.2.10 Removal and Replacement of the BS( )-L Kit (Ten Key Kit)

The Business BS()-L Kit (in black or white), is commonly delivered with the UNIVERGE SV9100 multiline terminal. If required, the BS()-L Kit can be removed and replaced on the DT300/DT700 Series multiline terminal.

The Retro BS( )-L Kit is an optional kit available to be used with the IPK II and IPS terminals.

### 5.2.10.1 Remove the BS()-L Kit

1. Pry the right side panel from the multiline terminal (refer to Figure 5-136 Remove Plastic Panels).





### 5.2.10.2 Install the BS( )-L Kit

1. Slide replacement Ten Key kit into position. Tabs of kit fit into holes on the multiline terminal.



Figure 5-138 Install the Ten Key Kit



2. Press down until the Ten Key kit clicks into place.

Figure 5-139 Secure the Ten Key Kit



3. Reinstall the Line Key and Numbered Keypad panels on the multiline terminal.







4. Reinstall the right side panel (refer to Figure 5-140 Install Plastic Panels).



### 5.2.10.3 Configuring the Digital Telephone for the Ten Key Kit

- 1. With the telephone not plugged in and the handset on-hook, press the **4** and **6** buttons on the numbered keypad and connect the telephone cable.
  - This places the telephone into Service Class Read/ Write (R/W) mode. The Message Waiting LED should be On.
- 2. Press **2** on the numbered keypad to enter the Button Kit mode.
  - ➡ The Message Waiting LED should flash.
- 3. Follow the directions below for the type of keypad installed:

Numbered Keypad Type	Push	LED Indication (2D Style Terminal)
Japan Value	01	Line 1 LED on Red
Model A Telephone	02	Line 2 LED on Red
Model B UX5000 Telephone	03	Line 1 and 2 LED on Red
Call Center	04	Line 1 LED on Green
Hotel-1	05	Line 2 LED on Green
Hotel-2	06	Line 1 and 2 LED on Green
Retirement Home	07	Line 1 LED flashing Red
Japan 32-Button	08	Line 2 LED flashing Red
Japan Economy	09	Line 1 and 2 LED flashing Red
Model A Economy	10	Line 1 LED flashing Green
Model B Economy	11	Line 2 LED flashing Green
Reserve	12	Line 1 and 2 LED flashing Green

Table 5-19 Numbered Keypad Type

- 4. Press line key 2, 8, 14 or 20 to save to memory. The display changes back to the Service Class R/W mode and the Red Message Waiting (MW) LED is On.
- 5. Press **Exit** to return the telephone to idle.

### 5.2.10.4 Configuring the IP Telephone for the Ten Key Kit

- ➡ There is no setting for the DT900, the key kit is set at the factory.
- 1. Press **Menu**, then **0** (Config) to enter the terminal program mode.
- At the Login screen, enter the user name (default = ADMIN) and password (default = 6633222) and press the OK Softkey.
- 3. Press **3** for Maintenance Setting.



- 4. Press **4** for Adjust.
- 5. Press **2** for Key Kit Type.
- 6. Press the Up/Down key to select the keypad kit.

### Table 5-20 Keypad Kit Type

Keypad Kit Entry	Description
Kit1	Type A – Japan with cursor key
Kit2	Type A – US with cursor key
Kit3	Type B – US with cursor key
Kit4	_
Kit8	32 Line Key without cursor key
Kit9	Type A – Japan without cursor key
Kit10	Type A – US without cursor key
Kit11	Type B – US without cursor key
Kit12	_

### 7. Press 4 for Next.

### 8. Press the Up/Down key to select the line key kit.

→ By default, the correct line key kit for the keypad kit selected above is highlighted.

### Table 5-21 Line Key Kit Type

Line Key Kit Entry	Description
Kit12	Enhanced 12-Button
Kit24	Enhanced 24-Button
Kit32	Enhanced 32-Button
Kit8	Self-Labeling
Kit6	Value 6-Button
Kit2	Value 2-Button
Kit0	IP-CTS

- 9. Press Softkey for OK to complete.
- 10. Continue pressing Softkey to exit (Exit-Exit-Save). The terminal resets automatically.



### 5.2.11 Installing the Sticker-Braille-L KIT

Stickers 1 and 2 (2-button, 6-button, 12-button and 24-button telephones)

Stickers 1 and 2 are attached by peeling the sticker from the sheet and applying it to the face plate (it can be applied over the LCD) or by cutting the sticker from the sheet and placing the sticker in the Directory Card holder.

Sticker 3 (12-button and 24-button telephones)

The LN/LND sticker is applied directly to the button by peeling the sticker from the sheet and applying it directly on the button face.

Sticker 4 (2-button, 6-button, 12-button, and 24-button telephones)

The HLD/HOLD, SP/SPK and CNF/CONF stickers are applied by peeling the sticker from the sheet and applying the sticker below the appropriate button.




Sticker 2 DIAL 🗄 🗄 🗄 ₿₿₿₿ CALL 1 ₽₽₽₽ мѕс 🗄 🗄 🗄 CALL 2 FLASH 🗄 🗄 🛱 8 **B** 8 DND міс 🛱 🛱 🛱 9 8 8 LND 1.3 Sticker 4 HLD HOLD SP SPK 880 Β Ε

Figure 5-142 Sticker-Braille-L KIT (Sheet 2)



## 5.2.12 Installing the Sticker-Braille-K KIT

STICKER-BRAILLE-K includes BRAILLE SEAL-K(E) and BRAILLE PARAPHRASE LABEL-K(E).

Figure 5-143 BRAILLE SEAL-K and BRAILLE PARAPHRASE LABEL-K(E)

or recall of hd hold
o f f f f f f f f f f transfer
o answer o o speaker
စာ m ေ mic
BRAILLE SEAL-K(E) GXM-025041-001-00
o o o o o o o o o o o o o o o o o o o
tf transfer 0 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
sp speaker o o o o o o
o o o o o o o o o o o o o o o o o o o
n answer oo oo oo
m mic
BRAILLE PARAPHRASE LABEL-K(E) GXM-025042-001-00



BRAILLE SEAL-K(E) is a braille sticker pasted at function key on Multiline Terminal. This braille appears by simple alphabet. BRAILLE PARAPHRASE LABEL-K(E) is a reinterpretation from simple alphabet to Function Key name.

About BRAILLE PARAPHRASE LABEL-K(E), set up near your telephone and use it.

The following is a position to paste each seal to Function key. r: Left side of Recall key f: Right side of Feature key n: Left side of Answer key m: Right side of Mic key hd: Bottom of Hold key tr: Bottom of Transfer key sp: Bottom of Speaker key

Figure 5-144 Sticker-Braille-K KIT



For further information on the BRAILLE SEAL-K(E) used by DTK.ITK terminals refer to:

CBZ-032608-001-00R001P01\_BRAILLE SEAL-K(E) MANUAL



## 5.2.13 DCL-60-1/DCZ-60-2 CONSOLE (BK/WH)

The Attendant Console has 60 programmable line keys and is available in black or white. The unit features:

- 60 programmable Direct Station Selection (DSS) keys (refer to system user guides)
- Supported on ITL or DTL modular terminals
- Green and Red LEDs

The DSS Console gives a multiline terminal user a Busy Lamp Field (BLF) and one-button access to extensions, trunks and system features. The 60-Button DSS Console provides an additional 60 programmable keys. The page switching key allows a maximum of 120 keys. There are two pages of 54 programmable keys and six fixed keys.

Keep the following in mind when installing DSS Consoles:

A 60-Button DSS Console requires a separate digital station port when pairing with a digital multiline terminal. For IP terminals, the console is connected to the side option slot using a special cable.



Figure 5-145 DCL-60-1/DCZ-60-2 CONSOLE



## 5.2.13.1 Installing the DCL-60-1/DCZ-60-2 CONSOLE



To prevent possible damage to the DCL-60-1/ DCZ-60-2 CONSOLE or the DT Series multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/ DC adapter from the DTL/ITL multiline terminal



- If a "Digital Port Connection" is used, one telephone can support a maximum of 32 DSS Consoles.
- If connected to an IP phone as a side option, a maximum of one DSS Console is supported per telephone.
- 1. Remove both plastic panels from the front of the multiline terminal.
- 2. Turn multiline terminal upside down.
  - → Only one DCL-60-1/DCZ-60-2 CONSOLE can be attached to the DT Series multiline terminal.
- 3. Pry the side panel from the multiline terminal.

Figure 5-146 Remove Side Panel from Multiline Terminal



- 4. Turn the multiline terminal button side up.
- 5. Fit the projections of the supplied bracket into the side of the multiline terminal.



6. Attach the bracket with three supplied screws.



Figure 5-147 Secure Bracket to Multiline Terminal with Screws

7. Carefully push the Serial cable into the Serial Cable Groove (DT700/DT800 only).



Figure 5-148 Press Serial Cable into Groove

8. Using the guides, slide the DCL-60-1/DCZ-60-2 CONSOLE onto the installed bracket (refer to Figure 5-148 Press Serial Cable into Groove).



9. Secure the DCL-60-1/DCZ-60-2 CONSOLE to the bracket with the two screws provided.

Figure 5-149 Securing the DCL-60-1/DCZ-60-2 CONSOLE with Screws



- 10. Open the small door covering the side option connectors by pulling the cover latch toward you (refer to Figure 5-150 Serial Cable Installed, ITL, DT700 only).
- 11. Connect the cable from the DCL-60-1/DCZ-60-2 CONSOLE to the Side Option Connector on the multiline terminal and close the cover (DT700/DT800 only).



Figure 5-150 Serial Cable Installed

12. Set the tilt leg on the multiline terminal to the desired height.



- 13. Set the height of the tilt leg on the DCL-60-1/DCZ-60-2 CONSOLE to match the tilt leg on the multiline terminal.
- 14. Attach the side panel to the side of the DCL-60-1/DCZ-60-2 CONSOLE.
- 15. Return the multiline terminal and DCL-60-1/DCZ-60-2 CONSOLE to the buttons side up position.
- 16. Connect the digital cable to the LINE jack (DT300/DT400 only).
- 17. Connect the AC Adapter cable. See Figure 5-151 Connect AC Adapter Cable on page 5-134.



18. Complete the installation by reattaching both plastic panels to the front of the multiline terminal.



Figure 5-152 DCL-60-1/DCZ-60-2 CONSOLE Installed



## 5.2.14 DCK-60-1 CONSOLE (BK/WH)

The Attendant Console has 60 programmable line keys and is available in black or white. The unit features:

- 60 programmable Direct Station Selection (DSS) keys (refer to system user guides)
- **\_\_** Supported on ITK or DTK modular terminals
- Green and Red LEDs

The DSS Console gives a multiline terminal user a Busy Lamp Field (BLF) and one-button access to extensions, trunks and system features. The 60-Button DSS Console provides an additional 60 programmable keys. The page switching key allows a maximum of 120 keys. There are two pages of 54 programmable keys and six fixed keys.

Keep the following in mind when installing DSS Consoles:

A 60-Button DSS Console requires a separate digital station port when pairing with a digital multiline terminal. For IP terminals, the console is connected to the side option slot using a special cable.



Figure 5-153 DCK-60-1 CONSOLE (BK/WH)

# 5.2.14.1 Installing the DCK-60-1 CONSOLE with Multiline Terminal

The DCK-60-1 can be connected to the DT500/DT900 series.



If an 8LK unit is connected, connect the DCK-60-1 to the right side of the 8LK unit.





To prevent possible damage to the DCK-60-1 or the DT Series multiline terminal during installation or removal, disconnect the line cord/ LAN cable and the AC/DC adapter from the DTK/ ITK multiline terminal



 If connected to an IP phone as a side option, a maximum of one DSS Console is supported per telephone.

- 1. Connect the cable.
  - **For digital multiline terminal, proceed to Step 11.**
  - For IP multiline terminal continue with Step 2.
- 2. Turn the multiline terminal and DSS upside down. Connect the telephone connection cable to the connector on the back of the DSS console.
- Insert the telephone connection cable into the groove of the DSS console (refer to Figure 5-154 Install Telephone Connection Cable).



If an 8LK unit is connected, fit the cable into the groove of the 8LK unit.

Figure 5-154 Install Telephone Connection Cable



4. Lift the small lid on the multiline terminal to access to cable connector (refer to Figure 5-154 Install Telephone Connection Cable).



- 5. Slide the black plastic covering toward the DSS console to protect the exposed wires.
- Carefully plug the DSS console cable into the connector on the multiline terminal (refer to Figure 5-155 DSS to IP Multiline Connection).



- 7. Route the cables around the cross rib on the multiline terminal to hide the extra cable.
- 8. Insert the telephone connection cable into the groove of the DSS console and close the cover.
- 9. Using the 4 screws supplied, install the DSS console support bracket (refer to Figure 5-156 Installing the DSS Console Support Bracket on page 5-138).

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10. Connect the AC Adapter plug to the AC adapter connector on the DSS console (refer to Figure 5-157 Installing the AC Adapter on page 5-139).





- 13. Align the height of the tilt legs on the multiline terminal and DSS console.
- 14. Turn the multiline terminal and DSS console over.



- 15. Attach the Designation label and function button panel (refer to Figure 5-159 Installing the Designation Label).
- 16. Align the Designation label and top panel with the button on the DSS and carefully press until it clicks into position.





## 5.2.14.2 Installing the DCK-60-1 CONSOLE as Standalone Console

- 1. Connect the Line Cord modular plug to the LINE connector on the DSS console (refer to Figure 5-161 Installing DCK-60-1 CONSOLE (BK/WH) Standalone).
- 2. Press the line cord into the groove of the DSS console.



- 3. Adjust the tilt legs on the DSS console to the desired height.
- 4. Turn the multiline terminal and DSS console over.
- 5. Attach the Designation label and function button panel (refer to Figure 5-162 Installing the Designation Label).
- 6. Align the Designation label and top panel with the button on the DSS and carefully press until it clicks into position.





7. Installation of the Standalone DSS is complete.

Figure 5-163 Standalone DCK-60-1 CONSOLE (BK/WH)





## 5.2.15 LCD (BL)-L UNIT (BK/WH)

The LCD (BL)-L UNIT is an optional LCD unit for modular terminals and supports the backlit LCD feature (DT300 Series only).



Figure 5-164 LCD (BL)-L UNIT

Figure 5-165 LCD (BL)-Z UNIT

## 5.2.16 LCD (BL)-Z UNIT (BK/WH)

The LCD (BL)-Z UNIT is an optional LCD unit for modular terminals and supports the backlit LCD feature (DT400 Series only).



## 5.2.17 PANEL()-L UNIT

Optional plastic color side panels allow users to customize the ITL/DTL terminals. A variety colors are available for the Base (all), VLCD (Value LCD) and SLCD (Sophi LCD) terminals (refer to Chapter 1, Table 1-13 DT300/DT700 Series Optional Equipment List on page 1-12).

Right and Left side panels are not interchangeable.

Figure 5-166 PANEL( )-L UNIT



## 5.2.18 WM-L UNIT

The WM-L UNIT (Wall Mount Unit) is used to attach any DT Series multiline terminal to the wall. This unit connects to the bottom of the telephone.

When optional adapters are used, the multiline terminal must be installed on the wall using the WM-L UNIT.

### 5.2.18.1 Mount Multiline Terminal on Wall using WM-L UNIT

Use the template shown in Figure 5-167 Wall Mount Spacing Guide (WM-L UNIT) on page 5-144 for required spacing before drilling.



 Attach the WM-L UNIT to the wall using six screws or, using two wall mounted screws (refer to Figure 5-168 Attach WM-L UNIT Using Screws on page 5-145).





- 2. Plug one end of the line cord into the wall receptacle. Leave about eight inches of cord and bundle the rest.
- 3. Plug the opposite end of the line cord into the multiline terminal as illustrated in Figure 5-169 Plugging in Line Cord.

Figure 5-169 Plugging in Line Cord





4. Align the four cutouts on the bottom of the multiline terminal (refer to Figure 5-170 Cutouts for WM-L UNIT) with the tabs on the WM-L UNIT (refer to Figure 5-171 WM-L UNIT Tabs).



Figure 5-170 Cutouts for WM-L UNIT

Figure 5-171 WM-L UNIT Tabs





5. Push down until the multiline terminal snaps into place (refer to Figure 5-172 WM-L UNIT Installed).



Figure 5-172 WM-L UNIT Installed

- 6.
- To release the multiline terminal from the WM-L UNIT, press the release button and push the telephone up (refer to Figure 5-173 WM-L UNIT Release Button).



Figure 5-173 WM-L UNIT Release Button



# 5.2.18.2 Mount Multiline Terminal on Wall Plate using WM-L UNIT

1. Locate the screw holes on the base and hang the cover over the screws on the wall plate as illustrated in Figure 5-174 Attach WM-L UNIT to Wall Plate.



- ➡ Because of variation in wall plates, this method is not recommended.
- 2. Plug one end of the line cord into the wall receptacle. Leave about eight inches of cord and bundle the rest.
- 3. Plug the opposite end of the line cord into the multiline terminal as illustrated in Figure 5-175 Plugging in Line Cord.

Line In

Figure 5-175 Plugging in Line Cord



4. Align the four cutouts on the bottom of the multiline terminal (refer to Figure 5-176 Cutouts for WM-L UNIT) with the tabs on the WM-L UNIT (refer to Figure 5-177 WM-L UNIT Tabs).



Figure 5-176 Cutouts for WM-L UNIT

Figure 5-177 WM-L UNIT Tabs





5. Push down until the multiline terminal snaps into place (refer to Figure 5-178 WM-L UNIT Installed).



6. To remove the WM-L UNIT from the wall panel, push up on the telephone until it comes loose (refer to Figure 5-179 Removing the Multiline Terminal).



Figure 5-178 WM-L UNIT Installed



7. To separate the multiline terminal from the WM-L UNIT, press the release button and slide the multiline terminal up (refer to Figure 5-180 WM-L UNIT Release Button).



Figure 5-180 WM-L UNIT Release Button



## 5.2.19 DSS WM-L UNIT

The DSS WM-L UNIT (Wall Mount Unit) is used to attach the DCL-60-1/ DCZ-60-2 CONSOLE to the wall. This unit connects to the bottom of the terminal.

## 5.2.19.1 Mount DCL-60-1/DCZ-60-2 CONSOLE on Wall using DSS WM-L UNIT

Use the template shown in Figure 5-181 Wall Mount Spacing Guide (DSS WM-L UNIT) for required spacing before drilling.



Figure 5-181 Wall Mount Spacing Guide (DSS WM-L UNIT)



1. Attach the DSS WM-L UNIT to the wall using six screws or, using two wall mounted screws (refer to Figure 5-182 Attach DSS WM-L UNIT Using Screws).



## 5.2.19.2 Mount DCL-60-1/DCZ-60-2 CONSOLE on Wall Plate using DSS WM-L UNIT

1. Locate the screw holes on the base and hang the cover over the screws on the wall plate as illustrated in Figure 5-183 Attach DSS WM-L UNIT to Wall Plate.



Because of variation in wall plates, this method is not recommended.



2. Plug one end of the line cord into the wall receptacle. Leave about eight inches of cord and bundle the rest.



Figure 5-185 Plugging Cable into DCL-60-1/DCZ-60-2 CONSOLE





### 5.2.20 60 DSS WM-K UNIT

The 60 DSS WM-K UNIT (Wall Mount Unit) is used to attach the DCK-60-1 CONSOLE to the wall. This unit connects to the bottom of the terminal.

# 5.2.20.1 Wall Mount DCK-60-1 CONSOLE using 60 DSS WM-K UNIT

Use the template shown in Figure 5-186 Wall Mount Spacing Guide (60 DSS WM-K UNIT) for required spacing before drilling.

For the material of the wall, avoid gypsum board etc., and carefully examine the weight of the DSS console and whether it can withstand the load when it is pulled during operation.



Figure 5-186 Wall Mount Spacing Guide (60 DSS WM-K UNIT)



1. Attach the 60 DSS WM-K UNIT to the wall using four screws or, using two wall mounted screws (refer to Figure 5-187 Attach 60 DSS WM-K UNIT Using Screws).



# 5.2.20.2 Mount DCK-60-1 CONSOLE on Wall Plate using 60 DSS WM-K UNIT

1. Locate the holes on the base and hang the cover over the hooks on the wall plate as illustrated in Figure 5-188 Attach 60 DSS WM-K UNIT Using Wall Plate.

If connecting a digital multiline terminal continue with Step 2.

If connecting an IP multiline terminal proceed to Step 7.

If installing separately, continue with Step 2.





 Attach the modular rosette to the cutout of the 60 DSS WM-K UNIT to the wall (refer to Figure 5-189 Attach Modular Rosette).

If a modular connector is already located in the wall or if you do not use the modular rosette, as when using a switch box, proceed to Step 3.



3. Connect the modular plug of the supplied line cord into the modular rosette (or modular connector), refer to Figure 5-190 Connect Line Cord.







 Hook four hooks on the DSS console to the hooks on the 60 DSS WM-K (refer to Figure 5-192 Attach DSS Console to 60 DSS WM-K UNIT).

Push any excess line cord into your 60 DSS WM-K with your finger.

Figure 5-192 Attach DSS Console to 60 DSS WM-K UNIT



8. DSS console installation to 60 DSS WM-K UNIT complete.



### **OPTIONAL HANDSETS** SECTION 6

#### 6.1 **ITL/DTL PTM Handset**

The Push to Mute (PTM) handset has a single-pole, single-throw switch that must be continuously held down to provide local mute.

These replacement handsets for ITL/DTL terminals help to ensure a secure telephony environment by keeping unwanted audio from being transmitted over the corporate telephone network.

Using the PTM handset on an NEC digital or IP terminal prevents eavesdropping and eliminates the worry that privileged information could be transmitted without user authority. These handsets are also an ideal solution to filter unwanted audio transmissions from environments with ambient background noise.



Figure 5-193 ITL / DTL PTM Handset

#### ITL/DTL PTT Handset 6.2

The Push to Talk (PTT) handset has a single-pole, single-throw switch that must be continuously held down to transmit local audio.

These replacement handsets for ITL/DTL terminals help to ensure a secure telephony environment by keeping unwanted audio from being transmitted over the corporate telephone network.

Using the PTT handset on an NEC digital or IP terminal prevents eavesdropping and eliminates the worry that privileged information could be transmitted without user authority. These handsets are also an ideal solution to filter unwanted audio transmissions from environments with ambient background noise.







### 6.3 UTR-1-1 USB Handset

The NEC USB telephone can be plugged directly into a PC USB port, enabling the high quality voice input and output abilities of a standard desktop telephone. By connecting it to the USB port of a computer, calls can immediately be made and received using a SoftPhone without installation of additional software drivers.

The physical design eliminates stress associated with holding the handset between the ear and shoulder. The user immediately hears a dial tone after taking the handset off-hook, eliminating the need to click on/off hook icons in a PC application when making a call.

#### 6.3.1 Handset Connection

Plug the handset cable (RJ-11 connector) into the bottom of the cradle. Route the handset cable in the handset groove.

Figure 5-195 Installing the UTR-1-1 USB Handset Cable



#### 6.3.2 **USB** Connection

Plug a USB cable (type A connector) into the back of the cradle. Plug the USB cable (type B connector) in the USB port of a PC.

Figure 5-196 Installing the UTR-1-1 USB Handset to a PC





## 6.3.3 Wall Mounting

The UTR-1-1 USB handset can be mounted on the wall using a wall plate or two screws. Align the two holes on the back of the UTR-1-1 and slide down onto the wall plate or screws.





Because of variation in wall plates, this method is not recommended.


# SECTION 7 UT880 IP TELEPHONE

The UT880 is an IP desk phone for use on the SV9100 system. This phone is powered by Power over Ethernet (PoE) reducing the need for power adapters allowing for a clean installation. In addition, headsets for those users who frequently make long calls are supported for comfort.

# 7.1 Powering the UT880

The UT880 can only be powered using Power over Ethernet (PoE) 802.3af.

# 7.2 Updating the UT880 System Firmware

UT880 firmware is updated via the Internet from the settings page of the phone. To update the firmware go to the desk top of the UT800, choose **Settings** and select **About Tablet**. Choose **System updates** then **Check now**. If an update is available you will be prompted to download the update. Once the download has finished you will be prompted to apply the update. If no update is available the phone will state your system is up to date.

# 7.3 UT880 Platform Information

Refer to Table 5-22 UT880 Platform Information for UT880 specifications.

Main Item	Sub Item	Specification
System	CPU	ARM Cortex-A9 Dual MicroProcessor 512KB L2 Cache
	Flash Memory	4Gbit NAND Flash
	SDRAM Memory	1Gbit DDR3 SDRAM
	CODEC	G.711u/a, G.729, G.722, H.264
Voice Interface	Handset	Supported
	Headset	Supported
	Speaker Phone	Supported
Network	LAN	10/100/1000Bast-T with Auto MDIX
	PC	10/100/1000Bast-T with Auto MDIX
	Bluetooth	BT V2.1 + EDR
Display & Keypad	LCD	7" TFT LCD (1024x600)
	LED	Message indicator support (3EA)
	Keypad	Full Touch

Table 5-22 UT880 Platform Information



#### Table 5-22 UT880 Platform Information (Continued)

Main Item	Sub Item	Specification
Additional Function	USB	USB 2.0 Host (1EA)/USB 3.0 Device (1EA)
	SD CARD	Micro SD support
	Camera	1.3mm FF
Environmental	Power	PoE
	Operating Temp (°C) Humidity (%)	-5°C ~ 50°C 10 ~ 90%

# 7.4 UT880 (Front View)

The exterior of the UT880 is made from ABS based high strength material with all input done via a Touch Screen Panel.



Figure 5-198 UT880 Telephone (Front View)



# 7.5 UT880 (Rear View)

The rear of the UT880 is composed of a LAN port for LAN connection and a PC port for PC connection. The PC connection port is connected to a 10Mbps~1Gbps Ethernet switch inside the UT880. This allows the use of only one LAN connection to a phone to be utilized for both telephone and PC workstation network access. Connections are also available for the included handset and optional headset.

Figure 5-199 UT880 Telephone (Rear View)





#### SECTION 8 SINGLE LINE TELEPHONES

#### 8.1 AT-50

The AT-50 is a single line telephone for use on the SV9100 system. It provides the user with feature keys such as Redial, Flash/Pause, PBX Dial/Set, Search and Mute.

#### 8.1.1 AT-50 Platform Information

The AT-50 terminal is designed to be used behind a PBX or KTS system.



For detailed information, refer to the AT-50 Caller ID Business Telephone User Guide.

8.1.2 AT-50 (Front View)



Figure 5-200 AT-50 Telephone (Front View)



#### 8.1.3 AT-50 (Rear View)

The rear of the AT-50 is composed of a LINE port for TDM connection with the SV9100. A HANDSET connection for the included handset, a LMH (Ringer Volume Switch) and MF-DP (Dialing Mode Switch) for specific settings.





#### 8.1.4 Wall Mounting the AT-50

This telephone can be mounted on a wall with two screws. The screws shall be supplied by the customer.

- 1. Mark off the correct positions for the screws, 3.29in (83.5mm), apart vertically opposed before drilling the wall.
- 2. Install the screws into the wall.



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3. Mount the telephone on the wall so that the screw heads insert into the slots on the underside of the telephone.



4. Remove the hanger hook from the telephone, then reverse it and reinsert on the telephone.





5. If you wish to temporarily place the handset down during a conversation, hook the handset onto the top of the hanger hook as shown in Figure 5-204 AT-50 Hook the Handset.

Figure 5-204 AT-50 Hook the Handset



#### 8.2 AT-55

The AT-55 is a single line telephone for use on the SV9100 system. It provides the user with feature keys such as Speaker, Hold, One touch, Redial, Flash/ Pause, PBX Dial/Set, Search and Mute.

#### 8.2.1 AT-55 Platform Information

The AT-55 terminal is designed to be used behind a PBX or KTS system.

The AT-55 terminal is equipped with 10 one-touch dial memory keys for programming your most frequently dialed telephone numbers.



For detailed information, refer to the AT-55 Caller ID Handsfree Business Telephone User Guide.



## 8.2.2 AT-55 (Front View)





#### 8.2.3 AT-55 (Rear View)

The rear of the AT-55 is composed of a LINE port for TDM connection with the SV9100. A HANDSET connection for the included handset, a LMH (Ringer Volume Switch) and MF-DP (Dialing Mode Switch) for specific settings.



#### 8.2.4 Wall Mounting the AT-55

This telephone can be mounted on a wall with two screws. The screws shall be supplied by the customer.

- 1. Mark off the correct positions for the screws, 3.29in (83.5mm), apart vertically opposed before drilling the wall.
- 2. Install the screws into the wall.



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3. Mount the telephone on the wall so that the screw heads insert into the slots on the underside of the telephone.

Figure 5-207 Wall Mount the AT-55



4. Remove the hanger hook from the telephone, then reverse it and reinsert on the telephone.





5. If you wish to temporarily place the handset down during a conversation, hook the handset onto the top of the hanger hook as shown in Figure 5-209 At-55 Hook the Handset.

Figure 5-209 At-55 Hook the Handset





# 8.3 ITX-1615-1W (BK) TEL

The ITX-1615-1 is a 2-button single line SIP terminal for use on the SV9100 system. It provides the user with feature keys such as Home, Phonebook, Message, Page/Intercom, Hold, Mute, Transfer, Conference, Send, Speaker, Headset and Volume.



#### 8.3.1 ITX-1615-1 (Front View)

Figure 5-210 ITX-1615-1 Telephone (Front View)



## 8.3.2 ITX-1615-1 (Rear View)

Refer to Figure 5-211 ITX-1615-1 Telephone (Rear View) for available ports on the ITX-1615-1 telephone.



SV9100 System Hardware Manual



## 8.3.3 Wall Mounting the ITX-1615-1

This telephone can be mounted on a wall with two screws. The screws shall be supplied by the customer.

- 1. Mark off the correct position for the screws, approximately 2.375in (60.325mm), apart horizontally opposed before drilling the wall.
- 2. Install the screws into the wall.
- 3. Slide the stand downward to remove from back of telephone.
- 4. Unplug the Handset cable (if used).
- 5. Insert all four hooks into the slots on the back of the telephone.



- 6. Firmly slide the wall mount upward to lock it into place.
- 7. Install Handset cable (if used).
- 8. Mount the telephone on the wall so that the screw heads insert into the slots on the back of the telephone.
- 9. Remove the hanger hook from the telephone, then reverse it and reinsert in the telephone.

# Installing SV9100 Cordless Telephones



# SECTION 1 GENERAL DESCRIPTION

This chapter provides information regarding cordless telephones that can be used with the UNIVERGE SV9100 system.

# SECTION 2 D<sup>term ®</sup> CORDLESS DECT (DTL-8R-1)

DTL-8R-1 is a cordless telephone that is adapted for digital NEC PBX (Private Branch Exchange. It is designed for use in the office environment.



A handset and wired phone cannot be used at the same time.
The handset and base station must have the original ID that is written on each unit at the factory.

Figure 6-1 D<sup>term ®</sup> Cordless DECT (DTL-8R-1)









## 2.1 Selecting a Location

Select a location for the *D*<sup>term</sup> Cordless DECT to avoid excessive heat or humidity. The base unit of the *D*<sup>term</sup> Cordless DECT can be placed on a desk or tabletop near a standard 120V AC outlet and telephone line jack. The base unit can also be mounted on a standard wall plate using the wall mount adapter. Keep the base unit and handset away from sources of electrical noise (motors, fluorescent lighting, computers, PC monitor).

# 2.2 Installation Precautions

To ensure optimum performance follow these guidelines.

- O Base units must be placed at least 20 feet apart.
- Always place the base unit on top of a desk or on higher shelves. Avoid locations surrounded by metal surfaces.
- O Place the base away from any electrical component such as a PC, monitor and other telephone.



# 2.3 Connecting the Telephone Cords

When connecting the telephone cords, observe the following precautions.



- Never install telephone wiring during a lightning storm.
- Never touch bare telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

To connect the telephone cords:

1. Connect the cord from the telephone jack to the Line In on the *D*<sup>term</sup> Cordless DECT.



2. Connect a qualified NEC digital multiline terminal to the *D*<sup>term</sup> Cordless DECT (refer to Figure 6-4 Connecting the D<sup>term</sup> Cordless DECT to the Multiline Terminal on page 6-4).





Figure 6-4 Connecting the D<sup>term</sup> Cordless DECT to the Multiline Terminal

#### 2.4 Applying Power to the Charging Unit

The unique design of the telephone allows the user to place the handset in the charging unit with or without the belt clip attached. The charging unit can charge a second battery with or without the handset being charged. The battery packs can be recharged automatically either in or out of the handset.



Use only the supplied AC adapter for the charging unit.

Figure 6-5 Applying Power to the Charging Unit





The AC adapter furnished with this telephone usually has a polarized line plug with one blade wider than the other. This plug fits in the power outlet only one way. If you cannot insert the plug fully in the outlet, try reversing the plug. Refer to Figure 6-6 Polarized Plug.

If you cannot plug the AC adapter in the outlet, you may need to replace it.



Use only Route the power cord where it can not create a trip hazard, or where it could become chafed and create a fire or other electrical hazards.the supplied AC adapter for the charging unit.

Wide Blade



AC ADAPTER

# 2.5 Mounting the Base to a Standard Wall Plate

The base unit can be mounted on a standard wall plate. To attach the wall mount stand to the base unit:

1. Slide the wall mount stand in the notches at the top of the base unit. Rotate the wall mount stand down and snap it into place (refer to Figure 6-7 Attaching the Wall Mount Stand to the Base Unit on page 6-6).





Figure 6-7 Attaching the Wall Mount Stand to the Base Unit

- 2. Plug the AC adapter into the base unit.
- 3. Place the AC adapter cord inside the molded channel of the wall mount stand.

Figure 6-8 Placing the AC Adapter Cord Inside the Wall Mount Stand



- 4. Plug one end of the short telephone cord (locally supplied) in the *LINE* jack on the base unit. Plug one end of the NEC digital multiline terminal into the *PHONE* jack. Place the telephone cords inside the molded channels on the bottom of the wall mount stand.
- 5. Plug the other end of the short telephone cord into the modular wall jack in the center of the wall plate.



6. Place the base unit on the posts of the wall plate and push down until it is firmly seated.

Figure 6-9 Placing the Base Unit on the Posts of the Wall Plate





Because of variation in wall plates, this method is not recommended.

7. Plug the AC adapter into a standard 120 Vac wall outlet.

Figure 6-10 Plugging the AC Adapter into the AC Wall Outlet





Do not use an outlet controlled by a wall switch.



# 2.6 Mounting the Base Directly to the Wall

If a standard wall plate is not available, mount the telephone directly on the wall. Before mounting the telephone, consider the following:

- O Select a location away from electrical cables, pipes, or other items behind the mounting location that could cause a hazard when inserting screws into the wall.
- O Make sure the wall material can support the weight of the base unit.
- O Use #10 screws with anchoring devices suitable for the wall material where the base unit will be placed.

To mount the telephone:

1. Insert two mounting screws 3-15/16 inches apart. Allow about 3/16 of an inch between the wall and screw heads for mounting the telephone.

Figure 6-11 Inserting Screws into the Wall for Wall Mounting the Telephone



- 2. Plug in and secure the AC adapter.
- 3. Plug the AC adapter into the base unit.
- 4. Plug one end of the short telephone cord into the *LINE* jack on the base unit. Then plug one end of an NEC multiline terminal into the *PHONE* jack. Place the telephone cords inside the molded channels on the bottom of the wall mount stand (refer to Figure 6-12 Placing the Telephone Cords Inside the Wall Mount Stand on page 6-9).



Figure 6-12 Placing the Telephone Cords Inside the Wall Mount Stand



5. Place the base unit on the posts of the wall screws and push down until it is firmly seated.



Figure 6-13 Attaching the Wall Mount Unit to the Wall

- 6. Plug the other end of the short telephone cord into a telephone wall jack.
- 7. Plug the AC adapter into a standard 120 Vac wall outlet. Refer to Figure 6-10 Plugging the AC Adapter into the AC Wall Outlet on page 6-7.



Do not use an outlet controlled by a wall switch.



# 2.7 Wall Mounting the Charging Unit

The charging unit can be wall mounted as well. Before mounting the charging unit, consider the following:

- O Select a location away from electrical cables, pipes, or other items behind the mounting location that could cause a hazard when inserting screws into the wall.
- O Make sure the wall material can support the weight of the charging unit.
- O Use #10 screws with anchoring devices suitable for the wall material where the charging unit will be placed.

To mount the charging unit:

1. Insert two mounting screws as shown below. Allow about 3/16 of an inch between the wall and screw heads for mounting the telephone.



2. Plug the AC adapter in the charging unit. Wrap the AC adapter cord around the strain relief.

Figure 6-15 Wrapping the AC Adapter Cord Around the Strain Relief





3. Place the charging unit on the posts of the wall screws and push down until it is firmly seated.



4. Plug the AC adapter into a standard 120 Vac wall outlet. Refer to Figure 6-16 Placing the Charging Unit on the Wall.

# 2.8 Attaching and Removing the Belt Clip

A belt clip can be used to attach the handset to a belt or pocket for convenient portability.

1. Slide the clip into the tab slots. Press firmly until it snaps into place. The belt clip fits snugly onto the handset.



Figure 6-17 Attaching the Belt Clip to the Handset



- 2. To remove the clip, press the retaining clip in toward the belt clip blade and slide the clip up at the same time.
  - Figure 6-18 Removing the Belt Clip



## 2.9 Installing the Handset Battery Pack

Before installing batteries, refer to *D*<sup>term ®</sup> Cordless DECT Owner's Manual Specifications and Battery Safety. It is important to follow safety regulations when handling batteries.

1. Remove the battery cover by pressing the latch and sliding the cover down and off of the handset.



Figure 6-19 Removing the Battery Cover



2. Slide the battery pack down into the handset.



3. Replace the cover and slide it up until it latches onto the handset.



# 2.10 Charging Batteries

The rechargeable battery pack must be fully charged before using the  $D^{term}$  Cordless DECT for the first time.



Charge the battery pack without interruption for five to eight hours.



# 2.11 Charging Spare Battery Packs

The *D*<sup>term</sup> Cordless DECT is equipped with a battery charger for charging the spare battery pack.

# SECTION 3 D<sup>term ®</sup> CORDLESS REPEATER DTL-RPT-1

The UDR100 repeater lets you extend the coverage area of your cordless DECT telephone system in all directions.







If the repeaters are installed so their coverage area overlaps the coverage area of the base, the base can hand-off calls to the repeaters as the user moves from one coverage area to another. When connected to the repeater, the mobile handset operates the exact same way as it does when connected to the base, and the hand-off from the base to the repeater can be completely invisible to the end user, even during an active call.



Each base supports up to six repeaters, so you can extend coverage in all directions, including through floors and ceilings:





In addition, the UDR100 supports a sequential or "daisy-chain" layout to extend coverage in a single direction. Up to three repeaters can be installed in sequence:



► For detailed information on daisy-chain layout and configuration, contact your installer or refer to the UDR100 Administrator's Guide.



# 3.1 Setting Up Your Repeater

Before installing the repeater, you must activate the repeater mode on your base and then register the repeater to the base and any handsets. Before you start the registration process, be sure you have:

- O A working base
- O A working handset registered to that base
- O Any repeaters you want to register to this base (you must complete the registration process separately for each repeater)
- O At least one of the AC adapters supplied with the repeaters



Use ONLY the power adapter that came with your repeater. A different power adapter may cause an electrical hazard or damage the repeater.

#### 3.1.1 Changing the Telephone System PIN

Before you start the registration process, you must reset the system PIN of your telephone to *0000* (consult the manual that came with your base for more information). After you reset the PIN, make sure to register the handset you used back to the base station.

#### 3.1.2 Automatic Registration

The repeater seeks out the base with strongest DECT/GAP signal and automatically registers to that base.

- 1. Make sure the repeater is powered off (i.e., the AC power adapter is not connected).
- 2. Set the base in registration mode. (Consult the owner's manual that came with your base station for more information.
- Use the AC adapter to connect the repeater to a standard 120 V AC outlet. (Do not use a power outlet controlled by a wall switch.) The LED on the repeater flashes briefly, then remains on and steady.
  - ► If the LED continues to flash, register the repeater again.

The repeater is now registered to this base and is ready to use.

You can safely disconnect the power and move the repeater to the selected location; the repeater stays registered to the base.



## 3.1.3 Manual Registration

If you are registering more than one repeater to the same base, you must use the manual registration procedure.

- 1. Connect the repeater to power for 1~5 seconds and then disconnect it.
- 2. Reconnect the power to the repeater. The LED on the repeater flashes slowly, indicating the repeater is in registration mode.
  - ➡ The repeater stays in registration mode for five minutes. If you cannot complete the registration in five minutes, repeat the procedure starting with step 1.
- 3. Set the base in registration mode. (Consult the owner's manual that came with your base station for more information.)
- 4. The LED on the front of the repeater flashes quickly, with no interruptions.
  - ► If the LED has brief interruptions in the flash, you need to reset your telephone system PIN to 0000. (Refer to 3.1.1 Changing the Telephone System PIN on page 6-17.)
- 5. Press the handset TALK? key to go off-hook. The LED stops flashing.
- 6. Use the number pad on the handset to assign a repeater number. Press a number between 2 and 7. Each repeater number can be used only once per base. (These numbers are independent of any handset extension number.)
- 7. When the repeater accepts the assignment, the LED flashes a corresponding number of times.
- 8. Press the STAR? key to confirm the registration, and then the END? key. The LED goes off for two seconds, flashes for a brief moment, and then remains on steady.

The repeater is now registered to this base station. You can repeat the procedure with each repeater that you want to register to this base, or you can disconnect the power and move the repeater to the selected location.Registration for a Daisy-Chain Layout



The repeater remains registered even if you disconnect the AC adapter or there is a power failure. If you want to clear the registration (for example, so you can register to a different base), you must reset the repeater.

Registering the repeaters to operate in a daisy-chain or sequential layout requires network administrator access and configuration software. Contact your installer or refer to the DTL-RPT-1 Administrator's Guide (provided with the configuration software) for more information.



#### 3.1.4 Registering to a Different Base

After the repeater is registered, you must reset it before you can change the registration to a different base. If you want to reset the repeater and clear its registration, follow the steps below:

- 1. Disconnect the power.
- 2. Connect the power for one to five seconds, and disconnect it again.
- 3. Connect the power for 25~35 seconds.
- 4. Disconnect the power, and perform the registration procedure with the new base.

## 3.2 Installing the Repeater

#### 3.2.1 Finding the Right Location

To get the best operating conditions for the repeater, it is important to place it correctly. Here are a few tips for placing repeaters:

- Place the repeater as high as possible, but *at least six feet above* the floor.
- □ Make sure you have good reception from the base.
- Make sure the location is close to a standard 120 V AC power outlet. Never install electrical cords across a traffic area: they can create a trip hazard or become damaged and create a fire or electrical hazard.
- Allow at least 30 feet between repeaters (if you are installing repeaters across multiple floors, remember to allow 30 feet vertically, also).
- Avoid sources of electrical interference, such as hi-fi systems, office equipment or microwave ovens.
- Avoid heat sources and direct sunlight.
- Avoid things that can interfere with radio signals, such as metal doors, thick walls, niches and cupboards.



#### 3.2.2 Map the Base Coverage Area

To find the best location for the repeater, you need to determine the base coverage area. Stand near the base and make a call. Walk away from the base with the handset, and make a note where the signal becomes weaker. The optimum location for the repeater is as far from the base as possible while still maintaining a good signal, or just inside the location where the signal became weaker.





#### 3.2.3 Test the Location

To test the location, plug the AC adapter into the repeater, then hold the repeater in the place where you plan to mount it. The LED should remain on and steady, indicating that the repeater has a good signal from the base.

If the LED flashes, the repeater is not getting a good signal. The repeater may be too far away from the base, there may be interference from electronic devices, or the signal might be blocked by thick walls or metal objects. Try moving the repeater to another location.



#### 3.2.4 Installing the Repeater



Be sure the wall material can hold the weight of the repeater. Never install a repeater in damaged or decaying wall material.

- 1. Hold the repeater in its final location, and mark the center of the top edge.
- 2. From the edge mark, measure down approximately 1-1/2 inches, and mark the screw location.
- 3. At the screw location, use a 3/16ths drill bit to make a pilot hole approximately one inch deep.
- 4. Place the wall anchor into the pilot hole and tap it gently with a hammer until the anchor is flush with the wall.
- 5. Insert the mounting screw into the anchor, leaving approximately 1/4 inch space between the screw head and the wall.
- 6. Put the repeater over the screw head and slide it down into place.
- 7. Connect the repeater to the 120V AC power outlet.

#### 3.2.5 Multiple Repeater Systems

You can register up to six repeaters to one base as long as the repeaters are a minimum of 30 feet apart. *Remember* that the signal can cross through walls and floors.

#### 3.2.5.1 Incorrect Installation

Figure 6-27 Incorrect Installation on page 6-22 illustrates repeaters that are incorrectly installed.





#### 3.2.5.2 Correct Installation

Figure 6-28 Base Coverage Area illustrates repeaters that are correctly installed.




#### 3.2.5.3 Daisy-Chain Installation

You can combine normal and daisy-chain connections to create a wide variety of coverage configurations, as long as you have no more than six repeaters per base unit.



#### 3.3 Troubleshooting Chart

To review common problems and possible solutions, refer to the *D*<sup>term ®</sup> Cordless DECT Repeater Guide DTL-RPT-1.

#### 3.4 Turning on the Verification Tone

To activate the verification tone to aid in troubleshooting installation problems, refer to the *D*<sup>term ®</sup> Cordless DECT Repeater Guide DTL-RPT-1.

#### 3.5 Maintenance

For user maintenance of the repeater, refer to the *D*<sup>term ®</sup> Cordless DECT Repeater Guide DTL-RPT-1.



# SECTION 4 D<sup>term ®</sup> CORDLESS DECT (DTZ-8R-1)

The DTZ-8R-1 is a cordless telephone that is adapted for digital NEC PBX (Private Branch Exchange). It is designed for use in the office environment. When the phone is connected to the digital PBX, it must have a digital PBX expansion bard inside the base station.



- A handset and wired phone cannot be used at the same time.
- The handset and base station must have the original ID that is written on each unit at the factory.
- Some digital PBX expansion boards require a wired telephone to make the call.

Figure 6-30 D<sup>term ®</sup> Cordless DECT (DTZ-8R-1)









#### 4.1 Selecting a Location

Select a location for the *D*<sup>term</sup> Cordless DECT to avoid excessive heat or humidity. The base unit of the *D*<sup>term</sup> Cordless DECT can be placed on a desk or tabletop near a standard 120V AC outlet and telephone line jack. The base unit can also be mounted on a standard wall plate using the wall mount adapter. Keep the base unit and handset away from sources of electrical noise (motors, fluorescent lighting, computers, PC monitor).

## 4.2 Installation Precautions

To ensure optimum performance follow these guidelines.

- O Base units must be placed at least 20 feet apart.
- O Always place the base unit on top of a desk or on higher shelves. Avoid locations surrounded by metal surfaces.
- O Place the base away from any electrical component such as a PC, monitor and other telephone.



# 4.3 Connecting the Telephone Cords

When connecting the telephone cords, observe the following precautions.



- Never install telephone wiring during a lightning storm.
- Never touch bare telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

To connect the telephone cords:

1. Connect one line cord from NEC's PBX (or key system) digital station port to the Line In connector on the *D*<sup>term</sup> Cordless DECT base unit. Connect another line cord from the Line Out connector to a qualified *D*<sup>term</sup> multiline telephone.





Do not connect the DTZ-8R-1 line cord directly to PBX station card as the DTZ-8R-1 will not function. Connect the line cord to the jack with a single pair connected back to one digital station port.



# 4.4 Applying Power to the Charging Unit

The unique design of the telephone allows the user to place the handset in the charging unit with or without the belt clip attached.

Connect the AC adapter with the green tip to the charging unit and to a suitable AC power source. The battery pack is charged automatically when the handset is placed on the charger.







The DTZ-8R-1 does not support the Wall Plate mount.



# 4.6 Mounting the Base Directly to the Wall

Before mounting the telephone, consider the following:

- O Select a location away from electrical cables, pipes, or other items behind the mounting location that could cause a hazard when inserting screws into the wall.
  - The location must be near a 120Vac power outlet so that the AC power adapter can reach.
  - Also consider proximity to the PBX (key system) so that the telephone line cord will not be excessively long.
- O Make sure the wall material can support the weight of the base unit.
- O Use #10 screws with anchoring devices suitable for the wall material where the base unit will be placed.

To mount the telephone:

1. Insert two mounting screws 3-15/16 inches apart. Allow about 3/16 of an inch between the wall and screw heads for mounting the telephone.



Figure 6-34 Inserting Screws into the Wall for Wall Mounting the Telephone

- 2. Plug the AC adapter (yellow tip) into the base unit, and route the cord through the molded channel on the back of the base unit.
- 3. Plug one end of the short telephone cord (locally supplied) in the *LINE* jack on the base unit. If an NEC multiline (wired) telephone will be used, connect a line cord from the *LINE OUT* jack on the base unit to the multiline telephone.





4. Place the base unit on the posts of the wall screws and push down until it is firmly seated.

- 5. Plug the other end of the short telephone cord into a telephone wall jack.
- 6. Plug the AC adapter into a standard 120 Vac wall outlet.



Do not use an outlet controlled by a wall switch.



# 4.7 Attaching and Removing the Belt Clip

A belt clip can be used to attach the handset to a belt or pocket for convenient portability.

1. Slide the clip into the tab slots. Press firmly until it snaps into place. The belt clip fits snugly onto the handset.



2. To remove the clip, press the retaining clip in toward the belt clip blade and slide the clip up at the same time.

Figure 6-37 Removing the Belt Clip





# 4.8 Installing the Handset Battery Pack

Figure 6-38 Removing the Battery Cover

Before installing batteries, refer to *D*<sup>term ®</sup> Cordless DECT Owner's Manual DTZ-8R-1 Specifications and Battery Safety section. It is important to follow safety regulations when handling batteries.

1. Remove the battery cover by pressing the latch and sliding the cover down and off of the handset.



2. Install the two AAA batteries (AAA Ni-MH, 1.2V, 900mAh re-chargeable batteries), observing the polarity orientation.



Batteries must be the same size and type (AAA Ni-MH, 1.2V, 900mAh re-chargeable batteries. Use of other battery types may be hazardous and will void the product warranty.

Figure 6-39 Installing the Batteries





3. Replace the cover and slide it up until it latches onto the handset.



## 4.9 Charging the Handset Batteries

The rechargeable battery pack must be fully charged before using the handset for the first time.



- 1. Place the handset in the charging unit.
- 2. Make sure the *Handset Charging* LED indicator lights. If the *Handset Charging* LED does not come on, check to see if the AC adapter is plugged in and that the handset is making good contact with the charging contacts on the charging unit.



The Handset Charging LED turns blue during and after charging the handset with the battery.

Figure 6-41 Handset Charging LED Indicator





# SECTION 5 BLUETOOTH CORDLESS HANDSET

#### 5.1 Bluetooth Cordless Handset (BCH) Interface

This optional interface allows the multiline terminal user to use Bluetooth technology to provide a cordless handset. This handset provides:

- O Keyset-like Handset
- O Eight Line Buttons
- O Function Button
- O Dial Button
- O Display
- O All Multiline Terminal Functions with Main Unit
- O Cradle Charges Handset
- O Base Side RF Block (50 meters, Class 1)
- O Bluetooth Distance: 50 Meters

Up to 16 devices can be installed within a 100m (open area, ex: outdoors) or 50m (confined/blocked area, ex: indoors) radius and each device is located with 1 meter between each device simultaneously. This maximum can be affected by the installation environment.

The BCH and a Bluetooth headset (BTH) cannot be used at the same time. When using a Bluetooth headset in place of the handset, the Plantronics Voyager 510 headset is recommended.

Table 6-1 Firmware Compatibility Matrix

		BCH-L Unit Lot Number	
		xxxDxx or lower	xxxExx or higher
Terminal Lot Number DT-330	xxx I xx or lower (Version 8.10 and 1, E0 or lower)	Supported	Supported
	xxxJxx or higher (Version 2.20 or higher)	Not supported	Supported

► BCH Support may differ based on terminal firmware. To verify both DT-330 terminal and BCH-L Unit firmware, hold down keypad buttons 1, 2 and 3 while plugging the line cord into the terminal.



Table 6-2 BCH Charging LEDs				
On-Hook Charging:	Red = Charging	Green = Charging Complete		
Off-Hook (Idle):	No LED = Idle	Flashing Red = Incoming Call		

When charging the BCH, the following LEDs provide indications of the status:

The BCH retains call histories for up to 10 outgoing and 10 incoming calls. For outgoing calls, this includes completed and uncompleted calls. For incoming calls, this includes both answered and unanswered calls. The call history provides the date, time and telephone number for each call. When the limit is exceeded, the oldest call is deleted and replaced with the newest call.

#### 5.2 Selecting a Location

Before choosing a location for your new telephone, consider these important guidelines:

- O If multiple cordless terminals are installed, keep their Bluetooth cradles at least 3.3 feet (1 meter) apart.
- O If the Bluetooth cradle is installed near a metal, concrete wall or any other structure that could affect radio transmission, a communication failure might occur.
- O Keep the Bluetooth cradle at least 9.8 feet (3 meters) away from any device listed below. Also be careful not to get within 9.8 feet (3 meters) of these devices when using the Bluetooth handset.
  - Microwave ovens
  - Wireless LAN access points (AP)
  - Medical apparatus
  - **RFID** (apparatus operating in the 2.4GHz band)
  - Manufacturing equipment, such as plasma strippers (LSI manufacturing)
  - Speedway electronic toll gates
  - Bluetooth devices

# 5.3 Controls and Indicators

Controls and indicators can be found in Figure 6-42 Bluetooth Cradle Controls and Indicators or Figure 6-43 Bluetooth Handset Controls and Indicators on page 6-36.







Figure 6-43 Bluetooth Handset Controls and Indicators





# 5.4 Installing the Bluetooth Cordless Handset

The BCH-L (BK) UNIT is an optional device that transforms the standard multifunction telephone into a cordless terminal. This section explains how to transform the standard hand-set into a BCH-L (BK) UNIT. The BCH-L (BK) UNIT cannot be connected to the DTL-2E-1, DTL-6DE-1 or DTL-12-E-1 telephones.

#### 5.4.1 Installing the Bluetooth Handset Cradle



Before installing or removing the BCH-L (BK) UNIT, remove the line cord and the AC adapter from the outlet.

- 1. Turn multiline terminal upside down.
- 2. Unplug the line cord and handset cord from the multiline terminal.
  - Only one BCH-L (BK) UNIT can be attached to the DTL multiline terminal.
- 3. Lower the tilt leg to the first position (refer to Figure 6-44 Separate Tilt Leg from Leg Support).



- 4. Push the two stopper tabs through the slots to separate the tilt leg from the leg support.
- 5. Lay the tilt leg and the leg support flat.
- 6. Press the two tabs locking the legs to the multiline terminal and pull the legs toward you, lifting to remove (refer to Figure 6-45 Remove Legs From Multiline Terminal on page 6-38).



Figure 6-45 Remove Legs From Multiline Terminal



- 7. Remove the side panel.
- 8. Disconnect serial connection cord from terminal body. Leave cord connected to the cradle unit.
- 9. Push the latch to the right to unlock the cradle unit. Then push the cradle unit forward to separate it from the terminal body (see Figure 6-46 Detach Cradle from Multiline Terminal).



Figure 6-46 Detach Cradle from Multiline Terminal



10. Insert the cradle connecting cable of the Bluetooth Cradle (BTC) into the unit connector.

Figure 6-47 Attach Bluetooth Cradle to the Multiline Terminal



11. Fit the projections on the side of the Bluetooth Cradle into the guide holes on the side of the terminal and pull toward you (Figure 6-47 Attach Bluetooth Cradle to the Multiline Terminal) until the unit snaps into place.

Figure 6-48 Grooved Cutout for Connecting Cable

- 12. Attach the side panel to the Bluetooth Cradle.
- 13. Press the connecting cable into the grooved cutout.



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14. Remove the connector cover (rubber) from the bottom of the multiline terminal.



15. Insert the lower claws of the Bottom Unit (see Figure 6-50 Installing the Bottom Unit) into precut holes on the multiline terminal.



16. Align connector on inside of bottom unit and push down until unit snaps into place.

17. Push the latch to release the cover (see Figure 6-51 Stowing the Bottom Unit Cable). Stow the extra bottom unit connecting cable and close the cover.

Figure 6-50 Installing the Bottom Unit





- 18. Cut or trim the supplied coupled device for the tilt legs handset option.
- 19. Insert the stopper coupled device into the right and left tilt legs (see Figure 6-52 Insert Stopper for Handset Use).



- 20. Set the coupled device for tilt legs into position.
- 21. Reinstall the legs, pushing upwards until both locks snap into place.
- 22. Set tilt legs to desired position.
- 23. Place the multiline terminal with the numbered keypad up.
- 24. Connect the Line cord and the AC adapter.



25. Place the Bluetooth handset in the cradle.



Before you use the handset for the first time or reuse the handset after it has been left out of service for a long time, charge it for at least five hours. A full charge takes approximately 16 hours.

26. Erect the antenna (refer to Figure 6-53 Bluetooth Handset Installed).



Figure 6-53 Bluetooth Handset Installed



## 5.4.2 Wall Mounting the Bluetooth Cradle



To prevent possible damage to the BCH-L (BK) UNIT due to falling, NEC recommends installing the unit in a firm position so it cannot fall because of its own weight.

Clearances required for installing the Bluetooth cradle are shown below. Avoid mounting the cradle on a plaster-board wall, but before mounting the cradle on a wall, check that the wall can support the weight of the telephone and withstand the load from pulling the telephone during operation.





- 1. Attach two wood screws to the wall.
  - Keep a clearance of about 0.08" (2mm) between each wood screw and the wall (refer to Figure 6-55 Installing Wood Screws on page 6-44).





- 2. Remove the Bluetooth hanger from the cradle.
  - ➡ With a screwdriver, pry from the bottom, and lift the handset hanger from the cradle.
- 3. Rotate the hanger top to bottom. Slide it downward in the hollow until it clicks into position.







4. Turn multiline terminal upside down.

Figure 6-58 Wall Mounting the Terminal

5. Lower the tilt leg to the first position (refer to Figure 6-44 Separate Tilt Leg from Leg Support).



6. Hook the wall mount holes (C and D) on the back of the terminal on wood screws (c and d) installed.





#### 5.4.3 Remove and Replace Handset Battery

The battery loaded in the Bluetooth handset has a useful life of about two years, depending on how the handset is used. If the battery voltage diminishes quickly after the battery has been charged for a long time, replace with a new Li-ion battery.

1. Remove cover from back of handset.



2. Remove existing battery and dispose of properly.

Figure 6-60 Removing Battery from Handset



3. Install new Li-ion battery.



Full charge takes approximately 16 hours.

4. Reinstall battery cover.



# SECTION 6 BLUETOOTH HUB ADAPTER

#### 6.1 Bluetooth Hub Adapter (BHA) Features

The BHA-L UNIT adapter connects a Bluetooth device to a multiline terminal. The BHA-L UNIT cannot be connected to the DTL-2E-1, DTL-6DE-1 or DTL-12E-1 telephone.

#### 6.1.1 Installing the BHA-L UNIT



Before installing or removing the BHA-L UNIT, remove the line cord and the AC adapter from the outlet.

- 1. Turn multiline terminal upside down.
- 2. Unplug the line cord and handset cord from the multiline terminal.
  - Only one BHA-L UNIT can be attached to the DTL multiline terminal.
- 3. Lower the tilt leg to the first position (refer to Figure 6-61 Separate Tilt Leg from Leg Support).



4. Remove the connector cover (rubber) from the bottom of the multiline terminal (see Figure 6-62 Removing the Connector Cover on page 6-48).





5. Insert the lower claws of the Bottom Unit (see Figure 6-63 Installing the BHA-L UNIT) into precut holes on the multiline terminal.



Figure 6-63 Installing the BHA-L UNIT

- 6. Align connector on inside of BHA-L UNIT and push down until unit snaps into place.
- 7. Set tilt legs to desired position.
- 8. Place the numbered keypad up.
- 9. Connect the Line cord and the AC adapter.



# 6.1.2 Pairing a Bluetooth Device and Multiline Terminal (Bluetooth Installed)

Access the Bluetooth screen from a multiline terminal menu and register the Bluetooth headset with the BHA-L UNIT.

#### 6.1.2.1 Accessing the Bluetooth Device Setup Screen

From the multiline terminal, access the setup screen using one of the following:

- If the BHA-L UNIT is connected to an SV9100: Press menu keys > [5. Optional Devices] > [1. Bluetooth].
- If the BHA-L UNIT is connected to a PBX (other than SV9100):
  Press menu keys > [3. Setup] > [5. Optional Devices] > [1. Bluetooth].

#### 6.1.2.2 Entering a PIN Code

In pairing a Bluetooth device having a PIN Code other than 0000, enter a string of four to 16 digits to suit that device.

Figure 6-64 Entering a PIN Code



#### 6.1.2.3 Pairing

Up to eight Bluetooth devices can be located around the BHA-L UNIT, select which can be paired with the device (refer to Figure 6-65 Pairing a Device).

Figure 6-65 Pairing a Device





#### 6.1.2.4 Connecting the Paired Device

Enable the Bluetooth device. Select [2 Enable] in the Connect screen.



After pairing a Bluetooth device, be sure to configure its connection to enable it. If settings are not completed, the Bluetooth device that does the pairing cannot be used.

Figure 6-66 Connecting the Paired Device



#### 6.1.2.5 Unpairing

To unpair a paired the Bluetooth device, select the device in the [Delete] screen.

Figure 6-67 Unpairing a Device



6.1.2.6 Visibility Setting

Set to Disable (default: [1. Disable]).

Figure 6-68 Setting Visibility Option





#### 6.1.2.7 BT Information

You can view the following information about the BHA-L UNIT:

- Firmware and hardware versions.
- Bluetooth module information and standard.
- □ Installed profile versions.
- Device address and name.





# SECTION 7 OPTIONAL HEADSETS

# 7.1 D<sup>term ®</sup> USB Wireless Headset

This headset supports WebDial 2.1.4.0 or higher, Softphone 310 and SP30 Softphone version 9 or higher with digital encryption, TIA810a compliance, and a noise-canceling microphone for secure, clear, and quiet conversations. It has a 200-foot range and includes nine hours talk time.

The headset can be converted to accommodate over-the-head or over-the-ear styles.





#### 7.1.1 Installing the Base Unit

Attach the Base Unit to the stand pegs, and connect the USB connector to a free USB port on your computer. A USB hub can be used, if you are certain that it can supply the required 250mA to charge the headset. An optional AC power adapter can be installed in the AC Power Adapter Port.

#### 7.1.2 Installing the PerSonoCall Software

To install the software, insert the CD supplied with the unit. If the CD does not autoplay, use Windows Explorer to find the file called install.bat, double click on it, and follow the instructions on the screen.

#### 7.1.3 Charging the Headset Battery

To charge the headset battery, place it in the docking cradle. During charging, the charge indicator is On. When charging is complete the indicator goes Off. The headset must be charged for a minimum of one hour before use – three hours to fully charge.

#### 7.1.4 Initial Setup

The Unit includes a base ringer to provide notification of an incoming call when not wearing your headset. This feature is enabled when the Ringer switch is down and is disabled when the switch is up.

When the headset is installed, it sets itself as the default device in your computer. You can set your preferences manually in Windows through the Sounds and Audio Devices option in the control panel. A softphone may require choosing the audio device and carries out a short test to match this device to the softphone. It may also enable you to choose which device indicates an incoming call. Refer to the softphone documentation for more information.

#### 7.1.5 Using the Headset

Refer to the User Guide for operating procedures.



# 7.2 Headsets Used with D<sup>term ®</sup> Telephones

A multiline terminal user can use a customer-provided headset in place of the handset. Like using Handsfree, using the headset frees up the user's hands for other work. However, Headset Operation provides privacy not available from handsfree.

The headset plugs into a separate jack on the bottom of the phone. This allows the use of the handset or headset – whichever is more convenient at the time.

Connect the headset in the headset jack located on the bottom of the multiline terminal. (This jack is located next to the handset jack, so make sure to connect to the proper jack.)

#### 7.2.1 NEC D<sup>term ®</sup> Headset (MX250)

The M Series Pin Jack Style headset MX250 allows maximum versatility for wireless or cordless phones. The MX250 is easy to put on and can be worn in either ear. This headset includes an EarBudeez ™ stabilizer for best possible fit to prevent the headset from becoming dislodged during important conversations. Over-the-ear styling provides a comfortable fit.



Figure 6-71 Cordless Headset (MX250)



## 7.2.2 NEC *D*<sup>term ®</sup> Cordless Phone Headset (M175)

The NEC M175 mobile headset offers hands-free convenience anywhere you go. Its convertible design can be worn with a headband or earloop on either ear, depending on whether you want greater stability or convenient small size. The pivoting noise-canceling microphone keeps your voice crystal clear, even in noisy environments. Comfortable, durable, and lightweight, it also works with headset-ready cordless phones and features a one-touch volume and mute control so you can be heard clearly.

Figure 6-72 Cordless Headset (M175)



# 7.2.3 NEC *D*<sup>term ®</sup> NEC Polaris SupraPlus™

Supra Series Monaural or Binaural headsets are super stable and perfect for phone-intensive jobs. They have an adjustable headband so they can be worn all day. The Binaural model allows you to hear conversations in extra noisy environments.



Figure 6-73 NEC Polaris Supraplus



#### 7.2.4 NEC *D*<sup>term ®</sup> NEC POLARIS MIRAGE ®

With no headband, no eartip, no hands, no hassle, these headsets are lightweight and have concert hall acoustics. With its over-the-ear fit and receiver that rests gently against the ear it is easy to forget that it is being worn.

Figure 6-74 NEC Polaris Mirage



#### 7.2.5 NEC D<sup>term ®</sup> NEC POLARIS TRISTAR ®

For business professionals who require comfort and stability in an over-the-ear design that does not mess up their hair, the TriStar headset is the best solution. The three point design ensures that it is comfortable and stable on the ear. It is very lightweight and can also fit most eyeglass wearers.



Figure 6-75 NEC Polaris TriStar



# 7.2.6 NEC *D*<sup>term ®</sup> NEC Polaris Encore ®

Monaural or Binaural Encore headsets are comfortable and practical for almost everyone. Human factors engineering for near universal fit, light weight all day comfort, and the SES<sup>®</sup> (Sound Enhancement System) tone control switch that allows bass and treble settings brings a new generation of headset technology.

Figure 6-76 NEC Polaris Encore





- Headsets that have open style receivers (i.e., Mirage, Duoset and Duopro) can cause echo problems on DT700 Series telephones. The echo suppression and receiver gain of the telephone determines the severity of the echo when using any headset.
- Due to the environment where the telephones or headsets are located, ambient noise may affect performance. Please contact NEC for the recommended headset to use with VoIP applications.

# Installing SV9100 Wireless Telephones



# SECTION 1 GENERAL DESCRIPTION

The wireless telephones provide wireless freedom that also allows access to features provided by the UNIVERGE SV9100 system.

# SECTION 2 NEC SIP DECT SOLUTIONS

The SIP Digital Enhanced Cordless Telecommunication (DECT) is a stand-alone system that is connected to the NEC Telephone System via a TCP/IP connection using Session Initiation Protocol (SIP). This means that in the NEC Telephone System, the DECT extensions must be assigned as SIP extensions. From the NEC Telephone System perspective, there is no difference between an SIP extension and an SIP DECT extension.

Figure 7-1 SIP DECT System Configuration shows the SIP DECT System Configuration. All connections are IP connections over Ethernet.





## 2.1 Installation

The hardware installation consists of the following steps:

- 1. Determine the number of DAPs that need to be installed and where they should be located. Refer to NEC SIP DECT Solutions Technician's Guide, DAP Planning as a guideline.
- 2. Read the sections DAP Cabling and DAP Power Provision in the NEC SIP DECT Solutions Technician Guide carefully to determine how the DAPs should be powered and how the cable must be run.
- 3. Make sure that you have an PoE Switch available to connect the IP DECT equipment. Power up the PoE Switch.
- 4. Setup and connect the power provision for the DAPs. The LEDs on the DAPs should show some activity.
- 5. Connect the DAP cables to the IP Switch.



Do Not connect the Ethernet cables or the PoE Switch to the local IP network. The PoE configuration should be installed in a closed network.

- 6. Make sure that you have a computer available that can be used for management. Connect this PC to the IP Switch using an Ethernet cable. Check that the lamp on the IP Switch indicates that the connection is established.
- 7. (For UNIVERGE SV9100 only) Connect a network cable between the GPZ-IPLE and the IP Switch.
- 8. The next step is setting up your IP Addressing structure. Refer to the NEC SIP DECT Solutions Technician's Guide, IP Addressing.

#### 2.2 Handsets

The following are available to the SIP DECT system:


### 2.2.1 SIP DECT G955

The NEC Philips Digital Enhanced Cordless Telecommunications (DECT) G955 Handset is a cordless telephone with enhanced features suitable for office use. The handsets include a single-press SOS key used to make one-touch calls or send messages to a particular contact number. The G955 DECT Handset offers text-messaging to send and receive messages.

For more detailed information, refer to the G955 Handset Owner's Manual.



Figure 7-2 G955 Wireless Handset

#### 2.2.1.1 Display Screen

Figure 7-3 G955 Display Screen shows the layout of the G955 screen.

Figure 7-3 G955 Display Screen





lcon	Description		
<u></u>	Level of radio signal		
8	Bluetooth connection status (only for G955 DECT Handset) For Bluetooth connection status icons, refer to Table 7-2 G955 Bluetooth Headset Status Icons on page 7-5		
$\mathbf{>}$	New text message received If active, this icon replaces the Bluetooth connection status icon		
M	Voice Message waiting indication		
ß	Dialpad locked		
( <u>(</u> )	Activated alarm If active, this icon replaces the Dialpad locked icon		
[]	Missed calls		
4	Ringer deactivated		
$\mathbf{v}$	Caller filter (only for G955 DECT Handset) If active, this icon replaces the Ringer deactivated icon		
ā	Battery charge status For battery status, refer to Table 7-3 G955 Battery Charge Status Icons on page 7-5		

#### Table 7-1 G955 Icon Line Icons



lcon	Description		
	Connected		
8	Disconnected		
8	In conversation		

#### Table 7-2 G955 Bluetooth Headset Status Icons

# Table 7-3 G955 Battery Charge Status Icons

lcon	Description	
Ű	Empty	
ů.	Less than 33%	
ů.	More than 33% and less than 75%	
Ű	More than 75%	



Figure 7-4 G955 Handset Controls





#### 2.2.2 SIP DECT G266

The G266 handset is a standard mobile handset offering a range of professional capabilities, such as a central directory, loudspeaker and personal alarming. The G266 uses an intuitive color display and icon based menus providing a variety of control features integrated with the PBX. The G266 also provides a dual charging capability allowing an additional battery to be charged (refer to Figure 7-5 G266 Wireless Handset).



Figure 7-5 G266 Wireless Handset

#### 2.2.2.1 Charging the Battery Pack

- 1. Place the handset face down on a flat surface.
- 2. Pull the lock at the bottom of the battery compartment cover upward and at the same time shift the cover downwards.
- 3. Remove the battery compartment cover.
- 4. Lift the battery pack and remove the battery protective tab.
- 5. Push the battery pack back into the casing.
- 6. Replace the battery cover.

#### 2.2.2.2 Installing the Charger

- 1. Place the charger on a flat surface.
- 2. Connect the micro-B USB connector of the USB cable to (the back of) the charger.
- 3. Connect the type A USB connector to the USB AC/DC Adapter.
- 4. Connect the adapter to an electrical outlet.



5. Set the handset on the charger (refer to Figure 7-5 G266 Wireless Handset on page 7-7).

The Charging screen is displayed.



6. After a few seconds, the Charging display is replaced by the normal display. Refer to Table 7-4 G266 Battery Charge Status Icons for a description of the charging icons displayed during charging.



Table F F G200 Ballory Onlinge Blalle Holle		
lcon	Description	
Í	Empty	
<b>1</b>	Less than 10%	
	10% to 20%	
	20% to 90% (the bigger the green bar, the higher the charge percentage)	
	Fully charged (more than 90%)	



## 2.2.2.3 Charging a Spare Battery

The G266 Desktop Charger can be used to charge a spare battery pack for the G266. To charge a spare battery pack:

- 1. Place the spare battery pack in the spare battery charging slot compartment. (Upside down and text on the battery pack to the front.)
- 2. Slid the spare battery pack under the metal rim to keep it in place.

## 2.2.2.4 Charging and Operating Times

Discharged batteries require 7 hours (using the spare battery slot might take longer) to completely recharge. Completely charged batteries provide the handset with up to 20 hours of talk time and 160 hours of standby time.

For detailed instructions on the G266 and G566 handsets, refer to the NEC IP DECT G266 and G566 Handsets User Guide.

## 2.2.3 SIP DECT G566

The G566 is a sophisticated handset that provides a range of mobile unified communications and messaging capabilities to fulfill task management and staff/patient safety scenario's in various businesses, hospitality and healthcare. The G566 uses an intuitive color display and icon based menus providing a variety of control features integrated with the PBX. The G566 also provides a dual charging capability allowing an additional battery to be charged.

Figure 7-8 G566 Wireless Handset





## 2.2.3.1 Charging the Battery Pack

- 1. Place the handset face down on a flat surface.
- 2. Pull the lock at the bottom of the battery compartment cover upward and at the same time shift the cover downwards.
- 3. Remove the battery compartment cover.
- 4. Lift the battery pack and remove the battery protective tab.
- 5. Push the battery pack back into the casing.
- 6. Replace the battery cover.

#### 2.2.3.2 Installing the Charger

- 1. Place the charger on a flat surface.
- 2. Connect the micro-B USB connector of the USB cable to (the back of) the charger.
- 3. Connect the type A USB connector to the USB AC/DC Adapter.
- 4. Connect the adapter to an electrical outlet.
- 5. Set the handset on the charger (refer to Figure 7-8 G566 Wireless Handset on page 7-9).

The Charging screen is displayed.





 After a few seconds, the Charging display is replaced by the normal display. Refer to Table 7-5 G566 Battery Charge Status Icons on page 7-11 for a description of the icons displayed during charging.





, ,		
lcon	Description	
Î	Empty	
·	Less than 10%	
	10% to 20%	
	20% to 90% (the bigger the green bar, the higher the charge percentage)	
Î	Fully charged (more than 90%)	

# Table 7-5 G566 Battery Charge Status Icons

#### 2.2.3.3 Charging a Spare Battery

The G566 Desktop Charger can be used to charge a spare battery pack for the G566. To charge a spare battery pack:

- 1. Place the spare battery pack in the spare battery charging slot compartment. (Upside down and text on the battery pack to the front.)
- 2. Slid the spare battery pack under the metal rim to keep it in place.

## 2.2.3.4 Charging and Operating Times

Discharged batteries require 7 hours (using the spare battery slot might take longer) to completely recharge. Completely charged batteries provide the handset with up to 20 hours of talk time and 160 hours of standby time.

For detailed instructions on the G266 and G566 handsets, refer to the NEC IP DECT G266 and G566 Handsets User Guide.



## 2.2.4 SIP DECT 1766

The I766 is a robust DECT handset for voice and messaging in demanding environments. The I766 DECT handset is a powerful communication tool and by its ruggedized design ideal for healthcare and other demanding environments

Figure 7-11 I766 Wireless Handset



#### 2.2.4.1 Installing the Battery Pack

- 1. Place the handset face down on a flat surface.
- 2. Pull the lock at the bottom of the battery compartment cover upward and at the same time shift the cover downwards.
- 3. Remove the battery compartment cover.
- 4. Lift the battery pack and remove the battery protective tab.
- 5. Push the battery pack back into the casing.
- 6. Replace the battery cover.

#### 2.2.4.2 Installing the Charger

- 1. Place the charger on a flat surface.
- 2. Connect the micro-B USB connector of the USB cable to (the back of) the charger.
- 3. Connect the type A USB connector to the USB AC/DC Adapter.
- 4. Connect the adapter to an electrical outlet.



#### 2.2.4.3 Charging the Battery

1. Set the handset on the charger (refer to Figure 7-11 I766 Wireless Handset on page 7-12).

The Charging screen is displayed.



- 2. After a few seconds, the Charging display is replaced by the normal display.
- 3. The handset, if switched off, automatically switches on when placed in the charger.

## 2.2.4.4 Charging a Spare Battery

The I766 Desktop Charger can be used to charge a spare battery pack for the I766. To charge a spare battery pack:

- 1. Place the spare battery pack in the spare battery charging slot compartment. (Upside down and text on the battery pack to the front.)
- 2. Slid the spare battery pack under the metal rim to keep it in place.

## 2.2.4.5 Charging and Operating Times

Discharged batteries require 7 hours (using the spare battery slot might take longer) to completely recharge. Completely charged batteries provide the handset with up to 20 hours of talk time and 160 hours of standby time.

For detailed instructions on I766 handsets, refer to the NEC IP DECT I766 Handset User Guide.



#### 2.2.5 ML440

The ML440 IP Wireless Handset is an ergonomically designed compact wireless handset for business users who are mobile in the office and want to make and receive wireless calls while in the office. The DECT protocol operates in the 1.9 GHZ frequency band that has been cleared specifically for voice applications, thus avoiding any interference problems and delivering crystal clear and secure voice conversations.

The ML440 provides numerous features and conveniences for optimal comfort. Its illuminated graphic color LCD display enables use in poorly lit environments, while its internal loudspeaker provides hands free operation with excellent sound quality.

For a detailed list of the features supported, refer to the SV9100 Features and Specifications Manual.

This handset requires the AP400 Access Point and DAP Controller software.

#### 2.2.5.1 ML440 Handset and Charger

Figure 7-13 ML440 Handset – Front View provides a front view of the handset. Figure 7-14 ML440 – Handset Charger on page 7-15 provides a top view of the charger.



Figure 7-13 ML440 Handset - Front View





## 2.2.5.2 Charging the Battery

1. Install the battery (refer to Figure 7-15 ML440 – Handset Battery Installation).





- 2. Use the charger AC adapter to connect the charger's AC jack to a standard 120V AC power outlet.
- 3. Place the handset in the charger with the display facing forward. The HANDSET STATUS LED should turn on; if it doesn't, reseat the handset or try plugging the AC adapter into a different outlet.



4. Place the spare battery (if available) in the back section of the charger; the BATTERY STATUS LED should turn on. (Pull the battery latch back slightly to fit the battery in the slot.)

Figure 7-16 ML440 – Insert Handset into Charger



#### 2.2.5.3 Powering on the Handset

To power up the handset, press and hold **End** until the display flashes once (about three seconds). The handset searches for the base station or multi-cell chain it is registered to and connects to the unit with the strongest signal.



# 2.3 AP300/AP400

The IP DECT AP300/AP400 Access Points connect directly to the IP network and can be used on both NEC platforms as well as different PBX platforms using a SIP interface.

## 2.3.1 Connecting the Base Station



If your network connection does not provide Power Over Ethernet, contact customer service to order a base station AC adapter and a standard Ethernet-to-PoE adapter.

Figure 7-17 AP300/AP400 with PoE Adapter





Install the Base Station

1. Connect a standard Ethernet cable (Cat 5 or higher) to the Ethernet/ PoE jack on the rear of the base station.

Figure 7-18 Install AP300/AP400 Base Station

2. Route the cable through the channel.

 Cord

 Unit of the second seco

Power over Ethernet

The DAPs support Power over Ethernet, the so called PoE (described down in IEEE802.3af specification).

The following overview gives the specifications of the PoE:

- Voltage at the AP400: minimum 36 volts, maximum 57 volts.
- Connector: Standard RJ45 connector, using the spare wires pins (wires). Refer to Table 7-6 DAP RJ-45 Pinouts on page 7-19 Pin Layout Ethernet Connector RJ45 on the DAP.
- Maximum cable length: 100 meters.



TADIE 7-0 DAF RJ-40 FILIOUU	Table	7-6	DAP	RJ-45	Pinouts
-----------------------------	-------	-----	-----	-------	---------

DAP RJ-45 Socket			
	Pin No.	Connection	
	1	10/100 Base-T Tx+	
	2	10/100 Base-T Tx-	
ףי, אט	3	10/100 Base-T Rx+	
	4	+48 Volt power	
	5	+48 Volt power	
8 1	6	10/100 Base-T Rx-	
	7	RTN (0 Volt) power	
	8	RTN (0 Volt) power	

The advantage of Power over Ethernet is that you can provide the DAPs with power from one location only, e.g., same power source as the SV9100. On such a location you can install a UPS (Uninterruptable Power Supply) to increase system reliability.

3. Connect the other end of the cable to your TCP/IP network.

During the boot process the LEDs will flash on and off. When LED is solid Yellow it is operational and synchronized to other DAP or is the synchronization master (refer to Table 7-8 Base Station LED States and Meanings).

Flash Pattern	Condition Indicated
Off	No Power.
0.5 Seconds On – 0.5 Seconds Off	Loading software/firmware.
Short Flash every 2.5 Seconds	IP Network error (not connected, no DHCP/ TFTP server, no DAP controller).
Steady On	DAP Operational and synchronized to other DAP or is the synchronization master.
Continuous Fast Blink	Hardware error.
Fast Blink	DAP operational, but trying to synchronize to another DAP.

Table 7-7 AP300/AP400 LED Indications



# SECTION 3 ML440/AP20

The ML440/AP20 chapter outlines the steps for connecting and mounting the base station, charging the battery, and powering on the handset.

# 3.1 Connecting the Base Station



If your network connection does not provide Power Over Ethernet, contact customer service to order a base station AC adapter and a standard Ethernet-to-PoE adapter.





Rear View





Install the Base Station

- 1. Connect a standard Ethernet cable (Cat 5 or higher) to the Ethernet/PoE jack on the rear of the base station.
- 2. Route the cable through the channel.



3. Connect the other end of the cable to your TCP/IP network.

When the base station powers on, the STATUS LED on the front briefly lights orange and then turns off while it initializes and connects to the network. After the base station successfully initializes and connects to the network, the LED lights green and remains steady on (refer to Table 7-8 Base Station LED States and Meanings).

Color	State	Meaning
Green	Flickering	Stage in base flash memory rewrite at the end of the base firmware update.
Green	Steady On	All operations normal.
N/A	Off	No power in unit <b>OR</b> initializing and connecting to the network.
Orange	Briefly On	Powering on.
Orange	Flickering	Stage in base flash memory rewrite at the end of the base firmware update.

Table 7-8 Base Station LED States and Meanings



Color	State	Meaning
Red	Blinking	Factory reset warning. A factory reset has been initiated or is in progress.
Red	Blinking	No Ethernet connection available <b>OR</b> handset registration failed.
Red	Flickering	Stage in base flash memory rewrite at the end of the base firmware update.
Red	Steady On	Critical error. Contact technical support.

Table 7-8 Base Station LED States and Meanings (Continued)

# 3.2 Base Station Wall Mounting Installation



Ensure the wall can support the weight of the base station.

1. Hold the base in its final location and mark the screw location based on the measurements shown.







- 2. Insert the appropriate anchors for the wall material.
- 3. Insert the mounting screws into the anchors, leaving about 1/4 inch of space between the screw head and the wall.
- 4. Connect the Ethernet cable and route the cord (refer to Figure 7-21 Base Station Dimensions on page 7-22).
- 5. Place the base over the screw heads and slide it down into place.

## 3.3 Handset and Charger

Figure 7-22 ML440 Handset – Front View provides a front view of the handset. Figure 7-23 ML440 – Handset Charger on page 7-24 provides a top view of the charger.







# 3.4 Charging the Battery

1. Install the handset battery as shown.

Figure 7-24 ML440 – Handset Battery Installation

Remove the battery	Insert the bottom of the battery into the	Replace the battery
cover from the back	compartment. Lay the battery down and	cover and slide it up
of the handset.	push it gently until it snaps into place.	into place.

- 2. Use the charger AC adapter to connect the charger's AC jack to a standard 120V AC power outlet.
- 3. Place the handset in the charger with the display facing forward. The HANDSET STATUS LED should turn on; if it doesn't, reseat the handset or try plugging the AC adapter into a different outlet.



4. Place the spare battery (if available) in the back section of the charger; the BATTERY STATUS LED should turn on. (Pull the battery latch back slightly to fit the battery in the slot.)

Figure 7-25 ML440 – Insert Handset into Charger



# 3.5 Powering on the Handset

To power up the handset, press and hold **End** until the display flashes once (about three seconds). The handset searches for the base station or multi-cell chain it is registered to and connects to the unit with the strongest signal.

Issue 10.0



# Installing SV9100 Conference Solutions



# SECTION 1 GENERAL DESCRIPTION

Conferencing solutions provide premium, full-duplex audio to small conference rooms as a single unit or to larger rooms when expanded by up to three units that also expand microphone access and loudspeaker coverage.

# SECTION 2 NEC SIP CONFERENCE MAX

The NEC SIP Conference Max expandable conferencing telephone provides premium, full-duplex audio to small conference rooms as a single unit and to larger rooms as an expanded system. Up to four SIP Conference Max units can be linked, expanding not only microphone coverage but loudspeaker coverage and control access as well. This creates even distribution of sound for a more natural communications experience.

# 2.1 Installation

1. Connect the cable from the Link Out on the base unit to the Link In jack on the conferencing pod.



Do Not plug a laptop or PC into the Link Out jack on the base unit or conferencing pod, severe electrical damage could occur.



Figure 8-1 NEC SIP Conference Installation



- 2. Connect the base unit to the Ethernet jack using the Ethernet cable.
- 3. Connect the power cord to the base unit and plug it directly into an electrical outlet.
- 4. To connect additional units, connect the 12 foot Connection cable to the Link Out jack on the first phone and to the Link In jack on the second phone.



Up to three additional SIP Conference Max phones for a total of four may be connected.







# 2.2 Connecting and Charging the Batteries

To connect and charge the batteries:

- 1. Slide the cover off the battery compartment on the bottom of one pod.
- 2. Connect the battery pack plug in the port in the compartment and install the battery pack.
- 3. Slide the cover back in place.
- 4. Connect the power supply/charger to the conferencing pod and plug it in an electrical outlet.



5. Repeat steps 1~4 for the other pod.

## 2.3 Keypad Functions

Refer to Table 8-1 SIP Conference Max Keypad Functions.

Кеу	Function	
ON/OFF key (telephone icon)	Press to activate the telephone and access dial tone. Press again to hang up and return to standby mode.	
PHONEBOOK (book icon)	Press to dial stored numbers. Press and hold two seconds to enter Phonebook Edit mode.	
REDIAL (circular arrow icon)	Press once to dial the last number called. Press and hold two seconds to enter Program mode.	
CONFERENCE (three person icon)	Press to dial the conferencing service provider. This feature must be programmed.	
FLASH (lightning flash icon)	Press to enable call forwarding, call waiting, or three-way calling when supported by telephone service.	
CLEAR (vertical line and left arrow icon)	Press to clear the last digit entered or press and hold to clear al numbers. Press to exit programming mode.	
VOLUME (loud and dim speaker icons)	Press during call to adjust call volume or press while telephone is ringing or in standby mode to adjust ringer volume.	
MUTE (mic with diagonal line icon)	Press to mute sound.	

Table 8-1 SIP Conference Max Keypad Functions



# 2.4 Programming Options

To enter Programming mode, press and hold REDIAL until a diamond arrow is displayed on the LCD. Then press the applicable key and follow the instruction in Table 8-2 SIP Conference Max Programming Options.

Menu Option	Key	Programming
Ringer Melody	1	Press REDIAL. The current melody selection flashes. Press 1~5 to change melody. Press REDIAL to save the selection.
Dialing Mode	2	Press REDIAL. The current dialing selection flashes. Press 1 for tone or 2 for pulse. Press REDIAL to save the selection.
Flash Duration	3	Press REDIAL. The current duration flashes. Press 1~5 to select duration as follows: 1 = 600ms 2 = 300ms 3 = 150ms 4 = 100ms 5 = 80ms Press REDIAL to save the selection.
Local Number*	4	Press REDIAL. Enter the telephone number that you want displayed on the LCD in standby mode. Press REDIAL to save the number.
Conference*	5	Press REDIAL. Enter the telephone number you want the conference key to dial. Press REDIAL to save the number.
Service*	6	Press REDIAL. Enter the telephone number you want the O key to dial. Press REDIAL to save the number.

Table 8-2 SIP Conference Max Programming Options

 Press CLEAR to return the previous menu. Press and hold to exit programming without saving changes.

Press and hold 1 to enter hyphen or to enter a space in the number. Press CLEAR before entering a new number.



# 2.5 Compliance

This product is in compliance with the following regulations and requirements:

- FCC Part 15/ICES-003
  This product has been tested and complies with the limits for a Class A digital device.
- O FCC Part 68 US:FBIMT01B910158015 Ringer Equivalence Number (REN):0.1B(ac)
- O Industry of Canada (IC) IC: 1970A-158015: REN:0.1B(ac)
- O European Council Directive 1999/5/EC

Issue 10.0



# **Installing SV9100 Optional Equipment**



# SECTION 1 GENERAL INFORMATION

This chapter provides information for installing optional equipment, such as PGD(2)-U10 ADP, background music, door boxes, DSS consoles, *D*<sup>term</sup> VSR, external paging as well as other handsets, recording devices and adapters on the SV9100 digital and IP telephones.

# SECTION 2 PGD(2)-U10 ADP

# 2.1 Using a PGD(2)-U10 ADP

The PGD(2)-U10 ADP provides two circuits which allow connection to external terminals such as:

- O Door Box (eight maximum per system)
- O External Speaker (eight maximum with PGD(2)-U10 ADP [with amplifier], one on the GCD-CP10 or GCD-CP20 [no amplifier])
- O External Music Source (external MOH) (96 maximum per system)
- O External Recording System (96 maximum per system)
- O External Ringing

The system allows a maximum of 56 PGD(2)-U10 ADP to be installed (48 for ACI ports [external MOH or external recording system], four for Door Boxes, and four for Paging). The PGD(2)-U10 ADP also provides multi-purpose controls. These control relays can be used for controlling the external amplifier, external music source and door lock control with the use of a Door Box. The system allows up eight general purpose relays with the PGD(2)-U10 ADP (four relays on each PGD(2)-U10 ADP) and one on the GCD-CP10 or GCD-CP20 for a maximum of nine.



The PGD(2)-U10 ADP connects to any available digital extension port. The terminal connections made in the PGD(2)-U10 ADP and the jumper settings determine what features are used for each circuit.



Figure 9-2 PGDAD(PGD2)





The example in Figure 9-3 Connection Between Port and Dead Port Numbers displays the connection between the port number and the dead port number:

Figure 9-3 Connection Between Port and Dead Port Numbers

Connectable Port No.4	<b>1</b> @	2₽	3₽	40	<b>5</b> +3	6+3	7₽	8.0
Dead Port No.↩	90	10₊∍	11₽	<b>12</b> 43	13₊⊃	14.	15₊⊃	16₽

# 2.2 LED Indications

Table 9-1 PGD(2)-U10 ADP LED Indications lists the LED indications and provides a brief description of each.

LED	Indication	Note
LED 1	Green LED when CH1 in use.	Flashing green LED indicates DIP Switch setting and programming for CH1 are conflicting.
LED 2	Green LED when CH2 in use.	Flashing green LED indicates DIP Switch setting and programming for CH2 are conflicting.

# 2.3 Setting up PGD(2)-U10 ADP Connections

This sections provides instructions for setting up the PGD(2)-U10 ADP connections.



- If the PGD(2)-U10 ADP is to be wall mounted, all the cable connections should be made first.
- For the module to ID correctly after setting the jumpers, set the circuit type to 0 for the module port in Program 10-03-01 prior to connecting the line cord to the PGD(2)-U10 ADP.



1. Remove the screw from the front of the PGD(2)-U10 ADP.



Figure 9-4 Remove Cover from PGD(2)-U10 ADP

2. Using a screwdriver, break out the plastic piece covering the cable hole.



Figure 9-5 Remove Plastic Cover from Cable Hole

3. Set the S3 – S6 jumpers to the proper settings for the function to be used (refer to Table 9-2 PGD(2)-U10 ADP S3 – S6 Jumper Settings on page 9-5).



	S3	S4	Function	LED Indication
Channel 1	Open	Open	Door Box	On when in use.
	Open	Short	External Paging Speaker	On when in use.
	Short	Open	External Ringer	On when in use.
	Short	Short	External Music on Hold / Recording System	On steady.
	S5	S6	Function	LED Indication
	Open	Open	Door Box	On when in use.
Channel 2	Open	Short	External Paging Speaker	On when in use.
	Short	Open	External Ringer	On when in use.
	Short	Short	External Music on Hold / Recording System	On steady.

Table 9-2 PGD(2)-U10 ADP S3 – S6 Jumper Settings

Figure 9-6 PGD(2)-U10 ADP Jumper Settings





4. Strip one end of the cable to be connected to the control relay or door box so that approximately 1/4" (8mm) of bare wire is exposed.



5. Insert the cable into the proper CN4 or CN5 location while holding down the lock button (holding down this lock button is easiest with a flat-head screwdriver). Once the cable is in place, release the lock button.



*Refer to the specific function being connected for more detail on PGD*(2)*-U10 ADP connections.*




Figure 9-7 PGD(2)-U10 ADP Connection Diagram





Figure 9-8 PGD(2)-U10 ADP Security Connection Diagram





- 6. Repeat Steps 4 and 5 for any additional connection required.
- 7. Replace the cover and tighten the screw to hold the cover in place.
- 8. If required for the function being used, insert the RCA connectors into the CN2 (Channel 1) and CN3 (Channel 2) connectors on the back of the PGD(2)-U10 ADP.

# NEC



- 9. Install a modular jack for each PGD(2)-U10 ADP. For each module, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
- 10. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
- 11. Install bridging clips as required.



For the module to ID correctly, set the circuit type to 0 for the port in Program 10-03-01 prior to connecting the line cord.

12. Plug a modular line cord from the mod jack to the CN1 connector on the PGD(2)-U10 ADP.



In some cases, while testing the operation of an extension port that is connected to a Cordless II, Cordless Lite II, or PGD(2)-U10 ADP, a technician may connect a line cord directly from an extension port on the CD-8DLCA/CD-16DLCA blade. Though this is not the recommended connection, it can be used to test these devices.

- Should a direct connection of this type be made to the base station of the Cordless II or Cordless Lite II, or to a PGD(2)-U10 ADP, the line cord must be 2-wire (1-pair). If a 2-pair wire is used, the system provides power to the unused pair. This can prevent the cordless telephone from acquiring a link with the base station or it can damage the PGD(2)-U10 ADP or the SV9100 station card.
- The recommended connection is to punch down 2 wires to the cross-connect block, then connect the extension block to the RJ-61 connector on the blade.



### 13. Optional:

To wall mount the PGD(2)-U10 ADP, insert two wood screws 100mm apart (3 15/16"). Leave 3mm (1/8") of the screw exposed. The screws can be installed either vertical or horizontal, depending on which position fits best for your location.



14. The back of the PGD(2)-U10 ADP has two key-hole type openings. Place the PGD(2)-U10 ADP over the two screws and slide it down or over (depending on the positioning) to lock it in place.

Figure 9-12 Wall Mounting the PGD(2)-U10 ADP





# SECTION 3 BACKGROUND MUSIC

## 3.1 Installing Background Music

Background Music (BGM) sends music from a customer-provided music source to speakers in Multiline terminals. If an extension user activates it, BGM plays when the user's extension is idle.

- Connecting to the GCD-CP10 or GCD-CP20: Connect an RCA line from the AUX1 or AUX2 connector on the GCD-CP10 or GCD-CP20 to the appropriate location on the extension cross-connect block.
- 2. Connect the two-conductor station cable from the cross-connect block to the external music source.
  - GCD-CP10/CP20 PCB Music Input AUX1 AUX2 OO Music Source Cross Connect Block
- 3. Install bridging clips as required.

Figure 9-13 CPU Connections

# SECTION 4 DOOR BOX

# 4.1 Installing a Door Box



The Door Box is a self-contained, water-resistant, Intercom unit typically used to monitor an entrance door. A visitor at the door can press the Door Box call button (like a door bell). The Door Box then sends chime tones to all extensions programmed to receive chimes. The system can have up to eight Door Boxes.



Each PGD(2)-U10 ADP audio output can optionally support two analog Door Boxes. In addition, you can connect each circuit control relay to an electric door strike. This allows an extension user to remotely activate the door strike while talking to a visitor at the Door Box. The control relays are normally open. The GCD-CP10 or GCD-CP20 also provides one general purpose relay. The GCD-CP10 or GCD-CP20 relay 0 is assigned to the door box extension port in Program10-05-01. When the relay on the PGD(2)-U10 ADP is used, there is no need to assign the relay to the Door Box. Connect the relay as detailed in the steps below for the Door Box used. The relays on the PGD(2)-U10 ADPs are numbered 5-8.



The relay closes when the Door Box/external page zone is called. The maximum applied voltage is 24vDC at .5A for each contact.



A PGD(2)-U10 ADPPGDAD(PGD2) circuit used for an analog Door Box cannot be used for External Paging.

- Make sure the jumper in the PGD(2)-U10 ADP for the associated Door Box is set correctly. (Refer to Figure 9-6 PGD(2)-U10 ADP Jumper Settings on page 9-5).
- 2. If a line cord was not previously connected to the PGD(2)-U10 ADP, complete Steps 3-6. Otherwise, skip to Step 7.
- 3. Install a modular jack for each PGD(2)-U10 ADP. For each module, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
- 4. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
- 5. Install bridging clips as required.
- 6. Plug a modular line cord from the mod jack to the CN1 connector on the PGD(2)-U10 ADP.
- 7. If wall mounting the Door Box, remove the screw on the front of the Door Box.
- 8. Remove the back half of the Door Box and attach this mounting bracket to the wall with the two screws provided.
- 9. Connect the two-conductor station cable from the CN4 connectors in the PGD(2)-U10 ADP to the Door Box terminals. These wires must be routed through the opening in the bottom of the Door Box mounting bracket.



Be sure to maintain the proper polarity.

- 10. Replace the front half of the Door Box and reattach the screw to secure it in place.
- 11. To connect a Door Box to an external relay for an unlock device, for example, connect one-pair 24 AWG station cable from the Relay 5 (for Door



Box 1) or Relay 6 (for Door Box 2) connectors (CN5) in the PGD(2)-U10 ADP. Connect the opposite end to the unlock device.

Refer to section 6.2 Door Box /External Page Relay Contacts on page 9-18 for additional information when using the GCD-CP10 or GCD-CP20 relay.



Figure 9-14 Setting the PGD(2)-U10 ADP for a Door Box







# SECTION 5 EXTERNAL PAGING

### 5.1 External Page

Two external page zone/door box circuits are provided by each PGD(2)-U10 ADP installed. Each Door Box/external page circuit provides a dry relay contact. The GCD-CP10 or GCD-CP20 also provides a connection for external paging and a relay. The external page on the GCD-CP10 or GCD-CP20 is speaker number 9 – the relay is number 0. The external page speakers provided by the PGD(2)-U10 ADPs are  $1 \sim 8$  – the relays on the PGD(2)-U10 ADPs are numbered  $1 \sim 8$ .

The PGD(2)-U10 ADP can be used for talkback with External Page, as can a CO trunk port with the proper external page equipment (ex: Valcom) – set Program 31-06-03 to 0 for talkback. However, the external page circuit on the GCD-CP10 or GCD-CP20 cannot be used for talkback.



A PGD(2)-U10 ADP circuit used for External Paging cannot be used for an analog Door Box.

The PGD(2)-U10 ADP can not send DTMF to External Paging equipment.

# 5.2 Installing an External Page System

- Connecting to the GCD-CP10 or GCD-CP20: Connect an RCA line from the AUX1 or AUX2 connector on the GCD-CP10 or GCD-CP20 to the appropriate location on the extension cross-connect block.
- 2. Connect the two-conductor station cable from the cross-connect block to the external relay/external page.
- 3. Install bridging clips as required.

### -OR-

- Connecting to the PGD(2)-U10 ADP: Make sure the jumper in the PGD(2)-U10 ADP for the channel is set correctly. (Refer to Figure 9-6 PGD(2)-U10 ADP Jumper Settings on page 9-5).
- 2. If a line cord was not previously connected to the PGD(2)-U10 ADP, complete Steps 3-6. Otherwise, skip to Step 7.
- Install a modular jack for each PGD(2)-U10 ADP. For each module, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
- 4. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
- 5. Install bridging clips as required.
- 6. Plug a modular line cord from the mod jack to the CN1 connector on the



PGD(2)-U10 ADP.

7. Connect the two-conductor station cable from the CN5 connectors in the PGD(2)-U10 ADP to the external relay/external page.

Figure 9-16 PGD(2)-U10 ADP Cable Connection



PGDAD Module



The PGD(2)-U10 ADP provides amplifiers for each page output port (for a maximum of +8 dBM, 600 ohms at 1KHz). No additional page amplification is provided by the PGD(2)-U10 ADP but, if required, an external page amplifier can be used for additional amplification.

The page output of the GCD-CP10 or GCD-CP20 does not provide amplification (for a maximum output of -3 dBm, 600 ohms at 1KHz). If the paging volume is not satisfactory using the AUX1 or AUX2 connector on the GCD-CP10 or GCD-CP20, the PGD(2)-U10 ADP should be used instead.



# SECTION 6 EXTERNAL PAGING AND DOOR BOX/PAGE RELAYS

### 6.1 External Page Relays

Two external dry contact relays are available when a PGD(2)-U10 ADP is installed which can be used to activate ancillary devices (i.e. door unlock devices). The GCD-CP10 or GCD-CP20 also provides one page relay. When the relay on the PGD(2)-U10 ADP is used, there is no need to assign the relay to the Door Box – connect the relay as detailed in the steps below for the Door Box used. The relays on the PGD(2)-U10 ADPs are numbered 5~8. Each Door Box/ external page circuit provides a dry relay contact.



• If Relays 5 and 6 of a PGD(2)-U10 ADP are set as General Purpose Relays, they cannot be used for Door Box/Page Relays.

CAUTION

- Program 10-21-05 sets the relay switch on the GCD-CP10 or GCD-CP20.
- If General Purpose Relay is set to 1 (Relay 1), the page relay cannot function on the GCD-CP10 or GCD-CP20. General Purpose Relays override Paging Relays and the Paging Relay is associated with Relay 1 on CN10.
- The service codes indicated are the default codes. Refer to Program 11-12-20 and 11-12-50 to redefine these codes as needed.

### 6.2 Door Box /External Page Relay Contacts

6.2.1 Connecting a Contact Relay Device to a Door Box/External Page Relay

Connect a dry contact relay device to a Door Box/External Page Relay.

To connect to the GCD-CP10 or GCD-CP20:

- 1. Connect an RCA line from the AUX1 or AUX2 connector on the GCD-CP10 or GCD-CP20 to the appropriate location on the extension cross-connect block.
- 2. Connect the two-conductor station cable from the cross-connect block to the external relay.
- 3. Install bridging clips as required.

#### -OR-

To connect to the PGD(2)-U10 ADP:

- Make sure the jumper in the PGD(2)-U10 ADP for the channel is set correctly. (Refer to Figure 9-6 PGD(2)-U10 ADP Jumper Settings on page 9-5).
- 2. If a line cord was not previously connected to the PGD(2)-U10 ADP, complete Steps 3~6. Otherwise, skip to Step 7.



- Install a modular jack for each PGD(2)-U10 ADP. For each module, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
- 4. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
- 5. Install bridging clips as required.
- 6. Plug a modular line cord from the mod jack to the CN1 connector on the PGD(2)-U10 ADP.
- 7. Connect the two-conductor station cable from the CN5 connectors in the PGD(2)-U10 ADP to the external relay.



The relay closes when the Door Box/external page zone is called. The maximum applied voltage is 24vDC at .5A for each contact.

Figure 9-17 GCD-CP10 or GCD-CP20 Page Connections



# SECTION 7 EXTERNAL RECORDING SYSTEM/EXTERNAL RINGER

### 7.1 External Recording System or External Ringer

The PGD(2)-U10 ADP allows the connection of an external recording system or external ringer. With a customer-provided tape recorder, when an extension user dials the ACI analog port extension number, they can automatically start the recorder and activate the record function. When the user hangs up, the recording stops and the tape recorder turns off. For tape recording, connect the tape recorder AUX input jack to the PGD(2)-U10 ADP jack. Connect the recorder control leads (if available) to the CTL (control relay) jack. By using Department Calling, you can arrange multiple tape recorders into a pool. When an extension user dials the Department Group pilot number, they reach the first available tape recorder in the pool.



The relays in the PGD(2)-U10 ADP can optionally control customer-provided external ringers (loud bells) and buzzers. When an extension user dials the ACI analog port extension number, the associated PGD(2)-U10 ADP relay closes and activates the ringer. You could use this ability to control an emergency buzzer for a noisy machine shop floor, for example. In addition, if programmed for ringing, an incoming trunk call can activate the ringer/buzzer.

# 7.2 Installing an External Recording System or External Ringer

To connect to the PGD(2)-U10 ADP:

- Make sure the jumper in the PGD(2)-U10 ADP for the channel is set correctly. (Refer to Figure 9-6 PGD(2)-U10 ADP Jumper Settings on page 9-5).
- 2. If a line cord was not previously connected to the PGD(2)-U10 ADP, complete Steps 3~6. Otherwise, skip to Step 7.
- Install a modular jack for each PGD(2)-U10 ADP. For each module, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
- 4. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
- 5. Install bridging clips as required.
- 6. Plug a modular line cord from the mod jack to the CN1 connector on the PGD(2)-U10 ADP.
- 7. Connect an RCA jack to the audio output(s) on the back of the PGD(2)-U10 ADP.
- 8. The opposite end of this cable is connected to the external recording system or external ringer either directly or by connecting to the cross-connect block where the item is connected. Refer to Figure 9-18 PGD(2)-U10 ADP Cable Connection on page 9-21.





Figure 9-18 PGD(2)-U10 ADP Cable Connection

PGDAD Module

### 7.3 Programming

- 10-03-01 : ETU Setup Terminal Type (Circuit 1)
   10-03-06 : ETU Setup Terminal Type (Circuit 2)
   Confirm that the PGD(2)-U10 ADP has defined the circuit as either type 7
   for External Ringer or 9 for ACIs. (If the PGD(2)-U10 ADP circuit was previously defined for another type of circuit, unplug the PGD(2)-U10 ADP and plug it back in to reset the circuit type.)
- 10-05-01 : General Purpose Relay Setup
   Define which relay circuits (5~8) on the PGD(2)-U10 ADP are used for General Purpose Relays.
- 11-06-01 : ACI Extension Numbering Assign extension numbers to ACI software ports. Select a number outside of the normal extension number range. ACI Ports 1~96



#### O 11-08-01 : ACI Group Pilot Number

Assign pilot numbers to ACI groups. When a user dials the pilot number, they reach an available ACI software port in the group. ACI Groups 1~16

11-12-50 : Service Code Setup (For Service Access)
 Specify the service code to toggle the relay open and closed (Default: 780).

#### O 33-01-01 : ACI Port Type Setup

Set each ACI software port for input (1) or input/output (2). Use input ports for Music on Hold sources. Use output ports for External Paging/ringer control.

ACI Ports 1~96

#### O 33-02-01 : ACI Department Calling Group

Assign ACI software ports to ACI Department Groups. This lets ACI callers connect to ACI software ports by dialing the group pilot number (set in Program 11-08).

ACI Ports 1~8, ACI Groups 1-16

#### ACI Recording

- 14-09-01 : ACI Conversation Recording Destination for Trunks ACI Recording Destination Extension Number
   Use this option to assign the ACI Call Recording destination per trunk. The destination can be an ACI port extension number (assigned in Program 11-06-01) or an ACI Department Group pilot number (assigned in Program 11-08-01). If destinations are assigned in Programs 14-09 and 15-12, the destination in Program 15-12 is followed.
- 14-09-02 : ACI Conversation Recording Destination for Trunks ACI Automatic Recording for Incoming Call
   Determine whether a trunk should be automatically recorded when an

Determine whether a trunk should be automatically recorded when an incoming call is received (0=Off, 1=On).

- 15-07 : Programmable Function Keys
   If required, program an ACI Conversation Record Key (SC 751 + 78). This
   key allows an extension user to press the key to manually record a call to
   the ACI.
- 15-12-01 : Conversation Recording Destination for Extensions ACI Recording Destination Extension Number

Assign the ACI Call Recording destination per extension. The destination can be an ACI port extension number (assigned in Program 11-06) or an ACI Department Group pilot number (assigned in Program 11-08). If destinations are assigned in Programs 14-09 and 15-12, the destination in Program 15-12 is followed.

 15-12-02 : Conversation Recording Destination for Extensions – ACI Automatic Recording for Incoming Call
 Determine whether an extension should be automatically recorded when an incoming call is received (0=Off, 1=On).



### **External Ringer**

• **31-05-01 : Universal Night Answer/Ring Over Paging** For each trunk port which should ring the external ringer, enter 1.

# SECTION 8 MUSIC SOURCES

### 8.1 Music on Hold

The system can provide Music on Hold from either an internally synthesized source on the GCD-CP10 or GCD-CP20 or from an external source. The external MOH can be a tuner, tape deck, CD player, etc. The settings in Program 10-04-01 and 14-08-01 determine whether the source for MOH is internal or external.

In addition to a connector on the GCD-CP10 or GCD-CP20, the PGD(2)-U10 ADPs also provide connections for external MOH sources. When using external music sources for external MOH, programming determines the MOH source for each trunk.

The GCD-CP10 or GCD-CP20 provides a dry relay that activates when a call is placed on Hold. When an external MOH source is connected to the MOH relay and a call is placed on Hold, the MOH relay is activated. This allows an external relay sensor/power supply to turn on the MOH source.

This arrangement allows the MOH source (e.g., a tape deck) to run only when a call is placed on Hold. The *maximum* applied voltage for the relay is 24vDC at .5A (the relays are normally open and close when a call is put on hold).

### 8.2 Installing External Music on Hold

To connect to the GCD-CP10 or GCD-CP20

- Connect an RCA line from the AUX1 or AUX2 connector on the GCD-CP10 or GCD-CP20 to the appropriate location on the extension cross-connect block.
- 2. Connect the two-conductor station cable from the cross-connect block to the external music source.
- 3. Install bridging clips as required.

#### -OR-

Connecting to the PGD(2)-U10 ADP:

 Make sure the jumper in the PGD(2)-U10 ADP for the channel is set correctly. (Refer to Figure 9-6 PGD(2)-U10 ADP Jumper Settings on page 9-5).



- 2. If a line cord was not previously connected to the PGD(2)-U10 ADP, complete Steps 3~6. Otherwise, skip to Step 7.
- Install a modular jack for each PGD(2)-U10 ADP. For each module, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
- 4. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
- 5. Install bridging clips as required.
- 6. Plug a modular line cord from the mod jack to the CN1 connector on the PGD(2)-U10 ADP.
- 7. Connect an RCA jack to the audio output(s) on the back of the PGD(2)-U10 ADP.

Figure 9-19 CPRU Connections

8. The opposite end of this cable is connected to the external music source either directly or by connecting to the cross-connect block where the music source is connected.







Figure 9-20 PGD(2)-U10 ADP Connections

PGDAD Module



# SECTION 9 NIGHT MODE SELECTION

### 9.1 Night Mode Selector Switch

The Night Mode Switch relay closes when the system detects either an open or closure on the MISC block NIGHT SW terminals. Maximum 48v DC is output to the switch when open, and 7mA DC when shorted.

### 9.2 Connecting a Night Mode Selector Switch

- 1. Connect an RJ-61 modular line cord from the CN10 connector on the GCD-CP10 or GCD-CP20 to the appropriate location on the extension cross-connect block.
- 2. Connect the two-conductor station cable from the cross-connect block to the night switch mechanism output leads.
- 3. Install bridging clips as required.

# SECTION 10 TELEPHONE LABELING

### 10.1 DESI Printer Sheets

Telephones can be easily labeled by removing the plastic faceplate. These labels can be printed by hand, typewriter, or printing DESI labels. Labels for this are on 8  $1/2 \times 11^{\circ}$  paper, which allows for easy printing by any printer – dot matrix, laser, etc.

DESI Printer Sheets are available for the following:

- O Economy 2E DESI ITL/DTL-2E (25 PKG)
- O Economy 6DE DESI ITL/DTL-6DE (25 PKG)
- O All Value Telephones DESI ITL/DTL-12D/24D (25 PKG)
- O 8LK DESI ITL/DTL 8LK (25 PKG)
- O 60 DSS DESI DCL-60 (25 PKG)
- O Clear Side Panel DESI ITL/DTL-SIDE (25 PKG)
- O LCD Value, Clear Side DESI ITL/DTL-SIDE-LCDV (25 PKG)



### 10.1.1 Removing the Faceplate

- 1. Use the small notch at the lower right corner of the telephone, to lift the faceplate up.
  - Each corner has a plastic locking pin which releases as the faceplate is lifted up.

Figure 9-21 Removing the Faceplate



- 2. Replacing the Faceplate
- 1. Place the faceplate back on the telephone.
- 2. At each corner, press the locking pin back into place.



# SECTION 11 D<sup>term ®</sup> VOICE SECURITY RECORDER (VSR)

# 11.1 *D<sup>term</sup>* Voice Security Recorder (VSR)

The *D*<sup>term</sup> Voice Security Recorder is a USB device that taps across the digital extension pair of the NEC telephone system allowing digital recording of the telephone user's conversation. The file created is saved either to the local PC or to a network location, depending on the application blade. This adapter is for use with digital multiline terminals. It cannot be used with analog or VoIP.

This device meets all applicable FCC and UL requirements for this type of communication device.



Figure 9-22 D<sup>term</sup> Voice Security Recorder

### 11.2 PC Compatibility

The D<sup>term</sup> Voice Security Recorder application supports Microsoft operating systems which support USB devices such as Windows XP and Windows 7.

### 11.2.1 Connection Configuration

The configuration connection is shown in Figure 9-23 VSR Connection Configuration on page 9-29.



### 11.2.2 Connectors

- One PC USB connector that provides power and streams all speech and control channel information to the host PC and desktop software.
- Two digital telephone line connections that passively tap across the D<sup>term</sup> digital connection and listen in high impedance mode to the signaling on the line.



### 11.3 Installation

The VSR is packaged with everything necessary for installation including:

- O Software CD
- O USB Cable
- O Telephone connection lead



O Quick-start installation manual



**IMPORTANT** 

The use of monitoring, recording, or listening devices to eavesdrop, monitor, retrieve, or record telephone conversation or other sound activities, whether or not contemporaneous with transmission, may be illegal in certain circumstances under federal or state laws. Legal advice should be sought prior to implementing any practice that monitors or records any telephone conversation. Some federal and state laws require some form of notification to all parties to a telephone conversation, such as using a beep tone or other notification methods or requiring the consent of all parties to the telephone conversation, prior to monitoring or recording the telephone conversation. Some of these laws incorporate strict penalties.

To install the VSR:

- 1. Unplug the line cord from your telephone and connect it to either port on the *D*<sup>term</sup> VSR unit.
- 2. Connect the NEC telephone system to the remaining port on the *D*<sup>term</sup> VSR unit. You are now ready to record.

#### For Windows 2000 or XP

1. Using the USB cable provided, connect the USB interface on the *D*<sup>term</sup> VSR unit to your PC. Windows automatically detects the new hardware and starts the New Hardware Wizard. This displays a dialog box similar to the one shown below. Select the second option, **Install from a list or specific location**, and press **Next**>.



Figure 9-24 Voice Security Recorder Installation-1





2. Insert the NEC Installation CD in your CD drive and press Next>.

Please choose your search and instal	lation options.
⊙ Search for the best driver in these loc	ations.
Use the check boxes below to limit or paths and removable media. The best	expand the default search, which includes local t driver found will be installed.
Search removable <u>m</u> edia (flopp	у, CD-ROM)
Include this location in the sear	ichi
D:\drivers	Bīowse
O Don't search. I will choose the driver	to install.
Choose this option to select the devic	e driver from a list. Windows does not guarantee th
the driver you choose will be the best	maternol your hardware.
	< <u>B</u> ack <u>N</u> ext> Cancel

Figure 9-25 Voice Security Recorder Installation-2

 If you downloaded the files from the Internet, uncheck the Search removable media box, select the Include this location... box and enter the location where you stored the downloaded files (e.g. C:\My Documents). Press Next> (refer to Figure 9-26 Voice Security Recorder Installation-3 on page 9-33).



Figure 9-26 Voice Security Recorder Installation-3

Hardwar	re Installation
<u>.</u>	The software you are installing for this hardware: Dterm-Recorder-USB-Interface has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

- 4. The software is fully tested, but has not yet been submitted to Microsoft for approval. Press **Continue Anyway**.
- 5. Press **Finish** to close the dialog box.
- 6. Run **SBladep.exe** on your NEC Installation CD to install the *D*<sup>term ®</sup> Voice Security Recorder application software on your PC.
- 7. Using the USB cable provided, connect the USB interface of the NEC VSR unit to an available USB port on your PC.
- 8. Unplug the line cord from your telephone and connect the phone to either port on the D<sup>term</sup> VSR unit.
- Connect the NEC telephone system to the remaining port on the D<sup>term</sup> VSR unit (refer to Figure 9-37 Voice Security Recorder Connection on page 9-44).

### 11.3.1 VSR Application Software

The VSR software is delivered on a Compact Disk using a self-starting install shield. The CD contains all applicable files and installation procedures to operate to this specification, including USB device drivers, software application, and Help files.

A quick-start instruction sheet and a recorded user guide that steps the user through the various options are provided.



The VSR application supports Microsoft Operating Systems that support USB devices. The following systems meet this requirement:

- □ Windows 98SE
- Windows Millennium Edition (ME)
- Win 2000
- Windows XP (all variants)
  - ► VSR does not support WIN 95 and below, or WIN NT.

### 11.3.2 VSR User Interface Tab Options

VSR has the following tabs to allow the user to select features and options:

- Playback allows various playback features of recorded conversations.
- **Record allows control of recording.**
- About provides software version information.
- Options to set-up controls such as recording format.
- File Management allows the user to manage disk space used by the VSR.

Figure 9-27 VSR User Interface Tab Options

NEC Dterm V	oice Sec	curity Re	corder			
Playback	Record	About	Options	File Management		

### 11.3.3 VSR Playback Tab

This tab allows the user to list and play recorded conversations. A graphical presentation of the volume level of the call with a cursor to indicate the current playback position is displayed. The cursor can be dragged forward or backward to allow rapid selection of the applicable section.



	Figure 9-28	VSR Playback	Tab
--	-------------	--------------	-----

NEC Dterm Voice Security Recorder	
Playback Record About Options File Management	
Select File to Play	
! Caller Time + Date ∇ Length	
Caller ID Comment Filtercurrent	

Figure 9-29 Caller ID or Comment Editor

Dterm Voice Security Rec	order	
Playback Record About 0	Options   File Management	
	n bha hai Ala an <mark>A</mark> h an bha sha A	Happy Customer
		1:42 PM 2/6/2004 0:00
Û		
Enter notes about the call h the text field.	ere. User can use the comment tab	to search by ket word in 🔺 🗾
! Caller	Time + Date ∇ Len	
Happy Customer NEC Inquiry Cust # 12345	1:42 PM 2/6/20         2:41           12:32 PM 2/6/2         3:56           11:59 AM 2/6/2         12:51           11:39 AM 2/6/2         0:17           3:49 PM 2/5/20         0:46           3:27 PM 2/5/20         14:22           2:09 PM 2/5/20         21:03	_ <u>!</u> ×
Caller ID	Comment	Filtercurrent



The user can edit the Caller ID or the Comments field when viewing an existing recording.



Caller ID and number dialed are not available on the first release. Check with NEC for release date.

The user can list recordings in order of importance (using exclamation mark) with Caller ID, Time + Date, or duration.

The Caller ID and Comment buttons allow the user to filter out all recordings with the required Caller ID or text in the Comments field.

Playback, pause and stop buttons allow the user to control the Playback.

The Red exclamation mark allows recording to be identified as important for future listing or ensures that the recording cannot be overwritten.

The Red X allows recordings to be manually deleted.

The envelope button generates an e-mail with the recording inserted for mailing to a colleague.



### 11.3.4 VSR Record Tab

This tab allows the user to view recording levels and control the recording.

NEC Dterm Vo	oice Security F	Recorder		
Playback F	Record About	Options File Management		1
	lecording I	ot available.		
	Local	Remote	9	
				~
D	le	rm V	<b>S</b> R	<b>!</b>
	N www.ne	Supplied by IEC Unified Solutions ecunifiedsolutions.com/cng		

Figure 9-30 View Levels and Control Recording

The Oscilloscope shows the local and remote levels on the line separately (Microphone is the user level, and speaker is the distant party level).

The Caller ID field is for future versions, but information can be entered or overwritten by the user.

Manual Start, Stop, and Pause buttons control the recording status.

The user can add notes and mark important recordings with an exclamation point to avoid deleting the conversation.

The camera button allows a user to snapshot record conversation to the current point while continuing to record the entire conversation. This feature is important for emergency centers to allow an operator to quickly reply to an important part while continuing to record.



### 11.3.5 About Tab

This tab provides version and manufacturer information.

Figure 9-31 VSR About Tab





### 11.3.6 Options Tab

This tab allows the user to select various setup options of the VSR.

Figure 9-32	Select	VSR Setup	Options
-------------	--------	-----------	---------

NEC Dterm Voice Security Recorder				
Playback Record About Options File Management				
Automatically start recording every call				
Record Format: © GSM 06.10 compression (168 hours/GByte)				
Show dialog when Recorder starts				
Call selection: Calls Calls Constraints Constraints Call selection:				
Show splash screen at startup				
C 16bit Wav - Large filesize, high quality, universal				
Email format: 💿 8 bit Wav - Smaller filesize, lesser quality, universal				
O Dterm VSR - Smallest filesize, high quality, proprietary				
(A free player is available on the installation and documentation CD)				
Prompt me for call information at the start of each call				
Prompt me for call information at the end of each call				
Remove end-of-call prompt after 60 🛉 seconds. (0=never)				
Audio balance: Local Boost (%) 0 🛉 Remote Boost (%) 0 🛉				
WARNING: Excessive boost can distort audio				

#### Automatically start recording every call

Starts the recording when a call, including an internal extension call, is made.

Recorded format

Perfect Digital Recording stores the recording in PCM format taken directly from the digital line. But the highest quality requires significant space (35 hours per Gbyte) on the PC disk.

GSM 06.10 uses a compression technique to store 168 Hours per Gbyte. The quality difference is negligible so this becomes the default selection.

**G** Show dialog when recorder starts

Selecting this default option brings the Record tab to the front of the user screen when record is activated.



#### Call Selection

Saves all calls or only those that exceed an established limit.

□ Show splash screen at startup

When selected, the VSR logo is shown for five seconds when the application is started.

Email format

Allows the user to select the type of file inserted in an e-mail when the user selects the e-mail button on the Playback Tab to send the VSR format to other users that have this application or to convert it to a .wav format for replay by any PC.

D<sup>term</sup> VSR selection automatically adds the Caller ID, time, date and comments fields to any e-mail.

- Prompt for call information at the start of each call When selected, the Record screen is displayed when a call is made to allow the user to enter information.
- Prompt for call information at the end of each call

When selected, the screen shown below is displayed to allow the user to manage calls at the point of completion. The user can save or erase the call, add notes, or mark important calls using the red key shown below.



Figure 9-33 Manage Calls at Completion

NEC Dterm Vo	pice Security Recorder		
Call from	caller ID or key info here	8:26 AM 2/10/2004	•
Comments			_ <b>•</b> _
Notes abo	out the call can be entered here		A Y
	Save this Call	Erase this call	



### 11.3.7 File Management Tab

File management is necessary when the user makes many telephone calls and stores each conversation. The selections are self-explanatory.

NEC Dterm Voice Security Recorder				
Playback Record About Options File Management				
Store calls at: C:\WINDOWS\system32\	Browse			
If you are writing calls to a network location, a temporary local buffer c against network problems	an protect			
Buffer locally at:	Browse			
Dterm VSR can automatically delete calls to prevent your disk filling Files which you tag as important using the button like this on the playback				
<ul> <li>and record screens will NEVER be deleted automatica</li> <li>You can still manually delete them using the delete button</li> </ul>	lly			
Automatically delete unimportant calls				
C Never				
C After using 📃 100 🚽 Megabytes of disk space				
When the calls are days old				

Figure 9-34 File Management Tab



# 11.3.8 Custom Program Settings

Figure 9-35 Comvurgent Options for Additional Adjustments

Comvurgent provides the dealer or user the option of making additional adjustments.



This special configuration program can only be accessed by browsing to the installation location (default C:\Program Files\Comvurgent\XtRecorder), and then click on the NEC  $D^{term}$  Config.exe.



The customer takes all responsibility to ensure they meet legal requirements.

Comvurgent provides the user option settings to meet customer demands and cannot be responsible for misapplication of the product.

Several settings can be customized to meet requirements of the application as shown in Figure 9-36 Customizing Application to Meet Requirements on page 9-43.


NFC

Figure 9-36 Customizing Application to Meet Requirements

18. Dterm Recorder Configuration Tool	X
Detailed configuration of advanced Dterm Recorder options	
Display splash screen at the start of every call	
Lock splash screen at startup (Prevents the user disabling it)	
Show Dterm Recorder Dialog at the start of every call	
Prevent users of this station from deleting calls	
Prevent users of this station from pausing or halting recording	
Hide the system tray icon for invisible recording Please note. Illicit recording is illegal in some countries and US states	
Password  Password prevents users running this config program  Password prevents users accessing local settings	
Save and Use         Cancel           After changing options you must Exit and restart Dterm Recorder	

- Display splash screen at the start of each call
   Reminds user that recording is taking place by splashing a screen with every call.
- Show D<sup>term</sup> Recorder dialog at the start of each call
   Displays application record screen anytime a call is being recorded.
- Prevent users of this station from deleting calls
   Disables the delete key.
- Prevent users of this station from pausing or halting recording Disables pause and stop controls.
- Hide the system tray icon for invisible recording
   Hides the small icon that appears in the system tray and flashes red when recording.



## Password

Locks access to these settings and those at the user level.



When changes are made, the application must be closed and started again to become effective.

Figure 9-37 Voice Security Recorder Connection



## 11.4 Operation Note

Use the Options and File Management tabs in the *D*<sup>term ®</sup> Voice Security Recorder application to adjust the program settings as required (directory for storing messages, message deletion, file format, etc.).

It is recommended, after the initial installation of the D<sup>term</sup> Voice Security Recorder application, that the audio balance of the remote side be changed to approximately 100%.

- 1. Open the D<sup>term</sup> Voice Security Recorder application.
- 2. Click the **Options** tab.
- 3. Using the up arrow button, change the **Remote Boost (%)** setting to 100%.





# 11.5 4-Port Digital Call Logging Unit

## 11.5.1 Description

The 4-Port Digital Call Logging Units are Universal Serial Bus (USB) devices installed in the BackOffice next to the telephone system.

Up to 12 of the 4-Port Digital Call Logging Units can be connected to a single PC (providing 48 ports).

If larger installations are required, multiple PCs can be used with calls being stored on one central drive. Connectivity is accomplished via parallel wiring tapped across the same pair that feeds the  $D^{term}$  telephone. BackOffice Recorder software allows naming and mapping of each port independently.

The device does not interfere with communications between the PBX and the digital telephone. It does not require USB power or a connection to the PC to maintain normal telephone use.

The device meets the appropriate FCC and UL requirements for this type of communications device.

The device is soft up-loadable: the firmware and FPGA low-level protocol decryption is uploaded from the PC driver and the 4-Port Digital Call Logging Unit application at runtime. This allows easy upgrade and enhancement of the product in the field as required.

# 11.5.2 Connection Configuration

The configuration connection is shown in Figure 9-38 Digital Call Logging Unit Connection Configuration.



Figure 9-38 Digital Call Logging Unit Connection Configuration



# 11.5.3 Connectors

The NEC 4-Port Digital Call Logging Unit USB recording device has four connectors and four LED indicators:

- One PC USB connector, from which the device derives its power and streams all speech and control channel information up to the host PC and NEC BackOffice application.
- □ Four Digital Phone line connectors that passively tap across the NEC *D*<sup>term</sup> digital port and listen in high impedance mode to the signaling on the line. The NEC 4-Port Digital Call Logging Unit does not affect the telephone operation in any way with or without connection of the host PC.

# 11.5.4 Package Contents

The 4-Port Digital Call Logging Unit is packaged with everything necessary for installation including:

- Software CD
- USB Cable
- Quick-start installation manual

# 11.5.5 Hardware and Software Requirements

4-Port Digital Call Logging Unit:

- $\Box$  A Pentium<sup>®</sup> 4 equipped with:
  - 512 Mb RAM.
  - Windows XP, Windows 2000 Professional SP4 or 2003.
  - One USB Controller Card for each four devices powered USB hubs can be used however, no more than four devices should be connected to a USB Controller Card.
  - An available PCI slot for each USB Controller Card.
- LAN connection for remote access to stored calls.
- **NEC BackOffice Recorder software.**



- Calls should be stored on the same host PC.
- Using the GSM 6.10 Compression option, each 1Gb of Hard Disk storage allows recording of about 168 hours of calls.



# 11.5.6 Installation



DO NOT install the NEC BackOffice Software until instructed! It is critical that you follow the steps in the installation procedure in the order listed below. Failure to do so results in an unsuccessful installation.

# 11.5.6.1 Location Preparation

The wiring for the extensions should be within six feet of the PC location. For this reason, the PC for the NEC BackOffice Recorder should be located near the MDF for extension wiring.

The installer must prepare the wiring to tap off the digital pair with a T-Connect type setup.

It may be desirable to fasten the devices to a PC or rack. Since the devices are lightweight, this can be done quite easily with Velcro tape.

# 11.5.6.2 Set Up PC



DO NOT connect more than four of the 4-Port Digital Call Logging Unit devices to each USB Controller Card.

- 1. Set up the PC with the appropriate number of USB Controller Cards and/or USB hubs. Follow the installation instructions for the Controller Card carefully. The PC should be connected to the LAN for supervisor access and to facilitate Windows and software updates as needed. It may be desirable also to load PC Anywhere on the PC for remote administration of the application.
- 2. After USB cards are installed, go to <u>www.windowsupdate.com</u>. Download and install any updated device driver that may be available for WIN2000 or XP and your USB Controller Cards. This is very important, as WIN2000 does not always have the required device drivers loaded in default for USB 2.0 devices. If your card came with a driver CD this step may have been taken care of during installation of the card.
- 3. Update Windows 2000 to Service Pack 4; this is available as a free upgrade from the Windows update web site.
- 4. When all USB Controller Cards are installed and the PC updated, restart the PC.
- 5. Connect any USB hubs if applicable.



The brand or type of USB hub must match that of the USB Controller Card.

6. After USB hubs are installed, restart the PC again.



## 11.5.6.3 Install the 4-Port Digital Call Logging Unit

- 1. Connect the 4-Port Digital Call Logging Unit device to the USB cable and plug the USB cable in the PC. Windows responds with the Found New Hardware wizard.
- 2. Insert the provided NEC BackOffice CD in the CD drive of the PC.

Direct the installation of the driver to **Specific Location** and specify the **Driver** folder on the CD. Windows should find and load the device driver.

- 3. **Before inserting the next USB cable**, restart the PC. If Windows responds with Found New Hardware again, direct to the CD a second time and restart the PC. After you get a clean restart and Windows recognizes the device on restart, install the next device.
- Leave the CD in the CD drive and connect the next device, you may need to direct windows to the CD with each device you connect. Also, you may need to restart the PC with each device connection (this may require two restarts per device).
- 5. After all devices are connected, restart the PC and view the devices in Device Manager to ensure proper installation.
- 6. Connect the telephone wiring to the 4-Port Digital Call Logging Unit. Be sure to note which extension is connected to which port of the devices (each device has a unique serial number). In the Recorder window you see the serial number followed by a trailing digit (1~4), this identifies the port on the device.



Before the telephone wiring is connected, the devices may temporarily show Failed and then reinitialize. This is normal operation.

Label each Digital Station Port with the extension it records. Refer to Figure 9-39 4-Port Digital Station Ports.

Figure 9-39 4-Port Digital Station Ports

4-Port Digital Call Logging Unit



Digital Station Ports





# 11.5.6.4 Install the 4-Port Digital Call Logging Unit BackOffice Software

- 1. Insert the **NEC BackOffice** CD in the CD drive of the PC.
- 2. Locate the **Recorder** folder.
- 3. Click on the **Setup.exe** file in the Recorder folder.
- 4. Select Telephone System-Type.



Choose European if in a territory that uses A-Law or US for the US and territories that use  $\mu$ -Law.

- 5. Select **Install Location** or **Next** to choose default (recommended) location.
- 6. Select Finish.
- 7. A NEC BackOffice Recorder shortcut is now displayed on the desktop.
- 8. Click on the NEC BackOffice Recorder shortcut.
- 9. The Recorder screen is displayed. Refer to Figure 9-40 Recorder Screen on page 9-49.

Figure 9-40 Recorder Screen

erial No	Name	State	Call	Destination Folder
5099032 5099033 5099034 5099031	<unconfigur <unconfigur <unconfigur <unconfigur< th=""><th>good good good good</th><th>1</th><th>Double click here to configure it now Double click here to configure it now Double click here to configure it now Double click here to configure it now</th></unconfigur<></unconfigur </unconfigur </unconfigur 	good good good good	1	Double click here to configure it now Double click here to configure it now Double click here to configure it now Double click here to configure it now

 Double click on the first line in the sequence to configure. The Enter Line Details dialog box is displayed (each device is identified with a unique serial number – followed by a 1, 2, 3 or 4 which identifies the port from left to right on the device).



Figure 9-41 Enter Line Details Dialog Box

nter line details		
Device serial	number	05099032 💌
Either	Delete ti	his Entry
□ Dr - Enter information about t User or extension name e.g. John Doe or Extensio	his line In 300	Steve
File Path The disk or network location	on where calls	will be stored Browse
Audio Balance	Boost (%)	100 · Local 100 · Remote
Ignore calls shorter than	10 seco	onds
Automatically erase calls	<ul> <li>Never</li> <li>After</li> <li>When</li> </ul>	29   days     50   Megabytes of disk space used
OK		Cancel

- 11. Name the device (user or extension name).
- 12. Click on the **Browse** button to identify the storage location for the device.
- 13. It is recommended that you create a Master Calls folder with a subfolder for each device. This makes it easier to search for archived calls. You should also boost the remote signal and check for quality with a test call.
- Audio Balance allows you to increase or decrease the audio balance of the recording. Leaving Local and Remote at 100% leaves the recording as-is. Perhaps boosting the remote side on most installs to 150% is suggested, but test it prior to leaving this setting as-is.
- 15. **Ignore Calls** although the Recorder **Starts** recording automatically, this setting tells the system only to **Save** calls longer than this preset threshold.
- 16. **Automatically Erase Calls** this can be set to delete calls after x number of days or after a defined disk space is used.



-Calls marked Important during playback are not automatically deleted.

17. Press **OK** to save the settings.



18. Repeat this procedure for each listed device, entering a name and identifying the folder for storing recorded calls.



Calls should be stored on the same PC. However, if a network drive is used, you should choose a folder location on the local PC to buffer calls. This allows the application to run and store calls even if the network is temporarily down.

 When all the devices are named and mapped to a storage folder location, select File then Exit from the Recorder screen menu to save your configuration.

The NEC Recorder now records every call to and from the telephones. It is important to use proper procedure to shut down the application and PC when necessary.



The Recorder PC should be left on at all times (with battery backup) and the application always running.

Figure 9-42 Recorder Screen

🥑 Recorde	r			
<u>File Edit I</u>	<u>H</u> elp			
Serial No	Name	State	Cal	Destination Folder
01002976 01002979 01003012 01003015 01003021 01003027 01003029 01003062	Ext 20- Steve <unconfigur <unconfigur <unconfigur <unconfigur <unconfigur< th=""><th>good good good good good good good</th><th></th><th>C:\Documents and Settings\Steve Trok\Desktc Double click here to configure it now Double click here to configure it now</th></unconfigur<></unconfigur </unconfigur </unconfigur </unconfigur 	good good good good good good good		C:\Documents and Settings\Steve Trok\Desktc Double click here to configure it now Double click here to configure it now
Buffe	r calls locally at:	C:\Documents a	and Setting	s\Sp\Calls\ Browse



# 11.5.6.5 Choose and Install Player Options

Several player options are available with the NEC BackOffice Recording solution.

- Desktop Player can be loaded on an individual user's PC, giving the user complete access (although restrictions can be applied) to call management; deleting calls, emailing conversations, exporting to wav file, etc. This software can be downloaded from <u>www.usbcallrecord.com</u> free.
- VSR Manager 2.0 enables a supervisor(s) to search for calls, playback calls, associate notes about calls, mark them important, and delete or email conversations. Refer to the VSR Manager Installation Manual for instructions.
- ❑ VSR Reporter Pro same advanced functionality as VSR Reporter with the addition of the Agent Evaluation module Call Scoring. It provides customized scoring forms and criteria along with detailed support to quickly identify strengths and weaknesses within your Call Center.

These packages can be applied in any number of configurations within the organization providing control and management where needed and simple playback in other locations.

# 11.6 VSR Manager Version 2.0 Installation

Two options are available for playing back calls recorded by your VSR(s). The first is the Desktop Player which is used by an individual user to play back their own archive of calls or to play back NEC D<sup>term</sup> VSR calls stored on their PC or network. It easily manages calls from one storage location. It does not offer many of the advanced functions of the VSR Manager, such as establishing preset shortcuts to any number of storage folders for quick and easy access.



Figure 9-43 D<sup>term</sup> VSR Manager Screen

NEC Dterm VSR Manager				
Eile View Setup Help				
1:38 PM 5/12/2005 0:00	t <b>a life of the set of the set of</b>	tin a faile direction of the second	er den den anden is die ander den den mei water bereiten de	a (friff) og der okat ble-
Steve Ext 2002				
for this text				Search Now X
G Search only files currently displaye	i 🔽 Include	e comments in the	search	
C. Court from a most and delands		Search files fro	n 1/ 1/2004 👻 12:00:00 AM	
C Search al shortcuts	Include subfolders	up un	ii 6/ 7/2005 💌 2:59:43 PM 🔆 (	Clear
Only includes calls shorter than	60 seconds	Conly include:	calls longer than 60 seconds	
Displaying contents of folder C:\Docum	ents and Settings\Steve Tro	k\My Documents	\Ny Calls	
! User ID Caller ID	Time + Date 5	Length Con	nment	
Steve Customer ID	8:20 PM 5/12/2005	20:30 NE	Csystem sale	X
Sleve 949-555-1226	6:55 PM 5/12/2005	2:24 Sale	<ul> <li>10,000 pieces part number 100100</li> </ul>	
Steve Happy Customer	5:01 PM 5/12/2005	19:01 orde	25	
Sleve 214-555-1222	4:13 PM 5/12/2005	13:35 AB0	company	
Sleve	3:22 PM 5/12/2005	0:45		<b>M</b>
				>

The second player option is the **VSR Manager**. Take your call recording environment to the next level with NEC VSR application software. **VSR Manager** provides advanced visibility, access, retrieval, and playback tools for the VSR Recorder administrators. It provides an intuitive interface for establishing shortcuts to any number of storage folders and allows the supervisor to search across all storage folders for specific call information such as User, Time/Date, Length of Call, etc. The application can be used to access and manage VSR recordings whether created by the single port VSR or the 4-Port Digital Call Logging Unit. **VSR Manager** is built on the robust Microsoft.net frame-work and manipulates large volumes of recordings. It is a workhorse that delivers truly feature rich productivity tools in a familiar, ergonomic and easy to use MS Office style interface.



**VSR Manager** allows the manager or supervisor to quickly and easily gain access to important calls.

Nontcuts       Shortcut: Scored Recordings       Surday, Neucoder: 13, 2005 11:00:02 P         Shortcuts to Sources       Shortcut: Scored Recordings - (1)       Status, Neucoder: 13, 2005 11:00:02 P         My Caise       Shortcut: Scored Recordings       Cale: 10       Date and Time       Campation         Sales Statt       Signitude Cause       Signitude Cause       Signitude Cause       Signitude Cause         Collaboration       Sales Statt       Gauce Statter       Gauce Statter       Gauce Statter         Collaboration       Sales Statt       Gauce Statter       Gauce Statter       Gauce Statter         Collaboration       Sales Statt       Gauce Statter       Gauce Statter       Gauce Statter         Collaboration       Sales Statt       Gauce Statter       Gauce Statter       Gauce Statter         Collaboration       Gauce Statter       Gauce Statter       Gauce Statter       Gauce Statter         Collaboration       Gauce Statter       Statter       Gauce Statter       Gauce Statter       Gauce Statter         Collaboration       Gauce Statter       Statter       Statter       Gauce Statter       Gauce Statter       Gauce Statter         Collaboration       Gauce Statter       Statter       Statter       Gauce Statter       Gauce Statter       Gauce Statt	rens Partel	Short	cut: Scored Recordi	025			
Shortcuts to Sources         My Recordings - (1)         My Cais         Montored Agents         Sales Dept(1)         Sales Dept(1)         Sales Staff         Costoner Service         See Set Set Set Set Set Set Set Set Set	hortcuts	.8.8./	💈 Shortcut: Score	d Recordings			Sunday, November 13, 2005 11:28-32 Pt
My Cais       Info 1       Loor ID       Caler ID       Dots and Time       Length       Comment:         Monitored Agents       Sales Dept. (1)       Sales Dept. (2)       Sales Staff       Pan Rover       55555538       6/20/2005 1120:35 PM       00.00:04       Order for 25 Nerson Recorders number 239876         Customer Service       Sales Staff       Pan Rover       55555538       6/20/2005 120:35 PM       00.00:04       Order for 25 Nerson Recorders number 239876         Customer Service       Pan Rover       555555538       6/20/2005 120:25 PM       00.00:04       Order Number 123490         Customer Service       Pan Rover       55555518       6/20/2005 71-05:24 MI       00.00:04       Order Number 123490         Customer Service       Pan Back       555555518       6/20/2005 71-05:24 MI       00.00:04       ACC Organy Order         Customer Service       Pan Back       555555512       6/20/2005 57-05:24 MI       00.00:04       ACC Organy Order         Customer Service       Pan Back       555555512       6/20/2005 61:20:05:1AMI       00.00:04       ACC Organy Order         Customer Service       Pan Back       55555552       6/20/2005 61:20:05:1AMI       00.00:04       ACC Organy Order         Customer Service       Pan Back       555555512       6/20/2005 61:20:05:1AMI	Shortcuts to Sources.	\$ Share	Group+ Search i	nt All 💌 fo			- 0
All U Cals	My Recordings - (1)	Info 1	Uper ID	Caler ID	Date and Time TL	ength	Comment
Implication       Pain Rovier       55555304       6.20/2005 1:05:03 PM       00:00:04         Sales Staff       Costation       Implication       Implication       Implication       Implication         Costation       Implication       Implication       Implication       Implication       Implication         Costation       Implication       Implication       Implication       Implication       Implication         Costation       Implication       Implication       Implication       Implication       Implication         Implication       Implication       Im	-A Ily Cals	00	Victor Graves	5555551881	6/30/2005 1:12:35 PM	00:00:04	Order for 25 Xtension Recorders number 239876
States Dept. (n)	Monitored Agents	(2	Pam Rover	5555554364	6/30/2005 1:05:03 PM	00:00:04	
Customer Service       Susen daly       55555535       6/20/2005 12:02:52 PM       00:00:04       Order Number 123490         Collaboration       Archived Calls       0       Mary Jedison       555555153       6/20/2005 7:02:24 AM       00:00:04       ABC Company Order         Cell       Netsyine Davis       555555153       6/20/2005 7:02:24 AM       00:00:04       ABC Company Order         Cell       Cell       Netsyine Davis       555555153       6/20/2005 6:05:20 AM       00:00:04       ABC Company Order         Cell       Cell       Susen daly       555555137       6/20/2005 6:05:20 AM       00:00:04       ABC Company Order         Cell       Debter Love       555555137       6/20/2005 6:05:20 AM       00:00:04       Order Number 1239760         Cell       Debter Love       555555137       6/20/2005 6:10:82:20 AM       00:00:09       Order Number 1239760         Cell       Debter Love       555555137       6/20/2005 12:00:10 AM       00:00:09       Order Number 1239760         Cell       Debter Love       555555137       6/20/2005 12:00:10 AM       00:00:09       Order Number 12:39760         Cell       Henry Nordis       555555137       6/20/2005 12:00:10:51:52 AM       00:00:01       Order Number 12:39760         Cell       Henry Nord	Sales Dept (1)	0	Tracy Walker	555555338	6/30/2005 12142502 PM	00:00:04	
Collaboration Archived Calls	Customer Service	0	Susan daily	5555552655	6/30/2005 12:02:52 PM	00:00:04	Order Number 123498
Archived Calls	Collaboration	0.0	Mary Jackson	5555557651	6/30/2005 7:45:05 AM	00:00:05	
00         Occer Sanderson         55555120         6/20/2005 6:45:01.4M         00:00:04           02         Pack Black         555555337         6/20/2005 6:21:03.4M         00:00:04         Order Number 1239760           04         Robert Love         555555333         6/20/2005 6:05:20.4M         00:00:04         Order Number 1239760           04         Robert Love         555555353         6/20/2005 6:05:20.4M         00:00:04         Order Number 1239760           05         Debite Pollock         555555236         6/20/2005 12:94:22 FM         00:00:07         Reference call         0           05         Henry Norvis         555555301         6/20/2005 12:05:12 FM         00:00:011         Drder 2239987           08         Adam Trientole         5555554307         6/29/2005 12:05:12 FM         00:00:014         5           08         Susen dely         5555554307         6/29/2005 12:05:12 FM         00:00:014         5           09         Risk 5200553.NH3-00.33.00.xht         T         T         T         5           19         Paul Ellick 5200553.NH3-00.33.00.xht         T         T         T         5           19         Paul Ellick 5200553.NH3-00.33.00.xht         T         T         T         5 <td< td=""><td>Archived Calls</td><td>(*</td><td>Natasha Davis</td><td>555553495</td><td>6/30/2005 7:02:24 AM</td><td>00:00:04</td><td>ABC Company Order</td></td<>	Archived Calls	(*	Natasha Davis	555553495	6/30/2005 7:02:24 AM	00:00:04	ABC Company Order
		0.0	Oscar Sanderson	5555551520	6/30/2005 6:45:01 AM	00:00:04	
00         Robert Love         55555343         6/20/2005 6/35/20 AM         00/00/04           00         Debbe Policid         555555258         6/29/2005 1/3-22 PM         00/00/09         10           04         Henry Novis         55555258         6/29/2005 1/3-22 PM         00/00/07         Reference cal           04         Henry Novis         555555258         6/29/2005 1/3-22 PM         00/00/07         Reference cal           04         Acam Trambie         555555430         6/29/2005 1/3-52 AM         00/00/07         Reference cal           04         Acam Trambie         5555554307         6/29/2005 1/3-53.52 AM         00/00/04         5555554307           05         Stand cal         Stand cal         Stand cal         Stand cal         Stand cal           04         Stand cal         Stand cal         Stand cal         Stand cal         Stand cal           05         Stand cal         Stand cal         Stand cal         Stand cal         Stand cal           05         Stand cal         Stand cal         Stand cal         Stand cal         Stand cal           05         Stand cal         Stand cal         Stand cal         Stand cal         Stand cal           04         Notal         Stand cal		04	Paul Black	555555937	6/30/2005 6:21:31 4/4	00:00:04	Order Number 1239760
		C	RobertLove	5555553443	6/30/2005 6:05:20 AM	00.00:04	
CP         Henry Norris         5555552761         6/26/2005 12:00:10 PM         00:00:07         Reference cal           CP         Adam Trantolik         5555551722         6/29/2005 12:05:12 PM         00:00:01         Order 2239987           CP         Susen dely         555551722         6/29/2005 10:05:152 AM         00:00:04            CP         Susen dely         555551727         6/29/2005 10:05:152 AM         00:00:04            CP         Payer - Pmil Risk/0005-2NN-3-08:33:00 xtr         In         In         In         In           Payer - Pmil Risk/0005-2NN-3-08:33:00 xtr         In         In         In         In         In           Vise (I)         Centrol         Centrol         Centrol         Centrol         Centrol         In           Vise (I)         Centrol         Centrol         Centrol         Centrol         Centrol         Centrol           Vise (I)         Centrol         Centrol         Centrol         Centrol         Centrol         Centrol         Centrol           Vise (I)         Centrol         Centrol         Centrol         Centrol         Centrol         Centrol         Centrol		. (2	Debbie Pollock	555552538	6/29/2005 1134:22 PM	00:00:09	
		(2	Henry Norris	5555552791	6/29/2005 12:30:50 PM	00.00:07	Reference cal
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C         III         >           Player - Paul Elack-0005-XN-5-08.33.00 xlr         >         >         >           V         File+ (*: Control+) (*) + Hotory         >         >         >           Marcello         Color ID         Date 1 Time         Control+ (*)         >           Paul Elack         555555997         65002005 0.21 31 AM         Order Number 1239700		0	Susan daily	5555554307	6/29/2005 10:53:52 AM	00.00:04	
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Figure 9-44 VSR Manager Screen

These two players can be combined in any number of configurations in the company, providing control and management where needed and simple playback in other locations.

Refer to the documentation included with the D<sup>term</sup> VSR (P/N 780275) for details on setting up and using the Desktop Player.

This section assists you with the installation of the software and helps you start using the VSR Manager. For detailed assistance with the software, please refer to the Help Files located in the VSR Manager program.



# 11.6.1 Hardware and Software Check for VSR Manager 3.0

## 11.6.1.1 Minimum Hardware Requirements

- Processor: Pentium III-class (K7) 1.0GHz or equivalent (recommend Pentium 4 or equivalent)
- □ Memory: 128MB (recommend 256MB+)
- Disk Space: 30MB (recommend 60MB+)

## 11.6.1.2 Minimum Software Requirements

- Operating Systems: Windows XP (recommended latest service pack) Windows 2000 (recommended latest service pack) Windows 2003
- Microsoft .Net Framework 1.1+



If your PC does not meet the above requirements, please contact NEC. VSR Manager 2.0 can be provided, if upgrading to the minimum requirements is not possible or desirable.

## 11.6.1.3 Screen Resolution

VSR Manager is a visual application environment featuring dynamic graphical elements which may function at lower resolutions. However, for best performance and to view these items correctly, you should set the screen resolution to a minimum of 1024x768. You can do this from the **Control Panel** → **Display Settings** → **Advanced Settings** tab.



# 11.6.1.4 Is Microsoft.Net Framework 1.1 Installed?

VSR Manager 2.0 requires the Microsoft .Net Framework, which should be installed on your PC prior to installing VSR Manager. If your Windows operating system has been kept updated with Windows Service Packs, the Microsoft .Net Framework 1.1 likely has already been installed.

To check if you have the Microsoft.Net Framework installed:

- 1. Navigate to Control Panel → Add and Remove Programs.
- 2. Look for an entry referencing the Microsoft .Net Framework 1.1 or later.
- 3. If the Microsoft .Net Framework is not installed, you can download it from the Microsoft web site.



Not sure if .Net is installed:

If you have any doubt, try to install VSR Manager 2.0. The installation halts and informs you if the Microsoft .Net Framework 1.1 is not found. If this occurs, you can download the Microsoft .Net Framework 1.1, install it, restart your computer and then proceed to install VSR Manager.

# 11.6.2 Install Your Application Security Key

VSR Manager requires an Application Security Key (a USB dongle which is shipped with the application) to be inserted when the VSR Manager is running. This unlocks the application and prevents unauthorized use. The VSR Manager displays messages and halts its processes if the Application Security Key is not found or if the wrong key is inserted.



# • The Application Security Key is associated with your Software license.

- The Application Security Key is non-transferable and cannot be replaced if lost.
- If the key becomes damaged within the warranty period, you must return your key to support for verification and replacement if the nature of the damage qualifies.
- 1. Insert USB key into an available USB port on PC.
- 2. Windows should respond with **Found New Hardware** and identify the device as a Matrix USB Key.
- 3. If Windows does not find the needed driver, browse to the CD. The driver is loaded on the CD in the **Drivers** folder.



# 11.6.3 Install and Register VSR Manager 2.0

In a multi-user operating systems, such as Windows 2000 or Windows XP, applications are generally installed in a folder from which it can be run by all users, such as C:\Program Files. You can only install or uninstall applications if you have administrative privileges on your computer. If you encounter any installation problems, check to make sure you have administrative privileges or ask your administrator to install VSR Manager for you.

## 11.6.3.1 Install VSR Manager

- 1. Insert the VSR Manager CD in the computer CD-ROM drive or navigate to the location where you have saved your application download.
- 2. Double-click the VSR Manager Set-up icon.
- 3. Follow the on-screen instructions.
- 4. If prompted, restart your computer.

## 11.6.3.2 Register VSR Manager

To get additional support, it's a good idea to register your copy of VSR Manager. When you register, you can sign up for timely EMail notices about product updates so you can keep VSR Manager running at peak performance and benefit from any new features and enhancements. You can also sign up to receive up-to-the-minute notices about upgrades and new VSR products.

- 1. Select **Help → Online registration** (your Internet connection needs to be active to connect to the web site).
- 2. Fill out the Online electronic form.
- 3. You automatically receive a confirmation EMail and information as soon as it is available based on your notification preferences.



# 11.7 VSR Reporter Pro 2.0 Installation

Two options are available for playing back calls recorded by your VSR(s). The first is the Desktop Player which is used by an individual user to play back their own archive of calls or to play back NEC D<sup>term</sup> VSR calls stored on their PC or network. It easily manages calls from one storage location. It does not offer many of the advanced functions of the VSR Reporter Pro, such as establishing preset shortcuts to any number of storage folders for quick and easy access.

NEC Dterm VSR Manager		
Ele Vew Setup Help		
1:38 PM 5/12/2005 0:00	in hit an hit is built mainte trainin and is to an in the sector of the sector is the sector is the sector of a	1 <b>99 49 40 1945 5</b> 4
Steve Ext 2002		<b>→</b> 🛏 ×
for this text		Search Now X
C Search only files currently displayed	Include comments in the search	
C Search from current path/shortcut C Search al shortcuts	Search files from         1/         1/2004         ▼         12:00:00 AM ÷           ude subfolders         up until         6/         7/2005         ▼         2:59:43 PM ÷         Cleat	ar
Only includes calls shorter than     60 sec	conds  Only includes calls longer than 60 seconds	_
Displaying contents of folder C:\Documents and S	Settings\Steve Trok\My Documents\My Calls	
I User ID Caller ID Time	e + Date ∇ Length Comment	No. 100
Sieve Customer ID 8:20	0 PM 5/12/2005 20:30 NEC system sale	
Sieve 949-555-1226 6:55	5 PM 5/12/2005 2:24 Sale- 10,000 pieces part number 100100	-
Sleve Happy Customer 5:01	1 PM 5/12/2005 19:01 order	
Sleve 214-555-1222 4:13	3 PM 5/12/2005 13:35 ABC company	(T2)
Sleve 3:22	2 PM 5/12/2005 0:45	× *

Figure 9-45 D<sup>term</sup> VSR Reporter Pro Screen

The second player option is the **VSR Reporter Pro**. Take your call recording environment to the next level with NEC VSR application software. **VSR Reporter Pro** provides advanced visibility, access, retrieval, and playback tools for the VSR Recorder administrators. It provides an intuitive interface for establishing shortcuts to any number of storage folders and allows the supervisor to search across all storage folders for specific call information such as User, Time/Date, Length of Call, etc. The application can be used to access and manage VSR recordings whether created by the single port VSR or the 4-Port Digital Call Logging Unit. **VSR Reporter Pro** is built on the robust Microsoft.Net frame-work and manipulates large volumes of recordings. It is a workhorse that delivers truly feature rich productivity tools in a familiar, ergonomic and easy to use MS Office style interface.



**VSR Reporter Pro** allows the manager or supervisor to quickly and easily gain access to important calls.

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ortcuts	S. 3. /	Shortcut: Score	d Recordings			Sunday, November 13, 2005 11:2	18:32 P
Shortcuts to Sources	¥ Shall +	Group +   Search )	ns All 💌 for			-	0
My Recordings - (1)	Info 1	User ID	. Caler ID	Date and Time TIL	ength	Comment	
-A Ny Calis	0	Victor Graves	5555551881	6/30/2005 1:12:35 PM	00:00:04	Order for 25 Xtension Recorders number 239876	_
Monitored Agents	0	Pain Rover	5555554364	6/30/2005 1:05:03 PM	00:00:04		
Sales Dept - (1)	02	Tracy Walker	555555338	6/30/2005 12:42:02 PM	00:00:04		
Customer Service	0	Susan daily	5555552655	6/30/2005 12:02:52 PM	00.00:04	Order Number 123498	
Collaboration	0.0	Mary Jackson	5555557651	6/30/2005 7:45:05 AM	00:00:05		
Archived Calls	6	Natasha Davis	5555553495	6/30/2005 7:02:24 4/1	00:00:04	ABC Company Order	_
	C10	Oscar Sanderson	5555551520	6/30/2005 6:45:01 AM	00:00:04		
	64	Paul Back	5555559937	6/30/2005 6:21:31 AM	00:00:04	Order Number 1239760	
	Cre	RobertLove	555553443	6/30/2005 6:05: 20 AM	00:00:04		
	> C#	Debbie Pollock	555552538	6/29/2005 1:34:22 PM	00:00:09		
	64	Henry Norris	\$\$\$\$\$\$2791	6/29/2005 12:30:50 PM	00.00:07	Reference cal	_
	C10	Adam Tremble	5555553722	6/29/2005 12:05:12 PM	00:00:11	Order 2239987	
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and a second sec	A A	~					
THE THE CAL							

Figure 9-46 VSR Reporter Pro Screen

These two players can be combined in any number of configurations within the company, providing control and management where needed and simple playback in other locations.

Refer to the documentation included with the D<sup>term</sup> VSR (P/N 780275) for details on setting up and using the Desktop Player.

This section assists you with the installation of the software and helps you to start using the VSR Reporter Pro. For detailed assistance with the software, please refer to the Help Files located in the VSR Reporter Pro program.

## 11.7.1 Hardware and Software Check for VSR Reporter Pro 2.0

#### 11.7.1.1 Minimum Hardware Requirements

- Processor: Pentium III-class (K7) 1.0GHz or equivalent (recommend Pentium 4 or equivalent)
- Memory: 128MB (recommend 256MB+)
- Disk Space: 30MB (recommend 60MB+)



# 11.7.1.2 Minimum Software Requirements

- Operating Systems:
   Windows XP (recommended latest service pack)
   Windows 2000 (recommended latest service pack)
   Windows 2003
- Microsoft .Net Framework 1.1+



If your PC does not meet the above requirements, please contact NEC. VSR Manager 2.0 can be provided, if upgrading to the minimum requirements is not possible or desirable.

# 11.7.1.3 Screen Resolution

VSR Reporter Pro is a visual application environment featuring dynamic graphical elements which may function at lower resolutions. However, for best performance and to view these items correctly, it's recommended that you set the screen resolution to a minimum of 1024x768. You can do this from the **Control Panel** → **Display Settings** → **Advanced Settings** tab.

## 11.7.1.4 Microsoft.Net Framework 1.1 Installation

VSR Reporter Pro 2.0 requires the Microsoft .Net Framework, which should be installed on your PC prior to installing VSR Reporter Pro. If your Windows operating system has been kept updated with Windows Service Packs, the Microsoft .Net Framework 1.1 likely is already installed.

To check if you have the Microsoft.Net Framework installed:

- 1. Navigate to Control Panel → Add and Remove Programs.
- 2. Look for an entry referencing the Microsoft .Net Framework 1.1 or later.
- 3. If the Microsoft.Net Framework 1.1 is not installed, you can download it from the Microsoft web site.



The link to Microsoft .Net Framework download at time of this writing: http://www.microsoft.com/downloads/ details.aspx?FamilyID=262d25e3-f589-4842-8157-034d1e7cf3a3&displaylang=en

Not sure if.Net is installed:

If you have any doubt, try to install VSR Reporter Pro 2.0. The installation halts and informs you if the Microsoft.Net Framework 1.1 is not found. If this occurs, you can download the Microsoft.Net Framework 1.1, install it, restart your computer and then proceed to install VSR Reporter Pro.



# 11.7.2 Install Your Application Security Key

VSR Reporter Pro requires an Application Security Key (a USB dongle which is shipped with the application) to be inserted when the VSR Reporter Pro is running. This unlocks the application and prevents unauthorized use. The VSR Reporter Pro displays messages and halts its processes if the Application Security Key is not found or if the wrong key is inserted.



- The Application Security Key is associated with your Software license.
- The Application Security Key is non-transferable and cannot be replaced if lost.
  - If the key becomes damaged within the warranty period, you must return your key to support for verification and replacement if the nature of the damage qualifies.
- 1. Insert USB key into an available USB port on PC.
- Windows should respond with Found New Hardware and identify the device as a Matrix USB Key.
- 3. If Windows does not find the needed driver, browse to the CD. The driver is loaded on the CD in the **Drivers** folder.

## 11.7.3 Install and Register VSR Reporter Pro 2.0

In a multi-user operating systems, such as Windows XP, applications are generally installed in a folder from which it can be run by all users, such as C:\Program Files. You can install or uninstall applications only if you have administrative privileges on your computer. If you encounter any installation problems, check to make sure you have administrative privileges or ask your administrator to install VSR Reporter Pro for you.

## 11.7.3.1 Install VSR Reporter Pro

- 1. Insert the VSR Reporter Pro CD in the computer CD-ROM drive or navigate to the location where you have saved your application download.
- 2. Double-click the VSR Reporter Pro Set-up icon.
- 3. Follow the on-screen instructions.
- 4. If prompted, restart your computer.

## 11.7.3.2 Register VSR Reporter Pro

To get additional support, it is a good idea to register your copy of VSR Reporter Pro. When you register, you can sign up for timely Email notices about product updates so you can keep VSR Reporter Pro running at peak performance and benefit from any new features and enhancements. You can also sign up to receive up-to-the-minute notices about upgrades and new VSR products.

1. Select **Help** → **Online registration** (your Internet connection needs to be active to connect to the web site).



- 2. Fill out the Online electronic form.
- 3. You automatically receive a confirmation Email and information when it is available based on your notification preferences.

# SECTION 12 IP/DIGITAL CALL LOGGING

There are many different reasons to record a phone call and NEC's Digital Call Logging software will cover all your needs. NEC's 1-Port Digital Logging Unit is a good place to start. It records and plays phone calls to and from one digital terminal and when properly installed does not require any other call logging applications to be fully functional. The back bone of NEC's higher volume call recording software is the NEC IP/Digital BackOffice software which is PC based and is capable of recording calls from both VoIP and TDM type technologies.

NEC's BackOffice software works in conjunction with a 4-Port Digital Logging Unit for recording of TDM type calls. The recording of VoIP type calls does not require the Digital Logging Unit. To listen to the recorded calls NEC offers an NEC IP/Digital Player, Manager or Reporter Pro. All of these perform the listening function but offer increasing levels of additional features. All of these products are covered in this section.

# 12.1 NEC 1-Port Digital Logging Unit

The NEC 1-Port Digital Logging Unit is a USB device that taps across the digital extension pair of the NEC telephone system allowing digital recording of the telephone user's conversation. The file created is saved either to the local PC or to a network location, depending on the application blade. This adapter is for use with digital multiline terminals. It cannot be used with analog or VoIP.



This device meets all applicable FCC and UL requirements for this type of communication device.

Figure 9-47 1-Port Digital Logging Unit



# 12.1.1 PC Compatibility

The NEC 1-Port Digital Logging unit application supports Microsoft operating systems which support USB devices such as Windows XP and Windows 7.

## 12.1.2 Connection Configuration

The configuration connection is shown in Figure 9-48 VSR Connection Configuration.

## 12.1.3 Connectors

One PC USB connector that provides power and streams all speech and control channel information to the host PC and desktop software.



Two digital telephone line connections that passively tap across the digital connection and listen in high impedance mode to the signaling on the line.



## 12.1.4 Installation

The VSR is packaged with everything necessary for installation including:

- Software CD
- USB Cable
- Telephone connection lead
- Quick-start installation manual



The use of monitoring, recording, or listening devices to eavesdrop, monitor, retrieve, or record telephone conversation or other sound activities, whether or not contemporaneous with transmission, may be illegal in certain circumstances under federal or state laws. Legal advice should be sought prior to implementing any practice that monitors or records any telephone conversation. Some federal and state laws require some form of notification to all parties to a telephone conversation, such as using a beep tone or other notification methods or requiring the consent of all parties to the telephone conversation, prior to monitoring or recording the telephone conversation. Some of these laws incorporate strict penalties.

1. Unplug the line cord from your telephone and connect it to either port on the call logging unit.



2. Connect the NEC telephone system to the remaining port on the call logging unit. You are now ready to record.

## For Windows 7 or XP

1. Using the USB cable provided, connect the USB interface on the NEC 1-Port Digital Logging Unit to your PC. Windows automatically detects the new hardware and starts the New Hardware Wizard. This displays a dialog box similar to the one shown below. Select the second option, Install from a list or specific location, and press Next>.



When using Windows 7 the device driver software is installed automatically.

Figure 9-49 Hardware Update Welcome Screen

Hardware Update Wizard	
	Welcome to the Hardware Update Wizard This wizard helps you install software for: USB Device
	If your hardware came with an installation CD or floppy disk, insert it now.
	What do you want the wizard to do? Install the software automatically (Recommended) Install from a list or specific location (Advanced)
E-HEETER.	Click Next to continue.
	< Back Next > Cancel

2. Insert the NEC Installation CD in your CD drive and press Next>.



If you downloaded the files from the Internet or FT server, uncheck the **Search removable media box**, select the **Include this location**... box and enter the location where you stored the downloaded files (e.g. C:\My Documents). Press Next> (refer to Figure 9-51 Hardware Installation – Logo Testing Screen).



Figure 9-50 Hardware Update Screen – Installation Options

Please cho	ose your search and installation options.	EV.
⊙ <u>S</u> ear	ch for the best driver in these locations.	
Use I paths	he check boxes below to limit or expand the default search, which includes lo ; and removable media. The best driver found will be installed.	cal
	] Search removable media (floppy, CD-ROM)	
	Include this location in the search:	
	D:\drivers Browse	
O Don'	t search. I will choose the driver to install.	
Choo the d	se this option to select the device driver from a list. Windows does not guaran river you choose will be the best match for your hardware.	ntee

Figure 9-51 Hardware Installation – Logo Testing Screen

Hardwa	re Installation
<u>.</u>	The software you are installing for this hardware: Dterm-Recorder-USB-Interface has not passed Windows Logo testing to verify its compatibility with Windows XP. ( <u>Tell me why this testing is important.</u> ) <b>Continuing your installation of this software may impair</b> or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway

- 3. The software is fully tested, but has not yet been submitted to Microsoft for approval. Press **Continue Anyway**.
- 4. Press **Finish** to close the dialog box.



- 5. Run **Setup.exe** on your NEC Installation CD to install the Voice Security Recorder application software on your PC.
- 6. Using the USB cable provided, connect the USB interface of the NEC call logging unit to an available USB port on your PC.
- 7. Unplug the line cord from your telephone and connect the phone to either port on the call logging unit.
- Connect the NEC telephone system to the remaining port on the NEC 1-Port Digital Logging Unit (refer to Figure 9-62 Digital Call Logger Connection on page 9-76).

# 12.1.5 Call Logging Application Software

The software is delivered on a Compact Disk using a self-starting install shield. The CD contains all applicable files and installation procedures to operate to this specification, including USB device drivers, software application, and Help files.

A quick-start instruction sheet and a recorded user guide that steps the user through the various options are provided.

The application supports Microsoft Operating Systems that support USB devices. The following systems meet this requirement:

- Windows XP (all variants)
- Windows 7 (32- and 64-bit)

## 12.1.6 Call Logging User Interface Tab Options

The call logging unit has the following tabs to allow the user to select features and options:

- Playback allows various playback features of recorded conversations.
- **Record allows control of recording.**
- About provides software version information.
- Options to set-up controls such as recording format.
- File Management allows the user to manage disk space used by the call logging unit.

## Figure 9-52 User Interface Tab Options





## 12.1.6.1 Playback Tab

This tab allows the user to list and play recorded conversations. A graphical presentation of the volume level of the call with a cursor to indicate the current playback position is displayed. The cursor can be dragged forward or backward to allow rapid selection of the applicable section.

To select recorded calls for playback, click on the yellow folder and open another window where the repository of recorded calls can be selected.

NEC Dterm Voice Security Recorder
Playback Record About Options File Management
Select File to Play
! Caller Time + Date ∇ Length
Caller ID Comment Filtercurrent

Figure 9-53 Playback Tab



			Happy Customer 1:42 PM 2/6/2004 0:00
}			- 🕨 💻
nter notes about the c e text field.	all here. User can use t	he comment t	tab to search by ket word in
nter notes about the c e text field.	all here. User can use t	he comment t	tab to search by ket word in
nter notes about the c e text field. Caller Happy Customer	all here. User can use t Time + Date ⊽ 1:42 PM 2/6/20	Len   2:41	tab to search by ket word in
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nter notes about the c e text field. Caller Happy Customer NEC Inquiry Cust # 12345	all here. User can use t Time + Date ∇ 1:42 PM 2/6/20 12:32 PM 2/6/2 11:59 AM 2/6/2 3:49 PM 2/5/20 3:27 PM 2/5/20	Len 2:41 3:56 12:51 0:17 0:46 14:22	tab to search by ket word in
Caller Happy Customer NEC Inquiry Cust # 12345	all here. User can use t Time + Date ∇ 1:42 PM 2/6/20 12:32 PM 2/6/2 11:39 AM 2/6/2 3:49 PM 2/5/20 3:27 PM 2/5/20 2:09 PM 2/5/20	Len   2:41 3:56 12:51 0:17 0:46 14:22 21:03	tab to search by ket word in
nter notes about the c e text field. Caller Happy Customer NEC Inquiry Cust # 12345	Time + Date         ∇           1:42 PM 2/6/20         12:32 PM 2/6/20           12:32 PM 2/6/2         11:59 AM 2/6/2           3:49 PM 2/5/20         3:27 PM 2/5/20           3:27 PM 2/5/20         2:09 PM 2/5/20           2:09 PM 2/5/20         2:04 PM 2/5/20	Len   2:41 3:56 12:51 0:17 0:46 14:22 21:03 0:20	tab to search by ket word in
ter notes about the context field. Caller Happy Customer	all here. User can use t Time + Date ⊽ 1:42 PM 2/6/20	Len	tab to search by ket word

Figure 9-54 Caller ID or Comment Editor

The user can edit the Caller ID or the Comments field when viewing an existing recording.



Caller ID and number dialed are not available on the first release. Check with NEC for release date.

The user can list recordings in order of importance (using exclamation mark) with Caller ID, Time + Date, or duration.

The Caller ID and Comment buttons allow the user to filter out all recordings with the required Caller ID or text in the Comments field.

Playback, pause and stop buttons allow the user to control the Playback.

The Red exclamation mark allows recording to be identified as important for future listing or ensures that the recording cannot be overwritten.

The Red X allows recordings to be manually deleted.

The envelope button generates an email with the recording inserted for mailing to a colleague.



## 12.1.6.2 Record Tab

This tab allows the user to view recording levels and control the recording.

NEC Dterm Voice Security Recorder
Playback Record About Options File Management
Recording not available.
Dterm VSR
Supplied by NEC Unified Solutions www.necunifiedsolutions.com/cng

Figure 9-55 Record Tab

The Oscilloscope shows the local and remote levels on the line separately (Microphone is the user level, and speaker is the distant party level).

The Caller ID field is for future versions, but information can be entered or overwritten by the user.

Manual Start, Stop, and Pause buttons control the recording status.

The user can add notes and mark important recordings with an exclamation point to avoid deleting the conversation.

The camera button allows a user to snapshot record conversation to the current point while continuing to record the entire conversation. This feature is important for emergency centers to allow an operator to quickly reply to an important part while continuing to record.



## 12.1.6.3 About Tab

This tab provides version and manufacturer information.

Figure 9-56 About Tab

NEC Dterm Voice Security Recorder	
Playback Record About Options File Management	
Dterm Voice Security Recorder Version	
Manufactured by Convurgent Ltd. Nottingham UK. www.usbcallrecord.com	
for NEC Unified Solutions ©2003 http://www.necunifiedsolutions.com/cng/Default	



# 12.1.6.4 Options Tab

This tab allows the user to select various setup options.

```
Figure 9-57 Options Tab
```

Dterm Voice Sec	urity Recorder	
Playback Record	About Options File Management	
Automatically	start recording every call	
Record Format	Perfect Digital Recording (35 hours/GByte)     GSM 06.10 compression (168 hours/GByte)	
🗖 Show dialog w	hen Recorder starts	
Call selection:	C Save all calls C Only save calls longer than 10 - seconds	
Show splash s	creen at startup	
	C 16bit Wav - Large filesize, high quality, universal	
Email format	8 bit Wav - Smaller filesize, lesser quality, universal	
	C Dterm VSR - Smallest filesize, high quality, proprietary (A free player is available on the installation and documentation CD	)
Prompt me for	call information at the start of each call	
Prompt me for	call information at the end of each call	
Remove end-	of-call prompt after 60 seconds. (0=never)	
Audio balance:	Local Boost (%) 0 * Remote Boost (%) 0	÷
	WARNING: Excessive boost can distort audio	

Automatically start recording every call

Starts the recording when a call, including an internal extension call, is made.

Recorded format

Perfect Digital Recording stores the recording in PCM format taken directly from the digital line. But the highest quality requires significant space (35 hours per Gbyte) on the PC disk.

GSM 06.10 uses a compression technique to store 168 Hours per Gbyte. The quality difference is negligible so this becomes the default selection.

Show dialog when recorder starts

Selecting this default option brings the Record tab to the front of the user screen when record is activated.

Call Selection

Saves all calls or only those that exceed an established limit.

□ Show splash screen at startup

When selected, the VSR logo is shown for five seconds when the application is started.



Email format

Allows the user to select the type of file inserted in an email when the user selects the email button on the Playback Tab to send the VSR format to other users that have this application or to convert it to a .wav format for replay by any PC.

VRS selection automatically adds the Caller ID, time, date and comments fields to any email.

Prompt for call information at the start of each call

When selected, the Record screen is displayed when a call is made to allow the user to enter information.

Prompt for call information at the end of each call

When selected, the screen shown below is displayed to allow the user to manage calls at the point of completion. The user can save or erase the call, add notes, or mark important calls using the red key shown below.



Figure 9-58 Manage Calls at Completion

NEC Dterm Vo	ice Security Recorder		
Call from	caller ID or key info here	8:26 AM 2/10/2004	•
Comments			•
Notes abo	ut the call can be entered here		A V
	Save this Call	Erase this call	

## 12.1.6.5 File Management Tab

File management is necessary when the user makes many telephone calls and stores each conversation. The selections are self-explanatory.



Figure 9-59 File Management Tab

NEC Dterm Voice Security Recorder	
Playback Record About Options File Management	
Store calls at: C:\WINDOWS\system32\	Browse
If you are writing calls to a network location, a temporary local buffer against network problems	can protect
Buffer locally at:	Browse
Dterm VSR can automatically delete calls to prevent your disk filling  Files which you tag as important using the button like this and record screens will NEVER be deleted automatic You can still manually delete them using the delete buttor Automatically delete unimportant calls Never  After using	on the playback cally 1
When the calls are 7 days old	

# 12.1.6.6 Custom Program Settings

Comvurgent provides the dealer or user the option of making additional adjustments.



Figure 9-60 NEC Options for Additional Adjustments



This special configuration program can only be accessed by browsing to the installation location (default C:\Program Files\NEC\XtRecorder), and then click on the NEC *D*<sup>term</sup> Config.exe.



The customer takes all responsibility to ensure they meet legal requirements. NEC provides the user option settings to meet customer demands and cannot be responsible for misapplication of the product.

Several settings can be customized to meet requirements of the application as shown in Figure 9-61 Customizing Application to Meet Requirements.

Figure 9-61 Customizing Application to Meet Requirements

199 Dterm Recorder Configuration Tool	X
Detailed configuration of advanced Dterm Recorder options	
Display splash screen at the start of every call	
Lock splash screen at startup (Prevents the user disabling it)	
Show Dterm Recorder Dialog at the start of every call	
Prevent users of this station from deleting calls	
Prevent users of this station from pausing or halting recording	
Hide the system tray icon for invisible recording Please note. Illicit recording is illegal in some countries and US states	
Password Password prevents users running this config program	
Save and Use Cancel	
After changing options you must Exit and restart Dterm Recorder	

Display splash screen at the start of each call

Reminds user that recording is taking place by splashing a screen with every call.

Show recorder dialog at the start of each call

Displays application record screen anytime a call is being recorded.

Prevent users of this station from deleting calls

Disables the delete key.

Prevent users of this station from pausing or halting recording

Disables pause and stop controls.



Hide the system tray icon for invisible recording

Hides the small icon that appears in the system tray and flashes red when recording.

Password

Locks access to these settings and those at the user level.



When changes are made, the application must be closed and started again to become effective.





## 12.1.7 Operation Note

Use the Options and File Management tabs in the NEC Digital Logging Unit application to adjust the program settings as required (directory for storing messages, message deletion, file format, etc.).

It is recommended, after the initial installation of the Voice Security Recorder application, that the audio balance of the remote side be changed to approximately 100%.

- 1. Open the Voice Security Recorder application.
- 2. Click the **Options** tab.
- 3. Using the up arrow button, change the **Remote Boost (%)** setting to 100%.



Excessive boost can distort audio.



# 12.2 NEC 4-Port Digital Logging Unit

## 12.2.1 Description

The NEC 4-Port Digital Logging Units are Universal Serial Bus (USB) devices installed in the BackOffice next to the telephone system.

Up to 12 of the 4-Port Digital Logging Units can be connected to a single PC (providing 48 ports).

If larger installations are required, multiple PCs can be used with calls being stored on one central drive. Connectivity is accomplished via parallel wiring tapped across the same pair that feeds the telephone. The NEC IP/Digital BackOffice Recorder software (covered later in this manual), allows naming and mapping of each port independently.

The device does not interfere with communications between the PBX and the digital telephone. It does not require USB power or a connection to the PC to maintain normal telephone use.

The device meets the appropriate FCC and UL requirements for this type of communications device.

The device is soft up-loadable: the firmware and FPGA low-level protocol decryption is uploaded from the PC driver and the 4-Port Digital Logging Unit application at runtime. This allows easy upgrade and enhancement of the product in the field as required.

## 12.2.2 Connection Configuration

The configuration connection is shown in Figure 9-63 Digital Logging Unit Connection Configuration.



Figure 9-63 Digital Logging Unit Connection Configuration



# 12.2.3 Connectors

The NEC 4-Port Digital Call Logging Unit USB recording device has four connectors and four LED indicators:

- One PC USB connector, from which the device derives its power and streams all speech and control channel information up to the host PC and NEC BackOffice application.
- □ Four Digital Phone line connectors that passively tap across the NEC digital port and listen in high impedance mode to the signaling on the line. The NEC 4-Port Digital Call Logging Unit does not affect the telephone operation in any way with or without connection of the host PC.

# 12.2.4 Package Contents

The 4-Port Digital Call Logging Unit is packaged with everything necessary for installation including:

- Software CD
- USB Cable
- Quick-start installation manual

# 12.2.5 Hardware and Software Requirements

4-Port Digital Call Logging Unit:

- $\Box$  A Pentium<sup>®</sup> 4 equipped with:
  - O 512 Mb RAM.
  - O Windows XP, Windows 7.
  - One USB Controller Card for each four devices powered USB hubs can be used however, no more than four devices should be connected to a USB Controller Card.
  - O An available PCI slot for each USB Controller Card.
- LAN connection for remote access to stored calls.
- **NEC BackOffice Recorder software.**



- Calls should be stored on the same host PC.
- Using the GSM 6.10 Compression option, each 1Gb of Hard Disk storage allows recording of about 168 hours of calls.


### 12.2.6 Installation



DO NOT install the NEC BackOffice Software until instructed! It is critical that you follow the steps in the installation procedure in the order listed below. Failure to do so results in an unsuccessful installation.

### 12.2.6.1 Location Preparation

The wiring for the extensions should be within six feet of the PC location. For this reason, the PC for the NEC BackOffice Recorder should be located near the MDF for extension wiring.

The installer must prepare the wiring to tap off the digital pair with a T-Connect type setup.

It may be desirable to fasten the devices to a PC or rack. Since the devices are lightweight, this can be done quite easily with Velcro tape.

#### 12.2.6.2 Set Up PC



DO NOT connect more than four of the 4-Port Digital Call Logging Unit devices to each USB Controller Card.

- Set up the PC with the appropriate number of USB Controller Cards and/or USB hubs. Follow the installation instructions for the Controller Card carefully. The PC should be connected to the LAN for supervisor access and to facilitate Windows and software updates as needed. It may be desirable also to load PC Anywhere on the PC for remote administration of the application.
- After USB cards are installed, go to <u>www.windowsupdate.com</u>. Download and install any updated device driver that may be available for Windows XP or Windows 7 and your USB Controller Cards. If your card came with a driver CD this step may have been taken care of during installation of the card.
- 3. Update to the most up to date Service Pack; this is available as a free upgrade from the Windows update web site.
- 4. When all USB Controller Cards are installed and the PC updated, restart the PC.
- 5. Connect any USB hubs if applicable.



The brand or type of USB hub must match that of the USB Controller Card.

6. After USB hubs are installed, restart the PC again.



### 12.2.6.3 Install the 4-Port Digital Logging Unit

- 1. Connect the 4-Port Digital Logging Unit device to the USB cable and plug the USB cable in the PC. Windows responds with the Found New Hardware wizard.
- 2. Insert the provided NEC BackOffice CD in the CD drive of the PC.

Direct the installation of the driver to **Specific Location** and specify the **Driver** folder on the CD. Windows should find and load the device driver.

- 3. **Before inserting the next USB cable**, restart the PC. If Windows responds with Found New Hardware again, direct to the CD a second time and restart the PC. After you get a clean restart and Windows recognizes the device on restart, install the next device.
- Leave the CD in the CD drive and connect the next device, you may need to direct windows to the CD with each device you connect. Also, you may need to restart the PC with each device connection (this may require two restarts per device).
- 5. After all devices are connected, restart the PC and view the devices in Device Manager to ensure proper installation.
- Connect the telephone wiring to the 4-Port Digital Logging Unit. Be sure to note which extension is connected to which port of the devices (each device has a unique serial number). In the Recorder window you see the serial number followed by a trailing digit (1~4), this identifies the port on the device.



Before the telephone wiring is connected, the devices may temporarily show Failed and then reinitialize. This is normal operation.

Label each Digital Station Port with the extension it records. Refer to Figure 9-39 4-Port Digital Station Ports.

Figure 9-64 Digital Station Ports

4-Port Digital Logging Unit





### 12.2.6.4 Install the NEC IP/Digital BackOffice Software

The BackOffice application is software which resides on a PC in the telephone system room. This BackOffice software works in conjunction with NEC's Digital Logging Unit (Digital Logging Unit is not necessary when recording VoIP type calls) and can be configured to allow for the recording of IP and/or TDM calls. To install follow the instructions with screen shot examples below.

- 1. Download the software from NEC's FTP site or insert the installation CD included with the Digital Logging Unit's installation package.
- 2. Double click **Setup.exe** to start the installation process then follow the screens below.

Figure 9-65 D<sup>term</sup> VSR Welcome Screen

DtermVSR - InstallShield Wizard	Welcome to the InstallShield Wizard for DtermVSR The InstallShield Wizard will install DtermVSR on your computer. To continue, click Next.	
InstallShield	< Back Car	ncel

3. Click Next.





4. Read the license agreement. Click **Yes** to accept.



DtermVSR - InstallShield Wizard	Contraction of the Contraction o	×
DtermVSR - InstallShield Wizard Select Telephone System	Select which digital telephone system you are using           European NEC only           US NEC only           SIP only           European NEC with SIP only           US NEC with SIP only	
InstallShield	< <u>B</u> ack <u>N</u> ext > Canc	zel

Figure 9-67 D<sup>term</sup> VSR Select Telephone System

5. If in the US and using u-law, select **US NEC with SIP only** and click **Next**.



termVSR - InstallShield Wizard		×
Select License System		
	Select which license system you are using  License Manger Client (LMC) License Manger System (LMS) USB Dongle for i-SIP USB Dongle for in-SIP	
InstallShield	<back next=""> Car</back>	ncel

Figure 9-68 D<sup>term</sup> VSR Select License System

6. Select licensing system and click **Next**.



DtermVSR - InstallShield Wizard		
Choose Destination Location Select folder where setup will ins	all files.	
	To Install to this folder, click Next. To install to a different folder, click Browse and select another folder	
	Destination Folder- C:\Program Files\NEC\DtermVSR\ Browse	
InstallShield	< Back Next> Cancel	1

Figure 9-69 D<sup>term</sup> VSR Choose Destination Location

7. Choose destination then click **Next**.





Figure 9-70 D<sup>term</sup> VSR Ready to Install the Program

8. Click Install.



DtermVSR - InstallShield Wizard	And a second
	InstallShield Wizard Complete
	Setup has finished installing DtermVSR on your computer.
	Installation complete. Press Finish to run DtermVSR now
InstallShield	Kack Finish Cancel

Figure 9-71 D<sup>term</sup> VSR Installation Complete

9. Select when to reboot and click **Finish**.





## 12.2.7 Configure Ports

1. Click on the **NEC BackOffice** shortcut to launch the port status screen.

Figure 9-72 Example of Port Status Screen

tails								
Port No.	ENC	State	Serial No. or Port No.	Name	Call	Unit Type	Destination	
1		Disabled	011030061	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
2		Disabled	011030062	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
3		Disabled	011030063	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
4		Disabled	011030064	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
5		Disabled	011030093	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
6		Disabled	011030094	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
7		Disabled	011030095	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
8		Disabled	011030096	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
9		Good	011030153	TDM 102	Idle	Digital	C:\Users\Mark Hughes\Desktop\Gr	
10		Good	011030154	SL TDM 125	Active	Digital	C:\Users\Mark Hughes\Desktop\wh	
11		Disabled	011030155	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
12		Disabled	011030156	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
13		Good	011030157	TDM101	Idle	Digital	C:\Users\Mark Hughes\Desktop\Bla	
14		Good	011030158	SL TDM 101	Idle	Digital	C:\Users\Mark Hughes\Desktop\wh	
15		Disabled	011030159	<unconfigured></unconfigured>	Idle	Digital	<unconfigured></unconfigured>	
		AL 2.2.3						_

2. To view the Options screen, in the icon tray click on the **NEC** icon then **View Options**.





## 12.2.7.1 Options Tab

The Options tab allows the user to configure the Buffer location and Auto Delete settings.



NEC recommends selecting 'Only save calls longer' and entering 6 in the seconds field.

Figure 9-73 Options Tab

	writing calls to a ne	twork location, a	temporary local bu	uffer can protect aga	nst network problems.		
Buffer calls locally at:	at:					<i><sup>(1)</sup></i>	×
	Compress	recordings	Show status	when recorder starts			
Cal selec	on:      Save all ca	olls					
	Only save	calls longer than	0	seconds			
DtermVSR the appro	can encrypt calls, s	electing the encry le to decrypt them	vption type to any	thing other than 'Nor f more than 23 charac	e' will encrypt the reco	rdings and only	
E copro						or nor cho ypoon	
Encryption ty	pe: [None (Open	Passpi	nrase:				
Automatically Rec	ord Calls						
		Record calls:	Uways		•]		
			Prefix call direct	ion to Caller ID			
Auto Delete Un-In	portant Calls						
DtermVSR	can automatically o	delete calls to prev	vent your disk from	n filling. Files which ar	e tag as important will		
NEVER DE		<ul> <li>Never</li> </ul>					
		After using	0 A v	Menshytes of disk sha	CP.		
				Ten			
		When the calls	are	days old			



### 12.2.7.2 Port Configuration Tab

Allows the user to configure the location where recorded TDM or IP calls are to be stored and the name associated with the recorded file. Ensure the **Enable the port for recording** box is checked if you want to record.

Seriel Mar on Dart Ma	Name	Enable
official No. of Port No.	Name	Enable this port for recording
011030061	<un-configured></un-configured>	
011030002	<un-configured></un-configured>	
011030064	«Un-Configured»	Channel Name
011030093	<un-contigured></un-contigured>	Channel Names
011030094	<un configured=""></un>	
011030095	<un-configured></un-configured>	
011030096	<un-configured></un-configured>	Settings
011030153	TDM 102	
011030154	SL TDM 125	File Path:
011030155	<un-configured></un-configured>	
011030156	<un-configured></un-configured>	Unit Typs: <select one="">  Unit No:  Port:</select>
011030157	LDMIDI	
011030158	SL TDM 101	Auto Gain Control
011030159	<un-configured></un-configured>	
011030160	<un-configured></un-configured>	Audio Boost (%) 100 A Local 100 Remote

#### Figure 9-74 Port Configuration Tab

- A name can be given so the administrator can easily determine the user or phone associated with the serial or port number. This is done by assigning a Channel Name in the Channel Name: field.
- In Settings enter the File Path name for the Recorded Call Storage location or, click on the folder icon to use the browse option.
- □ It is recommended that you create a Master Calls folder with a subfolder for each device. This makes it easier to search for archived calls.



#### 12.2.7.3 Caller ID Tab

This tab contains options for setting audio amplitude level that triggers recording, and silence period before halting recording. Settings in this tab should be set to desired levels. After making the desired changes in this section you should make test calls and check for quality of the recorded call.



If both ends of a call are placed on hold, the recording may end. When the call is taken off of hold, another call recording file is generated.

Figure 9-75 Caller ID Tab

NEC Options
Options Port Configuration Caller ID VoIP Configuration Licensing Caller ID
Dialed digits override the LCD display for caller ID
Delay before grabbing caller ID 4 seconds.
Helps where all calls are forwarded via operator or auto-attendant
Update caller ID
Never
Every 30 seconds
Trigger audio recording from remote end only
Use with open mic headphones
Audio amplitude to trigger recording 33 Local 33 Remote
A figure of around 35 is typically good, unless you have a noisy system
Silence period halt recording 500 ms
OK Cancel



### 12.2.7.4 VoIP Configuration Tab

In this tab select the **Network Interface** type connected to the monitor port of the data switch. Enter the NEC **PBX IP** address. Then follow the instructions written on the page itself. As the name implies this tab is only relevant for recording VoIP calls.

IP S	Settings						
1	Network Interface:	Realtek RTL8168D/8	111D Family PC	CI-E Gigabit Eth	ernet NIC (NDIS 6.)	20)	▼
	PBX IP:	192		16		3.	10
Ter	minals						
	Register Terminals Before the termina they need to be re system. To registe need to select the once registered yo this button.	als can be recorded gistered with the r the terminals you button below, bu need un check	Logging To enat below. and out to foun	ole logging select Please make a f going calls. The d using the butt	t the button ew incoming Log files can ton below.	Save Settings – After filling of this screen, your setting below other below will no	out the information on you need to save Is using the button wise the terminal list of update.
	Enable Terminal Registration		Open Location			Save	Settings
	URI	IP Address	Po	ort	VLAN		Encoding

#### Figure 9-76 VoIP Configuration Tab



#### 12.2.7.5 Licensing Tab

This tab is where the license dongle or license server information is configured. A user can also use this tab to view items such as the amount of channels for which they are licensed.



• The Recorder PC should be left on at all times (with battery backup) and the application running.

• NEC recommends turning Off power save functions on the PC hosting BackOffice.

tions Po	rt Configuration Caller ID VoIP Configuration	Licensing	
Licensing			
	Call Manager:	N/A	
	Call Archiver:	N/A	
	Call Reporter Pro:	N/A	
	Encypted recording channels:	100	USB dongle key NOT detected.
	VoIP Type:	N/A	
	VoIP recording channels:	100	
	USB Serial Key		
	NOT PRESENT		
License Se	erver		
	Server IP:	192 . 16 . 3 . 10	
	Server Port:	6080	
License Se	erver Assignment		
	Number of Encypted channels to assign:	0 0 = Max (100 Cha	annels)

Figure 9-77 Licensing Tab



### 12.2.7.6 IP Recorder Connectivity

The BackOffice recorder is connected to the mirroring Switched Port(s) or (SPAN) ports of the network switches that reflect the IP Voice traffic to be recorded. VoIP recording is available with every telephony environment that uses standard Real Time Protocol (RTP) for the voice packets.



*Refer to NEC IP/Digital BackOffice Users Guide for detailed setup information.* 



With passive VoIP recording the recording system connects to mirroring (SPAN) ports that reflect the traffic to be recorded

#### 12.2.7.7 Choose and Install Player Options

Several player options are available with the NEC BackOffice Recording solution.

- NEC IP/Digital Player can be loaded on an individual user's PC, giving the user complete access (although restrictions can be applied) to call management; deleting calls, emailing conversations, exporting to wav file, etc. This software can be downloaded from www.usbcallrecord.com free.
- NEC IP/Digital Manager enables an authorized user or a supervisor to search for calls, playback calls, associate notes about calls, mark them important, and delete or email conversations. Refer to the NEC IP/Digital Manager Installation Manual for instructions.



NEC IP/Digital Reporter Pro – provides the same advanced functionality as NEC IP/Digital Manager with the addition of the Agent Evaluation module Call Scoring and Call Reporting. It provides customized scoring forms and criteria along with detailed support to quickly identify strengths and weaknesses within your Call Center.

These packages can be applied in any number of configurations within the organization providing control and management where needed and simple playback in other locations.

## 12.3 NEC IP/Digital Player, Manager and Reporter Pro Requirements

This section assists you with the installation of the software and helps you start using your Call Logging product. For detailed assistance with the software, refer to the Help Files located in the Call Logging product program.

All NEC IP/Digital Call Logging products for listening require the same minimal PC standards.

#### 12.3.1 Hardware and Software Requirements

#### 12.3.1.1 Minimum Hardware Requirements

- Processor: Pentium IV-class 1.6GHz or equivalent or higher.
- Memory: 256MB
- Disk Space: 100MB
- Soundcard and Sound output like PC speakers or headphones.

#### 12.3.1.2 Minimum Software Requirements

- Operating Systems
  - O Windows XP
  - O Windows 7 (32- or 64-bit)
- Microsoft .Net Framework 2.0+



### 12.3.1.3 Screen Resolution

NEC's product line makes up a visual application environment featuring dynamic graphical elements which may function at lower resolutions. However, for best performance and to view these items correctly, it's recommended that you set the screen resolution to a minimum of 1024x768. You can do this from the **Control Panel → Display Settings → Advanced Settings** tab for Windows XP users.

If using Windows 7, go to Control Panel  $\rightarrow$  Display (you may need to select view by icons), then click change display settings and adjust the resolution.

### 12.3.1.4 Is Microsoft.Net Framework 2.0 Installed?

NEC IP/Digital Manager requires the Microsoft .Net Framework, which should be installed on your PC prior to installing the Manager. If your Windows operating system has been kept updated with Windows Service Packs, the Microsoft .Net Framework 2.0 likely has already been installed.

To check if you have the Microsoft.Net Framework installed:

- Navigate to Control Panel → Add and Remove Programs (Windows XP) or Programs and Features (Windows 7).
- 2. Look for an entry referencing the Microsoft .Net Framework 2.0 or later.
- 3. If the Microsoft.Net Framework is not installed, you can download it from the Microsoft web site.



The link to Microsoft .Net Framework download at time of this writing:

http://www.microsoft.com/en-us/download/ search.aspx?q=.net%20framework2.0

Not sure if.Net is installed:

If you have any doubt, try to install NEC IP/Digital Manager. The installation halts and informs you if the Microsoft.Net Framework 2.0 is not found. If this occurs, you can download the Microsoft.Net Framework 2.0, install it, restart your computer and then proceed to install the software.



# 12.4 NEC IP/Digital Player Installation

To listen to the recorded calls NEC offers an NEC IP/Digital Player, Manager or Reporter Pro. All of these perform the listening function but offer increasing levels of additional features. Those three playback options are described in greater detail below.

The NEC IP/Digital Player is used by an individual user to play back their own archive of calls or to play back NEC IP/Digital BackOffice calls stored on their PC or network drive. It easily manages calls from one storage location. It does not offer many of the advanced functions of the Manager, such as establishing preset shortcuts to any number of storage folders for quick and easy access. However the Players basic functionality is the same as the NEC IP/Digital Manager.

### 12.4.1 Installing the NEC IP/Digital Player

- 1. Insert the IP/Digital Player CD in the computer CD ROM drive or navigate to the location where you have saved your application download.
- 2. Double-click on the **Setup.exe** icon, the *D*<sup>term</sup> VSR Player Welcome screen is displayed.



Figure 9-79 D<sup>term</sup> VSR Player – Welcome Screen



## 3. Click **Next** the License Agreement screen opens.

Figure 9-80 D <sup>term</sup> \	VSR Player – License Agreement
---------------------------------	--------------------------------

DtermVSR Player - InstallShield	Wizard
License Agreement Please read the following licen	ise agreement carefully.
	Press the PAGE DOWN key to see the rest of the agreement.
	END USER SOFTWARE LICENSE AGREEMENT BEFORE INSTALLING THIS LICENSED PRODUCT ON YOUR COMPUTER, YOU MUST CAREFULLY READ THE FOLLOWING LEGAL DOCUMENT BETWEEN YOU, THE RESELLER, AND NEC ET AL. INSTALLING THE PRODUCT INDICATES YOUR ACCEPTANCE AND AGREEMENT OF THESE TERMS AND CONDITIONS. IF YOU DO NOT UNDERSTAND OR AGREE WITH ALL TERMS AND CONDITIONS, YOU SHOULD PROMPTLY DELETE OR DESTROY ALL FILES OF THIS LICENSED PRODUCT ON YOUR COMPUTER AND PROMPTLY RETURN THIS PRODUCT WITH PACKAGING TO THE PLACE WHERE YOU OBTAINED IT WITHIN FIFTEEN DAYS OF ACQUISITION AND THE LICENSE FEE PAID WILL BE REFUNDED. NEC America ("NEC et al.") and its resellers sell a license to use, on the terms set forth herein, a "PRODUCT" which has been written and prepared by NEC et al. and comprised collectively of: (a) "PROGRAM(S)" which are all computer program(s) software, computer program software module(s), contained on the media in this package or may be provided;
	Do you accept all the terms of the preceding License Agreement? If you select No, the setup will close. To install DtermVSR Player, you must accept this agreement.
InstallShield	< <u>Back</u> <u>Y</u> es <u>N</u> o



4. Select **Yes**, the Choose Destination Location screen opens.

Figure 9-81 D<sup>term</sup> VSR Player – Choose Destination Location

DtermVSR Player - InstallShield V	Vizard
Choose Destination Location Select folder where setup will in	n stall files.
	To Install to this folder, click Next. To install to a different folder, click Browse and select another folder
	Destination Folder C:\Program Files\NEC\Dterm\VSR\ Bjowse
InstallShield	< Back (Next>) Cancel



5. Click **Next**, the Choose Data Folder screen is displayed.

Figure 9-82 D<sup>term</sup> VSR Player – Choose Data Folder

DtermVSR Player - InstallShield	Wizard
Choose Data Folder	
	To store your calls here, click Next. To store data in a different location, click Browse and select another folder
	Destination Folder C:\Users\217216x710947\Documents\My Calls Browse
InstallShield	< Back Next> Cancel



6. Click **Next**, the Ready to Install the Program screen is displayed.

Figure 9-83 D<sup>term</sup> VSR Player – Ready to Install the Program

DtermVSR Player - InstallShield V	Vizard 📃 🗾
Ready to Install the Program The wizard is ready to begin ins	tallation.
	Click Install to begin the installation. If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield	< Back



7. Click **Install**, a screen displaying installation progress is displayed. When installation completes, a Wizard Complete screen opens.

Figure 9-84 D<sup>term</sup> VSR Player – Wizard Complete Screen



8. Select Finish.



For detailed instructions setting up and using this product, refer to the documentation included with the NEC IP/Digital Player or contact your product manager.



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		Date and	Time: 6/29/200	5		00:00:00	44	Duration: 0	00:00:08
		Date and	Time: 6/29/200	5		00:00:00		Duration: 0	00:00:08
		Date and	Time: 6/29/200	5		00:00:00	H	Duration: 0	00:00:08
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Call Det Display ENC	tale ring th !	Date and T	Time: 6/29/200	15 117216x712648/Docur Date + Time 9/20/2011 9:45	nents\My Ca Duration 00:00:00	00:00:00	BM	Comment	00:00:08
Call Det Display ENC	tais ving th !	Date and " econtents of fold User ID 217216X71 VoIP-122	Time: 6/29/200	5 117216x712648/Docum Date + Time 9/20/2011 9:45 8/10/2011 4:13	Duration 00:00:00 00:00:22	00:00:00	BM	Comment	00:00:08
Call Det Display ENC	tais ring th !	Date and "	Time: 6/29/200	15 17216x712648/Docur Date + Time 9/20/2011 9:45 8/10/2011 4:13 6/10/2011 4:13	nents/My Ca Duration 00:00:00 00:00:22 00:00:17	00:00:00 Filename 217216X712648-2011 VoIP Calls/VoIP-122 VoIP Calls/VoIP-122	BM	Comment	0:00:08
Call Det Display ENC	tals ving th	Date and "	Time: 6/29/200	17216x712648/Docur Date + Time 9/20/2011 9:45 8/10/2011 4:13 8/10/2011 4:13	nents/My Ca Duration 00:00:00 00:00:22 00:00:17 00:00:16	00:00:00 IIIs\ Filename 217216X712648-2011 VoIP Calls\VoIP-122 VoIP Calls\VoIP-222	BM	Comment	0:00:08
Call Det Display ENC	tals ring th !	Date and " we contents of fold User ID 217216X71 VoIP-122 VoIP-122 VoIP-122 VoIP-122	Time: 6/29/200 der: C: Jsers\2 Caller ID >155 <0125 >155 <8125	17216x712648/Docur Date + Time 9/20/2011 9:45 8/10/2011 4:13 8/10/2011 4:13 8/10/2011 4:13	Duration 00:00:00 00:00:17 00:00:12	00:00:00 Filename 217216X712648-2011 VoIP Calls/VoIP-122 VoIP Calls/VoIP-122 VoIP Calls/VoIP-122	BM	Comment	00:00:08
Call Det Display ENC	tails ring th !	Date and " we contents of fold User ID 217216X71 VoIP-122 VoIP-122 VoIP-122 VoIP-122 Dabhia Pollock	Time: 6/29/200 der: C:\Users\2 Caller ID >155 <8125 >155 <8125 <8125	5 117216x712648;Docum Date + Time 9/20/2011 9:45 8/10/2011 4:13 8/10/2011 4:13 8/10/2011 4:12 8/10/2011 4:12	nents\Wy Ca Duration 00:00:00 00:00:22 00:00:17 00:00:12 00:00:12	00:00:00 Filename 217216X712648-2011 VoIP Calls\VoIP-122 VoIP Calls\VoIP-122 VoIP Calls\VoIP-122 VoIP Calls\VoIP-122 Debbis Pollshize Pollade	BM	Comment	0:00:08
Call Det Display ENC	tals ring th	Date and " we contents of fold User ID 217216X71 VoIP-122 VoIP-122 VoIP-122 VoIP-122 Debbie Pollock Henry Meeth	Time: 6/29/200 der: C: Jsers\2 Caller ID >155 <8125 >155 <8125 5555552538 5555525288	5 217216x712648/Docur Date + Time 9/20/2011 9:45 8/10/2011 4:13 8/10/2011 4:12 8/10/2011 4:12 8/10/2011 4:12 8/10/2011 4:12 8/20/205 3:34	Duration 00:00:00 00:00:22 00:00:17 00:00:16 00:00:12 00:00:08	00:00:00 Filename 217216X712648-2011 VoIP Calls/VoIP-122 VoIP Calls/VoIP-122 VoIP Calls/VoIP-122 VoIP Calls/VoIP-122 Debbie/Debbie Pollod Debbie/Debbie Pollod	BM	Comment	00:00:08
Call Det Display ENC	tais ring th !	Date and " we contents of fold User ID 2172(6X71 VoIP-122 VoIP-122 VoIP-122 VoIP-122 Debbie Pollock Henry Norris	Time: 6/29/200 der: C:\Users\2 Caller ID >155 <0125 >155 <8125 \$\$55552538 \$\$555552538	17216x712648 Docur Date + Time 9/20/2011 9:45 8/10/2011 4:13 8/10/2011 4:12 8/10/2011 4:12 6/29/2005 3:34 6/29/2005 2:30	nents/Wy Ca Duration 00:00:00 00:00:12 00:00:12 00:00:12 00:00:12 00:00:01 00:00:12	00:00:00 Filename 217216X712648-2011 VoIP Calls\VoIP-122 VoIP Calls\VoIP-122 VoIP Calls\VoIP-122 VoIP Calls\VoIP-122 Debbie \Debbie Pollod Henry\Henry Norris-2	BM	Comment This s a sample com	ment entry with tra

Figure 9-85 Playback Tab

### 12.5 NEC IP/Digital Manager Installation

The **NEC IP/Digital Manager** provides advanced visibility, access, retrieval, and playback tools for the NEC BackOffice administrators. It also provides an intuitive interface for establishing shortcuts to any number of storage folders and allows the supervisor to search across all storage folders for specific call information such as User, Time/Date, Length of Call, etc. The application can be used to access and manage recordings whether created by the single port or the 4-Port Digital Logging Unit. **IP/Digital Manager** is built on the robust Microsoft.net frame-work and manipulates large volumes of recordings. It is a workhorse that delivers truly feature rich productivity tools in a familiar, ergonomic and easy to use MS Office style interface.

**IP/Digital Manager** allows the manager or supervisor to quickly and easily gain access to important calls.



MC DtermVSR Call Manager - [Play History] Elle Edit Tools View Settings Window Help - @ × Access Panel 🗆 🗙 📄 Play History My Calls for Review Play History - 4/11/2012 1:50:59 PM X 🗈 🖻 🗶 🥔 2 3 R 🛛 📁 Links to Recordings... 🔺 R 📁 Important Calls Won Sales ENC Caller ID A.. Date + Time 1 User ID Duration 1... Comment Lost Sales Personal 55555552791 5555555697 6/29/2005 2:30... 00:00:06 6/27/2005 12:4... 00:00:06 This is a sample comment entry with tradi... Henry Norris HE Henry Norris-20 Henry Norris HE Henry Norris-20 Henry Norris 6/20/2005 8:14... 00:00:06 HI Henry Norris-20 HE Henry Norris-20 NE Henry Norris-20 HE Henry Norris-20 Mar Henry Norris-X My Shortcuta My Calls for Review My Explorer Cals: 4 Important: 1 Duration: 00:00:26 File - Debbie Pollock-2005-JUN-29-15.34.22.xtr × **History** File -Hotlist Date and Time: 6/29/2005 3:34:22 PM 00:00:00 Duration: 00:00:08 

Figure 9-86 Play History Tab

These players can be combined in any number of configurations in the company, providing control and management where needed and simple playback in other locations.



## 12.5.1 Installing the NEC IP/Digital Manager



Administrative privileges required for installation.

- 1. Insert the Manager CD in the computer CD ROM drive or navigate to the location where you have saved your application download.
- 2. Double-click on the **Setup.exe** icon, the *D*<sup>term</sup> VSR Call Manager Welcome screen is displayed.

Figure 9-87 D<sup>term</sup> VSR Call Manager – Select License Manager System (LMS)

DtermVSR Call Manager - InstallShi	eld Wizard
	Welcome to the InstallShield Wizard for DtermVSR Call Manager The InstallShield Wizard will install DtermVSR Call Manager on your computer. To continue, click Next.
InstallShield	< Back Next> Cancel



### 3. Click **Next**, the License Agreement screen opens.

DtermVSR Call Manager - Installs	Shield Wizard
License Agreement Please read the following licens	e agreement carefully.
	Press the PAGE DOWN key to see the rest of the agreement.
	END USER SOFTWARE LICENSE AGREEMENT BEFORE INSTALLING THIS LICENSED PRODUCT ON YOUR COMPUTER, YOU MUST CAREFULLY READ THE FOLLOWING LEGAL DOCUMENT BETWEEN YOU, THE RESELLER, AND NEC ET AL. INSTALLING THE PRODUCT INDICATES YOUR ACCEPTANCE AND AGREEMENT OF THESE TERMS AND CONDITIONS. IF YOU DO NOT UNDERSTAND OR AGREE WITH ALL TERMS AND CONDITIONS, YOU SHOULD PROMPTLY DELETE OR DESTROY ALL FILES OF THIS LICENSED PRODUCT ON YOUR COMPUTER AND PROMPTLY RETURN THIS PRODUCT WITH PACKAGING TO THE PLACE WHERE YOU OBTAINED IT WITHIN FIFTEEN DAYS OF ACQUISITION AND THE LICENSE FEE PAID WILL BE REFUNDED. NEC America ("NEC et al.") and its resellers sell a license to use, on the terms set forth herein, a "PRODUCT" which has been written and prepared by NEC et al. and comprised collectively of: (a) "PROGRAM(S)" which are all computer program(s) software, computer program software module(s), contained on the media in this package or may be provided;  Do you accept all the terms of the preceding License Agreement? If you select No, the setup will close. To install DtermYSB Call Manager, you
InstallShield	must accept this agreement.

Figure 9-88 D<sup>term</sup> VSR Call Manager – License Agreement Screen



4. Select **Yes**, the Choose Destination Location screen opens.

OtermVSR Call Manager - Inst	allShield Wizard
Choose Destination Local Select folder where setup wi	ion I install files.
	Setup will install DtermVSR Call Manager in the following folder.
	To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
	Destination Folder C:\Program Files (x86)\NEC\Dterm\VSR Call Manager\ Browse
InstallShield	< Back Next> Cancel

Figure 9-89 D<sup>term</sup> VSR Call Manager – Choose Destination Location Screen



5. Click **Next**, the Ready to Install the Program screen is displayed.

Figure 9-90 D <sup>term</sup>	VSR Call Manager	<ul> <li>Ready to Install</li> </ul>	the Program Screen
-------------------------------	------------------	--------------------------------------	--------------------





6. Click **Install**, a screen displaying installation progress is displayed. When installation completes, a Wizard Complete screen opens.

Figure 9-91 D<sup>term</sup> VSR Call Manager – Wizard Complete Screen



7. Select Finish.



### 12.5.2 Install Call Manager License

The method of licensing (License Manager System (LMS)) can be used with the SV9100 system.

#### 12.5.2.1 License Manager System

This method requires the license to be loaded on the SV9100 and the call logging application configured to retrieve license information from the PBX.

DtermVSR Call Manager - Instal	IShield Wizard	×
Select License System		
	Select which license system you are using	
	License Manger Client (LMC)	
	USB Dongle	
InstallShield	< <u>B</u> ack <u>N</u> ext > Can	xel

Figure 9-92 D<sup>term</sup> VSR Call Manager – Select License Manager System (LMS)

- 1. From Settings select License Server.
- 2. Click **Next** to continue.
- 3. In the Ready to Install screen, click **Install**.
- 4. A screen displaying installation progress appears. When complete, select **Finish**.



5. If the Manager cannot find a license dongle, the window in Figure 9-93 USB Key Error – Call Manager displays.

Fi	gure 9-93 USB Key Error – Call Manager	
USB Key Erro	r	X
		Í I
	NEC	
	Dterm VSR Call Manager	
	A valid USB key could not be found	
	Export is disabled and only the first 30 seconds of call can be played.	
	Clos	e

- 6. Click on the **Close** button. Call Manager application launches.
- 7. From Settings select License Server.
- 8. Enter the **IP address of your PBX**, then click **OK**.
- 9. Shut down the application.
- 10. Double-click on the **D**<sup>term</sup> VSR Call Manager icon.

#### 12.5.2.2 USB Dongle

This method requires the use of a NEC IP/Digital application security key (USB dongle shipped with the application) and inserted when the Manager is running.



- The Application Security Key is associated with your Software license.
- The Application Security Key is non-transferable and cannot be replaced if lost.
- If the key becomes damaged within the warranty period, you must return your key to support for verification and replacement if the nature of the damage qualifies



#### 1. Select **USB Dongle**.

Figure 9-94	D <sup>term</sup> VSR Call Manager – Select USB Dongle
-------------	--

DtermVSR Call Manager - Install	Shield Wizard	×
Select License System		
	Select which license system you are using  License Manger Client (LMC) License Manger System (LMS)  USB Dongle	
InstallShield	< <u>B</u> ack <u>N</u> ext > Canc	el

- 2. Insert the USB dongle into an available USB port on the PC.
- 3. Found New Hardware is displayed then Hardware successfully installed.



If Windows does not locate the driver, browse to the CD or download from NEC site. Drivers are located on the CD in the Driver folder.

- 4. Click Next.
- 5. The Call Manager application launches.



# 12.6 NEC IP/Digital Reporter Pro Installation

The NEC IP/Digital Reporter Pro is NECs most feature rich product for listening to recorded phone calls. It has functionality much the same as the Manager but offers additional features. These additional features make management easier by providing tools to help gather data and generate reports.

Figure 9-95 NEC IP/VSR Reporter Pro



NEC IP/Digital Reporter Pro provides advanced visibility, access, retrieval, and playback tools for the Recorder administrators. It provides an intuitive interface for establishing shortcuts to any number of storage folders and allows the supervisor to search across all storage folders for specific call information such as User, Time/Date, Length of Call, etc. The application can be used to access and manage recordings whether created by the single port or the 4-Port Digital Logging Unit. NEC's IP/Digital Reporter Pro also provides advanced features which help in gathering data and report generation of usage and performance metrics for analysis and monitoring of the call recording environment. Usage analysis provide data metrics on call volume, disk usage, average call length, longest calls, most called numbers, longest recorded time numbers, call volume distribution over date span, call volume distribution at hourly intervals and call volume distribution at call length intervals.



**IP/Digital Reporter Pro** allows the manager or supervisor to quickly and easily gain access to important calls.

	Short	A Shortcut: Scored Recordings							
Taxis	(#:m)	💈 Shortcut: Score	d Recordings	-		Sunday, November 13, 2005 11-	28:32		
Shortcuts to Sources	\$ Shore	Group- Search	ns All 💌 for	-			0		
My Recordings - (1)	Info 1	User ID	. Caler ID	Date and Time TL	ength	Comment			
-A Ny Cals	0	Victor Graves	5555551881	6/30/2005 1:12:35 PM	00:00:04	Order for 25 Xtension Recorders number 239876			
Monitored Agents	(2)	Pam Rover	5555554364	6/30/2005 1:05:03 PM	00:00:04				
Sales Dept (1)	0	Tracy Waker	555555338	6/30/2005 12:42:02 PM	00:00:04				
Customer Service	C#	Susan daily	5555552655	6/30/2005 12:02:52 PM	00:00:04	Order Number 123498			
Collaboration	00	Mary Jackson	5555557651	6/30/2005 7145:05 AM	00:00:05				
Archived Calls	60	Natasha Davis	555553-495	6/30/2005 7:02:24 AM	00:00:04	ABC Company Order	_		
	00	Oscar Sanderson	5555551529	6/30/2005 6:45:01 AM	00:00:04				
	04	Paul Back	5555553937	6/50/2005 6:21:31 AM	00:00:04	Order Number 1239760			
	00	RobertLove	5555553443	6/30/2005 6:05:20 AM	00:00:04	and a linear second shift and the local second s			
	> C#	Debbie Pollock	555552538	6/29/2005 1134:22 PM	00:00:09				
	(#	Henry Norris	5555552701	6/29/2005 12:30:50 FM	00:00:07	Reference cal			
	(*	Adam Tremble	5555553722	6/29/2005 12:05:12 PM	00:00:11	Order 2239987			
	00	Susan daily	5555554307	6/29/2005 10:53:52 AM	00.00:04				
	6			III					
	Player - Faul Black-2005-308-3-08.33.00.xtr								
	AVIE	Flax (: Control+ )	- Hotist 🕥 - Hotory						
	Tere Lines	User ID	Caller ID	Date / Time	Commen				
		Paul Black 5	5555559957	6/30/2005 6.21 31 AM Order N	umber 123976	0			
Shortcuts		m		and a second second					
							5		
Hotlists	Distan					00-00-00 /	1000		

Figure 9-96 VSR Reporter Pro


# 12.6.1 Installing the IP/Digital Reporter Pro



- Administrative privileges required for installation.

- 1. Insert the Reporter Pro CD in the computer CD ROM drive or navigate to the location where you have saved your application download.
- 2. Double-click on the **Setup.exe** icon, the *D*<sup>term</sup> VSR Reporter Pro Welcome screen is displayed.



DtermVSR Reporter Pro - Install	Shield Wizard	×
	Welcome to the InstallShield Wizard for DtermVSR Reporter Pro The InstallShield Wizard will install DtermVSR Reporter Pro on your computer. To continue, cli Next.	sk
Install Shield	< <u>B</u> ack Canc	el



## 3. Click **Next**, the License Agreement screen opens.

	Figure 9-98	D <sup>term</sup> VSR	Reporter Pro –	License Agreement
--	-------------	-----------------------	----------------	-------------------

DtermVSR Reporter Pro - Install License Agreement Please read the following licen	Shield Wizard  se agreement carefully.  Press the PAGE DOWN key to see the rest of the agreement.  END USER SOFTWARE LICENSE AGREEMENT  BEFORE INSTALLING THIS LICENSED PRODUCT ON YOUR COMPUTER, YOU MUST CAREFULLY READ THE FOLLOWING LEGAL DOCUMENT BETWEEN YOU, THE RESELLER, AND NEC ET AL. INSTALLING THE PRODUCT INDICATES YOUR ACCEPTANCE AND AGREEMENT OF THESE TERMS AND CONDITIONS. IF YOU DO NOT UNDERSTAND OR AGREE[WITH ALL TERMS AND CONDITIONS, YOU SHOULD PROMPTLY DELETE OR DESTROY ALL FILES OF THIS LICENSED PRODUCT ON YOUR COMPUTER AND PROMPTLY RETURN THIS PRODUCT WITH PACKAGING TO THE PLACE WHERE YOU OBTAINED IT WITHIN FIFTEEN DAYS OF ACQUISITION AND THE LICENSE FEE PAID WILL BE REFUNDED. NEC America ("NEC et al.") and its resellers sell a license to use, on the terms set forth herein, a "PRODUCT" which has been written and prepared by NEC et al. and comprised collectively of. (a) "PROGRAM(S)" which are all computer program(s) software, computer program software module(s), contained on the media in this package or may be provided; Do you accept all the terms of the preceding License Agreement? If you
	select No, the setup will close. To install DtermVSR Reporter Pro, you must accept this agreement.
InstallShield	< <u>B</u> ack <u>Y</u> es <u>N</u> o



4. Select **Yes**, the Choose Destination Location screen opens.

DermVSR Reporter Pro - Instal Choose Destination Locati Select folder where setup will	Dn Install files.
	Setup will install DtermVSR Reporter Pro in the following folder.
	To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
	Destination Folder C:\Program Files\NEC\DtermVSR Reporter Pro\ <u>Browse</u>
InstallShield	< Back Next> Cancel

Figure 9-99 D<sup>term</sup> VSR Reporter Pro – Choose Destination Screen



5. Click **Next**, the Ready to Install the Program screen is displayed.

 DtermVSR Reporter Pro - InstallShield Wizard

 Ready to Install the Program

 The wizard is ready to begin installation.

 Click Install to begin the installation.

 If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

 Wizard

 If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

 InstallShield
 < Back</td>

 InstallShield
 < Back</td>

Figure 9-100 D<sup>term</sup> VSR Reporter Pro – Ready to Install the Program



6. Click **Install**, a screen displaying installation progress is displayed. When installation completes, a Wizard Complete screen opens.

Figure 9-101 D<sup>term</sup> VSR Reporter Pro – Wizard Complete

DtermVSR Reporter Pro - InstallShield Wizard			
	InstallShield Wizard Complete		
	The InstallShield Wizard has successfully installed DtermVSR Reporter Pro. Click Finish to exit the wizard.		
InstallShield	Kancel		

7. Select Finish.



8. On initial installation, the NEC IP/Digital Reporter Pro automatically launches. If Reporter Pro cannot find a license dongle the following window displays.



9. Click on the **Close** button.

## 12.6.2 Install Reporter Pro Licensing

Two methods of licensing (USB Dongle or LMS) can be used with the SV9100 system. Follow the instructions based on the license type purchased. Refer to 12.6.2.2 USB Dongle on page 9-120 for USB Dongle installation.

#### 12.6.2.1 License Manager System

This method requires the license to be loaded on the SV9100 and the application configured to retrieve license information from the PBX.

- 1. From Settings select License Server.
- 2. Enter the IP address of your PBX, then click OK.
- 3. Shut down and relaunch the application.

## 12.6.2.2 USB Dongle

This method requires the use of a NEC IP/Digital application security key (USB dongle shipped with the application) and inserted when Reporter Pro is running.

- 1. Insert the USB dongle into an available USB port on the PC.
- 2. Found New Hardware is displayed then Hardware successfully installed.



If Windows does not locate the driver, browse to the CD or download from NEC site. Drivers are located on the CD in the Driver folder.



- 3. Click Next.
- 4. The Reporter application launches.



- The Application Security Key is associated with your Software license.
- The Application Security Key is non-transferable and cannot be replaced if lost.
- If the key becomes damaged within the warranty period, you must return your key to support for verification and replacement if the nature of the damage qualifies.

# SECTION 13 TELEPHONE ADAPTERS

# 13.1 Using Adapters

The modular terminals can support installing one additional adapter underneath the terminal. These adapters provide the multiline terminal different abilities, depending on the adapter installed.

Figure 9-103 Installing Adapters



- O These optional adapters are not installed on non-modular telephones.
- O Only the ILPA, ADA and PSA Adapters can be used on the IP phones.
- O ADA Conversation Recording
- O APR Analog Port Adapter with Ringer
- O PSA Multiline Terminal/IP Phone Power Failure



Before installing or removing the adapter, the multiline terminal should be unplugged from the system. External power is not required for the adapter.

Telephones with any adapter installed require an optional wall mount unit (WM-L) to be wall mounted. The bracket does not accommodate the adapter(s).



# 13.2 In-line Power Adapter (ILPA-R)

The In-Line Power Adapter (ILPA-R), which is IEEE 802.3af compliant, detects power from a PoE-compatible Ethernet switch and passes it to the IP terminal. The ILPA does the negotiation and detection with the switch and then relays the power to the IP terminal device. This provides an additional way to power the NEC IP terminals. With this adapter, the IP terminals on the UNIVERGE SV9100 system can be powered using:

- O Local power connecting the IP terminal to a local AC wall outlet using the AC-R Adapter
- O NEC power supply PoE-managed switch (BlueFire 200/24) (in-line and spare pair detection)
- O Router Blade (spare pair detection)
- O Cisco Data Switch CDP supported (in-line and spare pair detection)
- O In-Line Power Adapter



Figure 9-104 In-Line Power Adapter

## 13.2.1 Conditions

- Only IP telephones supported by center feed can be used.
- This adapter cannot be used with the H.323 telephones.
- When center feed is used, unplug the adapter from the Ethernet switch before changing the SW1 setting on the back of the adapter.
- The ILPA-R adapter is intended for use with IP phones and IP Adapters. Installing any other device into the telephone port of the ILPA-R may result in damage to the device.
- □ When powering an IP phone using an ILPA-R adapter, the phone should **not** be connected to a port on the Router Blade.



When using center feed, set the SW1 switch located on the back of the adapter as follows:



Figure 9-105 In-Line Power Adapter Switch Settings

Center Feed Hub System	SW1 Setting
IEEE802.3af STD System	1
Cisco Discovery Protocol System	1
NEC BlueFire 200/24 Switch	2

## 13.2.2 Installation

1. Set the SW1 switch on the ILPA-R adapter to the correct setting for the Ethernet switch to which it is to be connected.

Center Feed Hub System	SW1 Setting
IEEE802.3af STD System	1
Cisco Discovery Protocol System	1
NEC BlueFire 200/24 Switch	2

2. Set the switch setting on the NEC IPhone or IP adapter to the correct position.

IPhone (SW2) or IP Adapter (SW1)	SW Setting
NEC Power Patch Panel (12-port NEC SN1604 PWRMS, 24-port NEC BlueFire 200/24) 8SHUBU Blade	1
Cisco Catalyst Power Patch Panel Cisco Catalyst PRW Series	2



- 3. Connect the NEC VoIP telephone to the TEL connector on the ILPA-R adapter with the LAN cable provided with the adapter.
  - If a customer-provided cable is used, the total length from the switch to the telephone should be less than 328 feet.
  - The adapter can be positioned either closer to the multiline terminal or switch it does not matter.
- Connect a crossover LAN cable to the LAN connector on the ILPA-R adapter. Plug the opposite end into the switch which is to provide power to the telephone. Refer to Figure 9-106 NEC Terminal Connection to an IEEE 802.3af PoE Switch.
  - If a straight-through cable is used, NIC Auto Detection must be enabled in Programs 10-12-05 (GCD-CP10 or GCD-CP20), 84-05-02 (VOIPU) or 85-01-03 (SHUBU).

Figure 9-106 NEC Terminal Connection to an IEEE 802.3af PoE Switch





# 13.3 ADA-L UNIT

Using the ADA-L UNIT (Ancillary Device Adapter) provides a recording jack connection from a telephone to an external tape recorder, speaker or PC. Both sides of the conversation are recorded. The adapter output is a 1/8" audio (stereo) jack which you can connect directly to an AUX level input on a recorder or page amplifier.

Recording a conversation (Handset/Headset/Hands-free), or sending recorded calls to a telephone are possible by connecting a recording device to the ADA-L UNIT (voice recording and playback from a recording device cannot occur at the same time).

Before installing or removing the adapters, *the multiline terminal should be unplugged from the system*.



Be sure the connected audio device provides a standard AUX level input.

The use of monitoring, recording, or listening devices to eavesdrop, monitor, retrieve, or record telephone conversation or other sound activities, whether or not contemporaneous with transmission, may be illegal in certain circumstances under federal or state laws. Legal advice should be sought prior to implementing any practice that monitors or records any telephone conversation. Some federal and state laws require some form of notification to all parties to a telephone conversation, such as using a beep tone or other notification methods or requiring the consent of all parties to the telephone conversation, prior to monitoring or recording the telephone conversation. Some of these laws incorporate strict penalties.

The handset records only when a call is placed or answered.

## 13.3.1 ADA-L UNIT Switch Settings

Figure 9-107 ADA-L UNIT shows the location of the switches. The dip switches (DSW) allow a technician to configure the unit for specific settings.



Due to the location of the switches, <u>set switches prior to</u> <u>installation</u> of ADA-L UNIT on DTK/DTL/DTZ/ITK/ITL/ITZ multiline terminal.

Figure 9-107 ADA-L UNIT







To provide control to the recorder or to enable/disable the record start warning tones, refer to Table 9-3 ADA-L UNIT Switch Settings.

Switch		Description/Settings	
Dip Switches (DSW)	DSW 1	Record Confirmation Tone On = Tone On (Default) Off = Tone Off	
	DSW 2 and DSW 3	Connection for the Record Confirmation Tone Source On = Connect Off = No Connection (Default)	
	DSW 4	Output the Hook Signal to External Recording Device (Requires cable from T1/T2) On = Output (Default) Off = No Output	
	DSW 5	Termination Impedance for OUT Jack On = 30ohms (Recording level is lower) Off = 600ohms (Recording level is higher) (Default = Off)	
	DSW 6	Upgrade F/W Version (Not normally used) On = (Default)	
	DSW 7 and DSW 8	Not Used Off = (Default)	

Table 9-3 ADA-L UNIT Switch Settings

► Do not connect T1 and T2 when DSW switches 3 and 4 are On.

Table 9-4 DT330 Compatibility Settings

ADA L Unit Switch	Terminal Lot Number DT-330			
Settings	xxx I Lx or lower (Version 1.E0 or lower)	xxx I Mx (Version 8.10)	xxxJSx or higher (Version 2.20 or higher)	
ADA Connection for Recording Only.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	
ADA Connection for Sending Recorded Calls to the Telephone.	Dip switches 2, 3, 5, 7 and 8 are OFF. Switches 1, 4 and 6 are ON.	Dip switches 2, 3, 5, 7 and 8 are OFF. Switches 1, 4 and 6 are ON.	Dip switches 2, 3, 5, 7 and 8 are OFF. Switches 1, 4 and 6 are ON.	
To Send and Receive to the Terminal	Not supported	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	Dip switches 1, 2, 3, 5, 7 and 8 are OFF. Switches 4 and 6 are ON.	

Lot Numbers: I, J – Hardware Revision Lot Numbers: L, M, S – Software Revision

<sup>➡</sup> To verify DT-330 terminal firmware, hold down keypad buttons 1, 2 and 3 while plugging the line cord into the terminal.



# 13.3.2 Installing the ADA-L UNIT (DTL/DTZ/ITL/ITZ Terminals)

Perform the following steps to connect the ADA-L UNIT to the Bottom Option Interface located underneath the DTL/DTZ/ITL/ITZ multiline terminal.





To prevent possible damage to the ADA-L UNIT or the DTL/ DTZ/ITL/ITZ multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/ DC adapter from the DTL/DTZ/ITL/ITZ multiline terminal.

- 1. Unplug the line cord from the multiline terminal.
- 2. Turn the DTL/DTZ/ITL/ITZ multiline terminal upside down.
- 3. Lower the tilt leg to the first position (refer to Figure 9-108 Separate Tilt Leg from Leg Support).

Figure 9-108 Separate Tilt Leg from Leg Support



- 4. Push the two stopper tabs through the slots to separate the tilt leg from the leg support.
- 5. Lay the tilt leg and the leg support flat to expose ADA-L UNIT compartment.
- Carefully pry loose the knockout covering the bottom option interface (refer to Figure 9-109 Bottom Option Interface Knockout on page 9-128).







7. Using the exposed Bottom Option Interface as a guide, install the ADA-L UNIT in the bottom of the DTL/DTZ/ITL/ITZ multiline terminal. Push down until left and right tabs are seated (Refer to Figure 9-110 Install ADA-L UNIT).



Figure 9-110 Install ADA-L UNIT

- 8. Return tilt leg to original position.
- 9. Reconnect all cables previously disconnected.

#### 13.3.3 Installing the ADA-L UNIT (DTK/ITK Terminals)

Perform the following steps to connect the ADA-L UNIT to the Bottom Option Interface located underneath the DTK/ITK multiline terminal.







To prevent possible damage to the ADA-L UNIT or the DTK/ ITK multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DTK/ITK multiline terminal.

- 1. Unplug the line cord from the multiline terminal.
- 2. Turn the DTK/ITK multiline terminal upside down and spread legs.
- 3. Carefully pry loose the knockout covering the bottom option interface (refer to Figure 9-111 Remove Knockout Cover on page 9-129).





Figure 9-112 Install ADA-L UNIT

4. Using the exposed Bottom Option Interface as a guide, install the ADA-L UNIT in the bottom of the DTK/ITK multiline terminal. Push down until left and right tabs are seated.





- 5. Return tilt legs to original position.
- 6. Reconnect all cables previously disconnected.

## 13.3.4 ADA-L UNIT Connection



The mini-plug connection cord should not use an attenuator. Use a monaural (single ring) mini-plug connection for normal recording.

- 13.3.4.1 ADA-L UNIT Connection for Recording Only
  - 1. Set the ADA-L UNIT DSW switches (Refer to Figure 9-107 ADA-L UNIT on page 9-125).



- Set DSW 6 to ON.
- DSW switch 5 is used to change the output level from the OUT jack of the ADA-L UNIT (On = Low, Off = High).
- Using the mini-plug connection cord, connect the ADA-L UNIT Out jack to the recording device MIC jack (Refer to Figure 9-113 ADA-L OUT Jack Connection on page 9-130).



Figure 9-113 ADA-L OUT Jack Connection

13.3.4.2 ADA-L UNIT Connection for Sending Recorded Calls to the Telephone

 $\mathbf{O}$ 

1. Set the ADA-L UNIT DSW switches (see Figure 9-107 ADA-L UNIT on page 9-125).



- Set DSW 6 to ON.
- When sending recorded calls to the telephone, set DSW switch 1 to ON.



2. Using the mini-plug connection cord, connect the ADA-L Unit IN jack to the recording device EAR PHONE jack (Refer to Figure 9-114 ADA-L IN Jack Connection).



Figure 9-114 ADA-L IN Jack Connection

## 13.3.4.3 Send a Startup (REMOTE) Signal to the Recorder

1. Using a Phillips screwdriver, remove the screw from the ADA-L UNIT. Solder the cable to the T1 and T2 contacts on the internal board (refer to Figure 9-115 ADA-L Solder Points).



• Ensure solder does not adhere to surrounding parts.

• Remove any solder waste from the board.

### Figure 9-115 ADA-L Solder Points



2. Run the cable out of the opening of the ADA-L UNIT (refer to Figure 9-116 ADA-L Cable Opening).



• DSW 4 must be set to ON.

This function is not supported on some recorders.



Figure 9-116 ADA-L Cable Opening



# 13.4 APR-L UNIT

The APR-L UNIT (Analog Port Ringer) provides an analog interface for the terminal. The APR-L UNIT adapter provides ringing which allows the connected device to be used for incoming and outgoing calls. This adapter also provides a separate extension number for the analog device, which allows both devices to be used at the same time (this can be removed in system programming if you wish). One terminal can have an APR-L UNIT adapter.

The maximum distance between the APR-L UNIT and the analog terminal is 49 feet.

The ring output voltage of the APR-L is 141Vpp(50Vrms).

With the APR-L UNIT adapter installed, and the analog device attached to the adapter is in use, the telephone cannot be used – Only one physical port number is assigned to the telephone. If both the analog device and telephone are picked up at the same time, the analog device takes priority. If the terminal user is on a call and the single line telephone is picked up, the single line telephone takes the call from the terminal user.



When installing or removing the adapters, the telephone should be unplugged from the system.

The APR-L UNIT does not support reverse-polarity, message waiting, or Caller ID.



## 13.4.1 APR-L UNIT Switch Settings

Figure 9-117 APR-L UNIT shows the location of the switches. The DIP switches (DSW) allow a technician to configure the unit for specific settings.



Due to the location of the switches, <u>set switches prior to</u> <u>installation</u> of ADA-L UNIT on DTK/DTL/DTZ/ITK/ITL/ITZ multiline terminal.

Set the DIP switches on the APR adapter to the required position.

Figure 9-117 APR-L UNIT



#### 13.4.2 Installing the APR-L UNIT

Perform the following to connect the APR-L UNIT to the Bottom Option Interface located underneath the DTK/DTL/DTZ/ITK/ITL/ITZ multiline terminal.



Only ONE APR-L UNIT can be installed.



To prevent possible damage to the APR-L UNIT or the DTK/ DTL/DTZ multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DTK/DTL/DTZ multiline terminal.

- 1. Unplug the line cord from the multiline terminal.
- 2. Turn the DTK/DTL/DTZ multiline terminal upside down.
- 3. Lower the tilt leg to the first position (refer to Figure 9-118 Separate Tilt Leg from Leg Support on page 9-134).







- 4. Push the two stopper tabs through the slots to separate the tilt leg from the leg support.
- 5. Lay the tilt leg and the leg support flat to expose APR-L UNIT compartment.
- 6. Carefully pry loose the knockout covering the bottom option interface (refer to Figure 9-119 Bottom Option Interface Knockout).



 Using the exposed Bottom Option Interface as a guide, install the APR-L UNIT in the bottom of the DTK/DTL/DTZ multiline terminal. Push down until left and right tabs are seated (Refer to Figure 9-120 Install APR-L UNIT on page 9-135).





Figure 9-120 Install APR-L UNIT



- 8. Return tilt leg to original position.
- 9. For the APR adapter to be recognized correctly, before plugging in the multiline terminal, make sure the extension number to be used for the adapter is undefined in Program 10-03-01.
- 10. Plug the line cord back into the multiline terminal.



To avoid any hardware problems, unplug the line cord, then any other adapter cables, BEFORE REMOVING THE ADAPTER.

# 11. To determine the APR analog extension number 10-03-04 : Optional Installed Unit 1

Display the type of terminal installed. This can be used to verify that the system recognizes the adapter.

### 10-03-06 : Terminal Type (B2)

Assign the terminal type (12) for the telephone channel, which has the APR Adapter installed.

When you want the APR to use the same extension number as the telephone to which it is attached, remove the terminal type in this option. With this setup, when the analog device is in use, it busies out the terminal as there is no separate port number assigned for the adapter. To reverse this, and allow the APR to have its own extension number, reassign the terminal type (12) in this option.

#### 10-03-07 : Logical Port Number (B2) Read Only

The port number of the APR Adapter is displayed for the extension (APR ports = 193~512 with all software through 3.07). The ports are assigned from the highest available port down.



# 13.5 PSA-L (BK) UNIT / PSA-L (WH) UNIT

The PSA-L UNIT (Power Save Adapter), an optional adapter for the ITL/DTL Terminals, is used with IP telephones to make or receive a call using the Public Switched Telephone Network (PSTN) when a call cannot be made or received using the Local Area Network (LAN). When a power failure occurs, the IP telephone is automatically switched to the PSTN. When power is restored, the IP telephone restarts and connects to the network unless a conversation is in progress on PSTN. The PSTN call must be completed by going on-hook before the connection to the LAN is restored. The unit features:

- O Survivability in case of power failure or network congestion
- O Support on modular terminals (ITL/DTL)
- O PSTN Type = analog PSTN
- O Dial method MF/DF (10pps)

Figure 9-121 PSA-L UNIT





Figure 9-122 PSA-L UNIT Connections



## 13.5.1 Installing the PSA-L Adapter



**BEFORE INSTALLING OR REMOVING the PSA-L adapter**, remove the line cord, LAN cable, and then AC adapter from the outlet.

- 1. Turn multiline terminal upside down.
- 2. Unplug the line cord and handset cord from the multiline terminal.



Only ONE PSA-L UNIT can be attached to the DTL/ITL multiline terminal.

3. Lower the tilt leg to the first position (refer to Figure 9-123 Separate Tilt Leg from Leg Support on page 9-138).







- 4. Push the two stopper tabs through the slots to separate the tilt leg from the leg support.
- 5. Lay the tilt leg and the leg support flat.
- 6. Press the two tabs locking the legs to the multiline terminal and pull the legs toward you, lifting to remove (refer to Figure 9-124 Remove Legs From Multiline Terminal).



Figure 9-124 Remove Legs From Multiline Terminal

- 7. Disconnect serial connection cord from terminal body. Leave cord connected to the cradle unit.
- 8. Push latch to right to unlock the cradle unit. Then push the cradle unit forward to separate from the terminal body.



Figure 9-125 Bottom of Multiline Terminal (Legs Removed)



9. Fit the projections on the side of the PSA-L UNIT into the guide holes on the side of the terminal and pull toward you until the PSA-L UNIT snaps into place.

Figure 9-126 Attach PSA-L UNIT to the Multiline Terminal





10. Gently press the serial cable into the grooved cutout for the cable.



Figure 9-127 Grooved Cutout for Serial Cable

- 11. Connect the serial connection cord (refer to Figure 9-126 Attach PSA-L UNIT to the Multiline Terminal on page 9-139) from the PSA-L UNIT to the terminal body.
- 12. Open the Dip Switch Cover (refer to Figure 9-122 PSA-L UNIT Connections on page 9-137). Set the dip switch on the PSA-L adapter to the required position. Close the cover.
- 13. If using the handset, place the stopper in the tilt leg.



Figure 9-128 Insert Stopper for Handset Use



14. For the Handset, set the connector in place.

Figure 9-129 Insert Connector for Handset Use

15. If using the handset, install the handset cable (refer to Figure 9-130 Insert Handset Cable).



Figure 9-130 Insert Handset Cable



- 16. Attach the analog trunk cable and the handset cable. Refer to Figure 9-122 PSA-L UNIT Connections on page 9-137.
- 17. Install the legs, pushing upwards until both locks snap into place.
- 18. Return tilt leg to desired position.
- 19. Place the multiline terminal numbered keypad up.
- 20. Connect the Line cord, the PSTN cable and the Handset cord (if used).
- 21. Remove both plastic panels from the front of the multiline terminal.



Figure 9-131 Remove Plastic Panels

22. Pull tab down and lift out the numbered keypad panel.

Figure 9-132 Remove Numbered Keypad





23. Install the new keypad panel supplied with the PSA-L UNIT.



Figure 9-133 Install Numbered Keypad

24. Install both plastic panels to the front of the multiline terminal (refer to Figure 9-134 Install Plastic Panels).

Figure 9-134 Install Plastic Panels



- 25. Connect the line cord to the adapter.
- 26. Connect the user system (KTS or PBX) cable.
- 27. If required, remove the side panel from the original cradle unit.



## 13.5.2 Using the PSA-L Adapter



**BEFORE INSTALLING OR REMOVING the PSA-L adapter,** remove the line cord, LAN cable, and then AC adapter from the outlet.

### 1. Placing Calls:

When the PSTN line is activated either manually by the switch or due to a power failure, use the dial pad buttons (0-9, \*, #) to place an outside call. Use the Vol  $\hat{1}$  or  $\overline{4}$  to increase or decrease audio levels.

- O Other than receiving calls, no other multiline terminal function is available.
- 2. Answering Calls:
  - O If you receive a call via PSTN during a conversation via LAN, answer the call by completing the LAN call and placing the handset back into the cradle. Change the LAN/PSTN Change Switch to PSTN and then lift the handset to answer the call. If you change the LAN/PSTN Change Switch to the PSTN position while talking via LAN, the LAN call is disconnected.
  - Other than receiving calls, no other terminal function is available.

### 3. Adjusting the Ring Volume

Use the Volume Control Switch located on the PSA-L adapter to adjust through the three available volume levels.

• O Other than receiving calls, no other terminal function is available.

#### 4. When Power is Restored

The IP multiline terminal restarts and reconnects to the network LAN. However, if you are on a PSTN call when the power is restored, your conversation continues until the handset is placed in the cradle. Once this occurs, the IP terminal restarts and reconnects to the LAN.

O Other than receiving calls, no other terminal function is available.



# 13.6 Gigabit Adapter (GBA-L UNIT)

The GBA-L UNIT enables IP telephones (DT730/DT750) to operate in a Gigabit Ethernet environment. A single Gigabit Ethernet desktop drop provides a 10/ 100Mbps to the IP telephone and a gigabit connection to a personal computer. The Gigabit Adapter is installed on the bottom of the IP telephone and offers a gigabit interface to the LAN side and PC port. The Gigabit Adapter is powered by PoE or can operate off of local power.



Figure 9-135 GBA-L UNIT

## 13.6.1 Installing the GBA-L UNIT



**BEFORE INSTALLING OR REMOVING the GBA-L UNIT,** remove the line cord, LAN cable, and then AC adapter from the outlet.

- 1. Turn multiline terminal upside down.
- 2. Unplug the line cord and handset cord from the multiline terminal.



Only ONE GBA-L UNIT can be attached to the DTL/ ITL multiline terminal.



3. Lower the tilt leg to the first position (refer to Figure 9-136 Separate Tilt Leg from Leg Support).

Figure 9-136 Separate Tilt Leg from Leg Support



- 4. Push the two stopper tabs through the slots to separate the tilt leg from the leg support.
- 5. Lay the tilt leg and the leg support flat.
- 6. Press the two tabs locking the legs to the multiline terminal and pull the legs toward you, lifting to remove (refer to Figure 9-137 Remove Legs From Multiline Terminal).

Figure 9-137 Remove Legs From Multiline Terminal





7. Plug in the LAN cable and gently press the cable into the grooved cutout (refer to Figure 9-138 Attach the LAN Cable).



8. Plug in the DC power cable and gently press the cable into the grooved cutout (refer to Figure 9-139 Attach the DC Power Cable).



Figure 9-139 Attach the DC Power Cable



9. Assemble the legs and bracket then align with tab holes (refer to Figure 9-140 Align Bracket with Terminal).



10. Pass the LAN and DC power cables through the bracket (refer to Figure 9-141 Pass Cabling Through Bracket).



Figure 9-141 Pass Cabling Through Bracket



11. Slide the supporting bracket forward until a click is heard (refer to Figure 9-142 Secure Bracket to Terminal).



Figure 9-142 Secure Bracket to Terminal

12. Secure base of GBA-L UNIT to bracket assembly (refer to Figure 9-143 Secure GBA-L UNIT Base to Bracket Assembly).

Figure 9-143 Secure GBA-L UNIT Base to Bracket Assembly





13. Install the NEC provided Cat 5 Ethernet cable (refer to Figure 9-144 IP Phone(X) Connection).



14. Install the NEC provided Cat 5 Ethernet cable (refer to Figure 9-145 PC(X) Connection).

Figure 9-145 PC(X) Connection




15. Install the NEC provided power cable (refer to Figure 9-146 DC Power Connection).



16. Connect the Core then plug in the Network connection cable (refer to Figure 9-147 LAN(=) Connection).

Figure 9-147 LAN(=) Connection





17. Install the cable from the optional external AC adapter (refer to Figure 9-148 AC to DC In Connection).



Figure 9-148 AC to DC In Connection



18. Cable installation for the GBA-L UNIT complete (refer to Figure 9-149 GBA-L UNIT Installed).





## 13.6.2 GBA-L UNIT Connection

The following chart outlines the connectivity available to the GBA-L UNIT:



Figure 9-150 GBA-L UNIT Connectivity Chart

## 13.6.3 LED Display

The following provides a list of each LED and associated operation and status indications. Refer to Figure 9-151 GBA-L UNIT LED Display on page 9-154 for the location of the LEDs on the GBA-L UNIT.



Figure 9-151 GBA-L UNIT LED Display

LED Name	When 1000Mbps is	When 100Mbps is	When 10Mbps is
	Connected	Connected	Connected
SPEED Display	Green Lighting	Red Lighting	Turning Off





LED Name	At LINK	ACT (At the Data Communication)
LINK/ACT Display	Green Lighting	Green Blinking

## 13.7 IPv6 Adapter and Concentrator Solution

NEC's IPv6 Adapter and Concentrator solutions main objective is supporting IPv4-only DT700 Series terminals and IPv4-only NEC SV9100 PBX in an IPv6-only network. The solution accomplishes this objective by using SSL VPN tunnels between the DT700 terminals and the NEC PBX. NEC offers two possible deployment scenarios; both utilize the VPN in bridge-mode, meaning the DT700 terminal's IP address will be in the same subnet as the LAN to which the IPv6 Concentrator is connected. Bridge-mode also means that the DT700 series phone's VLAN tagging and packet QoS information is retained across the VPN.

### **System Power**

The NEC Concentrator chassis is typically mounted in a 19" rack and powered by a standard 120vac power source.

The IP6-L Adapter snaps onto the back of NEC's DT700 Series VoIP phones and draws electrical power from the telephone.





# **PC Compatibility**

The PC is used to connect to and configure the Concentrator and the Adapter. A PC or laptop with either Windows XP or Windows 7 can be used.

# **Connection Types**

The IPv6 can be installed using a Routed or Remote connection.

 IPv6 only Routed Network – the IPv6 Adapter and Concentrator are deployed into a site where all internal routing is based on IPv6 addressing.



 Remote Worker – an employee takes his/her desk DT700 telephone home or on a business trip. This solution is supported on both the IPv4 and IPv6 Internet.



Figure 9-152 IPv6 Routed Network Configuration





## 13.7.1 Installation

The NEC IP6-L Adapter snaps into the back of the phone and converts IPv6 network traffic into IPv4 for communication with the telephone. The NEC Concentrator handles the IPv4 to IPv6 communication, but also contains SSL security certificates for the Concentrator and the telephone.

- Do not deploy the Concentrator into the production environment until the configuration has been completed.
- Obtain IP address information from your ISP or resident network administrator for the Concentrator's WAN port and at least one DNS Server address.
- ☐ For the Adapter, the "LAN" port means the port toward the DT700 phone and the "WAN" port means the port toward the PBX. For the Concentrator, the "LAN port" means the port toward the PBX and the "WAN" port means the port toward the DT700 Series phones.

Figure 9-154 Example of Port Names



- Configuration is done through a web GUI. Launch a browser and point it to the Concentrator's Port 1's default IP address, 192.168.1.1.
   You may need to change the IP address of your PC to connect.
- The default login credentials are user name **root** and password **default**.



For detailed configuration instructions including the building and installation of custom security certificates, refer to the Concentrator IP6-L Installation Guide.



# 13.7.2 Concentrator Installation and Configuration

After connecting and logging in via the browser to the Concentrator, a Configuration Menu is displayed on the left hand side of the main screen listing general system information. Below are the configuration menu parameters required to support connectivity through the Concentrator.

### 13.7.2.1 Network Settings

1. WAN Settings: For deployments, select **Static IP** then configure the IP addresses. Refer to Figure 9-155 Example of WAN Settings.

Figure 9-155	Example of WAN Settings	

#### WAN Interface IPv6 Settings:

Select the type of IPv6 WAN Interface to use: Disabled
Static IP
IPv6 in IPv4 Tunnel

IPv6 Address/Prefix: IPv6 Default Gateway:

2001:4::2	1	64
2001:4::1		

- 2. Network Settings: Enter the **default Concentrator** associated with the WAN port.
- 3. DNS Server: Enter the **DNS server IP** provided. The DNS server may also provide the NTP server credentials if configured. Click on **Apply** to activate the changes.
- 4. After applying these changes, connect using the newly configured IP address. It may take a couple minutes for the interface to reset.

#### 13.7.2.2 Security

The base security screen displays current firewall settings and options.

- 1. Under the configuration menu select **Security** and enable the desired WAN interface settings. For remote access via the WAN port, allow **http or https**.
  - HTTPS if selected, requires additional security certificate specifically for HTTPS.
  - Password a password change is recommended and can be accomplished under the System section of the Configuration Menu.

#### 13.7.2.3 VoIP Traversal

- 1. From the Configuration Menu select **VoIP Traversal** and set the operating mode to **External Server**. This allows connection to a remote client.
- 2. Scroll down to **Remote Clients** and enable server for remote clients and ensure listening port is set to **1194**.



3. Scroll down to **Bridge to LAN** and check the box to enable.



When the Bridge to LAN function is enabled, the web GUI is no longer accessible by the LAN interface. Web GUI access can be resumed from the WAN interface. However, the WAN firewall is enabled by default and will drop outside traffic.

- 4. Set the Transport Protocol to listen for clients using either IPv4 or IPv6.
- 5. Accept the default cipher and click **Submit**.
- 6. Under the Diffie-Hellman Parameters click the **generate new** button.



This is a processor intensive action, which may need to be performed during a low traffic time.

7. From the configuration menu under VoIP Traversal select **Authentication** and verify it is set to disabled (using certificates only).



If the Concentrator needs to be reset back to factory defaults, press the erase button three times using a large paper clip. After 2-3 minutes the unit should be completely booted.

#### 13.7.3 IP6-L Adapter Installation and Configuration

The IP6-L adapter snaps onto the back of an NEC DT700 Series VoIP telephone and then connected to the telephone LAN port. The network cable is inserted into the RJ45 port on the IPV6-L adapter.

#### 13.7.3.1 Log into IP6-L Adapter Configuration Screen

Connect a PC to the PC port on the back of the telephone. Launch a browser and connect to the LAN default IP Address (**192.168.3.1**). This may require changing the IP address of the PC. The user name is **admin** and the password is **password**.

The following configurations are required to support the IP6-L Adapter.

- 1. WAN Settings: Select how the adapter should obtain its IPv4 or IPv6 address.
- 2. LAN Settings: Use the default configuration for the LAN settings setup.
- 3. VPN Settings: Enter the **IP Address** or **Domain Name** of the Concentrator used in this deployment.



4. Unit Reboot: After applying the changes, click **unit reboot** and follow the prompted steps resulting in the reboot of the system.



NEC's IP6-L Adapter can be reset to factory defaults by clicking "Factory Default" under the Administration section of the GUI interface.

If the GUI interface is not available, set DIP switch 4 to the ON position and boot the unit.

After 30-45 seconds the unit should be completely booted. Set DIP switch 4 back to the OFF position.

#### 13.7.3.2 Security

NEC recommends that each user set his/her own password from Set Password under the Administration section.

# SECTION 14 NEC DT700/DT800 WIRELESS (WI-FI) ADAPTER

This section provides information about the NEC DT700 Wireless (Wi-Fi) Adapter for IP terminals.

## 14.1 Wireless Adapter (WFA-Z)

The NEC DT700/DT800 Wireless (Wi-Fi) Adapter installs in the expansion slot underneath the DT700/DT800 series terminal and draws power from the phone connector. The Wi-Fi adapter allows the DT700/DT800 terminal to connect to any wireless network and operate as if the terminal was connected to a wired Ethernet network.

Before installing or removing the adapters, *the multiline terminal should be unplugged from the system*.

### 14.1.1 NEC DT700/DT800 Wireless (Wi-Fi) Adapter Switch Settings

Figure 9-156 WFA-Z Adapter Dip Switches on page 9-160 shows the location of the switches. The dip switches (DSW) allow a technician to configure the unit for specific settings.



- Due to location, set switches prior to installation of Wi-Fi adapter unit on ITL multiline terminal.
- For additional information, refer to the DT700 Wireless (Wi-Fi) Adapter Admin Configuration Guide.



#### Figure 9-156 WFA-Z Adapter Dip Switches



Table 9-5 WFA-Z Adapter Switch Settings

Swi	tch	Description/Settings
Dip	DSW 1	Not Used
(DSW)	DSW 2	Not Used
	DSW 3	Not Used
	DSW 4	On = Default

#### 14.1.2 Installing the NEC DT700/DT800 Wireless (Wi-Fi) Adapter

Perform the following steps to connect the WFA-Z Adapter to the Bottom Option Interface located underneath the ITL multiline terminal.



Only one Wi-Fi adapter can be installed at a time.



To prevent possible damage to the Wi-Fi adapter or the ITL multiline terminal during installation or removal, disconnect LAN cable and the AC/DC adapter from the ITL multiline terminal.

- 1. Unplug the line cord from the multiline terminal.
- 2. Turn the ITL multiline terminal upside down.



3. Lower the tilt leg to the first position (refer to Figure 9-157 Separate Tilt Leg from Leg Support).

Figure 9-157 Separate Tilt Leg from Leg Support



- 4. Push the two stopper tabs through the slots to separate the tilt leg from the leg support.
- 5. Lay the tilt leg and the leg support flat to expose Wi-Fi adapter compartment.
- 6. Carefully pry loose the knockout covering the bottom option interface (refer to Figure 9-158 Bottom Option Interface Knockout).

Figure 9-158 Bottom Option Interface Knockout



7. Using the exposed Bottom Option Interface as a guide, install the Wi-Fi adapter in the bottom of the ITL multiline terminal. Push down until left and right tabs are seated (Refer to Figure 9-159 Install WFA-Z Adapter on page 9-162).



Figure 9-159 Install WFA-Z Adapter



## 14.1.3 Wi-Fi Adapter Connection

1. Connect the Adapter's PH port (using the short cable attached) to the LAN port on the phone (refer to Figure 9-160 Connecting the WFA-Z Adapter).





- 2. Reconnect all cables previously disconnected.
- 3. Return tilt leg to original position.
- 4. Power on the phone using the AC Adapter.



# 14.2 LED Indicators

Two LEDs are visible from the Wi-Fi Adapter when it is installed in the DT700. These LEDs provide a quick indication of the current mode of the Adapter. Figure 9-161 Wi-Fi and Status LEDs shows the LEDs, as they appear on the adapter, and which LED is the Wi-Fi LED and which one is the Status LED.

Figure 9-161 Wi-Fi and Status LEDs



#### Table 9-6 Battery Mount Equipment List

Mode	Wi-Fi LED	Status LED
Power Up	Yellow On Steady	Yellow On Steady
Linux Boot	Off	Off
No Wi-Fi Module	Yellow On Steady	Off
Start Wi-Fi Scan	Yellow Fast Blink	Off
Wi-Fi Connected	Green On Steady	Off
Firmware Update	Off	Yellow On Steady
Config File Copy from Flash Drive	Off	Green/Yellow Alternate Slow Blink
Factory Defaults Restored by Switch #4 being On	Yellow On Steady	Green On Steady

### 14.3 Configuring the Wi-Fi Adapter

There are two main methods by which the installer can configure the Wi-Fi Adapter.

- O Method 1 Accesses the Adapter's built-in web GUI.
- O Method 2 Uses a special PC-based program called CygWCT. CygWCT allows the installer to prepare the configuration settings and save these as config files on a USB flash memory stick (flash drive), which can then be used to configure Wi-Fi Adapters.



### 14.3.1 Web GUI

The adapter provides a web server that may be used to configure the wireless connection, update firmware, view status, view available wireless networks, configure the LAN, and so forth.

### 14.3.1.1 Default Configuration

The default local IP configuration of the Wi-Fi Adapter is as follows. By default, the Wi-Fi adapter is in bridged mode.

Manual/DHCP	Manual
Power Up	Yellow On Steady
Linux Boot	Off
No Wi-Fi Module	Yellow On Steady
Start Wi-Fi Scan	Yellow Fast Blink
Wi-Fi Connected	Green On Steady
Firmware Update	Off
Config File Copy from Flash Drive	Off
Factory Defaults Restored by Switch #4 being On	Yellow On Steady

Table 9-7 Local IP Configuration

### 14.3.1.2 Logging into the Adapter

The NEC Wi-Fi Adapter Application is configured using an Internet browser. Microsoft Internet Explorer 6.0 or higher is recommended. The Login screen allows a technician to enter their user name and password for network access.

Follow the steps below to login:

- 1. Start your Internet Explorer from a PC connected to the same network as the NEC Wi-Fi Adapter.
- 2. Enter the Wi-Fi Adapter default IP Address (192.168.3.2) in the address link of your browser. A Login screen displays (refer to Figure 9-162 Login Screen on page 9-165).
- 3. Enter the default **User Name** and the default **Password**. The default user name is admin and the default password is password.
- 4. Click Login to access the Wi-Fi Adapter Web application.



Figure 9-162 Login Screen



### 14.3.1.3 Logout Page

To end the session, select the Administration tab and click **Logout**. A confirmation message displays. Click **OK** to log out. The Login page displays.



If the browser's Refresh button is pressed, it will end the current session. Only use the Refresh or Cancel buttons presented on each page to refresh the current page information.

#### Figure 9-163 Logout Screen





### 14.3.1.4 Wireless Status

The Wireless Status page shows current Wi-Fi connection status information. This page is the home page for the Wi-Fi Adapter.

		in maintenanc	e
	Wireless Status		
Diamond	(1)	Connected	
Data Rate: 150 Mt	/s Signal Level: 74/100	and it	
Data Rate: 150 Mb	v/s Signal Level: 74/100	ott	
Data Rate: 150 Mb	v/s Signal Level: 74/100	attl	

Figure 9-164 Wireless Status Page



Selecting the **View Available Networks** button from the dropdown menu will scan for available Wi-Fi networks. The networks displayed can be refreshed by clicking the Refresh List button.



Wireless	Configuration	Administration	Maintenance	
Wireless Status				
View Available Networks	Wirel	ess Networks		
	The second se			
	R	efresh List		
	Cygnetron			
	Security-Enabled Network	92/100	1	
		880		
	testssid3			
	Unsecured Wireless	88/100		
	Nework	ull u		
	dap-1522			
	Security-Enabled	88/100		
	Network			
	testssid5		_	
	Security-Enabled	70//00	-1	
	Network	76/100	00	

#### 14.3.1.5 Wireless Configuration

**Wireless Configuration** allows Wi-Fi network setup including security type, authentication, encryption, etc. The wireless configuration page will automatically display which configuration options are required, depending on the Security Type and Authentication selected.

The **Load/Save Configuration** page allows the environment to be saved to a file for backup or deployment to other adapters.



Figure 9-166 Environment Backup/Restore

EC Empowered b	y Innovation DT70	00 Wireless Adapter	v0.0.1
Wireless	Configuration	Administration	Maintenance
	Enviro	nment Backup / Restor	e
s	ave current environment to	o a location on your compu	uter Backup
с Г	hoose system environmen	t file to restore Browse	Restore

The **IP Configuration** page allows local network access setup. The wireless port IP address can be statically assigned, or obtained from a DHCP server that is on the connected wireless network. DHCP mode can only be selected if the Wi-Fi Adapter is in Bridged mode.

Figure 9-167 IP Configuration

Vireless	Configuration Admir	nistration Ma	aintenance
	Lan Port	MAC Addres	<b>S:</b> 00:60:b9:40:5c:03
	IPv4 Address:	192.168.3.3	
	Wireless Port	MAC Addres	S: 00:0F:13:99:02:80
	Obtain IP from DHCP		Manually Set IP
	IPv4 Address:	192.168.3.2	
	IPv4 Submask:	255.255.255.0	
	IPv4 Gateway:		
	IPv4 DNS:		
	IPv4 NTP Server:	pool.ntp.org	
	NAT Static Route Enable:		
	NAT Gateway Address:	192.168.3.1	
		Apply Cancel	



### 14.3.1.6 Administration

Figure 9-168 System Logs

The **System Logs** page displays syslog information, and optionally sets a Syslog remote server and / or TFTP server to send Syslog remotely. Syslog verbosity is configurable.

Wireless	Configuration	Administration	Maintenance
		System Logs	
	View Syslog	Send Syslog Syslog Verbos	ity Level - INFO 🗸
	Remote Syslog Server	192.168.10.113	inable
	Send Log to TFTP Server	192.168.10.105	

If NAT Traversal mode is used on the phone, and the phone is set for Static IP mode, then the NAT Static Route Enable check box should to be checked. A NAT Gateway address is also required to be set.

The **Firmware Update** page updates the firmware on the wireless adapter.

Figure 9-169 Firmware Update

NEC Empowered to	by Innovation DT7	00 Wireless Adapter	v0.0.1
Wireless	Configuration	Administration	Maintenance
		Firmware Update Provide firmware file name	
	DO NOT REBOOT OR POW	Brows ER-DOWN UNTIL CONFIRMATIO	e
		Download	

The **Factory Defaults** page removes all user configurations and reset to factory default settings.



Figure 9-170 Factory Default Settings



The Manual Reset resets the Wi-Fi Adapter.



Figure 9-171 Manual Reset

NEC Empowered by	Innovation DT	700 Wireless Adapter	v0.0.1
Wireless	Configuration	Administration	Maintenance
		Manual Peret	
4	Web access	will not be available while un	it is rebooting
		Reboot Now	

## 14.3.2 CygWCT Utility

Use the CygWCT utility software to prepare the Wi-Fi Adapter's configuration settings and save to a flash drive. Two configuration files are created: Wpa\_supplicant.conf contains the wireless configuration settings (SSID, PSK, etc.) and sysconfig\_env contains the local management address information and other miscellaneous settings. The following sections describe the configuration options within CygWCT and how to use CygWCT to create the configuration files and save these to a USB memory stick.



This section will list the system requirements and will provide instructions for installing the CygWCT program.

#### 14.3.2.1 Wi-Fi Configuration Tab

Selecting the **Wi-Fi Config** tab allows the installer to configure the Wi-Fi Adapter wireless network credentials.

Figure 9-172 Wi-Fi Config Tab

Vifi Config Local IP Config	Firmware Update	
SSID	necWifi	
Security Type	WPA2 👻	
Authentication	PEAP-MSCHAPv2	
Encryption Type	TKIP	
Network Security Key	password	
CA Certificate	ca.pem	Browse
Client Identity	wifi	
Client Password	wifipassword	
Client Certificate	clientcert.pem	Browse
Client Private Key	clientkey.pem	Browse
Starting Date before NTP (Format MMDDhhmmYYYY)	100110022013	
SSID Scan Technique	Broadcast Probe Request 👻	
Country Code	US 👻	
Fast Reauthentication		
Bridged Mode	Non-Bridged Mode	Next >>

Figure 9-172 Wi-Fi Config Tab shows the Wi-Fi Configuration tab which is the first tab that is presented when the application is started. CygWCT will scan for any available removable flash drives and list them in the Drive drop-down box.

If a Flash Drive is not available, the utility will inform the user that a flash drive is needed and will then exit the program automatically, as shown in Figure 9-173 Removable Drives Not Detected on page 9-172.





	×
No removable drives detected. Please insert the des CygWCT.	tination drive and restart
	ОК

The fields displayed in Figure 9-172 Wi-Fi Config Tab on page 9-171 are explained below:

- SSID: The wireless network you wish the adapter to join should be installed.
- Security Type: Select the security type of the wireless network. Available options are *No Authentication*, *WPA*, or *WPA2*. If *No Authentication* is selected, no other wireless configuration options need to be set and they will be disabled.
- ❑ Authentication: If WPA or WPA2 are selected for security type, an authentication method must be selected. The three methods supported are *Pre-shared Key*, *EAP-TLS*, and *PEAP-MSCHAPv2*. Based on the authentication type selected, the required configuration options are enabled/ disabled below. If they are disabled, they will appear to be grayed out and they cannot be modified.
- □ **Encryption Type:** If WPA or WPA2 are selected, an encryption type must be selected. The encryption types supported are *TKIP* and *AES*.
- Network Security Key: If Pre-shared Key is selected as the authentication type, the key to be used for that network is entered here.
- CA Certificate: If EAP-TLS or PEAP-MSCHAPv2 is used for authentication, a Certificate Authority (CA) certificate must be loaded on the Wi-Fi Adapter. Click the Browse button to locate the certificate file. The file must be in .pem format.
- Client Identify: If EAP-TLS or PEAP-MSCHAPv2 is used for authentication, the client identity must be specified here.
- Private Key Password/Client Password: If EAP-TLS is used for authentication, the password for the private key is entered here. If PEAP-MSCHAPv2 is used, the password for the MSCHAPv2 client authentication is entered here.



- Client Certificate: If EAP-TLS is used for authentication, the certificate for the client is selected here. Click the Browse button to locate the client certificate. The file must be in .pem format.
- Client Private Key: If EAP-TLS is used for authentication, the private key for the client is selected here. Click the Browse button to locate the client certificate. The file must be in .pem format.
- Starting Date before NTP: If EAP-TLS or PEAP-MSCHAPv2 authentication is used, one of the checks for authentication of the certificates is if they are valid for the current date of the wireless client. However, neither the Wi-Fi Adapter or the DT700/DT800 have a valid time/date at power-up and cannot connect to a NTP or SIP server until the wireless connection is established. Therefore, a date/ time must be provided that will allow authentication of the certificates. This field allows the installer to specify that start date.
- SSID Scan Technique: If the SSID used for the wireless network is broadcast openly, select Broadcast Probe Request. If the SSID is not broadcast, the installer must select Directed Probe Request.
- □ Country Code: Certain wireless settings or power levels or prohibited depending on the country where the adapter is installed. The correct country of installation can be selected here.
- Fast Reauthentication: This can be used for disabling EAP fast re-authentication. Normally, there is no need to disable this heading.
- Bridged/Non-Bridged Mode: By default, the wireless adapter works as an Ethernet to a wireless bridge which means that in addition to the phone, other Ethernet devices can be "bridged" to the wireless network through the LAN port on the DT700/DT800. However, this can also unauthorize network devices on the wireless network, which may violate the installation's security policies. Because of this, some enterprise access points hardware will not allow bridged clients or provide the ability for the administrator to disable bridged clients. In this situation, the DT700/DT800 will not be able to connect to the network.

However, the Wi-Fi Adapter supports a non-bridged mode where the DT700/DT800 will appear to the access point as if it is directly connected to the access point and it will be able to function normally. Click on Non-Bridged Mode to enable this mode.

While in non-bridged mode the IP Terminal must have DHCP Addressing enabled. The IP Terminal and Wi-Fi Adapter will not connect to the SIP server if static IP Addressing is used on the IP Terminal.



When the Wi-Fi adapter is in non-bridged mode, the LAN port is not available. Connecting devices to the LAN port while the Wi-Fi adapter is set to non-bridged mode may cause the access point to reject the connection.

Next >>: Click on the Next button to proceed to the Local IP configuration tab and complete the configuration process.

#### 14.3.2.2 Local IP Configuration Tab

The Local IP Config tab may be used to define the IP Address information for the Wireless and Local Area Network (LAN) Ports.

The IP Address information defined for the LAN Port may be used to browse to the WEB Graphical User Interface which allows the Wi-Fi Adapter Unit technician to interact with the unit application.

The Web (GUI) interface can be used to view visible wireless networks within the radius of the adapter, as well as remotely upgrade the adapter firmware, reset the adapter to factory settings, reboot the adapter, and dump system logs.

Figure 9-174 Local IP Config Tab

		Opdate			
Wireless Port					
Manually Set IP Add	ress	0	Automa	atically	obtain from DHCP
IPv4 Address	192	168	0	0	
IPv4 Submask	255	255	255	0	
IPv4 Gateway	0.	0.	0	0	
IPv4 DNS	0	0	0	0	
IPv4 NTP Server	pool.nt	p.org			
Lan Port					
IPv4 Address	192	168	3	2	
NAT Static Port					
NAT Static Route Enable					
NAT Gateway	192	168	3	. 1	
TFTP Server					
Syslog Server					
Syslog Priority	3 •	Ren	note Sys	log Ena	able 📄
< < Back				[	Write Config
				Check I	Drive



The fields displayed in Figure 9-174 Local IP Config Tab on page 9-174 are explained below:

Wireless Port: The wireless port has the option of being configured by DHCP or assigned a static IP address. The wireless port is also used for establishing the date and time with NTP.

**IPv4 Address**, **IPv4 Submask**, **IPv4 Gateway:** If the adapter is configured for manual IP address configuration, the network information must be provided here. If DHCP is selected, these options are disabled.

**IPv4 DNS:** If the installer wishes for the adapter to resolve the name of the NTP or remote Syslog server, and the adapter is in Manual IP address mode, the IP address of the DNS server must be provided here.

**IPv4 NTP Server:** Network name or IP address of NTP server to be used.

LAN Port: In addition to the IP address assigned to the wireless port, a separate static IP address can be assigned to the Ethernet port that connects to the IP terminal. This can be useful if the DHCP address of the Wireless port is not known, or not available (for example, if in Non-Bridged mode).

**TFTP Server:** The TFTP server to send Syslog dumps to can be configured here. Note that the Syslog dump must be triggered through the Web GUI.

**Syslog Server:** If remote syslog is enabled, the Syslog will be sent to the server specified in this field.

**Syslog Priority:** The installer may choose to limit the amount and severity of messages sent to it by adjusting the priority level. Levels range from 5 (Error - Most Severe) to 1 (Debug information - Least severe).

**Remote Syslog Enable:** If checked, the adapter will send Syslog messages to the Syslog Server specified in the Syslog Server Field.

<< Back: Click the back button to go back to the Wi-Fi Config tab. Or click the Wi-Fi Config tab (Figure 9-174 Local IP Config Tab on page 9-174).

**Write Config:** Use this button to create the wireless and local IP configuration files and write them to the flash drive selected.

#### NAT Static Port:

**NAT Static Route Enable:** If the IP terminal is configured for NAT mode with a static address, this option must be enabled. This will configure the Wi-Fi Adapter to properly route SIP packets to the NAT gateway. If the IP terminal is configured for DHCP, this option does not need to be enabled because the Wi-Fi Adapter will get the gateway information from the DHCP response.



**NAT Gateway:** IP address of the gateway to which the SIP packets will be routed through. This address should be on the same subnet as the IP Terminal's address.

□ **Firmware Update Tab:** The firmware update tab allows the user to select an Adapter firmware image file to write to the flash drive. If the firmware on the flash drive does not match the firmware on the Adapter at startup, the Adapter will reprogram itself with the image loaded on the drive.

**Firmware Image:** Click the Browse button to select the firmware image to write to the Flash drive. The file can be in .tar or .zip format.

Write to Flash Drive: Click the Write to Flash button to copy the firmware image selected to the flash drive. Note: There cannot be duplicate .tar or .zip files on the flash drive. The CygWCT utility will prompt the user to allow it to remove existing .zip or .tar files before proceeding with the copy.

# SECTION 15 POWER FAILURE TELEPHONES

## 15.1 Power Failure

The system allows connection for basic telephone service during a power failure. The power failure operation occurs during a commercial power failure, and is not affected by blade failure. Power Failure Transfer is provided by connecting to the GCD-4COTB or GCD-4COTB-A blade.

Once Power Failure occurs, the Analog Trunk line will automatically switches to a Single Line Telephone connected to the CN3. After power is recovered, the Analog Trunk will automatically switch back to the COT circuit.

The CN3 connectors each provide connection to two analog trunk ports, *which are polarity sensitive (tip to tip, ring to ring)*. The power failure circuits, however, are not polarity sensitive. A maximum of 15 GCD-4COTB or GCD-4COTB-A blades per system is allowed.



When connecting the RJ-61 cables to the GCD-4COTB or GCD-4COTB-A blades, note the position of the Power Failure connector.

Do not confuse connector CN3 as the CN2 trunk connector.



# 15.2 Connector Pin-Outs on GCD-4COTB or GCD-4COTB-A Blade for Power Failure Circuits

Table 9-8 RJ-61 Cable Connectorprovides the pin-outs for the RJ-61 cable connector.

RJ-61 Cable Connector - CN3, SLT Interface for Power Failure				
	Pin No.	Connection		
	1	-		
	2	-		
	3	Circuit 2 - Tip		
12345678	4	Circuit 1 - Ring		
	5	Circuit 1 - Tip		
	6	Circuit 2 - Ring		
	7	-		
	8	-		

Table 9-8 RJ-61 Cable Connector

### 15.3 Installing the Power Failure Telephones

- 1. Connect an RJ-61 connector to the GCD-4COTB or GCD-4COTB-A blade installed in the system.
- 2. Install a modular jack for each single line telephone supporting PF operation. The modular jack should be within six feet of the phone.
- 3. For each extension, run one-pair 24 AWG station cable from the cross-connect block to a modular jack.
- 4. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack. Refer to Figure 9-175 Power Failure Connector (CN3) Shown on GCD-4COTB or GCD-4COTB-A Blade.





Figure 9-175 Power Failure Connector (CN3) Shown on GCD-4COTB or GCD-4COTB-A Blade



# SECTION 16 IVR – EXTERNAL SERVER

The IVR Server is an optional server interface supporting the following:

- □ 670201 Appointment Reminder
- G70203 Broadcast

This server connects to the SV9100 through Standard SIP Ports and requires the IPLE to be installed in the SV9100. NEC recommends the server and the SV9100 be plugged into the same managed data switch.

## 16.1 IVR Server Chassis

### 16.1.1 Front View

The control panel located on the front of the chassis has five LED's providing the user with critical information related to different parts of the system. Refer to Table 9-9 External Server – LED Indications for an explanation of each LED when illuminated.

Figure 9-176 IVR Server Chassis - Front View



Table 9-9	External Server – LED Indications
-----------	-----------------------------------

LED Indication	Condition	Comments
(Our	Indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm.	This LED will remain lit as long as the condition exists.
	Indicates network activity on LAN Interface 1.	
	Indicates network activity on LAN Interface 2.	



Table 9-9 External Server – LED Indications (	Continued)
---	------------

LED Indication	Condition	Comments
	Indicates channel activity for all hard drives.	
A A	Indicates power is being supplied to the systems power supply units.	This LED should normally be illuminated when the system is operational.
$\bigcirc$	The reset button, which is used to reboot the system.	
Ċ	The main power button, which is used to apply or turn off the system power. Turning off system power with this button removes the main power but keeps the standby power supplied to the system.	If you need to service the system you should unplug the AC power cord after shutting down the server.

### 16.1.2 Rear View

This section provides a listing of the Input/Output ports available on the IVR Server. Refer to Figure 9-178 IVR Server Chassis - Input/Output Ports and Table 9-10 External Server – Available Ports on page 9-181 for a listing of ports found on the back of the chassis.



Figure 9-177 IVR Server Chassis – Rear View







Table 9-10 External Server – Available Ports

Number	Port Type	Comments
1	Keyboard Port	
2	PS/2 Mouse	
3	USB Port 1	
4	USB Port 2	
5	COM Port 1	
6	VGA Port	
7	LAN Port 1	Eth0
8	LAN Port 2	Eth1

# 16.2 System Specifications

### Processors

Embedded single Intel® Atom™ D510 dual-core processor

### Chipset

Intel ICH9R chipset

### BIOS

32 Mb AMI SPI Flash

## Memory Capacity

Two DIMM slots that can support up to 4 GB of un-buffered non-ECC DDR2-667 SO-Dimms



## SATA Controller

On-chip (ICH9R) 3 Gb/s Intel SATA controller

### Hard Drive Support

Up to two internal 2.5" drives or one internal 3.5" drive

### **PCI Expansion Slots**

One PCI-E x4 card (in a x16 slot)

### Motherboard

X7SPA-HF (mini ITX)

Dimensions: 6.75 x 6.75 in (171.5 x 171.5 mm)

#### Chassis

SC502L-200B (mini 1U Rack mount)

Dimensions (both): (WxHxD) 17.2 x 1.7 x 9.8 in. (437 x 43 x 249 mm)

### Weight

Gross Weight: 10 lbs. (4.5 kg.)

### System Input Requirements

AC Input Voltage: 100-240 VAC (auto-range) Rated Input Current: 3A max.

Rated Input Frequency: 50 to 60 Hz

### **Power Supply**

Rated Output Power: 200W (Part# PWS-202-1H)

Rated Output Voltages: +3.3V (8A), +5V (8A), +12V (16A), -12V (0.5A), +5Vsb (2A)

#### **Operating Environment**

Operating Temperature: 10° to 35° C (50° to 95° F)

Non-operating Temperature: -40° to 70° C (-40° to 158° F) Operating Relative Humidity: 8% to 90% (non-condensing) Non-operating Relative Humidity: 5 to 95% (non-condensing)

#### **Regulatory Compliance**

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A



Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply, refer to www.dtsc.ca.gov/hazardouswaste/perchlorate."



For more information refer to:

- UNIVERGE SV9100 IVR Appointment Reminder Server Configuration Guide.
- UNIVERGE SV9100 IVR Broadcast Server Configuration Guide

# SECTION 17 IP VIDEO DOORPHONE

IP Video Doorphone tables has been saved in: SV9100\_IP Video Doorphone Equip - SAVE file

# 17.1 Connection Image

The IP Video Doorphone (IP3NE-IPCDH) connects with the IPLE via the PoE Switch(IEEE802.3af). The system can support a maximum of eight doorphones, which are shared between the video and PGD(2)-U10 ADP doorphones.



The IP Video Doorphone port requires both a door phone and SIP extension port. If the extension port is not available, the IP Video Doorphone can not be connected.



# 17.1.1 Local Setting (Web Setting)

Local Setting of the IP Video Doorphone is completed using a PoE Switch and PC for the following connections.







## 17.1.2 System Connections

Connect the IP Video Doorphone and IPLE via the PoE Switch. The image view of the IP Video Doorphone is displayed in the PC using DR-Viewer or can be displayed on a Polycom VVX1500 terminal.









# 17.2 IP Video Doorphone and Options

IP Video Doorphone (IP3NE-IPCDH) and available options are described in this section.

1. IP Video Doorphone (IP3NE-IPCDH)

Figure 9-181 IP Video Doorphone



Attached goods

Wooden Screws: 3.8x20mmx2pcs Screws: M4x25mmx2pcs Angle Adjustment Stand (for 6 degrees): 1pc

2. Wall Mount Bracket (IP3WW-CDH BRACKET SET)

Provides protection of Doorphone body.

Figure 9-182 Wall Mount Bracket Set

Attached goods

Screws: M3x6mmx4pcs

Rear Cover: 1pc



## 3. Wall Cover (IP3WW-CDH WALL COVER SET)

Used for flush mount of the Doorphone body.

Figure 9-183 Wall Cover Set



Attached goods Screws: M3x6mmx8pcs Rear Bracket: 2pcs


# 17.3 Location of Controls





# 17.4 Before Installing the IP Video Doorphone

17.4.1 Precautionary Information



- Observe the following warnings during installation:
- Power off the PoE Switch (PoE feeding 48V) during installation, and disconnect the LAN cable from the PoE Switch – Electric shock may occur.
- Do not connect /disconnect the LAN cable if hands are wet - Electric shock may occur.
- Do not use a metal-tipped (i.e. screwdriver) device when opening the doorphone unit. An electric shock or fire may occur.
- If the Doorphone emits either smoke or a burning, acrid odor, immediately disconnect the LAN Cable from the Doorphone.
  Operating the Doorphone in this state might cause a fire, an electrical shock or a system failure. Disconnect the LAN Cable and after confirming that the smoke has disappeared, contact the dealer.

### 17.4.2 Installation Information

The range of focus is depicted below.



Figure 9-185 Range of Focus





Figure 9-187 Viewing Field by Height



- When attaching the IP Video Doorphone to a wall, recommend the upper, right and left sides be sealed using a water resistant agent such as silicon.
- Do not seal the lower part of the unit, the drain hole on the bottom must be kept open.



Due to possible effects on images transmitted by the doorphone unit, do not install in the following environments:

If a strong light is shining on the door phone station, the visitor's face may not be distinguishable.

O Place where most of the background uses the open sky.

Figure 9-188 Sky Background



O Where the background is a white wall reflecting direct sunlight.



- O Where strong, direct sunlight is shining on the doorphone.

Figure 9-190 Shining on Doorphone



Figure 9-189 Sunlight on White Wall



• For a clearer image during night time viewing, install lighting equipment near the Video Doorphone.

Figure 9-191 Lighting Equipment

# Lighting Equipment





When the door phone is used for room monitor, do not install the extension terminals near the door phone, feedback may be present

### 17.4.3 General Precautions

- 1. To avoid shock or equipment damage, do not plug in or turn the system power on before completing the installation process.
- 2. Avoid working with the equipment during electrical storms.
- 3. Never install Doorphone wiring during a lightning storm.
- 4. Avoid parallel wiring with a power line, a TV antenna line and a FM antenna line.
- 5. Do not secure the cable using a stapler. Wiring may become damaged and short-circuit.
- 6. Avoid running cable beneath a carpet.
- 7. Do not run a cable under a desk or a cabinet.
- 8. Use Wire Protector when cables are run across the floor.

#### 17.4.4 Site Requirements

Meeting established environmental standards maximizes the life of the Doorphone. Make sure that the site is not:

- 1. In strong, direct sunlight or in extremely hot, cold or humid places.
- 2. In dusty areas or in areas where sulfuric gases are produced.
- 3. In places where shocks or vibrations are frequent or strong.



- 4. In places where water or other fluids comes in contact with the equipment.
- 5. In areas near high-frequency machines or electric welders.
- 6. Near radio antennas (including shortwave).

## 17.4.5 Powering On the IP Video Doorphone

- 1. When powering on the Doorphone, it may take up to 60 seconds until a doorphone starts. The Power lamp will begin blinking. When the lamp turns solid, the Doorphone is available.
- 2. If the Power lamp continues blinking for more than 70 seconds, the authentication to the main device may have failed. Reset the doorphone to attempt authentication again.

## 17.5 Installation

## 17.5.1 Connect a Door Unlock Device to the IP Video Doorphone

Connecting the Door Unlock Device to an IP Video Doorphone (using Relay contacts):

1. When the Unlock Device Relay output is normally closed. The 2-wire cable is connected the **C** and **NC** terminals.



Figure 9-192 C and NC Terminal Connections

2. When the Unlock Device Relay output is normally open. The 2-wire cable is connected to the **C** and **NO** terminals.







### 3. Cable Terminals

Table 0-11	ID	Vidoo	Door	nhono	Cabla	Torminals
	11	viueo	D001	priorie	Capie	reminais

Cable Terminal	Terminal Name	Remarks
	AO+	Not Used
	AO-	Not Used
	NC	Normally Closed
	С	Common
	NO	Normally Open

Figure 9-194 2-Wire Connections

The 2-wire is run down the hole in the cable terminal.





Do not run the AC power cable within 30cm (11.8 in) of the unit. The noise may cause a malfunction.

The device connected to the Doorphone contacts cannot exceed the contact ratings shown in the following table:

Table 9-12 Doorphone Specifications (Relay)						
Doorphone Specifications (Relay)						
Contact Configuration	Normally Open or Normally Closed					
Maximum Load	1A@DC24V					



The system can support a maximum of eight door stations (including the normal Door box). Refer to the following table for specifications of the IP Video Doorphone.

Table 9-13 IP Video Doorphone Specifications

Item		Specification	
	Feeding System	PoE (48V) IEEE802.3af	
Power Supply	Power Consumption	5W or less	
	Maximum Cable Length	100m or less	
Temperature and Humidity	Operating Temperature and Humidity	-10°C ~ +45°C 90% or less (non-condensing)	
	Storage Temperature and Humidity	-20°C ~ +60°C 90% or less (non-condensing)	
	Dimensions (WxDxH)	100×150×53.5mm	
Mechanical Specification	Weight	320g	
	Water Proof	JIS IPX3 (Rain proof type)	
EMI Standard	FCC	Class-B	
Camera	Image Sensor	1/4 type CCD 0.25 mega-pixel	
	Angle of View	Wide Angle Type, Horizontal direction = 102 degrees Vertical direction = 76 degrees	
	Image Compression	H.264 or MJPEG	
Voice	Compression Method	G.711 μ-law/A-law	
	LAN	10BASE-T/100BASE-TX Auto Negotiation Auto MDI/MDI-X	
Interface	External Relay Output	Non-voltage contact output×1 Rating value : DC24V/1A or less	
	External Line Output	External Speaker Output×1 Output Impedance : 600Ω	



# 17.5.2 Adjusting the Camera Angle

Adjustment of the camera is made using an angle adjustment lever in the backside of the Doorphone (camera part).

- 1. The angle of the camera can be adjusted approximately 15 degrees to each side (upper, right and left). Adjust the visitor image to a position than can be easily viewed.
- 2. When adjusting the camera upward, turn the lever downward. If moving the camera to the left, the lever turn to the left, likewise, if moving the camera to the right, turn the lever to the right.
- 3. For adjusting the camera angle, the lever position should be moved towards the desired edge. Otherwise the lever may slip off at the time of installation.



When the Camera angle is being adjusted upward, the Angle Adjustment Stand can be installed.

- Fit the Angle Adjustment Stand no more than six degrees from the mounting bracket. (Installation of screws is not required.)
- O Installing the Doorphone unit is a simple operation.
- O The main body of the Doorphone points upward six degrees.
- The Doorphone can adjust to 21 degrees, when using an up angle adjustment (6 degrees) together with a camera angle adjustment function (15 degrees) from the main body.



Figure 9-196 Angle Adjustment Stand

#### Mounting Bracket



• To disassemble the Angle Adjustment Stand, press down on the Mounting Bracket and pull up on the Angle Adjustment Stand at the same time.

Figure 9-197 Disassemble Angle Adjustment Stand





## 17.5.3 Installing the IP Video Doorphone



NOTE ----

The Mounting Bracket, Screw and Screw Cover are attached to the Doorphone Main Body.

• The Wall Mounting Plate is purchased locally by the user.

When installing the Doorphone, the Mounting Bracket, screw and screw cover can be removed and installed using the following procedure:

- 1. The Bracket is mounted to the Wall Mounting Plate (on the wall) using two wood screws (3.8x20mm) or two M4x25mm screws.
- 2. Connect LAN cable to the LAN Connector from the PoE Switch.
- 3. Insert the Bracket tab into the slot on top of the Main body.
- 4. Secure Main body and Mounting Bracket with the retaining screw.



5. Mount the Screw Cover.



When there is a gap between the Wall Mounting Plate (on the wall) and the Bracket, the Bracket may be warped due to an over-tightened screw. Simply loosen the screw.

17.5.4 Installing the IP Video Doorphone Using a Wall Mount Bracket (IP3WW-CDH BRACKET SET)

This section describes how to install the IP Video Doorphone using a Wall Mount Bracket.



Figure 9-199 Installing the IP Video Doorphone Using Wall Mount Bracket Set

- 1. Loosen the Main Body fixed screw and remove the Main Body from the Mounting Bracket.
- 2. The Rear Cover is mounted to the Wall Mounting Plate (on the wall) using two wood screws (3.8x20mm) or M4x25mm screws.
- 3. Insert the Bracket tab into the top of the Rear Cover.
- 4. Secure the Main Body and Rear Cover with the retaining screw.
- 5. Mount the Screw Cover.



6. Attach the Front Cover to the Main Body using the Front Cover fixed screws (Four M3 x 6 screws attach through the sides of Wall Mount Bracket).

Simply loosen the screw.

recommended.



WARNING

When installing the optional Wall Mount Bracket, ground the Doorphone using an earth line from the earth connecting lug on the Rear Cover to an electric service ground (less than 100 ohms). Otherwise, electric

When there is a gap between the Wall Mounting

Plate (on the wall) and the Bracket, the Bracket may be warped due to an over-tightened screw.

• The Wall Mount Bracket supports only embedded wiring. Exposed wiring (Open wiring) is not

17.5.5 Installing the IP Video Doorphone Using a Wall Cover Set (IP3WW-CDH WALL COVER SET)

shock may occur.

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This section describes how to install the IP Video Doorphone using a Wall Cover Set.



Figure 9-200 Installing the IP Video Doorphone Using Wall Cover Set



- 1. The Rear Bracket is mounted to the Mounting Bracket using Rear Bracket fixed screws (four M3x6mm screws).
- 2. Insert the Bracket tab into the slot on top of the Main Body.
- 3. Secure the Main Body and Mounting Bracket with the retaining screws.
- 4. Mount the Screw Cover.
- 5. Secure the Front Cover to the Main body using the Front Cover fixed screw (four M3 x 6 screws attached with Wall Cover).



- When the Front Cover is mounted to the wall, the Front Cover may be warped due to an overtightened screw. Simply loosen the screw.
- The Wall Cover Set supports only embedded wiring. Exposed wiring (Open wiring) is not recommended.



When installing the optional Wall Mount Bracket, ground the Doorphone using an earth line from the earth connecting lug on the Rear Cover to an electric service ground (less than 100 ohms). Otherwise, electric shock may occur.

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