

# ***UNIVERGE<sup>®</sup> SV9100***

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## **System Hardware Manual**

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# Regulatory

## HEARING AID COMPATIBILITY

NEC Multiline Terminals and NEC Single Line Telephones that are provided for this system are hearing aid compatible.

## 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 regulations regarding proper disposal procedures.

**Table R-1 Battery Types and Quantities for Chassis and Blades**

Unit Name	Type of Battery	Quantity
GCD-CP10	Lithium	1
CHS LARGE BATT SET	Sealed Lead	6
Internal Batteries	Sealed Lead	2
Bluetooth® Cordless Handset	Lithium-ion	1
G955 Wireless	Lithium-ion	1
CHS2UG SMALL BATT SET	Sealed Lead	2
MH240 Wireless	Lithium-ion	1

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

## IMPORTANT SAFEGUARDS FOR BATTERY DISPOSAL

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DO NOT PLACE USED BATTERIES IN YOUR REGULAR WASTE! 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 an 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.

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

#### PRODUCT PACKAGE LABELING



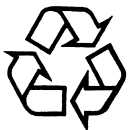
**Ni-Cd**

CONTAINS NICKEL-CADMIUM BATTERY. BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY. MUST NOT BE DISPOSED OF IN MUNICIPAL WASTE.



**Pb**

CONTAINS SEALED LEAD BATTERY. BATTERY MUST BE RECYCLED. MUST NOT BE DISPOSED OF IN MUNICIPAL WASTE.



**Ni-MH**

CONTAINS NICKEL-METAL HYDRIDE BATTERY. BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY. MUST NOT BE DISPOSED OF IN MUNICIPAL WASTE.

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## EUROPEAN UNION INFORMATION

### 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:

- TBR3 ISDN basic rate interface
- TBR4 ISDN primary rate interface
- 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 detailed documentation that comes with this system, contact your local NEC representative or the support desk of NEC Unified Solutions.

### Declaration of conformity

Hereby, "NEC Unified Solutions", declares that the SV9100 is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

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



### Electromagnetic Compatibility

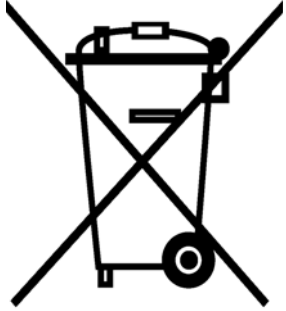
For the SV9100 system the following warning is applicable:

#### 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.

## PRODUCT DISPOSAL INFORMATION

### For Countries in the European Union



The symbol depicted here has been affixed to your product in order 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 in order 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.

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

At [www.nec-enterprise.com/About-NEC/Environment/weee-541/](http://www.nec-enterprise.com/About-NEC/Environment/weee-541/) 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.

# Introduction to SV9100

## SECTION 1 GENERAL INFORMATION

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

The DT700/DT800 series telephones 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 DT700/DT800 series telephones 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.

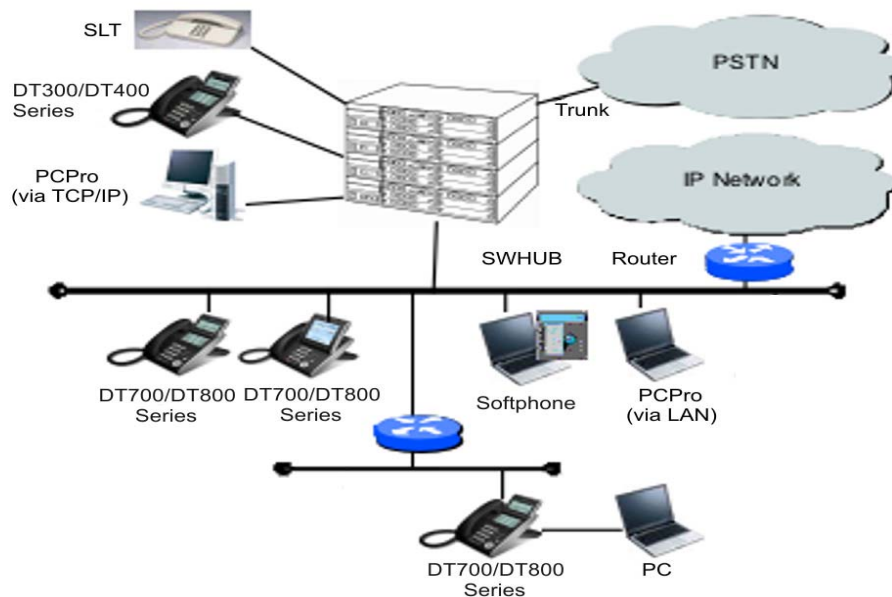
The SV9100 can provide legacy line/trunk interfaces to support the existing Time Division Multiplexing (TDM) based infrastructure, such as analog telephones, digital telephones (DT300/DT400 series), analogue networks and digital networks (T1/E1, ISDN, etc.).

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

The 19" 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 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels on page 2-5](#)).

Communications between legacy stations/trunks and DT700/DT800 series telephones/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 shows a simplified view of SV9100 system connectivity.



**Figure 1-1 Simplified SV9100 System 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 DT700/DT800 series telephones and for CCIS / Remote Unit connections with other 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 a heart of 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.

- DTMF receivers
- Caller ID receivers
- Caller ID senders
- MF senders / receivers
- CCPU LAN port supports 10/100/1000 (Gigabit) Ethernet modes
- 2 Control Relays
- MOH Input Port
- Paging Output Port
- In-Mail /SD Card
- VoIP.

In addition, by means of advanced LSI technology, size of the CPU blade is minimized, O&M NIC port (10/100M) 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 DT700/DT800 series.

- High Density Legacy Line/Trunk Blades

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

- Universal Blade Slot (9.5" Chassis)

A 9.5" Chassis is used for legacy line/trunk blades. The 9.5" Chassis provides three universal slots and one expansion slot. Also, the universal slots can be used for special application blades without complicated limitation. This makes easy quotation and installation.

- Universal Blade Slot (19" Base Chassis)

A 19" 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. This makes easy quotation and installation.

- 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 systems.

**Table 1-1 Chassis Equipment List**

Equipment Name	Equipment Description
CHS2UGG	19" Chassis (6-slot)
CHS2UG B	9.5" Chassis (3-slot)

**Table 1-2 Chassis Installation Equipment List**

Equipment Name	Equipment Description
CHS2UG MOVABLE WALL MOUNT KIT	Movable Wall Mount Set for CHS2UG B Chassis
CHS BASE UNIT	Floor Mount Set for all chassis (CHS2UG)
CHS2UG BLANK SLOT COVER KIT	Blank Slot Cover Set
CHS2UG JOINT BRACKET KIT	Upper Joint Bracket for 6-slot Chassis
CHS2UG RACK MOUNT KIT	Rack Mount for CHS2UGG Chassis
CHS2UG WALL MOUNT KIT	Wall Mount Set for CHS2UG Chassis
CHS2UG Stand Kit (K)	Stand Mount Kit for 2UG Chassis

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

Equipment Name	Equipment Description
CHS2UG B SMALL BATT BOX	Short-term battery box for 3-slot chassis Backup time - 10 minutes
CHSG LARGE BATT BOX	Long Term Battery Box for CHS2UG Chassis. Cable between batteries - 9.06in/230mm Fuse Unit to batteries - 18.11in/460mm Cable from chassis to battery box - 81.1in/2060mm
CHS2UG BATT MTG KIT	Battery Mount for CHS2UG Chassis
CHS2UG SMALL BATT SET	Short-term set for 3-slot chassis

**Table 1-3 Battery Mount Equipment List (Continued)**

Equipment Name	Equipment Description
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
GCD-CP10	CPU	Main Processor Blade for KTS
GPZ-BS10	BUS0	Expansion Chassis Interface Unit, 3-jack
PZ-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
GCD-4COTA	COT	4-port Loop Start Trunks
GPZ-4COTE	COTDB	4-port Loop Start Trunks on GCD-4COTA
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
<b>GCD-PRTA</b>	PRT	1 Primary Rate Interface
GCD-4DIOPB	DIOP	4 DID/OPX
GCD-4ODTA	ODT	4-port Tie Line Interface (E&M)
GCD-ETIA	GSWU	PoE Gigabit Switch Unit
GCD-LTA	LTA	8 Digital Station/2SLT for GCD-CP10 only
GCD-PVAA	CNF	Packet Voice Application (Future)
GPZ-IPLE	VoIPDB	VOIP on the CPU

**Table 1-4 Blade Equipment List (Continued)**

<b>Equipment Name</b>	<b>Abbreviations</b>	<b>Equipment Description</b>
GCD-VM00	VM00	Voice Mail and Server
SD-A1	1G-APP-CF	1GB InMail SD Card
SD-B1	4G-APP-CF	4GB InMail SD Card
GCD-RGA	RGA	Application Gateway - Router and conference
AKS-RGA-APP-GATEWAY-CF	AKS-RGA CF	Application Gateway - Compact Flash

**Table 1-5 Cable Equipment List**

<b>Equipment Name</b>	<b>Equipment Description</b>
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
CHS2U BATT CA INT	CHS2UG Battery Cable for Internal Battery
CHS2U BATT CA EXT-A	Battery Cable for External Battery 6-slot Chassis

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

<b>Equipment Name</b>	<b>Equipment Description</b>
DTL-2E-1 (BK) TEL	Economy Digital 2-button Telephone (No-Display)
DTL-6DE-1 (BK) TEL	Economy Digital 6-button Display Telephone
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

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

<b>Equipment Name</b>	<b>Equipment Description</b>
DTL-32D-1 (BK) TEL DTL-32D-1 (WH) TEL	Value Digital 32-button Display Telephone
DTL-12BT-1 (BK) TEL	12D + BCH (Future)
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 (DESI-less)
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	DESI-less 8-button Line Key Unit/LCD Unit for Digital Telephone
LCD (BL)-L (BK) UNIT LCD (BL)-L (WH) UNIT	LCD Unit (Backloght LCD) for Digital Telephone

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

<b>Equipment Name</b>	<b>Equipment Description</b>
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 (DESI-less)
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

**Table 1-8 IP Multiline Terminal (DT700 Series) Equipment List**

<b>Equipment Name</b>	<b>Equipment Description</b>
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-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: DESI-less
ITL-320C-1 (BK) TEL	Sophisticated Telephone
8LKI (LD)-L (BK) UNIT 8LKI (LD)-L (WH) UNIT	DESI-less LK/LCD Unit for IP

**Table 1-9 IP Multiline Terminal (DT800 Series) Equipment List**

<b>Equipment Name</b>	<b>Equipment Description</b>
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 (Colour)
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 (DESI-less)

Table 1-10 DT300/DT700 Series Optional Equipment List

Equipment Name	Equipment Description
APR-L UNIT	Analog Port Ringer (DT 300 only)
ADA-L UNIT	Ancillary Device Adapter
BHA-L UNIT	Bluetooth® Hub Adapter
PSA-L (BK) UNIT PSA-L (WH) UNIT	Power Save Adapter
BCH-L (BK) UNIT	Bluetooth Cordless Handset
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 (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)
DESI ITL/DTL-SIDE-LCDS (25 PKG)	DESI Sheet for Sophisticated Telephone LCD (Left and Right Part Sheet, 25 Package)
DESI ITL/DTL Directory 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)

**Table 1-10 DT300/DT700 Series Optional Equipment List (Continued)**

<b>Equipment Name</b>	<b>Equipment Description</b>
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
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)

**Table 1-10 DT300/DT700 Series Optional Equipment List (Continued)**

<b>Equipment Name</b>	<b>Equipment Description</b>
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
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



**Table 1-10 DT300/DT700 Series Optional Equipment List (Continued)**

<b>Equipment Name</b>	<b>Equipment Description</b>
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
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

**Table 1-10 DT300/DT700 Series Optional Equipment List (Continued)**

<b>Equipment Name</b>	<b>Equipment Description</b>
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 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
ML440	Wireless Handset
AP20 Base Unit	Base Unit for ML440
G955 SIP DECT Handset	SIP DECT wireless handset

**Table 1-11 DT400/DT800 Series Optional Equipment List**

<b>Equipment Name</b>	<b>Equipment Description</b>
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

**Table 1-11 DT400/DT800 Series Optional Equipment List (Continued)**

<b>Equipment Name</b>	<b>Equipment Description</b>
16LK-Z (BK) UNIT 16LK-Z (WH) UNIT	16-button Line Key Unit
DTZ-8R-1 Cordless DECT	Cordless Handset and Base Unit



# SV9100 System Specifications

## 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.

**Table 2-1 List of Abbreviations**

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 1U chassis)
BUS1	BUS Interface Blade (for 2U chassis)
CCT	CCIS Interface Blade
CF	Compact Flash
CFT	Conference Trunk (on CPU)
COT	Central Office Trunk (Loop and Ground Start Interface)

**Table 2-1 List of Abbreviations**

<b>Abbreviation</b>	<b>Description</b>
COTDB	Loop and Ground Start Interface Daughter Board on COT
CPU	Central Processing Unit
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
MOH	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)

**Table 2-1 List of Abbreviations**

<b>Abbreviation</b>	<b>Description</b>
PMS	Property Management System
PRI	Primary Rate Interface
PRT	Primary Rate Interface Blade
PS	Personal Station
PSA	PSTN Adapter (analog)
PVA	Packet Voice Application
RTB	Router Blade
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

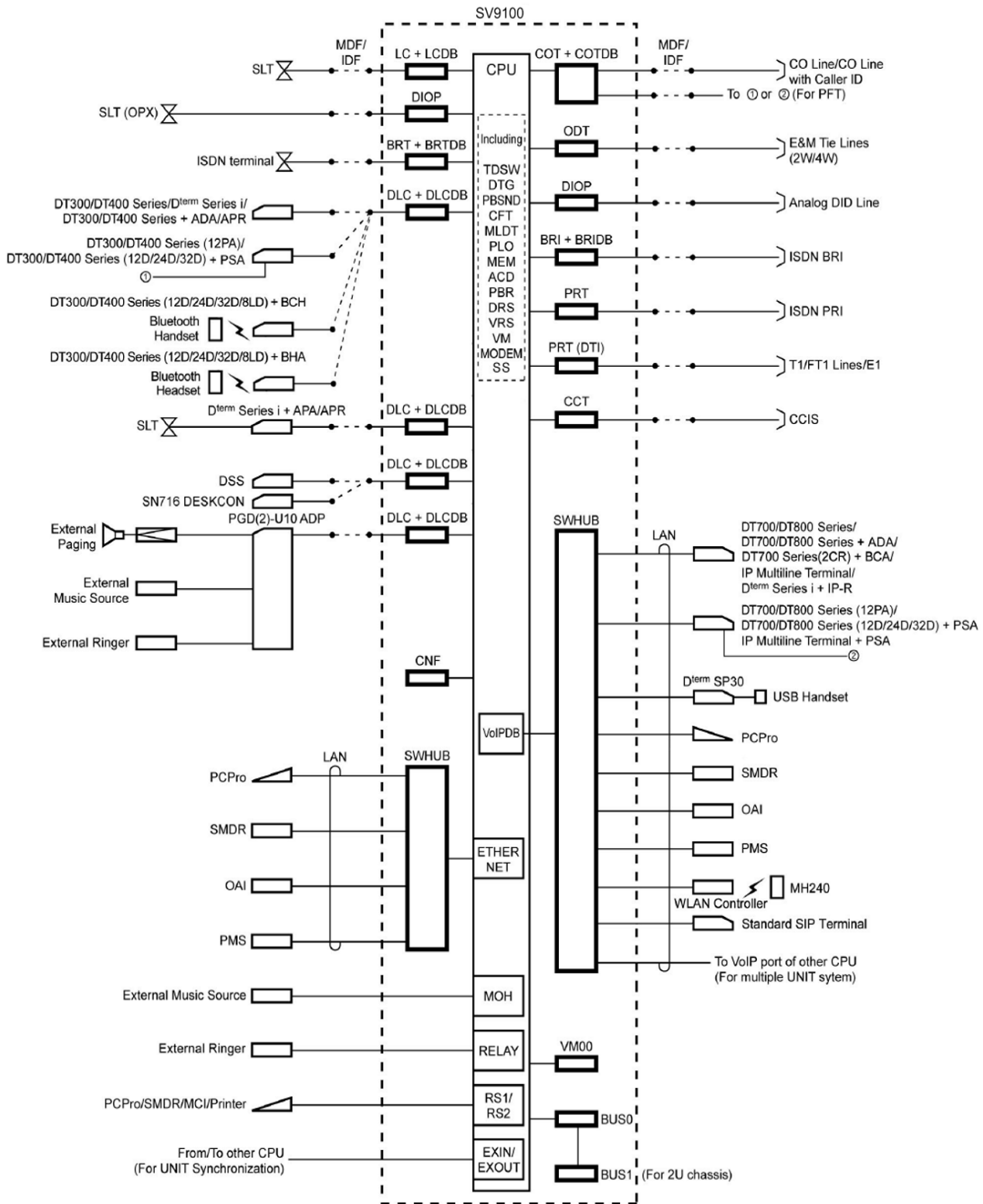


Figure 2-1 SV9100 System Block Diagram



## SECTION 3      **MAXIMUM SYSTEM 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 is installed in the first CHS2UG, it is referred to as the *Controlling Chassis*. Additional chassis, referred to as *Expansion Chassis*, can be installed to increase the capacity of the system to meet the customer's business needs.

As [Figure 2-3 19" Controlling and Expansion Chassis](#) and [Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels](#) illustrate, the system can be expanded to a total of 512 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 a the maximum port capacity of 512 ports, two systems can be linked together via an IP connection.

The maximum slot and channel capacities are listed in [Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels](#).

**Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels**

Number of:	9.5" Chassis	19" Chassis				System Maximum
	x 1 (CPU + 2 Slots)	x 1 (6 Slots)	x 2 (12 Slots)	x 3 (18 Slots)	X4 (24 Slots)	
Number of Timeslots	48	104	208	312	416	416
DT400/DT300 TDM (-48V)	32	80	176	272	368	Total 896
SLT (-28V)	32	80	176	272	368	
SLT (-48V)	8	20	44	68	92	
DT800/DT700 IP	896	896				
SIP/WLAN	896					
Analog Trunks (COT)	16	40	88	136	184	Total 400
BRI	16	40	88	136	184	
PRI	60	90	180	270	360	
IP Trunk (SIP)	400					
DTMF Receivers	32	32	32	32	32	96 *1
VoIP Channels	256					

**Table 2-2 SV9100 Maximum System Capacities – Trunks/Ports/Channels**

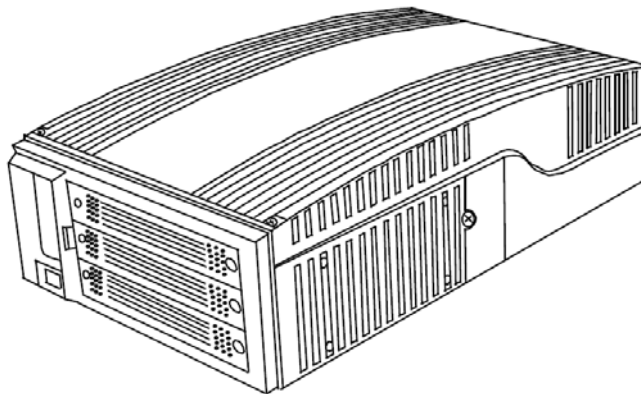
Number of:	9.5" Chassis	19" Chassis				System Maximum
	x 1 (CPU + 2 Slots)	x 1 (6 Slots)	x 2 (12 Slots)	x 3 (18 Slots)	x 4 (24 Slots)	
Voice Mail Channels on CPU	16 channels					
V90 Modem	1 channel					

\*1 = An additional 64 DTMF receivers are available when the GPZ-BS10 is installed

### 3.1 System Configuration – SV9100

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

Please note: the 9.5" chassis cannot be expanded.



3 Slots

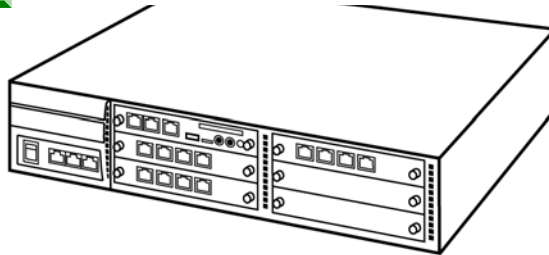
**Figure 2-2 9.5" Chassis**

The SV9100 19" chassis provides 104 total ports (96 digital terminals) and can be expanded, using three additional 19" chassis, for a maximum of 416 ports (368 digital terminals). Through IP connection and use of additional 19" chassis, the system can be expanded to a maximum of 896 ports.

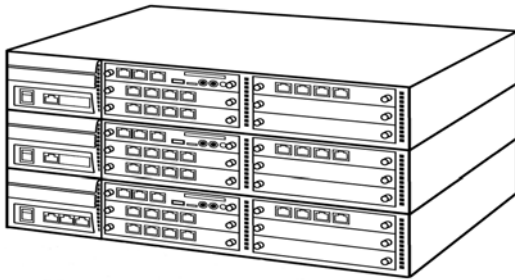
The 19" chassis consists of a controlling chassis (chassis with CPU blade), and the ability to expand the system using expansion blades depending on system configuration.



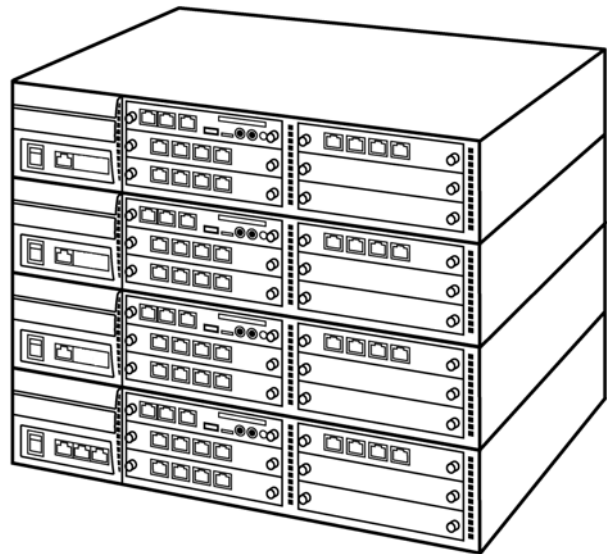
*The 9.5" chassis graphics shown in the horizontal position are for illustration purposes only. Actual positioning/mounting must be vertical.*



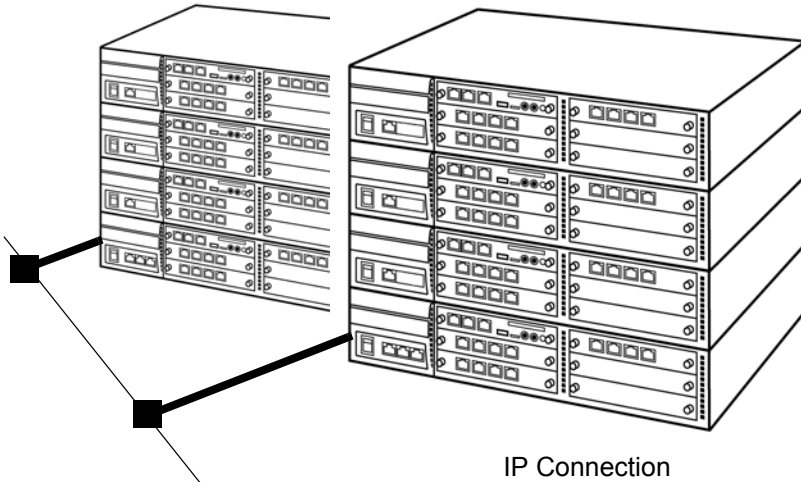
6 Slots



18 Slots



24 Slots



IP Connection

**Figure 2-3 19" Controlling and Expansion Chassis**

[Table 2-3 Maximum System Capacities – Chassis](#) shows the maximum number of chassis and related equipment that can be installed in a system.

**Table 2-3 Maximum System Capacities – Chassis**

Hardware	19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Comments
<b>Number of Slot(s) for Interface Package</b>	<b>5 Slots</b>	<b>6 Slots</b>	<b>23 Slots</b>	
<b>Chassis:</b>				
CHS2UG (19" Chassis)	1	3	4	Virtual slot in NetLink is limited to maximum of 240
<b>Expansion:</b>				
GPZ-BS10 3-jack Expansion Board for Controlling Chassis	1	0	0	–
GPZ-BS11 1-jack Expansion Board for Expansion Chassis	0	1	3	–
<b>Battery:</b>				
CHS LARGE BATT BOX (External Battery Box)	1	1	4	–
<b>Fan Box:</b>				
CHS2U FAN BOX SET	1	1	4	1 is factory installed with each chassis
<b>Power Supply:</b>				
MPS7101	1	1	4	1 is factory installed with each chassis

[Table 2-4 Maximum System Capacities – Blades](#) shows the maximum number for each blade that can be installed in a system.

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.

**Table 2-4 Maximum System Capacities – Blades**

Hardware	9.5" Chassis	19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Comments
<b>Number of Slot(s) for Interface Package</b>	<b>3 Slots</b>	<b>5 Slots</b>	<b>6 Slots</b>	<b>23 Slots</b>	
<b>Common Control Blades:</b>					
GCD-CP10	1	1	0	0	–
GPZ-IPLE (VoIP Daughter Board)	1	1	0	1	This unit provides 256 VOIP Gateway channels
GCD-SVR2 (Server Blade)	1	1	1	1	
<b>Station Blades:</b>					
GCD-4DIOPB (4 DID/OPX)	2	5	6	23	When installed as an OPX blade
GCD-4LCA (4 Single Line Telephone Interface)	2	5	6	23	–
GPZ-4LCA (4 Single Line Telephone Interface Daughter Board)	2	5	6	23	–
GCD-8DLCA (8 Digital Station Interface)	2	5	6	23	
GPZ-8DLCA (8 Digital Station Interface Daughter Board)	2	5	6	23	
GCD-8LCA (8 Single Line Telephone Interface)	2	5	6	23	
GPZ-8LCA (8 Single Line Telephone Interface Daughter Board)	2	5	6	23	

Table 2-4 Maximum System Capacities – Blades (Continued)

Hardware	9.5" Chassis	19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Comments
Number of Slot(s) for Interface Package	3 Slots	5 Slots	6 Slots	23 Slots	
GCD-16DLCA (16 Digital Station Interface)	2	5	6	23	
GCD-LTA (8 Digital/2 Single Line)	2	5	6	23	A
<b>Trunk Blades:</b>					
GCD-2BRIA (2 Basic Rate Interface)	2	5	6	23	–
GPZ-2BRIA (2 Basic Rate Interface Daughter Board)	2	5	6	23	–
GCD-4COTA (4 Loop Start Trunk)	2	5	6	23	–
GPZ-4COTE (4 Loop Start Trunk Daughter Board)	2	5	6	23	–
GCD-4DIOPB (4 DID/OPX)	1	5	6	23	When installed as a DID blade
GCD-4ODTA (4 E&M)	2	5	6	23	–
GCD-PRTA (1 Primary Rate Interface)	2	3	3	12	This blade is used for Primary Rate Interface.
<b>Optional Blades:</b>					
GCD-PVAA (Conference Bridge)	2	5	6	23	R2
GCD-ETIA (Switching Hub with Power over Ethernet)	2	3	3	12	–
GCD-CCTA (CCIS Trunk Interface/Common Channel Handler)	2	4	4	4	–
GCD-RTB (Router)	2	1	2	1	R2

**Table 2-4 Maximum System Capacities – Blades (Continued)**

<b>Hardware</b>	<b>9.5” Chassis</b>	<b>19” Chassis with CPU</b>	<b>19” Chassis without CPU</b>	<b>19” Chassis x4</b>	<b>Comments</b>
<b>Number of Slot(s) for Interface Package</b>	<b>3 Slots</b>	<b>5 Slots</b>	<b>6 Slots</b>	<b>23 Slots</b>	
GCD-VM00 (Voice Mail and Server)	1	1	1	1	Maximum of One per system
PZ-BZ10 (for Controlling Chassis)	0	1	0	0	–
PZ-BZ11 (for Expansion Chassis)		0	1	3	–

[Table 2-5 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-4COTE daughter board mounted.

**Table 2-5 Daughter Board Combinations**

Controlling Chassis	Daughter Board				
	GPZ-2BRIA	GPZ-4COTE	GPZ-4LCA	GPZ-8LCE	GPZ-8DLCB
<b>GCD-LTA</b> (8 Digital/2 Single Line)	4	4	–	–	–
<b>GCD-4COTA</b> (4 Loop Start)	–	4	–	–	–
<b>GCD-4LCA</b> (4 Single Line Interface)	–	–	4	4	–
<b>GCD-8LCA</b> (8 Single Line Interface)	–	–	4	4	–
<b>GCD-8DLCA</b> (8 Digital Station Interface)	–	–	–	–	4
<b>GCD-16DLCA</b> (16 Digital Station Interface)	–	–	–	–	–
<b>GCD-2BRIA</b> (2 Basic Rate Interface)	4	–	–	–	–

– = Does not apply

4 = Does apply



## SECTION 4 POWER-BASED CALCULATOR CHART

The Univerge SV9100 system uses two types of power factors. For a single chassis chart refer to [Table 2-6 Board Power Factor](#). For the maximum number of specific blades per package, see [Table 2-7 Maximum Number of Package Installed](#). Refer to [Table 2-8 Terminal Power Factor](#) below, for the Terminal/ Adapter power chart.

**Table 2-6 Board Power Factor**

Board Power Factor	
Total	=<7
Item	Power Factor
GCD-CP10	1
GCD-VM00	2
GCD-ETIA	2
GCD-PVAA	1
GPZ-IPLE	2
GCD-SVR2	2
GCD-RGA	1

**Table 2-7 Maximum Number of Package Installed**

Board (Power Factor)	Maximum Number of Package Installed			
	9.5 inch	19 inch with CCPU	19 inch without CCPU	4 x 19 inch
GCD-ETIA (2)	2	3	3	12
GCD-PVAA (1)	2	5	6	23
GCD-SVR2	2	2	3	11
GCD-RGA (1)	1	1	1	1

Table 2-8 Terminal Power Factor

Terminal Power Factor		
19 inch Chassis		=<80
9.5 inch Plastic Chassis without fan		=<64
Item	Power Factor	
SLT	Standard (-28V)	0.8
	Long Line (-48V)	2
DT300/DT400 Series	Economy (2, 6 or 12 button)	0.8
	Value (12, 24 or 32 button)	0.8
	Value (DESI-Less)	0.8
	Value (12 button) w/BCH	3
	Value (12 button) w/PSA	2
DT300/DT400 Series Optional	DSS Console	2
	Power Save Adapter (PSA)	1.2
	Line Key Unit (8 or 16 button)	0
	Ancillary Device Adapter (ADA)	2
	Analogue Port Adapter w/Ringer (APR)	2
	Bluetooth Cordless Handset (BCH)	2
	Bluetooth Hub Adapter (BHA)	2
DT700/DT800 Series (PoE from GCD-ETIA)	Economy (2, 6 or 12 button)	4
	Economy (DESI-Less)	4
	Value (12, 24 or 32 button)	4
	Value (DESI-Less)	4
	Value (12 button) w/PSA	4
	Sophi (32 button)	6
	Ancillary Device Adapter	2
	Bluetooth Connection Adapter (BCA)	2
Paging Adapter (PGD(")-U10 ADP)		2

Table 2-9 IP Terminal Power Chart - DT700

IP Terminal	IEEE802.3af Class	Label Indication (Maximum Current with All Options)				Maximum Current Without Options			
		48VDC		24VDC		48VDC		24VDC	
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	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	–	0.0W
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-8LDE-1 TEL	Class 1	68mA	3.3W	122mA	2.9W	68mA	3.3W	122mA	2.9W
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

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.

Table 2-10 IP Terminal Power Chart - DT800

IP Terminal	IEEE802.3af Class	Label Indication (Maximum Current with All Options)				Maximum Current Without Options			
		48VDC		24VDC		48VDC		24VDC	
ITY-6D-1 TEL	Class 1	75mA	3.6W			75mA	3.6W		
ITY-8LDX-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-8LD-3 TEL	Class 2	130mA	6.2W	235mA	5.6W	81mA	3.9W	137mA	3.3W

**Table 2-10 IP Terminal Power Chart (Continued)- DT800**

IP Terminal	IEEE802.3af Class	Label Indication (Maximum Current with All Options)				Maximum Current Without Options			
		48VDC		24VDC		48VDC		24VDC	
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

Label Indication:

IP Value/Sophisticated – 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.

**Table 2-11 IEEE802.af Class Specifications**

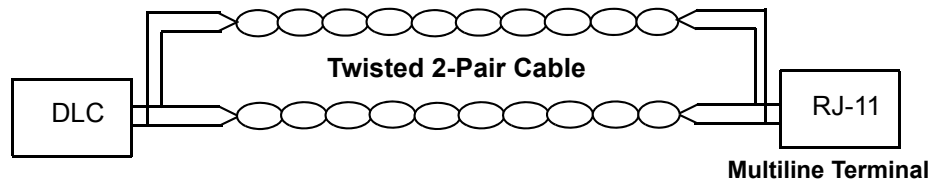
IEEE802.3af	Minimum	Maximum
Class 4	–	–
Class 3	6.49W	12.95W
Class 2	3.84W	6.49W
Class 1	0.44W	3.84W
Class 0	0.44W	12.95W

## SECTION 5 SYSTEM REQUIREMENTS AND SPECIFICATIONS

### 5.1 Cabling

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

[Figure 2-4 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).



**Figure 2-4 Connecting the DLC Using Twisted 2-Pair Cable**

Refer to the following tables for cabling requirements and specifications.

- ◆ [Table 2-12 DT300 Series Loop Resistance and Cable Length](#)
- ◆ [Table 2-13 DT400 Series Loop Resistance and Cable Length](#)
- ◆ [Table 2-14 DT700 Series Loop Resistance and Cable Length](#)
- ◆ [Table 2-15 DT800 Series Loop Resistance and Cable Length](#)
- ◆ [Table 2-16 Cable Connection Between the Analog Port and the Single Line Equipment](#)
- ◆ [Table 2-17 Cabling Requirements](#)

**Table 2-12 DT300 Series Loop Resistance and Cable Length**

Terminal or Adapter	By Twisted 1-Pair Cable (without AC Adapter) 24 AWG	By Twisted 1-Pair Cable (with AC Adapter) 24 AWG
DTL-2E-1 (BK) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTL-6DE-1 (BK) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTL-8LD-1 (BK) TEL DTL-8LD-1 (WH) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTL-12BT-1 (BK) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTL-12PA-1 (BK) TEL	1,969 ft (600m)	6,562 ft (2000m)

**Table 2-12 DT300 Series Loop Resistance and Cable Length (Continued)**

<b>Terminal or Adapter</b>	<b>By Twisted 1-Pair Cable (without AC Adapter) 24 AWG</b>	<b>By Twisted 1-Pair Cable (with AC Adapter) 24 AWG</b>
DTL-12D-1 (BK) TEL DTL-12D-1 (WH) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTL-24D-1(BK) TEL DTL-24D-1(WH) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTL-32D-1 (BK) TEL DTL-32D-1 (WH) TEL	1,969 ft (600m)	6,562 ft (2000m)
DCL-60-1 Console *	-	1,969 ft (600m)

\* An AC Adapter is required.

**Table 2-13 DT400 Series Loop Resistance and Cable Length**

<b>Terminal or Adapter</b>	<b>By Twisted 1-Pair Cable (without AC Adapter) 24 AWG</b>	<b>By Twisted 1-Pair Cable (with AC Adapter) 24 AWG</b>
DTZ-2E-3 (BK) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTZ-6DE-3 (BK) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTZ-8LD-3 (BK) TEL DTZ-8LD-3 (WH) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTZ-12D-3 (BK) TEL DTZ-12D-3 (WH) TEL	1,969 ft (600m)	6,562 ft (2000m)
DTZ-24D-3(BK) TEL DTZ-24D-3(WH) TEL	1,969 ft (600m)	6,562 ft (2000m)
DCZ-60-3 Console *	-	1,969 ft (600m)

\* An AC Adapter is required.

**Table 2-14 DT700 Series Loop Resistance and Cable Length**

<b>Terminal or Adapter</b>	<b>Ethernet Cable</b>
ITL-2E-1 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-6DE-1 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-8LDE-1 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)

**Table 2-14 DT700 Series Loop Resistance and Cable Length (Continued)**

<b>Terminal or Adapter</b>	<b>Ethernet Cable</b>
ITL-8LD-1 (BK) TEL ITL-8LD-1 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-12BT-1 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-12D-1 (BK) TEL ITL-12D-1 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-12CG-3 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-12DG-3 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-12PA-1 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-24D-1 (BK) TEL ITL-24D-1 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100 m)
ITL-32D-1 (BK) TEL ITL-32D-1 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITL-32OC-1 (BK) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)

**Table 2-15 DT800 Series Loop Resistance and Cable Length**

<b>Terminal or Adapter</b>	<b>Ethernet Cable</b>
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)
ITZ-8LDG-3 (BK) TEL ITZ-8LD-3 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITZ-12D-3 (BK) TEL ITZ-12D-3 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITZ-12CG-3 (BK) TEL ITZ-12CG-3 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITZ-12DG-3 (BK) TEL ITZ-12DG-3 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100m)
ITZ-24D-3 (BK) TEL ITZ-24D-3 (WH) TEL	Cat 5/Cat 6 Ethernet 328.1 ft (100 m)

**Table 2-16 Cable Connection Between the Analog Port and the Single Line Equipment**

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 (BK) UNIT	Twisted Pair	1,700 ohms
LCA	Twisted Pair	600ohms (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	1,500ohms 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 2-17 Cabling Requirements**

Connected Equipment	Cable
Music on Hold and Background Music Sources	Hi-Fi Shielded Audio Cable
External Amplifier	Hi-Fi Shielded Audio Cable
ITL Cabling	Cat 5 Straight Data Network Cable – 328.1 ft (100m) maximum distance.
Between DX4NA Door Phone and PGDAD	0.4mm cable = 70m (approx.) 0.5mm cable = 110m (approx.)

## 5.2 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).***



### 5.2.1 Power Supply Specifications

#### AC240V Power Supply:

- Dedicated 15 Amp circuit
- Power Requirements: 230 VAC @ 15A Controlling/Base Chassis
- Power Consumption: Base Chassis=263VA, Expansion Chassis=263VA, total 1060VA
- Input Voltage: 90VAC to 264VAC  
(Rated Voltage: 100VAC/120VAC/220VAC/230-240VAC)
- Frequency: 47Hz - 63Hz (Rated frequency: 50/60Hz)
- Phase and Wire: Single Phase, 2 Line + PE Type
- Grounding Requirements: No. 14 AWG copper wire
- Feeding Voltage:  $D^{term}/OPX/DID$ : -48V  
SLT: 25mA / -28V

With input voltage of 230 VAC and with full load conditions:

- Base chassis can refer to either 9.5" or 19" chassis

Output Power: Base chassis=130W, Expansion chassis=130W, total 520W

AC Input I: Base chassis=1.15A, Expansion chassis=1.15A, total 4.6A

VA @ 230V: Base chassis=276VA, Expansion chassis=276VA, total 1104VA

KWh @ AC Input I x 230V/1000: Base chassis=0.276 KWh,  
Expansion chassis=0.276 KWh, total 1.104 KWh

BTU (KWh x 3413): Base chassis=942 BTU, Expansion chassis=942 BTU, total 3768 BTU (at 240Vac)

- A dedicated outlet, separately fused and grounded for each chassis should be installed



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

### 5.2.2 Power Supply Consumption

Table 2-18 Power Consumption

Chassis	Maximum RMS Current	Watts Used (Idle)	Watts Used (Maximum)
Basic Chassis – GCD-CP10 Chassis	2.19 A	96	130
Basic Chassis + Expansion Chassis	4.38 A	192	260
Basic Chassis + 2 Expansion Chassis	6.57 A	288	390
Basic Chassis + 3 Expansion Chassis	8.76 A	384	520

### 5.3 Environmental Conditions

#### 5.3.1 Temperature and Humidity

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

- Operating Temperature: 0°C ~ 40°C
- Recommended Long Term Temperature: -20°C ~ 60°C
- Operating Humidity: 10 ~ 90% RH (non-condensing)
- Recommended Long Term Humidity: 10 ~ 90% RH

##### **Blades – GPZ-BS10, GPZ-BS11, GCD-8DLCA with GPZ-8DLCA daughter board, GCD-16DLCA,**

- Operating Temperature: 0°C ~ 40°C
- Recommended Long Term Temperature: -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-8LCA daughter board, GCD-4COTA with GPZ-4COTE daughter board, GCD-PRTA**

- Operating Temperature: 0°C ~ 40°C
- Recommended Long Term Temperature: -20°C ~ 60°C
- Operating Humidity: 10 ~ 90% RH (non-condensing)
- Recommended Long Term Humidity: 20 ~ 90% RH

##### **Door Box**

- Operating Temperature: -20°C ~ 60°C
- Operating Humidity: 20 ~ 80% (non-condensing)

##### **SV9100 Power Supply – MPS7101**

- Operating Temperature: 0°C ~ +40°C
- Recommended Long Term Temperature: -40°C ~ 75°C
- Operating Humidity: 20 ~ 95% RH (non-condensing)
- Recommended Long Term Humidity: 10 ~ 95% RH

## 5.4 Outside Line Types

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

- 2-wire, Loop Start trunks
- 4-wire, E&M Tie Lines (Type I or V, Dial Pulse, or DTMF)
- Digital Trunk T1/FT1 (Loop Start, Tie Line (E&M), or DID Signaling)
- ISDN-BRI Trunks
- ISDN-PRI Trunks
- VoIP Trunks (Internet Protocols)

## 5.5 Transmission, Network, and Control Specifications

### 5.5.1 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: 32 ms.

### 5.5.2 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 (A Law)
- TDM Clock: 2.048 MHz
- TDM Data Bus: 8 bit
- TDM Timeframe: 125 µs.

### 5.5.3 Control

This section indicates the speed or capacity:

- Control: Stored program with distributed processing
- Central Processor: 32-bit microprocessor
- Clock: 266 MHz
- 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

## 5.6 Dialing Specifications

### 5.6.1 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:  $10 \pm 0.5$  pps/ $20 \pm 1.0$  pps
- Percent Break:  $60 \pm 1.5\%$
- Interdigit Interval: 0 pps/ $20$  pps 770 ms. ~ 830 ms.

### 5.6.2 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  $\pm 1.5\%$

- Signal Level:

Nominal level per frequency: -6 ~ -4 dBm

Minimum level per frequency

Low Group: -10 dBm

High Group: -8 dBm

Maximum level per frequency: 0 dBm

- Rise Time: Within 5 ms.

- Duration of Dual Frequency Signal:  
110 ms. default/60 ms. minimum  
Interdigital Time: 140 ms. default/45 ms. minimum

Nominal **High** Group  
Frequencies (Hz)

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

Nominal **Low** Group  
Frequencies (Hz)

### 5.6.3 External Equipment Connection

- 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

### 5.6.4 Music Source for Music on Hold via Chassis

- Auxiliary Input: 0.6V PPS Signal Level
- Input Impedance: 600  $\Omega$

### 5.6.5 Music Source for Station Background Music via ACI

- Auxiliary Input: 0.6V PPS Signal Level
- Input Impedance: 600  $\Omega$

### 5.6.6 External Paging (Audio)

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

### 5.6.7 External Tone Ringer/Night Chime Output

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

#### 5.6.8 SMDR Output

- Female Connector (LAN) Standard DB-9 (straight)

#### 5.6.9 PC Connection

- Female Connector (LAN) Standard DB-9 (straight)

#### 5.6.10 Relay Contact

- All Relay Contact Ratings: 500 mA, 24Vdc

### 5.7 Battery Backup

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

#### 5.7.1 System Backup (Optional)

During a power failure, the system 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.

#### 5.7.2 Memory Backup

The GCD-CP10 Blade battery retains the Clock/Calendar and Last Number redial (LNR) buffers for each station when the GCD-CP10 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.

## 5.8 Weights and Dimensions

Table 2-19 SV9100 Weights and Dimensions on page 2-27 shows the shipping weight, height, width and depth of each SV9100 digital multiline terminal, IP multiline terminal,  $D^{term}$ , Series i multiline terminal, chassis, assorted blades and adapters.

**Table 2-19 SV9100 Weights and Dimensions**

Unit	Shipping Weight <sup>†</sup>	Height	Width	Depth
<b>SV9100</b>				
CHS2UG	278.7 oz (7.9 kg)	3.47 in (88 mm)	16.9 in (430 mm)	14.17 in (360 mm)
CHS2UG GW	158.7 oz (4.5 kg)	4.53 in (115 mm)	8.66 in (220 mm)	14.53 in (369 mm)
GCD-CP10	7.06 oz (0.2 kg)	0.98 in (25 mm)	5.71 in (145 mm)	7.09 in (180 mm)
PZ-ME50	.353 oz (0.01 kg)	0.12 in (3 mm)	2.56 in (65 mm)	1.22 in (31 mm)
GCD-LTA	6.70 oz (0.19 kg)	0.98 in (25 mm)	5.71 in (145 mm)	7.09 in (180 mm)
CHS LARGE BATT BOX	352.7 oz (10 kg)	23.23 in (590 mm)	17.72 in (450 mm)	10.43 in (265 mm)
CHSG LARGE BATT SET	194 oz (5.5 kg)	6.69 in (170 mm)	5.91 in (150 mm)	4.33 in (110 mm)
<b>Common</b>				
MPS7101	42.33 oz (1.2 kg)	2.36 in (60 mm)	7.08 in (180 mm)	6.10 in (155 mm)
GPZ-BS10	2.29 oz (.065 kg)	0.91 in (23 mm)	2.17 in (55 mm)	7.28 in (185 mm)
GPZ-BS11	1.975 oz (0.056 kg)	0.91 in (23 mm)	2.17 in (55 mm)	7.28 in (185 mm)
GPZ-IPLE	1.76 oz (0.05 kg)	0.60 in (15 mm)	3.15 in (80 mm)	6.3 in (160 mm)
GCD-8DLCA	5.89 oz (0.167 kg)	0.98 in (25 mm)	5.71 in (145 mm)	7.09 in (180 mm)
GPZ-8DLCB	4.41 oz (0.125 kg)	0.60 in (15 mm)	4.72 in (120 mm)	5.12 in (130 mm)
GCD-16DLCA	7.831 oz (0.222 kg)	1.89 in (48 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GCD-4COTA	6.35 oz (0.18 kg)	1.89 in (48 mm)	9.45 in (240 mm)	7.68 in (195 mm)

Table 2-19 SV9100 Weights and Dimensions (Continued)

Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
GPZ-4COTE	3.53 oz (0.10 kg)	1.89 in (48 mm)	9.45 in (240 mm)	5.12 in (130 mm)
GCD-4LCA	5.99 oz (0.17 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GPZ-4LCA	3.10 oz (0.09 kg)	0.60 in (15 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GCD-8LCA	6.46 oz (0.183 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GPZ-8LCE	3.70 oz (0.105 kg)	0.60 in (15 mm)	9.45 in (240 mm)	5.12 in (130 mm)
GCD-2BRIA	5.99 oz (0.17 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GPZ-2BRIA	4.02 oz (0.114 kg)	0.60 in (15 mm)	4.72 in (120 mm)	7.68 in (195 mm)
GCD-PRTA	5.5 oz (0.156 kg)	0.98 in (25 mm)	9.45 in (240 mm)	3.94 in (100 mm)
GCD-CCTA	5.5 oz (0.156 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GCD-4ODTA	8.25 oz (0.234 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GCD-RGA	10.05 oz (0.285 kg)	0.98 in (25 mm)	5.71 in (145 mm)	7.68 in (195 mm)
GCD-VM00	7.76 oz (0.22 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GCD-PVAA	10.05 oz (0.285 kg)	0.98 in (25 mm)	5.71 in (145 mm)	7.68 in (195 mm)
GCD-ETIA	12.17 oz (0.345 kg)	0.98 in (25 mm)	5.71 in (145 mm)	7.68 in (195 mm)
GCD-4DIOPB	7.73 oz (0.219 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
GCD-SVR2	9.8 oz (0.278 kg)	0.98 in (25 mm)	9.45 in (240 mm)	7.68 in (195 mm)
CHS BASE UNIT	21.87 oz (0.62 kg)	23.23 in (590 mm)	17.72 in (450 mm)	10.43 in (265 mm)
CHS2UG BLANK SLOT COVER KIT	1.76 oz (0.05 kg)	2.32 in (60 mm)	1.57 in (40 mm)	1.57 in (40 mm)
CHS L BATT BOX RACK MOUNT BRACKET	352.7 oz (10 kg)	18.5 in (470 mm)	14.6 in (370 mm)	2.76 in (70 mm)



Table 2-19 SV9100 Weights and Dimensions (Continued)

Unit	Shipping Weight <sup>†</sup>	Height	Width	Depth
CHS2UG INT BATT SET	95.24 oz (2.7 kg)	4.33 in (110 mm)	2.76 in (70 mm)	3.15 in (80 mm)
CHS2UG RACK MOUNT KIT	17.6 oz (0.5 kg)	0.91 in (23 mm)	9.65 in (245 mm)	3.35 in (85 mm)
CHS1UG/2UG WALL MOUNT KIT	35.27 oz (1 kg)	1.18 in (30 mm)	13.8 in (350 mm)	1.77 in (45 mm)
CHS2UG JOINT BRACKET KIT	7.06 oz (0.2 kg)	0.19 in (3 mm)	5.91 in (150 mm)	1.7 in (43 mm)
CHS2UG BATT MTG KIT 6 Slot	106 oz (3.0 kg)	2.95 in (75 mm)	4.45 in (113 mm)	4.13 in (105 mm)
<b>Digital Multiline Terminal</b>				
DTL-2E-1 (BK) TEL	35.27 oz (1.0 kg)	4.41 in (112 mm)	7.05 in (179 mm)	8.86 in (225 mm)
DTL-6DE-1 (BK) TEL	38.8 oz (1.1 kg)	4.41 in (112 mm)	7.05 in (179 mm)	8.86 in (225 mm)
DTL-8LD-1 (BK) TEL DTL-8LD-1 (WH) TEL	45.6 oz (1.3 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.39 in (264 mm)
DTL-12BT-1 (BK) TEL	45.6 oz (1.3 kg)	4.29 in (109 mm)	7.6 in (183 mm)	10.16 in (258 mm)
DTL-12PA-1 (BK) TEL	45.6 oz (1.3 kg)	4.41 in (112 mm)	7.6 in (183 mm)	10.16 in (258 mm)
DTL-12D-1 (BK) TEL DTL-12D-1 (WH) TEL	42.33 oz (1.2 kg)	4.39 in (111.7 mm)	7.05 in (179 mm)	10.16 in (258 mm)
DTL-24D-1 (BK) TEL DTL-24D-1 (WH) TEL	42.33 oz (1.2 kg)	4.39 in (111.7 mm)	7.05 in (179 mm)	10.16 in (258 mm)
DTL-32D-1 (BK) TEL DTL-32D-1 (WH) TEL	45.6 oz (1.3 kg)	4.39 in (111.7 mm)	8.1 in (205.8 mm)	10.16 in (258 mm)
DTZ-2E-3 (BK) TEL	35.27 oz (1.0 kg)	4.41 in (112 mm)	7.05 in (179 mm)	8.86 in (225 mm)
DTZ-6DE-3 (BK) TEL	38.8 oz (1.1 kg)	4.41 in (112 mm)	7.05 in (179 mm)	8.86 in (225 mm)
DTZ-12D-3 (BK) TEL DTZ-12D-3 (WH) TEL	42.33 oz (1.2 kg)	4.39 in (111.7 mm)	7.05 in (179 mm)	10.16 in (258 mm)
DTZ-24D-3 (BK) TEL DTZ-24D-3 (WH) TEL	42.33 oz (1.2 kg)	4.39 in (111.7 mm)	7.05 in (179 mm)	10.16 in (258 mm)
DTZ-8LD-3 (BK) TEL DTZ-8LD-3 (WH) TEL	45.6 oz (1.3 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.39 in (264 mm)

Table 2-19 SV9100 Weights and Dimensions (Continued)

Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
<b>IP Multiline Terminal</b>				
ITL-2E-1 (BK) TEL	35.27 oz (1.0 kg)	4.41 in (112 mm)	7.05 in (179 mm)	8.86 in (225 mm)
ITL-6DE-1 (BK) TEL	38.8 oz (1.1 kg)	4.41 in (112 mm)	7.05 in (179 mm)	8.86 in (225 mm)
ITL-8LDE-1 (BK) TEL	63.66 oz (1.98 kg)	4.41 in (112 mm)	7.05 in (179 mm)	8.86 in (225 mm)
ITL-8LD-1 (BK) TEL ITL-8LD-1 (WH) TEL	45.6 oz (1.3 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.39 in (264 mm)
ITL-12BT-1 (BK) TEL	45.6 oz (1.3 kg)	4.29 in (109 mm)	7.59 in (193 mm)	10.16 in (258 mm)
ITL-12D-1 (BK) TEL ITL-12D-1 (WH) TEL	42.33 oz (1.2 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.16 in (258 mm)
ITL-12PA-1 (BK) TEL	45.6 oz (1.3 kg)	4.41 in (112 mm)	7.59 in (193 mm)	10.16 in (258 mm)
ITL-24D-1 (BK) TEL ITL-24D-1 (WH) TEL	42.33 oz (1.2 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.16 in (258 mm)
ITL-12CG-3 (BK) TEL	49.38 oz (1.4 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.94 in (278 mm)
ITL-12DG-3 (BK) TEL	45.86 oz (1.3 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.16 in (258 mm)
ITL-32D-1 (BK) TEL ITL-32D-1 (WH) TEL	45.6 oz (1.3 kg)	4.41 in (112 mm)	8.1 in (205.8 mm)	10.16 in (258 mm)
ITL-320C-1 (BK) TEL	56.44 oz (1.6 kg)	4.41 in (112 mm)	8.94 in (227 mm)	9.84 in (250 mm)
ITY-6D-1 (BK) TEL	35.27 oz (1.0 kg)	5.24 in (133.1 mm)	7.01 in (178.1 mm)	8.46 in (214.9 mm)
ITY-8LDX (BK) TEL	37.74 oz (1.07 kg)	5.24 in (133.1 mm)	7.01 in (178.1 mm)	8.70 in (221.0 mm)
ITZ-12D-3 (BK) TEL ITZ-12D-3 (WH) TEL	42.33 oz (1.2 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.16 in (258 mm)
ITZ-12CG-3 (BK) TEL ITZ-12CG-3 (WH) TEL	49.38 oz (1.4 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.94 in (278 mm)
ITZ-12DG-3 (BK) TEL ITZ-12DG-3 (WH) TEL	45.86 oz (1.3 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.16 in (258 mm)
ITZ-24D-3 (BK) TEL ITZ-24D-3 (WH) TEL	42.33 oz (1.2 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.16 in (258 mm)

Table 2-19 SV9100 Weights and Dimensions (Continued)

Unit	Shipping Weight †	Height	Width	Depth
ITZ-8LDG-3 (BK) TEL ITZ-8LDG-3 (WH) TEL	45.6 oz (1.3 kg)	4.41 in (112 mm)	7.05 in (179 mm)	10.39 in (264 mm)
<b>Optional</b>				
8LK-L (BK) UNIT 8LK-L (WH) UNIT	7.05 oz (0.2 kg)	1.77 in (45 mm)	1.15 in (29.3 mm)	8.82 in (224 mm)
8LK-Z (BK) UNIT 8LK-Z (WH) UNIT	7.05 oz (0.2 kg)	1.77 in (45 mm)	1.15 in (29.3 mm)	8.82 in (224 mm)
ADA-L UNIT	2.82 oz (0.08 kg)	.98 in (25 mm)	2.56 in (65 mm)	3.23 in (82 mm)
APR UNIT	5.29 oz (0.15 kg)	0.98 in (25 mm)	2.56 in (65 mm)	3.23 in (82 mm)
BCH-L (BK) UNIT	31.75 oz (0.9 kg)	4.41 in (112 MM)	3.19 in (81 mm)	8.8 in (223 mm)
BHA-L Unit	5.29 oz (0.15 kg)	0.98 in (25 mm)	2.56 in (65 mm)	2.84 in (72 mm)
BCA-Z UNIT	2.82 oz (0.08 kg)	0.98 in (25 mm)	2.56 in (65 mm)	2.84 in (72 mm)
IPLA-R UNIT	2.82 oz (0.08 kg)	0.98 in (25 mm)	2.24 in (57 mm)	3.94 in (100 mm)
PGD(2)-U10 ADP	12.4 oz (0.35 kg)	1.58 in (40 mm)	6.81 in (173 mm)	4.13 in (105 mm)
DCL-60-1 (BK) CONSOLE DCL-60-1 (WH) CONSOLE	21.16 oz (.6 kg)	3.23 in (82 mm)	5.39 in (137 mm)	8.82 in (224 mm)
DCZ-60-2 (BK) CONSOLE DCZ-60-2 (WH) CONSOLE	27.50 oz (0.78 kg)	3.15 in (80 mm)	8.27 in (210 mm)	9.84 in (250mm)
DP-D-1A Doorphone	7.05 oz (0.2 kg)	5.12 in (130 mm)	3.89 in (98 mm)	1.12 in (28.5 mm)
PSA-L (BK) UNIT PSA-L (WH) UNIT	10.58 oz (0.3 kg)	3.15 in (80 mm)	2.91 in (74 mm)	8.8 in (223 mm)
GBA-L UNIT	23.99 oz (0.68 kg)	5.9 in (150 mm)	7.05 in (179 mm)	6.34 in (161 mm)
AC-L UNIT	12 oz (0.34 kg)	1.10 in (28 mm)	1.77 in (45 mm)	3.98 in (101 mm)
WM-L UNIT	1.58 oz (0.045 kg)	0.996 in (25.3 mm)	3.996 in (101.5 mm)	4.92 in (125 mm)
60 DSS WM-L UNIT	1.41 oz (0.04 kg)	0.99 in (25.3 mm)	3.4 in *86.5 mm)	4.92 in (125 mm)

Table 2-19 SV9100 Weights and Dimensions (Continued)

Unit	Shipping Weight <sup>1</sup>	Height	Width	Depth
G955 Wireless Handset	3.13 oz (0.08 kg)	4.96 in (126 mm)	1.77 in (45 mm)	0.78 in (20 mm)
ML440	169.6 oz (4.81 kg)	9.4 in (238.8 mm)	1.72 in (43.69 mm)	0.8 in (20.32mm)
AP20 Base Unit	179.2 oz (5.08 kg)	9.5 in (241.3 mm)	12.6 in (320 mm)	14.0 in (355.6 mm)
AP300/400 Base Unit	10.65 oz (0.302 kg)	6.85 in (174 mm)	5.75 in (146 mm)	1.69 in (43 mm)
G266 Wireless Handset	4.06 oz (0.115 kg)	5.28 in (134 mm)	1.97 in (50 mm)	0.79 in (20 mm)
Charger	2.75 oz (0.078 kg)	3.03 in (77 mm)	3.03 in (77 mm)	2.40 in (61 mm)
AC Adapter	0.88 oz (0.025 kg)	2.25 in (57.15 mm)	1.5 in (38.1 mm)	1.03 in (26.16 mm)
G566 Wireless Handset	4.34 oz (0.123 kg)	5.63 in (143 mm)	1.97 in (50 mm)	0.79 in (20 mm)
Charger	4.06 oz (0.115 kg)	3.03 in (77 mm)	3.03 in (77 mm)	2.40 in (61 mm)
AC Adapter	4.06 oz (0.115 kg)	2.25 in (57.15 mm)	1.5 in (38.1 mm)	1.03 in (26.16 mm)

<sup>1</sup> Shipping weight includes the shipping carton.

# *Installing the SV9100 Chassis*

## **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.

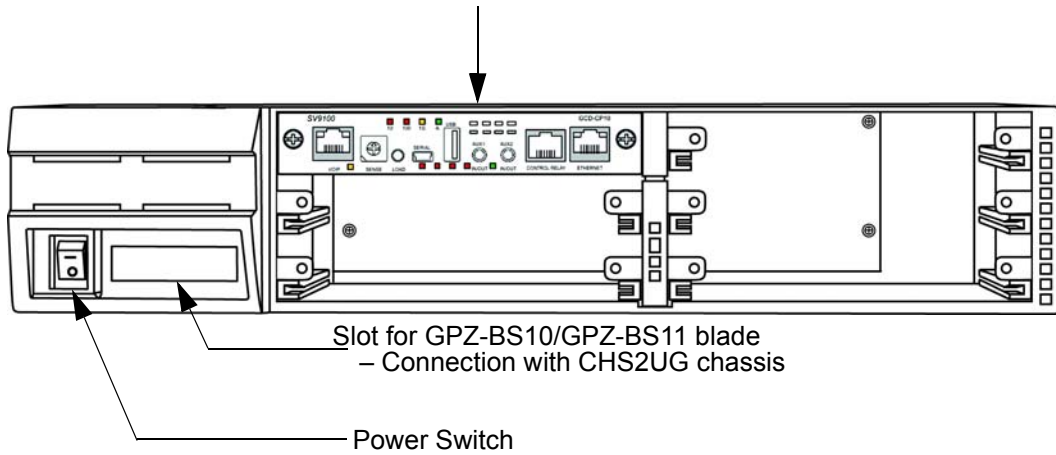
### **1.1      Installing the 19” (CHS2UG) Chassis**

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.

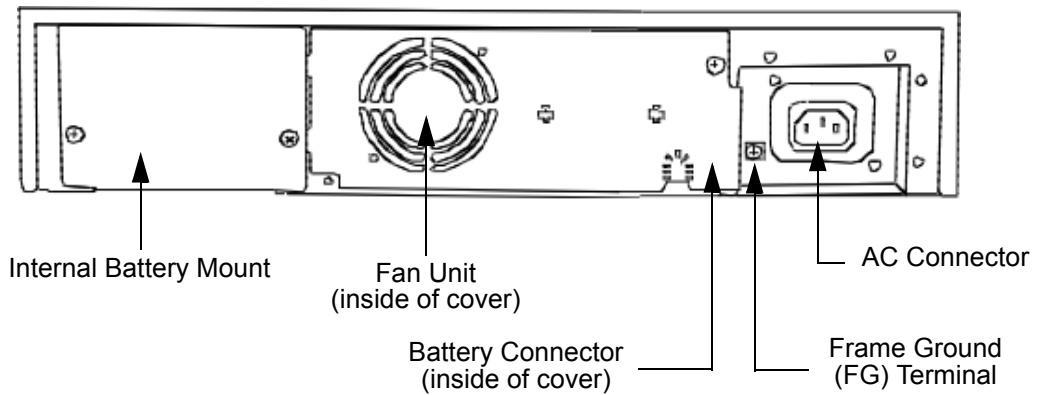
When the GCD-CP10 blade is installed in the first 19” chassis, it is called the controlling chassis. Additional chassis, called expansion chassis, can be installed to increase the capacity of the system to meet the customer’s business needs. Each chassis (Expansion or Controlling), is powered by an MPS7101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

**Figure 3-1 CHS2UG Chassis (Front View)**

Universal Slot for Legacy Line/Trunk blades and Application blades (six slots). When used as controlling chassis, the GCD-CP10 is mounted in Slot 1 (shown).



**Figure 3-2 CHS2UG Chassis (Rear View)**



1.1.1 Installing the 19" Controlling Chassis

1. Ensure the chassis is powered down.

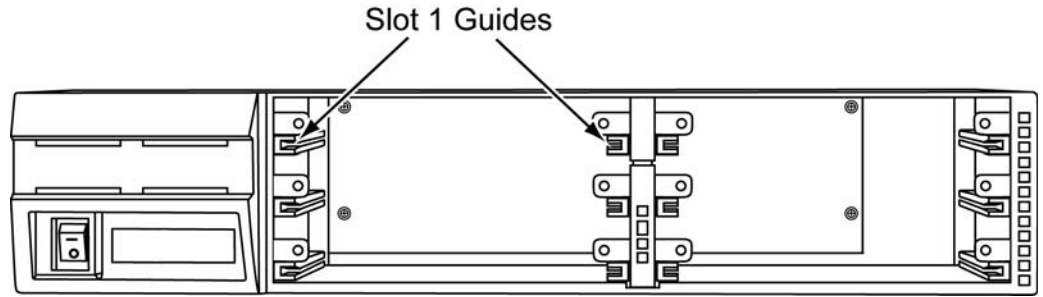


*Do not remove or install blades with the power on.*

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

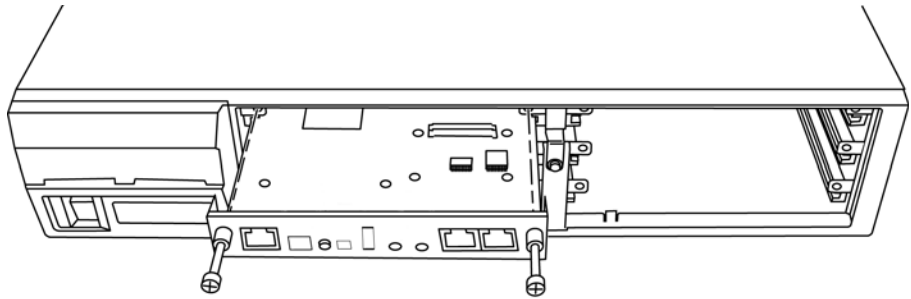
Chassis.

**Figure 3-3 19" Controlling Chassis – Guides Slot 1**



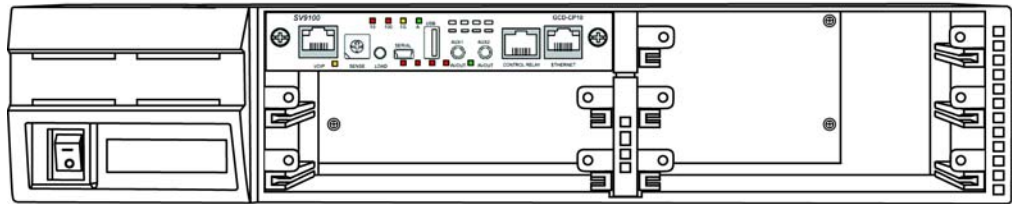
3. Slide the GCD-CP10 blade into the chassis until resistance (back plane) is felt.

**Figure 3-4 Installing the GCD-CP10 Blade**



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

**Figure 3-5 GCD-CP10 Blade Installed**



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

When adding additional chassis to the system to expand the capacity, a GPZ-BS10 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 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 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 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.

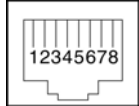
The GPZ-BS10 provides:

- 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



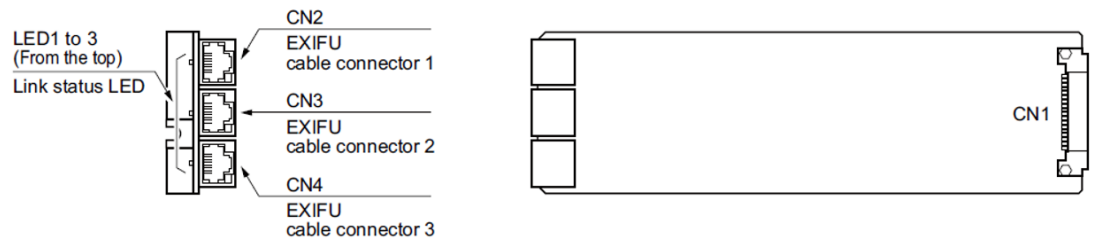
1.1.2.1 Connector Pin-Out on the GPZ-BS10/GPZ-BS11

Table 3-1 GPZ-BS10/GPZ-BS11 Connector Pin-Out

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

1.1.2.2 Install the GPZ-BS10 Expansion Base Blade in the CHS2UG Controlling Chassis

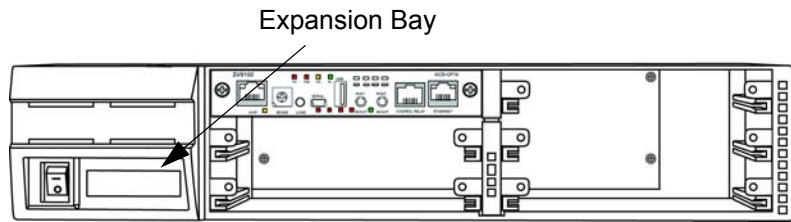
Figure 3-6 GPZ-BS10 Components



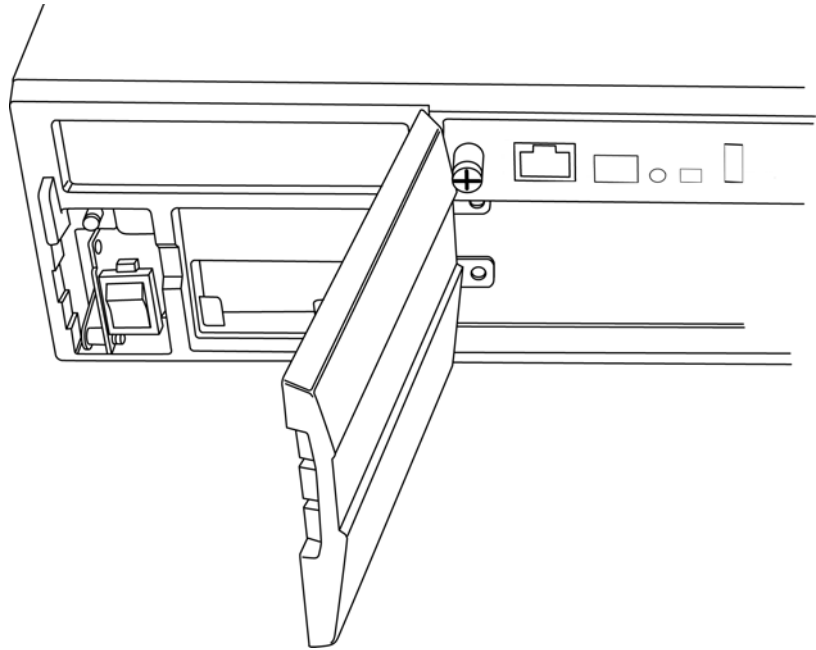
*Do not remove or install this blade with the power on.*

**WADNTI**

1. Ensure the chassis is powered down.
2. Locate the door positioned on the left end (expansion bay) of the Controlling Chassis (refer to [Figure 3-7 GPZ-BS10 Expansion Bay in Controlling Chassis on page 3-6](#)).

**Figure 3-7 GPZ-BS10 Expansion Bay in Controlling Chassis**

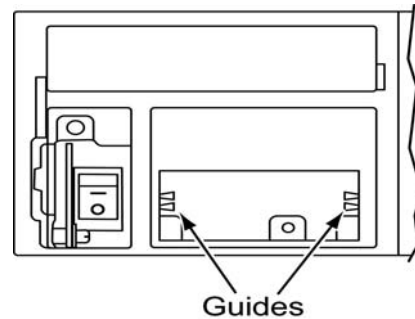
3. From the left side of the chassis, pull cover outward to expose the expansion bay.

**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 blade.*

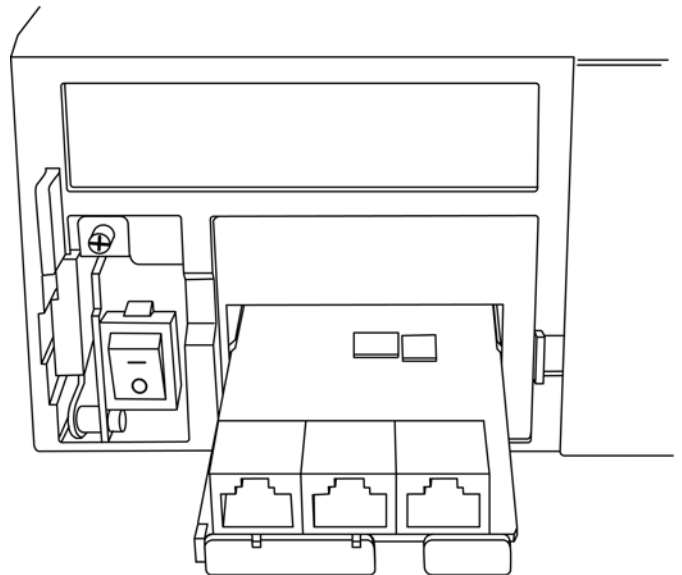
5. Align the GPZ-BS10 blade with the guides located in the expansion bay.

**Figure 3-9 GPZ-BS10 Blade Guides**



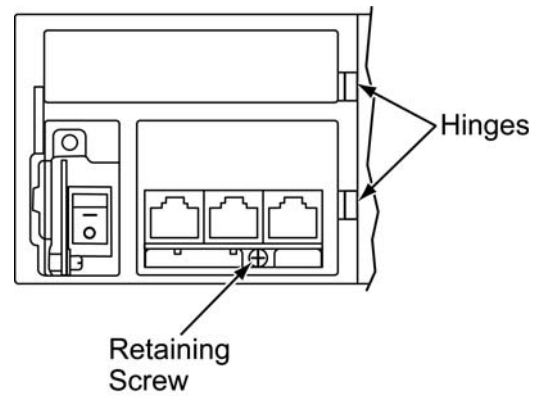
6. Slide the GPZ-BS10 blade into the chassis until resistance (back plane) is felt.

**Figure 3-10 Installing GPZ-BS10 Blade in Expansion Bay**



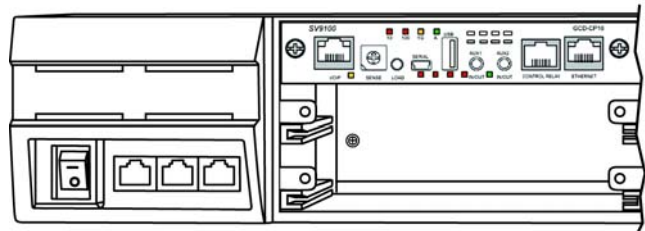
7. Gently push until the blade seats and install the supplied retaining screw.
8. Align the door tabs with hinges and reattach the cover (refer to [Figure 3-11 GPZ-BS10 Blade Installed on page 3-8](#)).

**Figure 3-11 GPZ-BS10 Blade Installed**



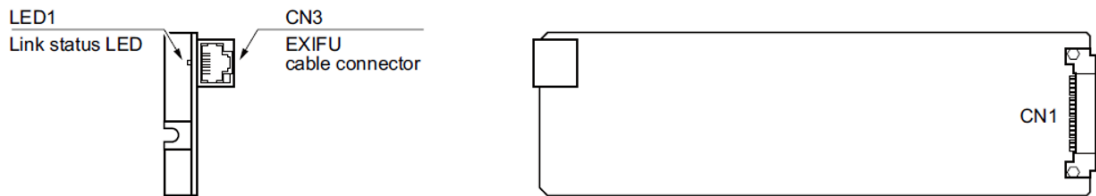
9. Close the GPZ-BS10 cover.

**Figure 3-12 GPZ-BS10 Installed (Cover Closed)**



- 1.1.2.3 Install the GPZ-BS11 Expansion Blade in the CHS2UG Expansion Chassis

**Figure 3-13 f Components**



**CAUTION**

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

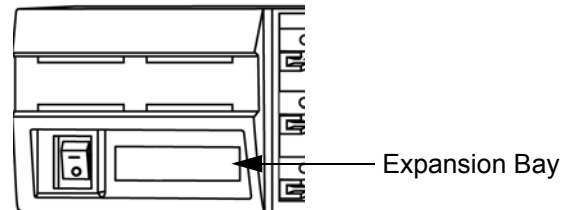


*Do not remove or install this blade with the power on.*

**WARNING**

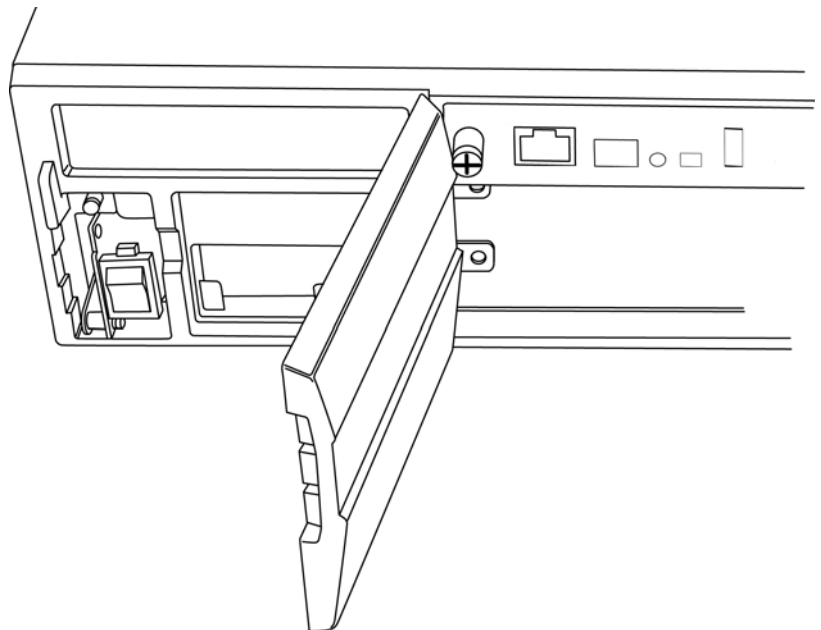
1. Ensure the chassis is powered down.
2. Locate the door positioned on the left end (expansion bay) of the Expansion Chassis.

**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 3-9](#)).

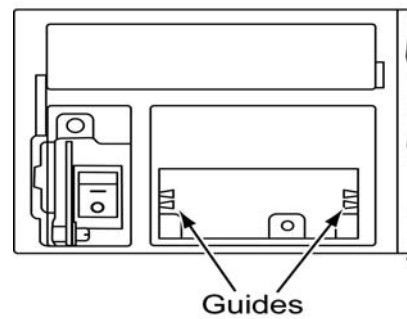
**Figure 3-15 Open Expansion Chassis Cover**



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

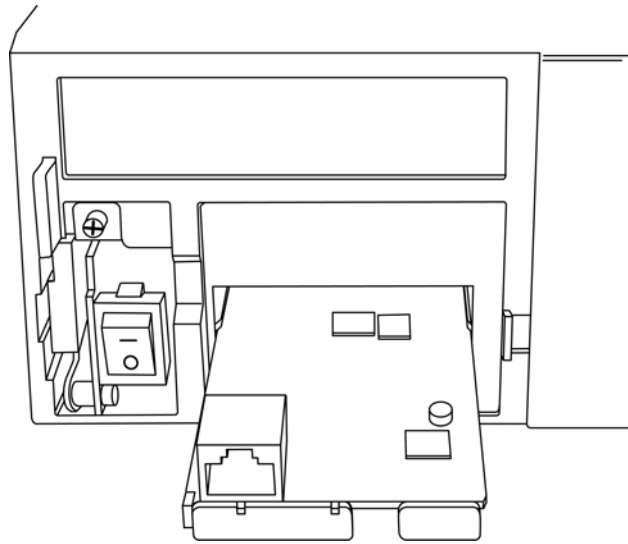
5. Align the GPZ-BS11 blade with the guides located within the expansion bay.

**Figure 3-16 GPZ-BS11 Blade Guides**



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

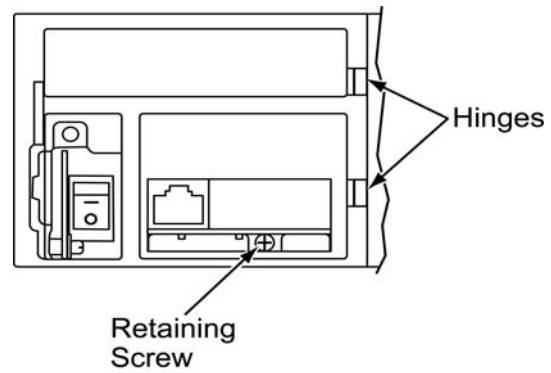
**Figure 3-17 Installing GPZ-BS11 Blade in Expansion Chassis**



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

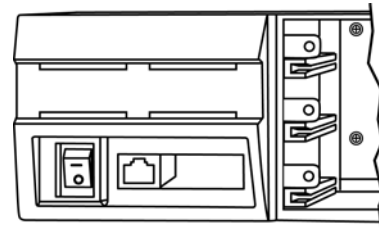
8. Align the door tabs with hinges and reattach the cover.

**Figure 3-18 GPZ-BS11 Blade Installed**



9. Close the GPZ-BS11 blade cover.

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



#### 1.1.2.4 Connect the Controlling and Expansion Chassis

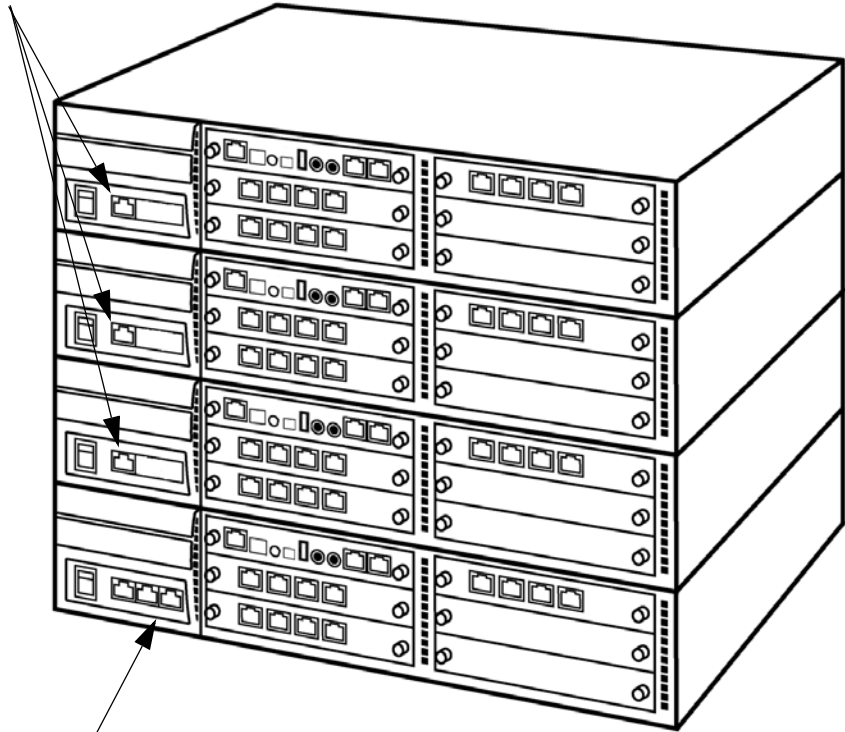


**CAUTION**

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

**Figure 3-20 19" Expansion Chassis Interface Units**

Expansion Chassis Interface Unit  
for the Expansion Chassis  
GPZ-BS11

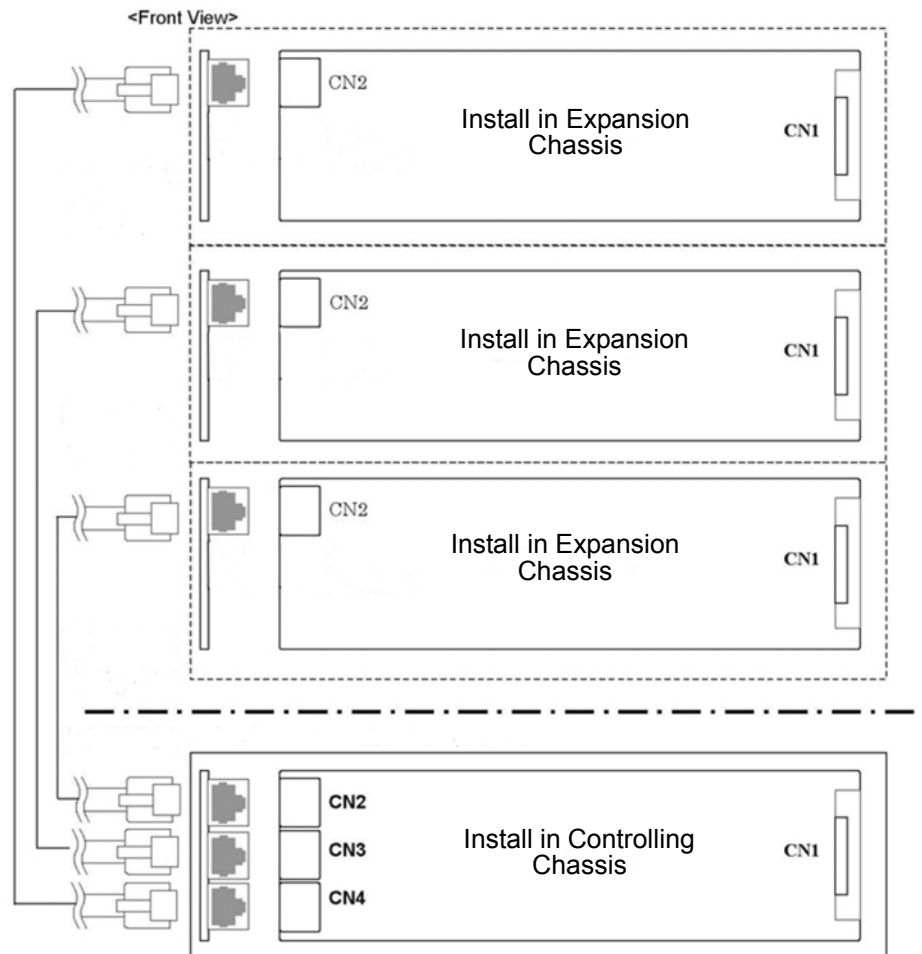


Expansion Chassis Interface Unit  
for the Controlling Chassis  
GPZ-BS10

1. Ensure Controlling and Expansion chassis are powered down.
2. 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 3-13](#)). Attach the opposite end to the CN2, CN3 or CN4 connector on the GPZ-BS10 of the Controlling Chassis.



Figure 3-21 System Expansion Cabling



3. Repeat for additional Expansion Chassis.

### 1.1.3 Install Grounding on 19" Chassis

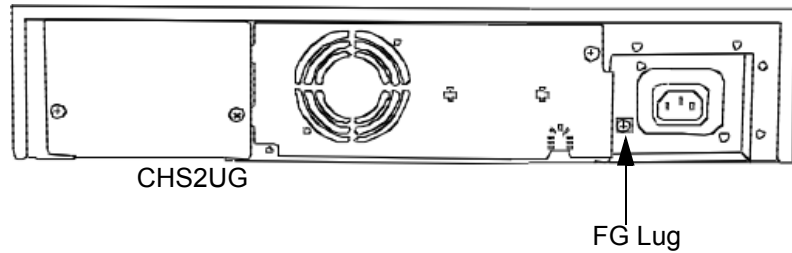
From the factory, the SG, ETH and PBXG grounds are located inside the chassis and are connected to the FG ground (frame ground) on the back of the chassis.

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**



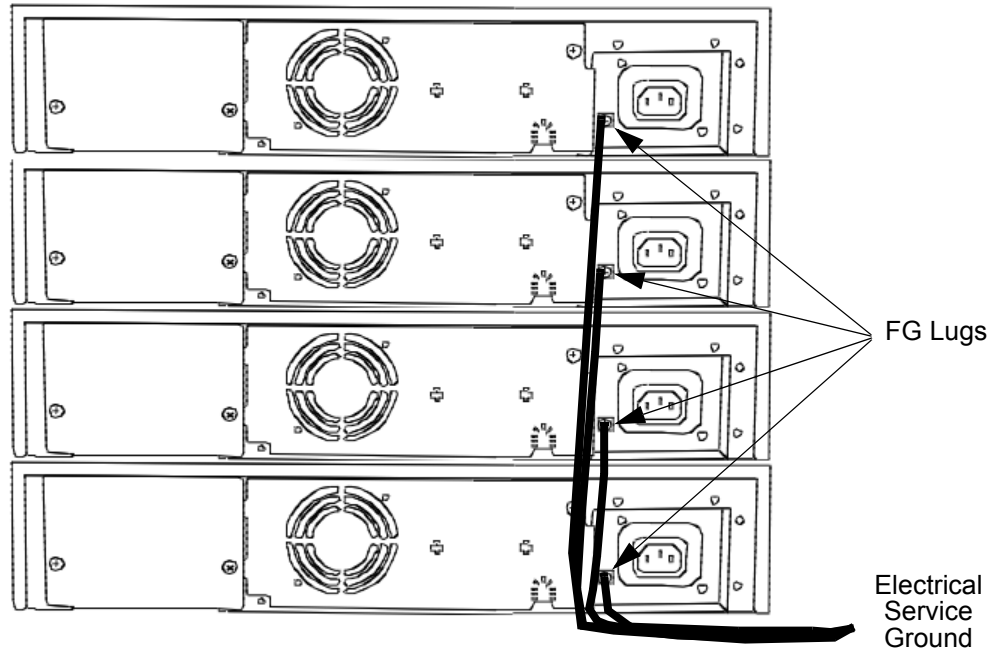
#### 1.1.4 Install Grounding on Multiple 19" Chassis (Optional)

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 3-15 for grounding illustration.

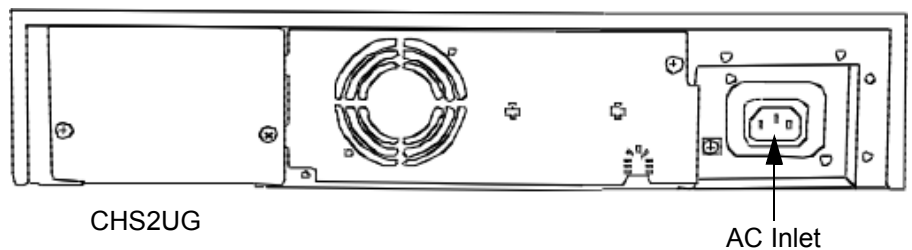
**Figure 3-23 19" Chassis Grounding Lug (Multiple-Chassis)**



### 1.1.5 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.

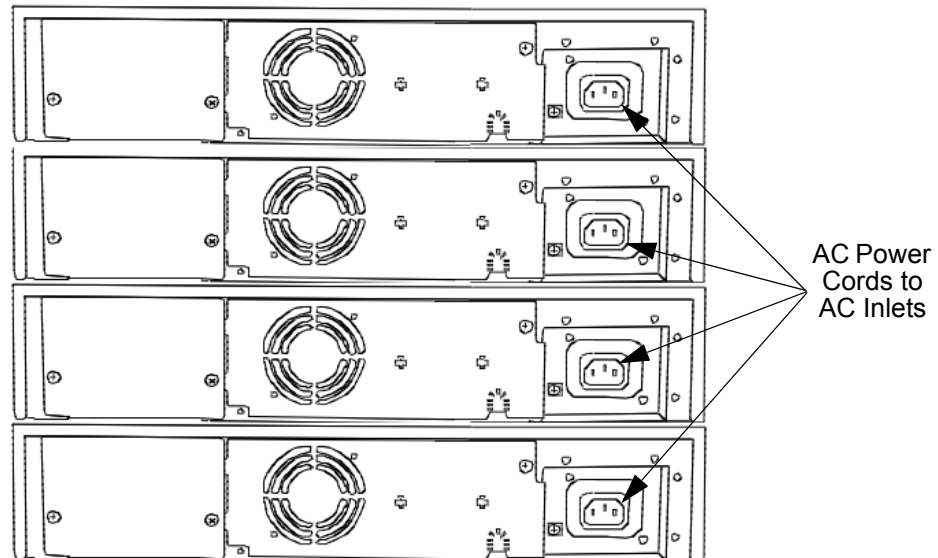
**Figure 3-24 Install the AC Power Cord**



### 1.1.6 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)**



### 1.1.7 Install Additional Blades 19" Chassis

Refer to Chapter 4, [2.1 Installation and Safety Precautions on page 4-3](#).

### 1.1.8 Apply Power to the 19" Chassis

Refer to Chapter 4, [2.6 Powering Up the SV9100 on page 4-9](#).

## 1.2 Installing the 9.5" Base (CHS2UG) Chassis

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

Before proceeding with installation of chassis, ensure site preparation is completed. The Gateway (CHS2U GW) chassis can be:

- Wall-mounted – refer to [2.2 Wall Mounting the 9.5" Chassis on page 3-25](#).
- Stand-mounted – refer to [4.2 Stand Mounting the 9.5" CHS2UG B Chassis on page 3-46](#).

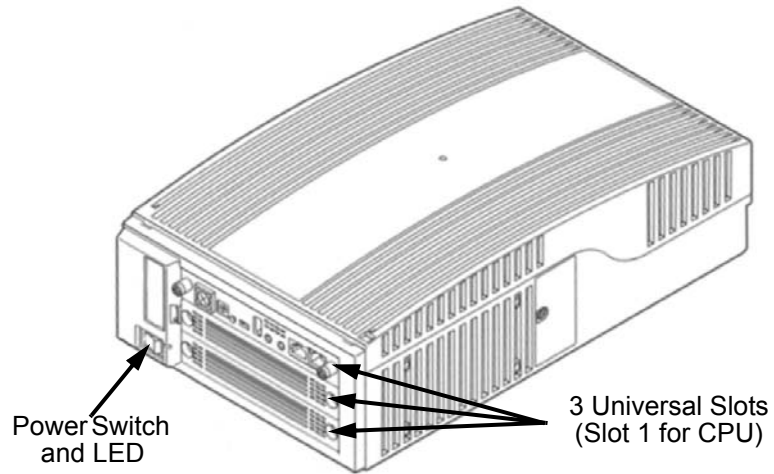
The Base (CHS2UG) chassis can be:

- Wall-mounted – refer to [2.2 Wall Mounting the 9.5" Chassis on page 3-25](#).

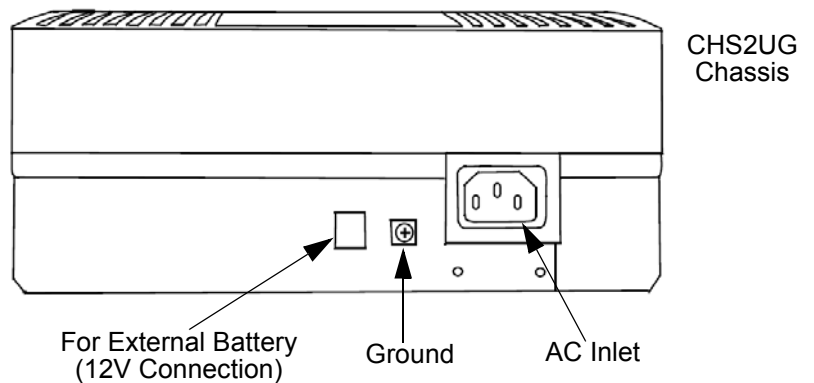
- Stand-mounted refer to [4.2 Stand Mounting the 9.5" CHS2UG B Chassis on page 3-46](#).

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.

**Figure 3-26 9.5" Chassis (Front View)**



**Figure 3-27 9.5" Chassis (Rear View)**



### 1.2.1 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 \(Rear View\)](#).

### 1.2.2 Install AC Power Cord 9.5" Gateway or Base 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 \(Rear View\)](#)].

### 1.2.3 Install Additional Blades 9.5" Gateway or Base Chassis

Refer to Chapter 4, [2.1 Installation and Safety Precautions on page 4-3](#).

### 1.2.4 Apply Power to the 9.5" Gateway or Base Chassis

Refer to Chapter 4, [2.6 Powering Up the SV9100 on page 4-9](#).

## 1.3 Installing the 9.5" Chassis

The CHS2UG chassis has three 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 blade is installed in slot 1 of the 9.5" Base Chassis, it is called the controlling chassis.

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 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.*

## SECTION 2 WALL MOUNTING THE CHASSIS

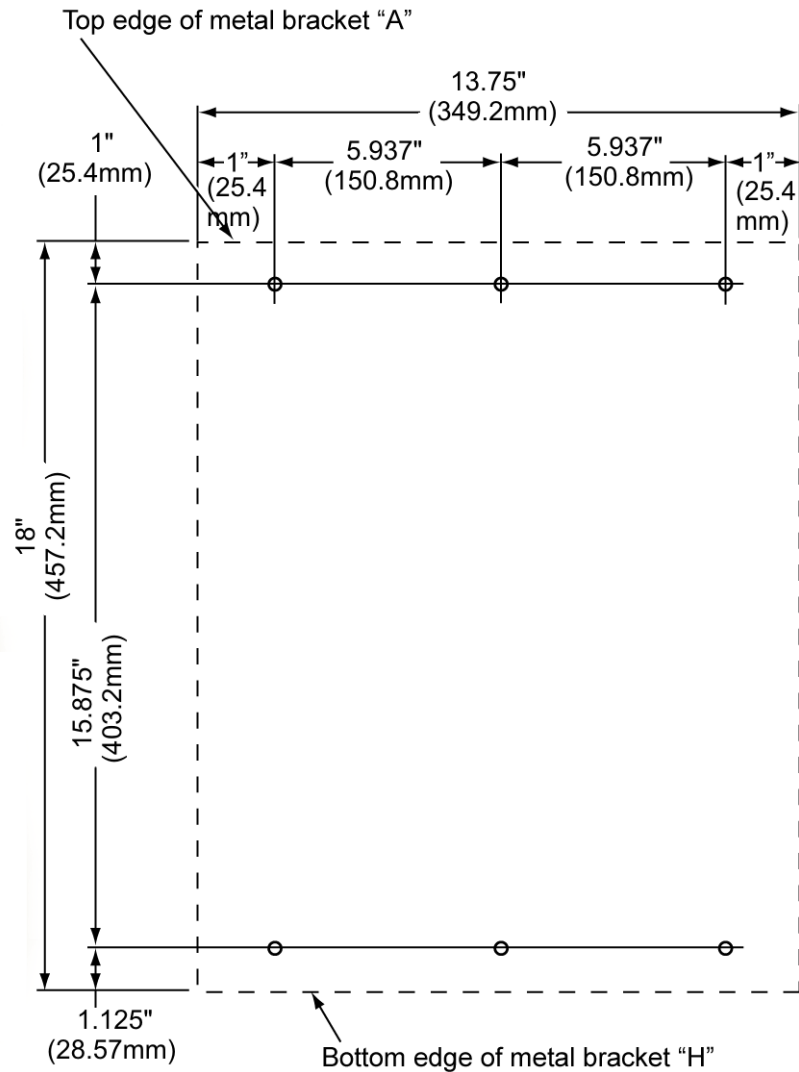
### 2.1 Wall Mounting the 19" (CHS2UG) Chassis

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.

#### 2.1.1 CHS2UG Chassis Wall Mount Installation

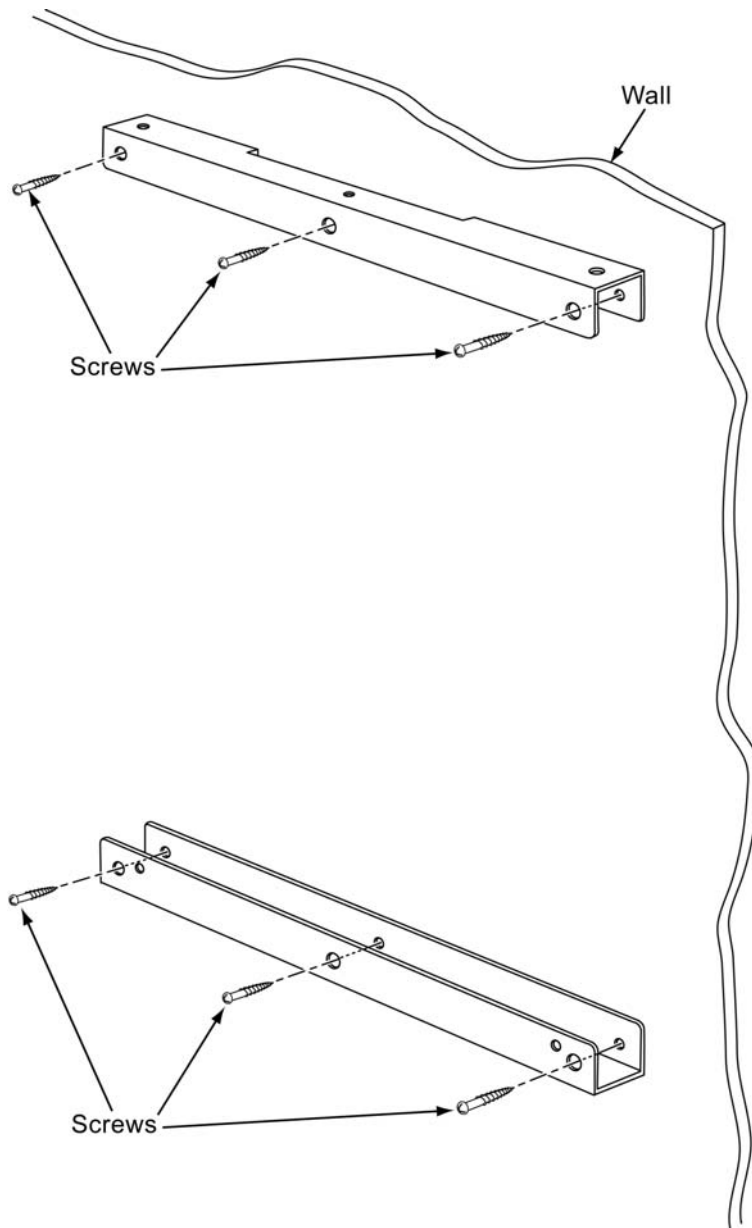
1. Use the template shown below for required spacing before drilling.

**Figure 3-28 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.

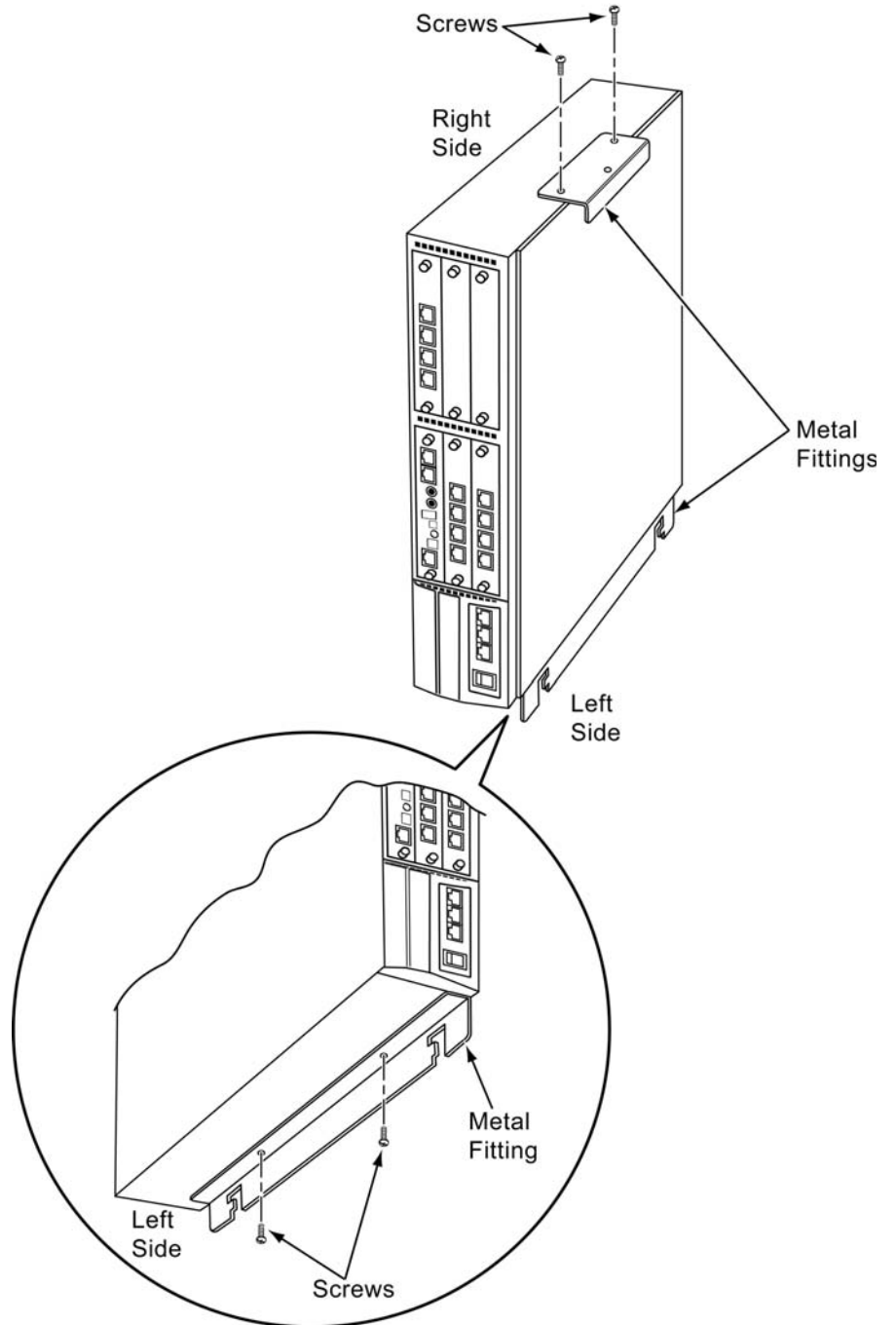
Figure 3-29 Install Wall Mount Brackets with Screws





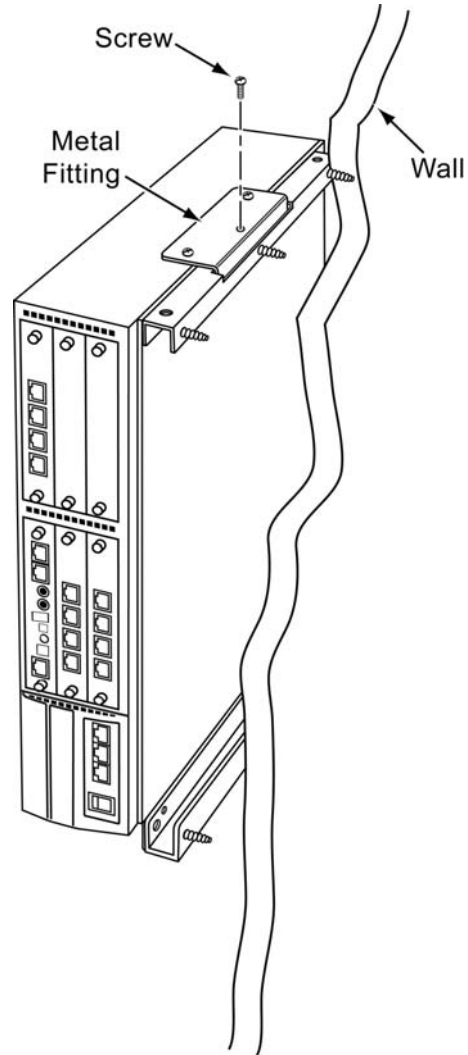
- Using four screws, secure the metal fittings on the Left and Right sides of the 19" chassis.

**Figure 3-30 Securing Metal Fittings to Chassis with Screws**



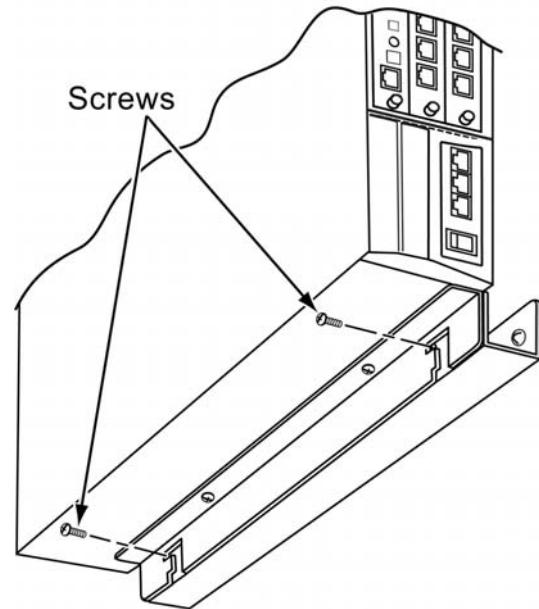
6. Align the metal fitting with the upper wall mount bracket. The lower metal fitting rests against the lower wall mount bracket. Secure the metal fitting and upper wall mount bracket with a single screw.

**Figure 3-31 Secure Metal Fitting to Upper Wall Mount Bracket with a Screw**



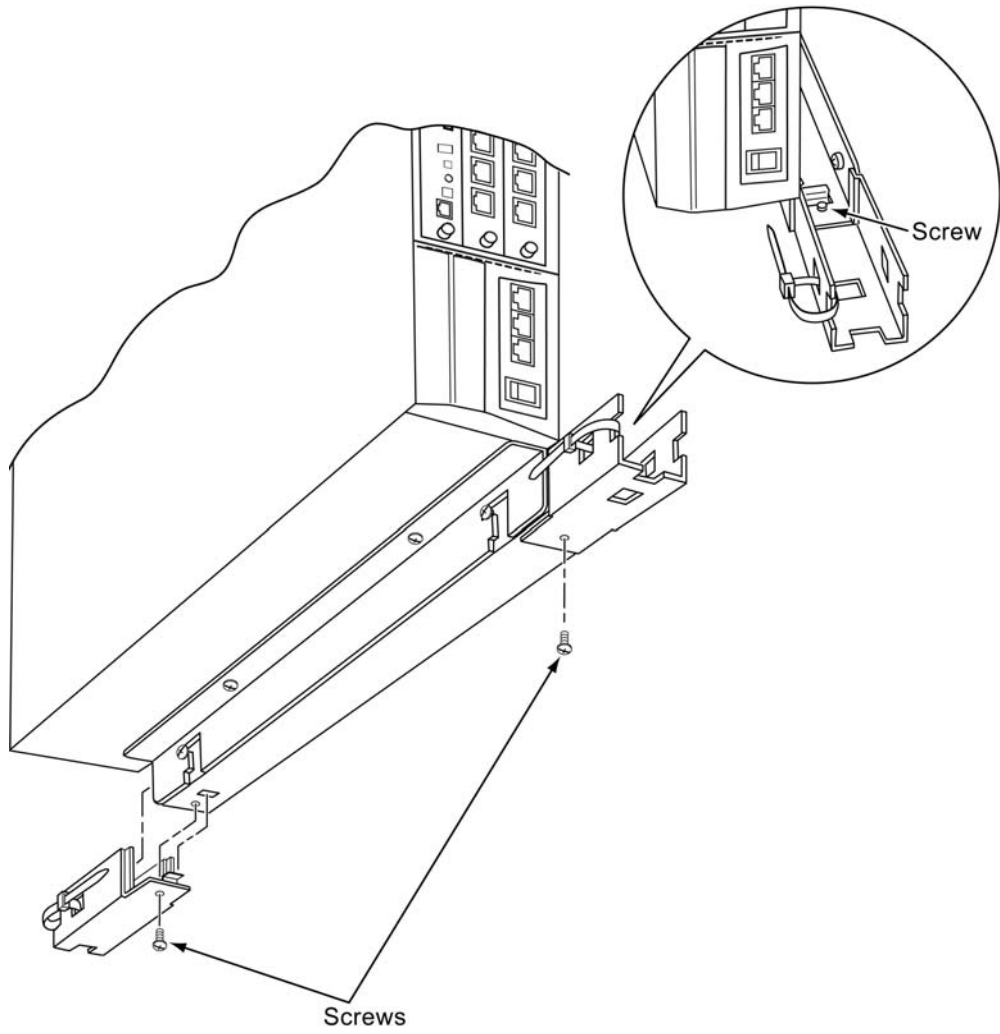
- Using two screws, secure the metal fitting to the lower wall mount bracket. Refer to figure below for screw location.

**Figure 3-32 Secure Metal Fitting to Lower Wall Mount Bracket with Screws**



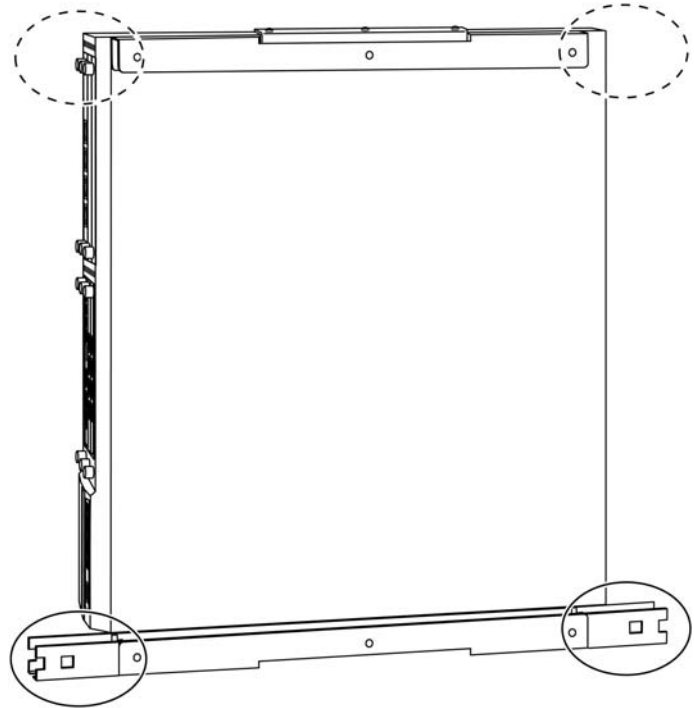
- Attach the supplied cable support bracket to either end of the lower wall mount bracket with a single screw.

Figure 3-33 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.

**Figure 3-34 Attachment Locations of Cable Support Bracket**



10. Connect the ground wire to all chassis. Refer to [1.1.3 Install Grounding on 19" Chassis on page 3-13](#) for complete details on grounding the system.
11. Refer to [1.1.5 Install AC Power Cords on 19" Chassis on page 3-15](#) to continue installation of the chassis or, Chapter 6 paragraph [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

## 2.2 Wall Mounting the 9.5" Chassis

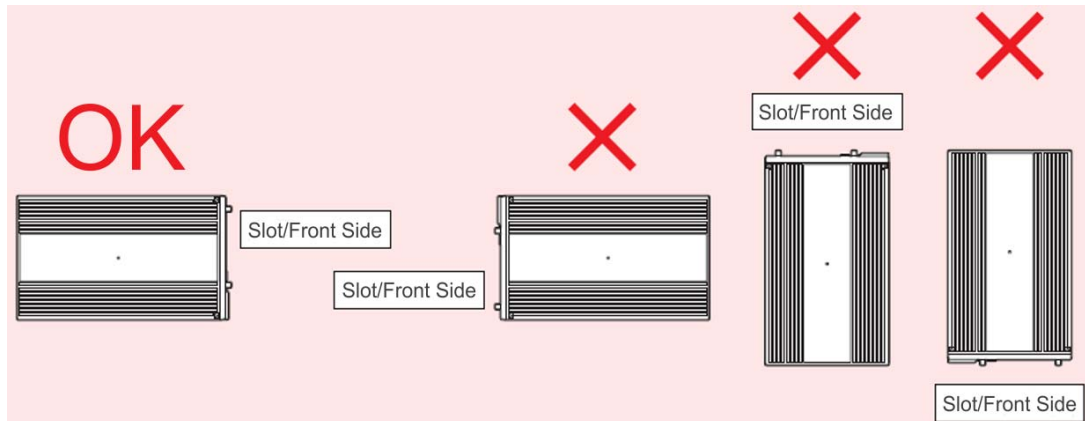
When wall mounting the chassis, ensure the wall can support the weight of the chassis and cards (25 lbs per system chassis ---- including blades, cords, power supply, etc.). The chassis is secured to the wall with a wall mount bracket.

- To wall mount the CHS2UG with the external battery installed, refer to [2.2.2.2 Wall Mounting the CHS2UG with the CHS2UG B Small Batt Box on page 3-31](#).

### 2.2.1 Option 1 – Wall Mounting the 9.5 inch (CHS2UG) Chassis

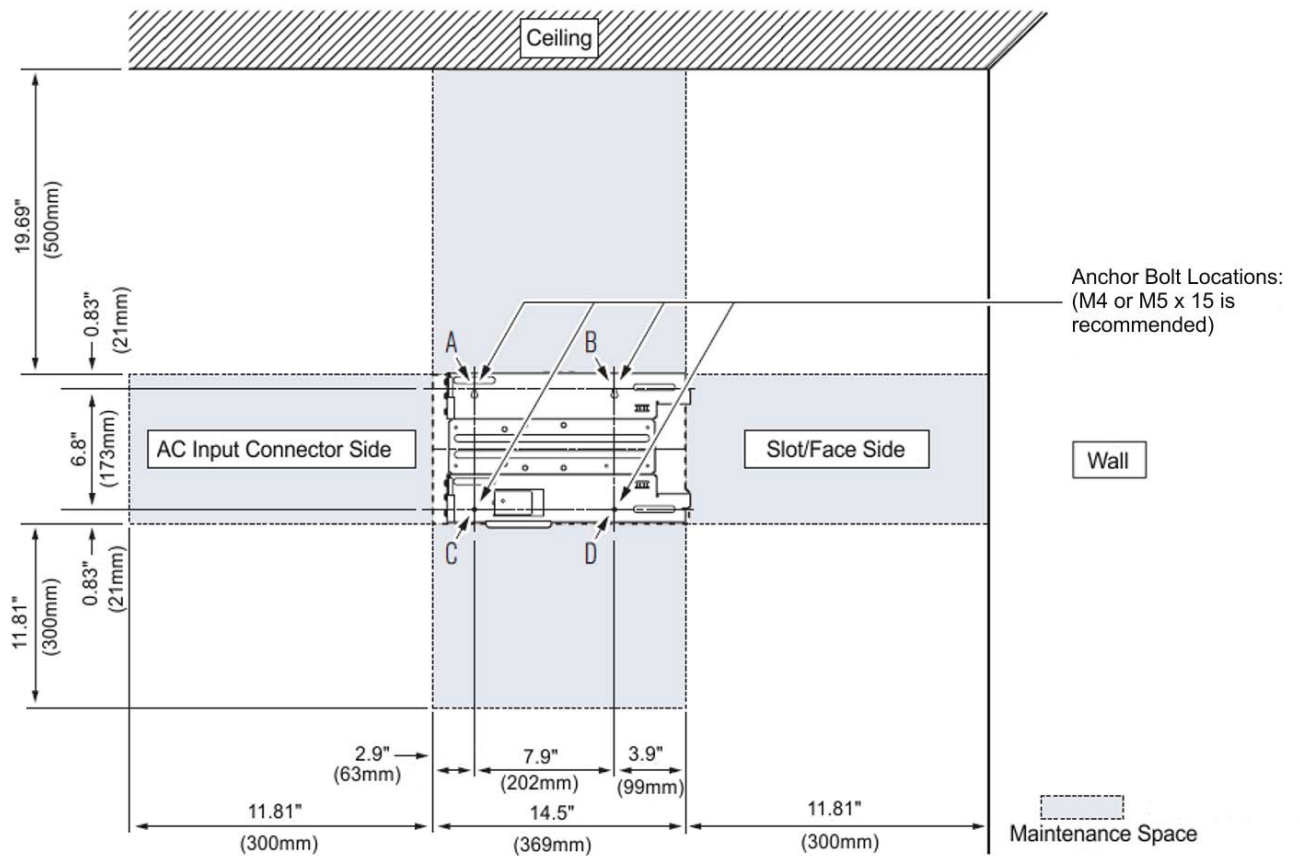
- When mounted, clearance between the wall and the CHS2UG/ CHS2UG E chassis is approximately 1.7 in (43mm) due to height of the wall mounting bracket.
- The chassis must be mounted horizontally with the slot (front) side on the right.

Figure 3-1 Wall Mount Positioning for 9.5" Base/Expansion Chassis



## 2.2.2 Wall Mounting the 9.5 inch (CHS2UG) Chassis

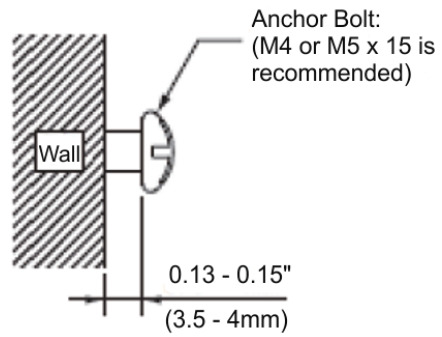
Figure 3-35 Wall Mount Spacing Guide (9.5" Chassis)



1. Use the template shown above for required spacing before drilling.
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 0.15 in (3.5 to 4.0mm) from the wall (refer to [\(Figure 3-36 Anchor Bolt from Wall \(9.5" Chassis\) on page 3-28\)](#)).*

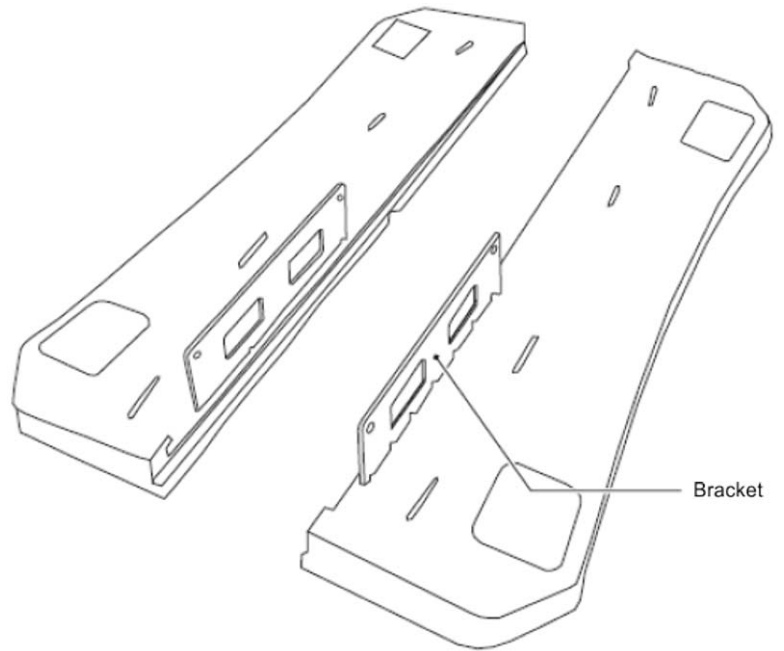
**Figure 3-36 Anchor Bolt from Wall (9.5" Chassis)**





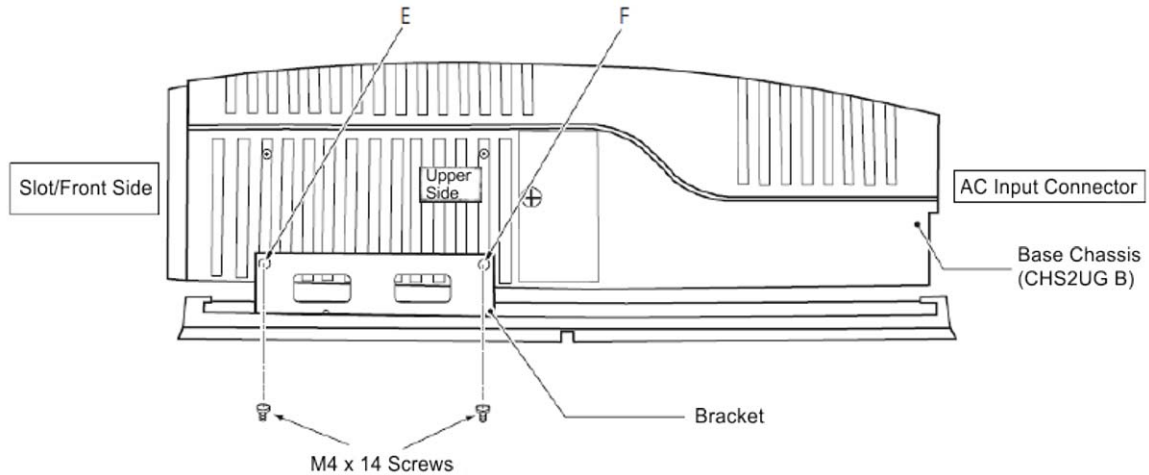
### 2.2.2.1 Wall Mounting the CHS2UG without the CHS2UG B Small Batt Box

1. Align the bracket halves (refer to [Figure 3-37 Wall Mounting Brackets \(Option 2\)](#)).  
**Figure 3-37 Wall Mounting Brackets (Option 2)**



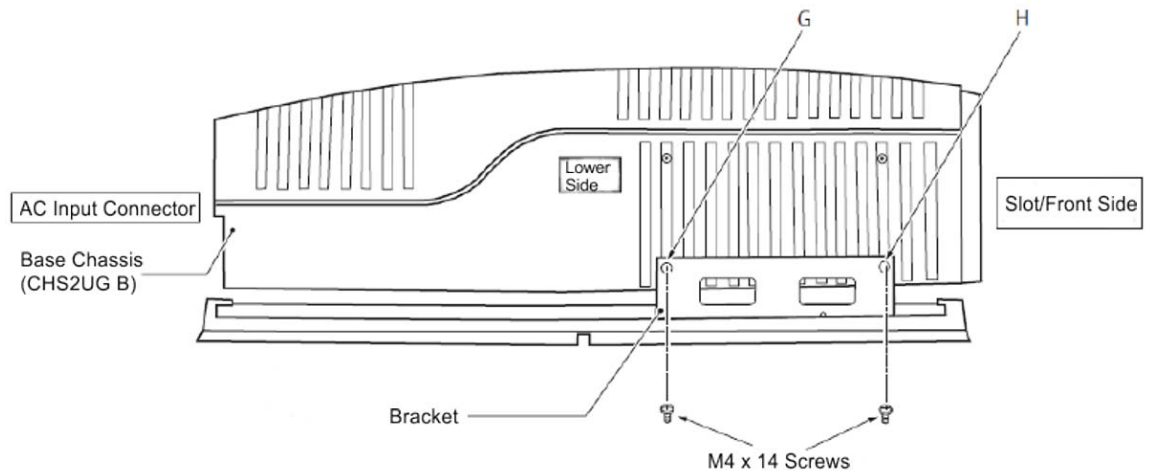
- Align holes **E** and **F** on the MV bracket (upper) with holes on the 9.5 inch Basic Chassis (CHS2UG). Install 2 M4 x 14 screws.  
M4 x 14 screws are provided with the WALL MOUNT BRACKET.

**Figure 3-38 Install Upper Bracket**



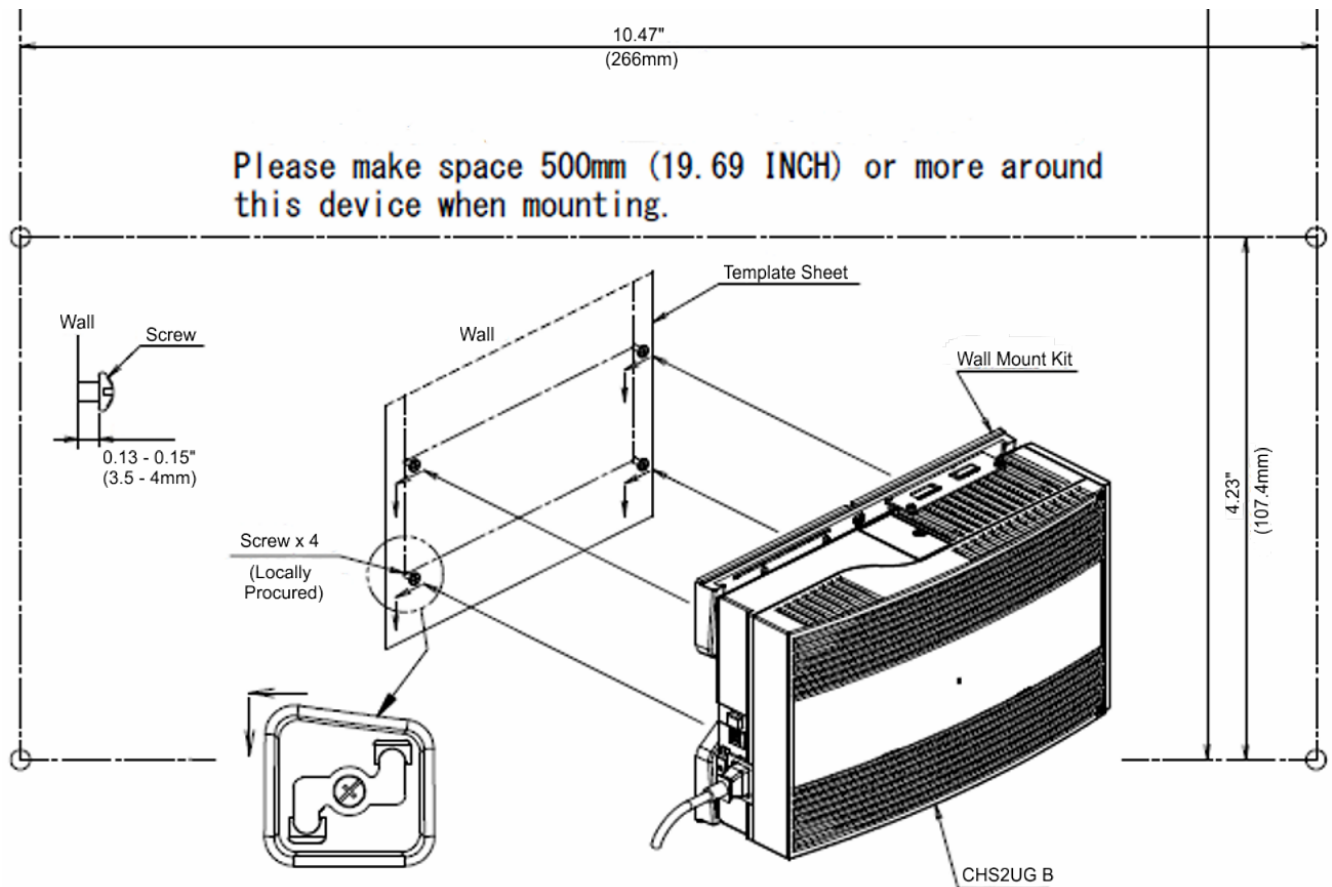
- Align holes **G** and **H** on the MV bracket (lower) with holes on the 9.5 inch Basic Chassis (CHS2UG). Install 2 M4 x 14 screws.  
M4 x 14 screws are provided with the WALL MOUNT BRACKET.

**Figure 3-39 Install Lower Bracket (Option 2)**



4. Align the upper and lower bracket holes with the heads of anchor bolts mounted on the wall and slide downward (refer to [Figure 3-40 Install Screws \(Option 2\)](#)).

**Figure 3-40 Install Screws (Option 2)**



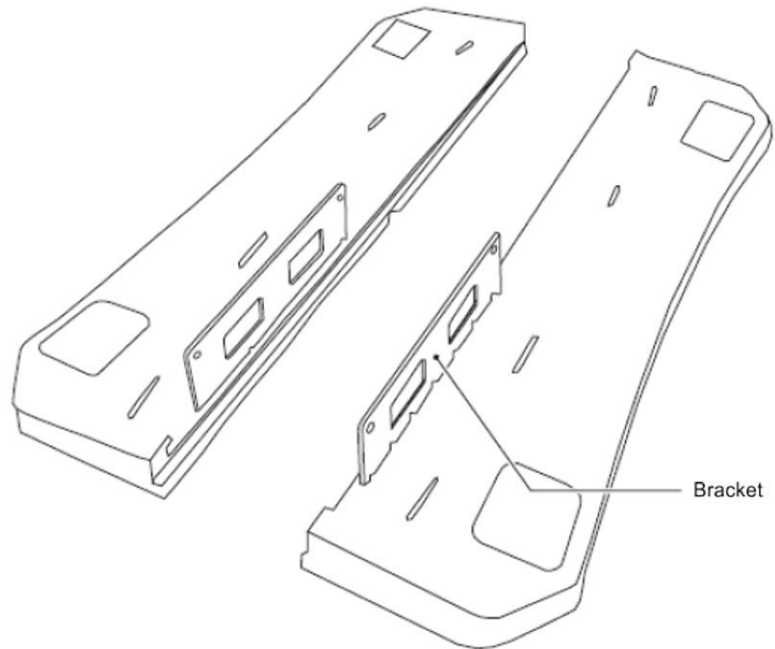
5. Connect grounding wire to chassis. Refer to Chapter 4 paragraph [1.3 Installing the 9.5" Chassis on page 3-18](#) for complete details on grounding the system.
6. Refer to [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

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

To install the CHSGW SMALL BATT BOX refer to section [6.3 Installing the CHSGW SMALL BATT BOX on the 9.5" Chassis on page 3-70](#)

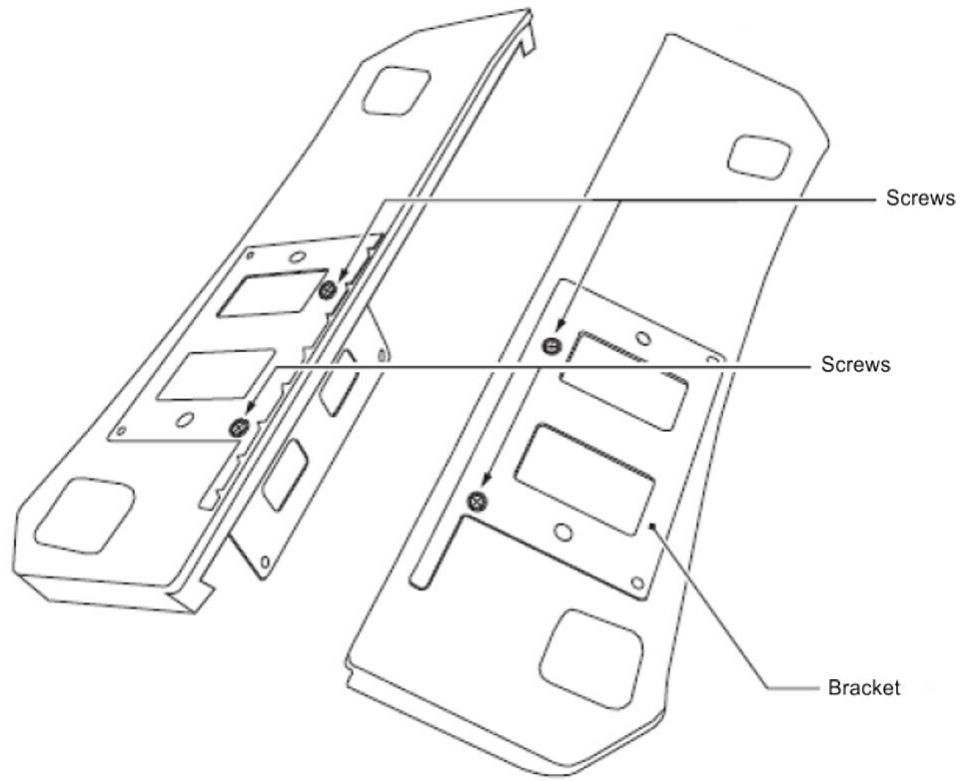
1. Align the bracket halves (refer to [Figure 3-37 Wall](#)

Mounting Brackets (Option 2).  
Figure 3-41 Wall Mounting (Small Batt Box)



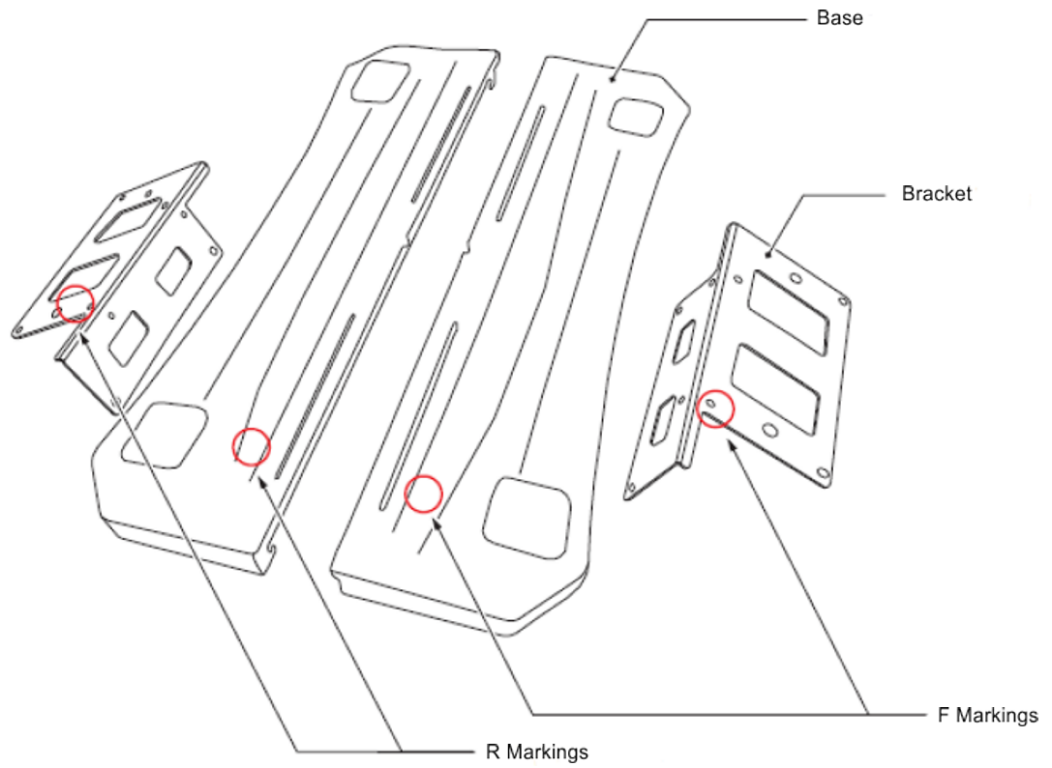
2. Turn the brackets upside down and remove four screws (refer to [Figure 3-42 Brackets \(Small Batt Box\)](#) on page [3-33](#)).

Figure 3-42 Brackets (Small Batt Box)

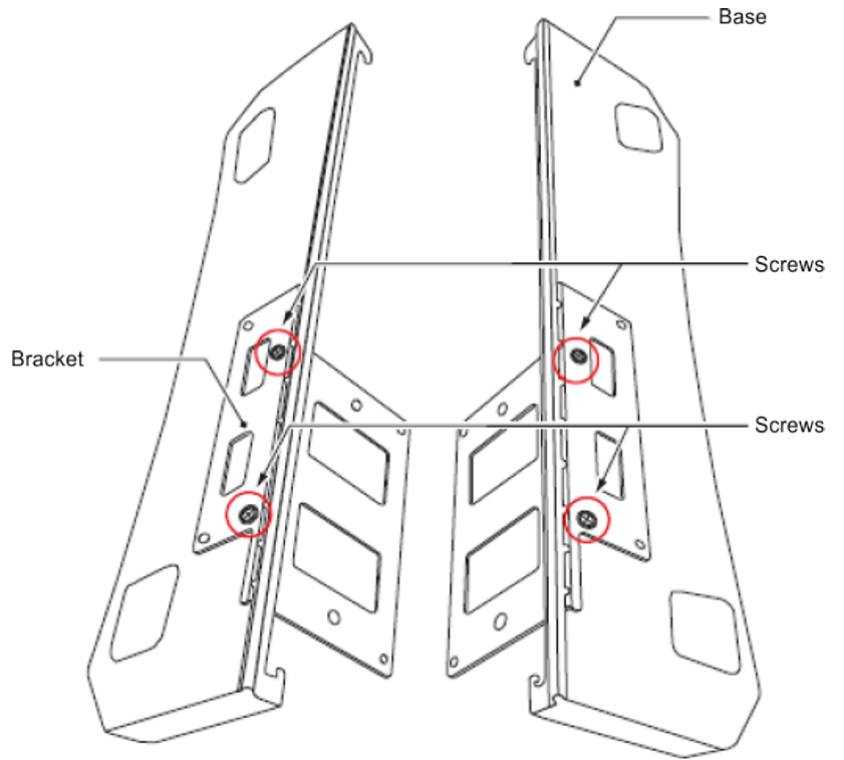


3. Align the holes marked as **R** and **F**.

**Figure 3-43 Reposition Brackets (Small Batt Box)**



4. Install the four screws previously removed.  
**Figure 3-44 Install Screws (Small Batt Box)**



5. Align the brackets with the holes on the sides of the 9.5 inch Basic Chassis (CHS2UG). Install 2 M4 x 14 screws.  
**Figure 3-45 Wall Mount – Upper Side (Small Batt Box)**



**Figure 3-46 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.
7. Connect grounding wire to chassis. Refer to Chapter 4 paragraph [1.3 Installing the 9.5" Chassis on page 3-18](#) for complete details on grounding the system.
8. Refer for installation of the power cord to Chapter 6 paragraph [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

## SECTION 3 FLOOR MOUNTING THE CHASSIS

### 3.1 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.

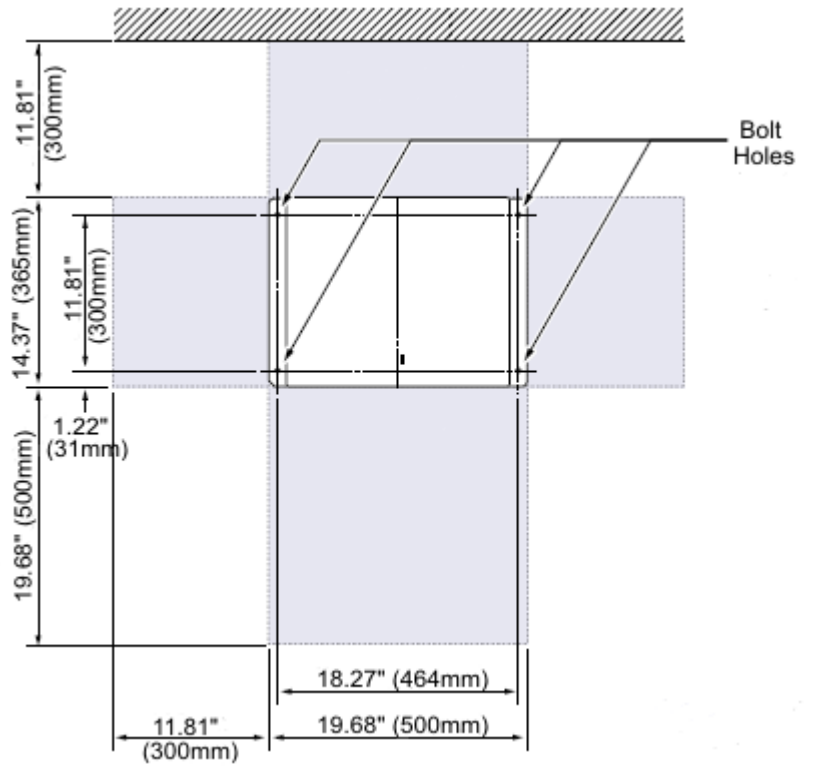
#### 3.1.1 CHS2UG Chassis Installation

1. Use the template shown in below for required spacing before drilling



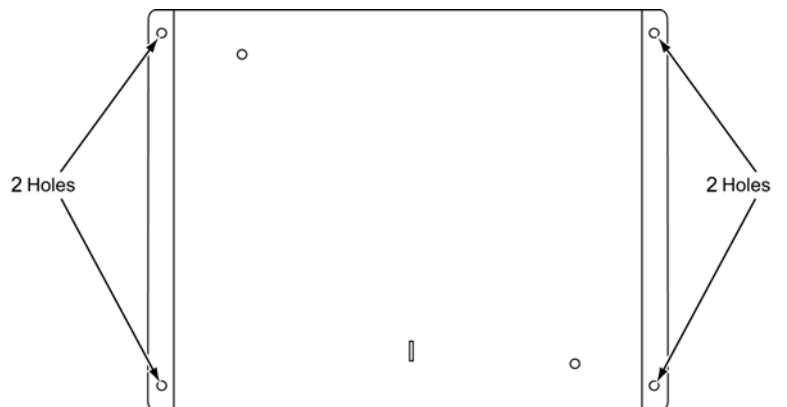
holes for 0.39" (10mm) anchor bolts (locally procured).

**Figure 3-47 Floor Mount Spacing Guide**



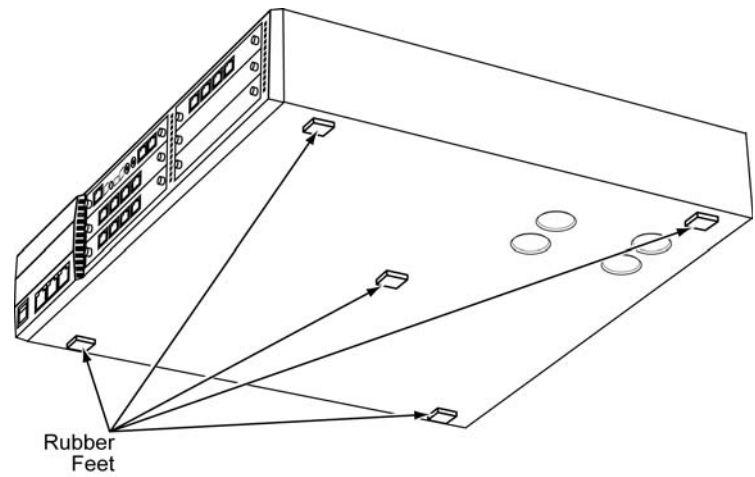
2. Mark and drill the four holes required to install the CHS BASE UNIT.
3. Using anchor bolts, secure the CHS BASE UNIT to the floor. Refer to figure below for screw location.

**Figure 3-48 Secure CHS BASE UNIT with Anchor Bolts**



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

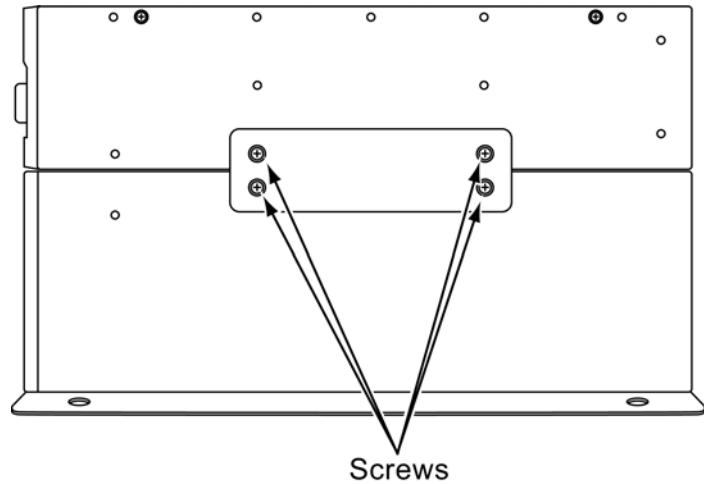
**Figure 3-49 Install Rubber Feet (19" Chassis)**



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

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

**Figure 3-50 Install CHS2UG JOINT BRACKET KIT**



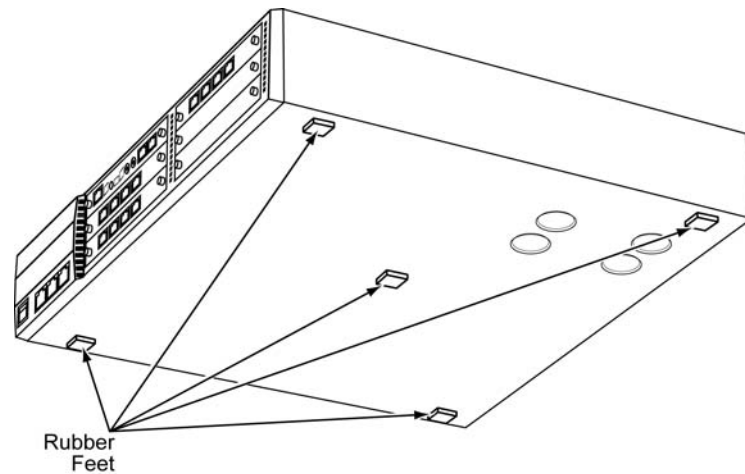
- Connect the ground wire to all chassis. Refer to [1.1.3 Install Grounding on 19" Chassis on page 3-13](#) for complete details on grounding the system.
- Refer to [1.1.5 Install AC Power Cords on 19" Chassis on page 3-15](#) to continue installation of the chassis or, Chapter 6 paragraph [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

### 3.1.2 Multiple CHS2UG Chassis Installation

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

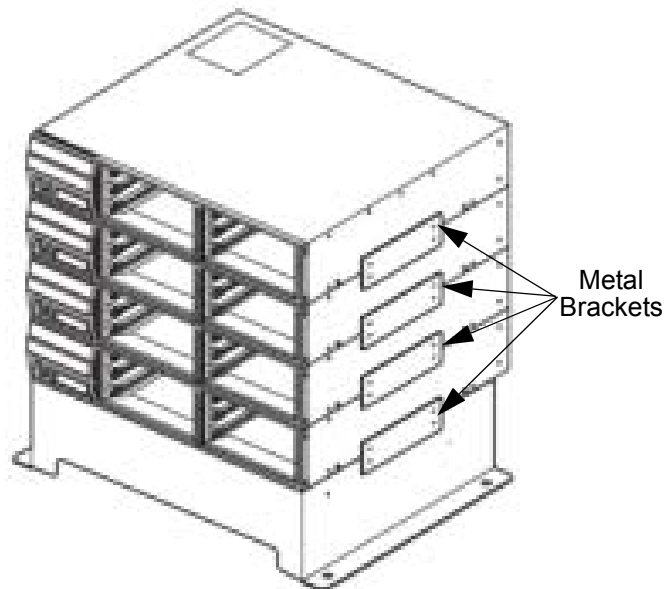
1. Install the five rubber feet to the bottom of each chassis.

**Figure 3-51 Install Rubber Feet for Multiple 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 below.

**Figure 3-52 Install Metal Brackets with Screws**



3. Connect the ground wire to all chassis. Refer to [1.1.3 Install Grounding on 19" Chassis on page 3-13](#) for complete details on grounding the system.
4. Refer to [1.1.5 Install AC Power Cords on 19" Chassis on page 3-15](#) to

continue installation of the chassis or, Chapter 6 paragraph 2.1 [Installation and Safety Precautions on page 4-3](#) for installation of blades.

## SECTION 4 STAND MOUNTING THE CHASSIS

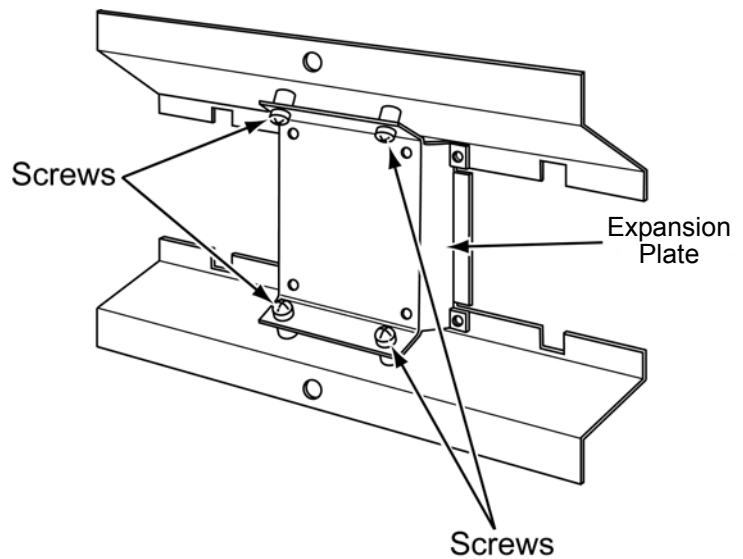
### 4.1 Stand Mounting the 19" (CHS2UG) Chassis

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).

#### 4.1.1 CHS2UG Chassis Installation

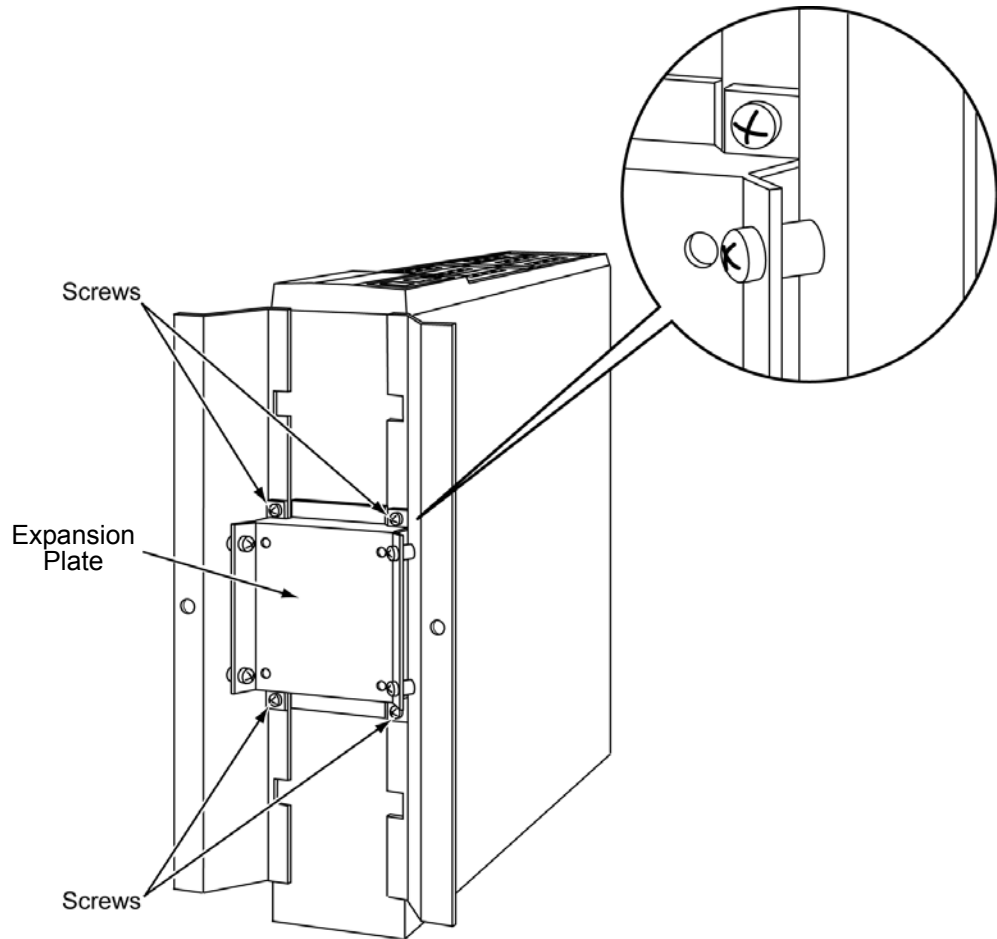
1. Using the supplied screws, assemble the CHS2UG STAND KIT (K) and CHS2UG STAND KIT (EXT) (refer to figure below).

**Figure 3-53 Assemble Stand Mount with Screws**



2. Secure the CHS2UG chassis to the assembled CHS2UG STAND KIT (K), see figure below.

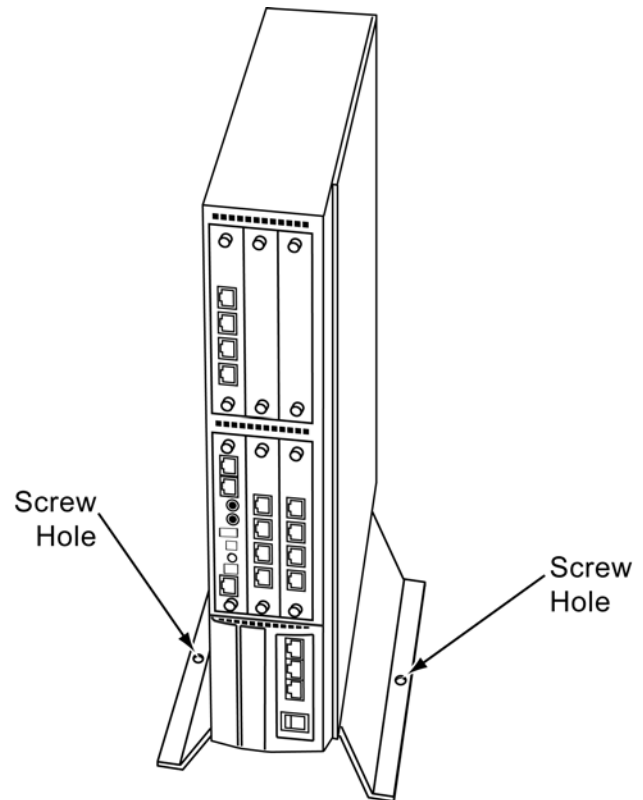
Figure 3-54 Secure CHS2UG Chassis to CHS2UG STAND KIT (K) with Screws



3. Using supplied screws, secure the CHS2UG STAND KIT (K) to the floor (refer to figure below).



*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.*

**Figure 3-55 Secure Stand Mount to Floor with Screws**

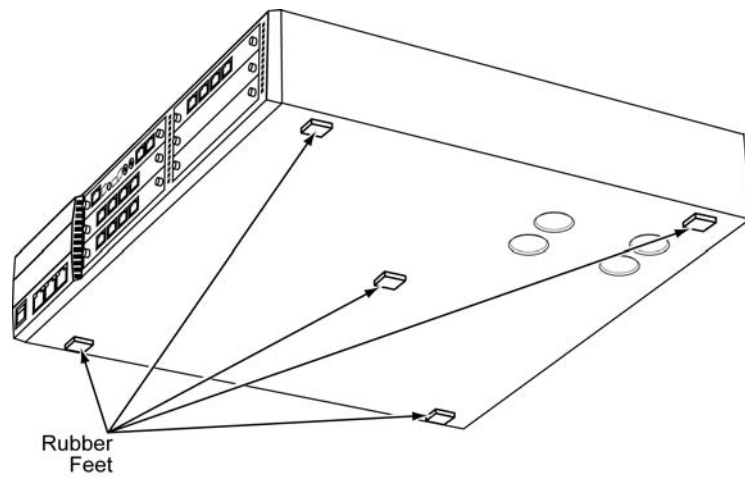
4. Connect the ground wire to all chassis. Refer to [1.1.3 Install Grounding on 19" Chassis on page 3-13](#) for complete details on grounding the system.
5. Refer to [1.1.5 Install AC Power Cords on 19" Chassis on page 3-15](#) to continue installation of the chassis or, Chapter 6 paragraph [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

#### 4.1.2 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.

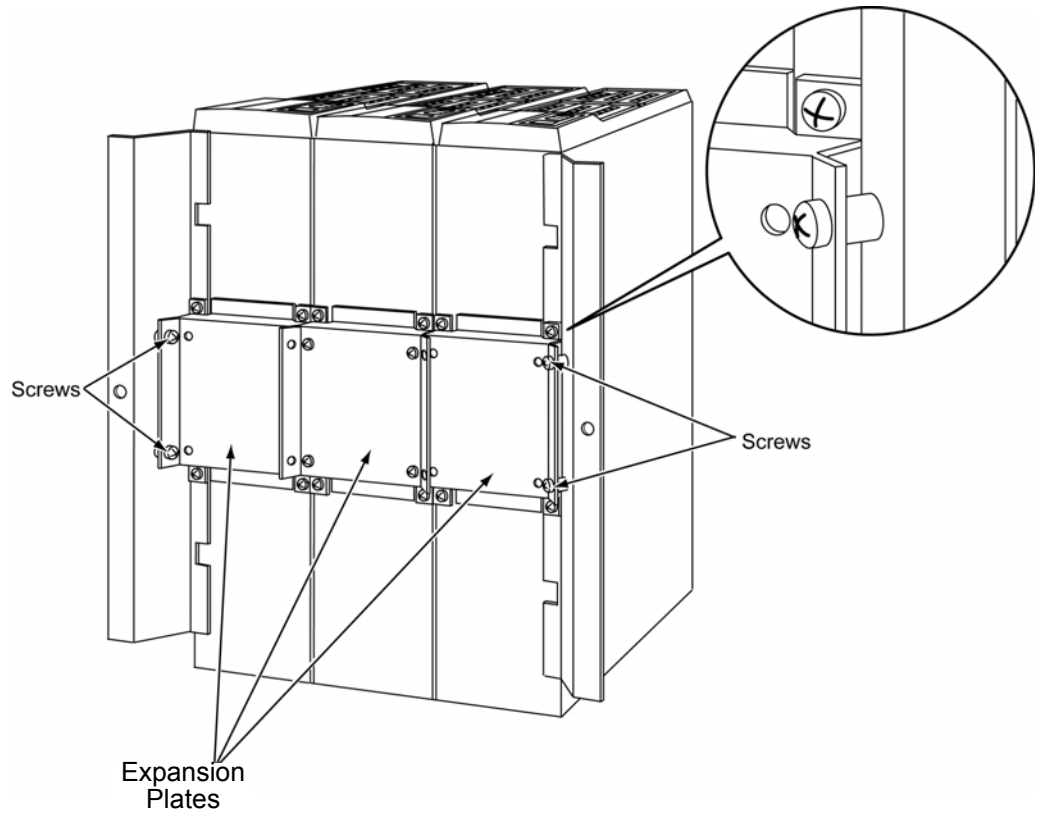
**Figure 3-56 Attach Rubber Feet to CHS2UG Chassis**



2. Each additional chassis requires a CHS2UG STAND KIT (EXT) to be installed (refer to figure below).

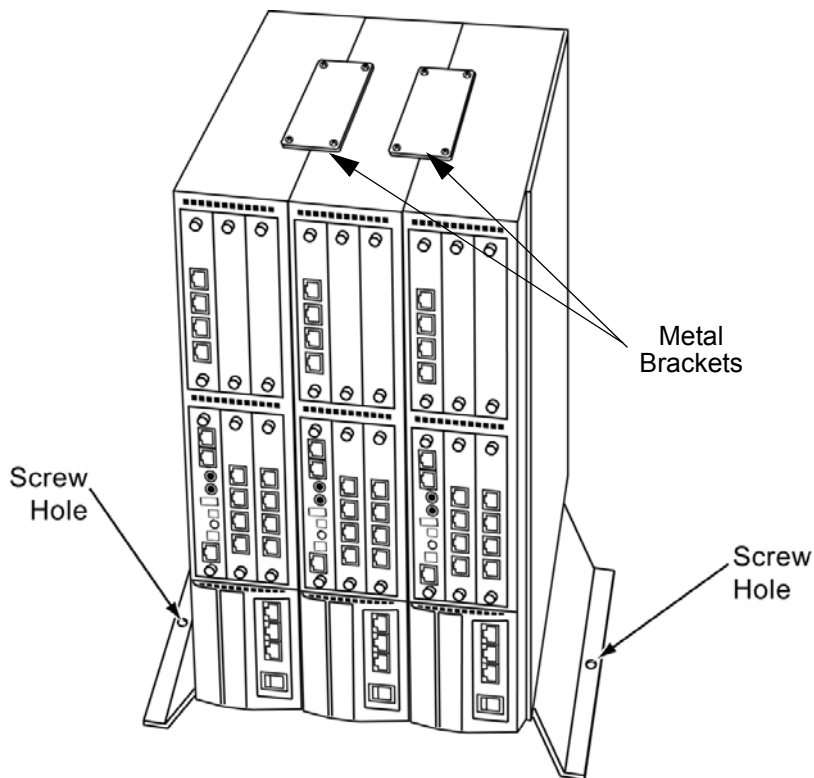


Figure 3-57 Install Additional CHS2UG STAND KIT (EXT)



3. Metal brackets from the CHS2UG JOINT BRACKET KITS are required to secure the top end of the chassis with screws. See figure below.

**Figure 3-58 Install Additional Brackets from CHS2UG JOINT BRACKET KIT**



4. Using supplied screws, secure the CHS2UG STAND KIT (K) to the floor.



*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.*

5. Connect the ground wire to all chassis. Refer to [1.1.3 Install Grounding on 19" Chassis on page 3-13](#) for complete details on grounding the system.
6. Refer to [1.1.5 Install AC Power Cords on 19" Chassis on page 3-15](#) to continue installation of the chassis or, Chapter 6 paragraph [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

## 4.2 Stand Mounting the 9.5" CHS2UG B Chassis

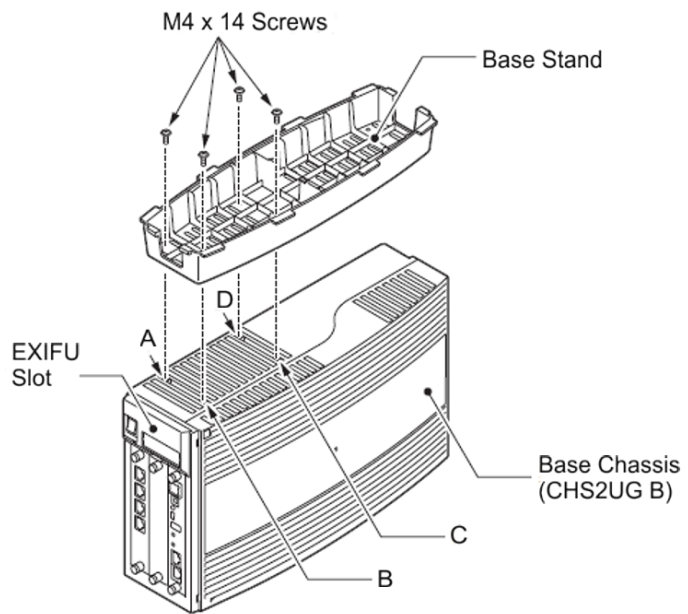
The 9.5" chassis can be stand mounted using the brackets supplied. The following section describes this procedure.

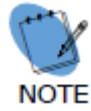
**NOTE**

*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.

**Figure 3-59 Attaching the Base Stand**

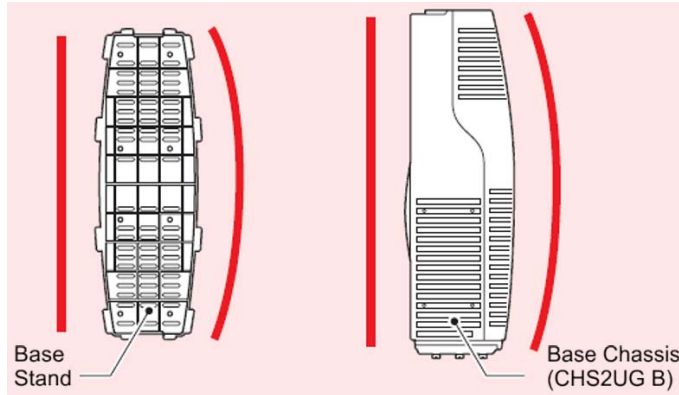




NOTE

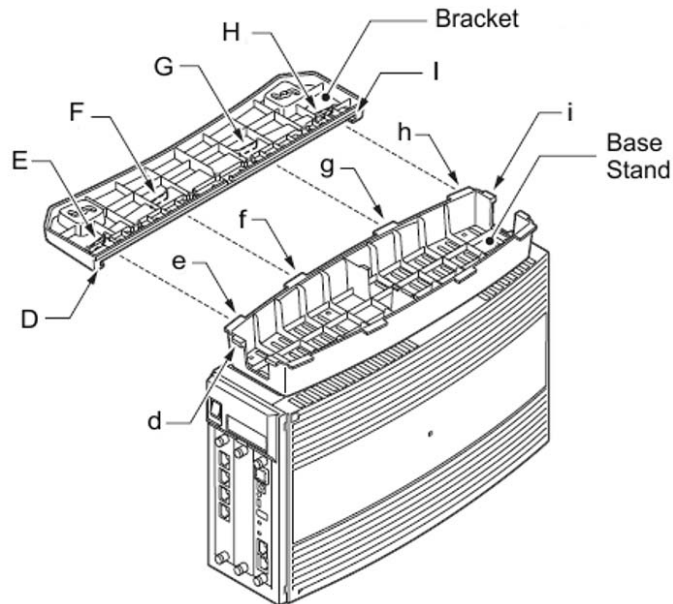
*When attaching the stand unit to the 9.5" Base chassis, ensure the shape of the stand unit aligns with the shape of the 9.5" chassis*

**Figure 3-60 9.5" Chassis with Base Stand Attached**



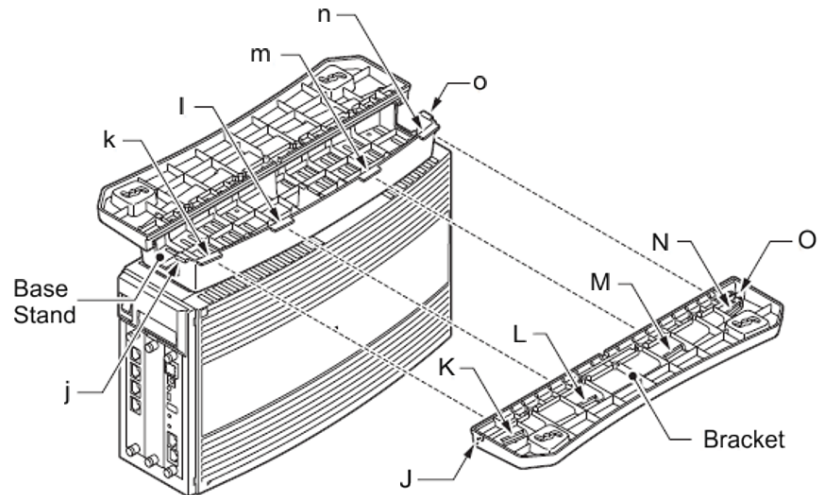
3. Install tab slots **D, E, F, G, H** and **I** of either bracket (stand unit brackets can be mounted on the left or right side), on tabs **d, e, f, g, h** and **i** of the stand unit.

**Figure 3-61 Attaching the First Stand Unit Bracket**



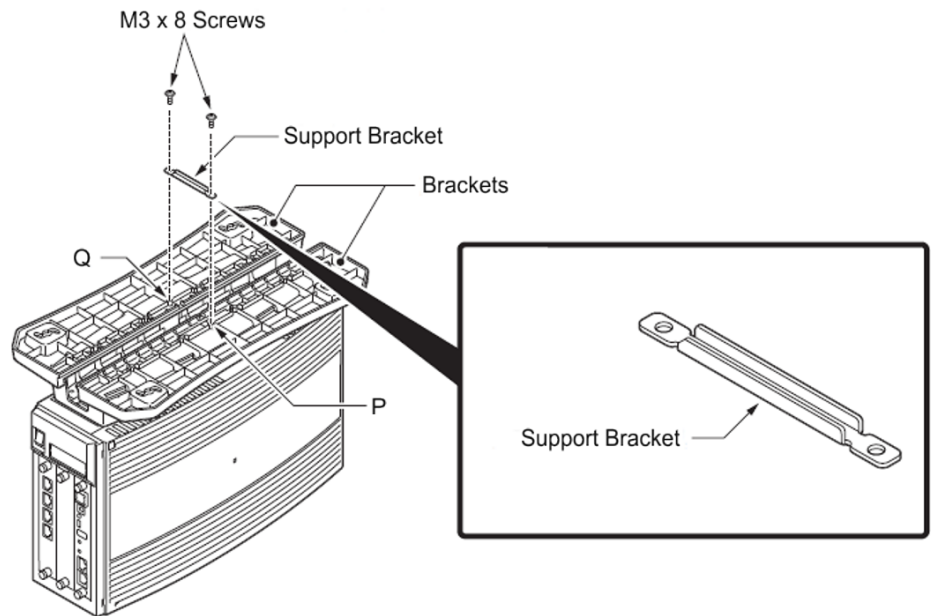
4. Install tab slots **J, K, L, M, N** and **O** of the remaining bracket on tabs **j, k, l, m, n** and **o** on the opposite side of the stand unit.

**Figure 3-62 Attaching the Second Stand Unit Bracket**



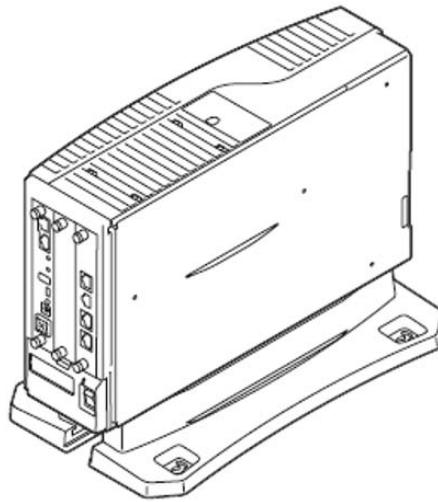
5. Align the support bracket with holes **P** and **Q** on the stand unit brackets and secure using the two M3 x 8 screws provided.

**Figure 3-63 Installing the Support Bracket**



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

**Figure 3-64 Stand Mount 9.5" Chassis**



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



**WARNING**

*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 [1.2 Installing the 9.5" Base \(CHS2UG\) Chassis on page 3-16](#) for complete details on grounding the system.
9. Refer to [1.1.5 Install AC Power Cords on 19" Chassis on page 3-15](#) for installation of the power cord or, Chapter 6 paragraph [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

## SECTION 5 RACK MOUNTING THE CHASSIS

### 5.1 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.

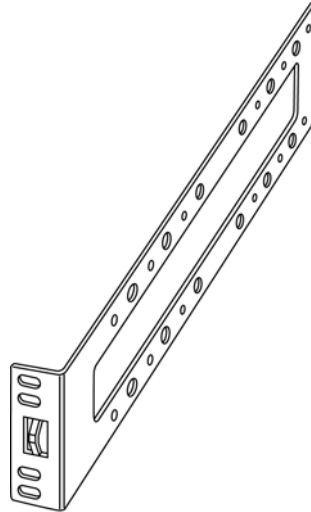
1. The 19" chassis requires two rack mount brackets per chassis for mounting. Each 19" chassis requires its own set of rack mount bracket(s). Refer to

figure below.



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

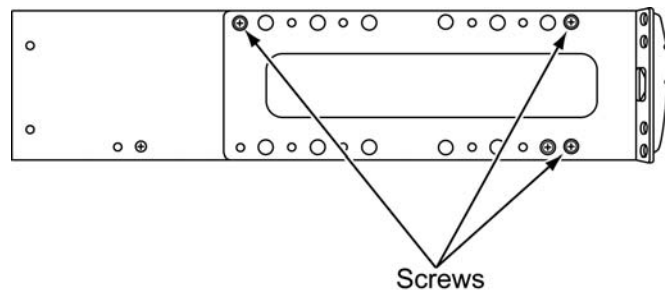
**Figure 3-65 CHS2UG Rack Mount Brackets**



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 below for the 19" chassis.

Repeat for additional chassis mounting.

**Figure 3-66 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.



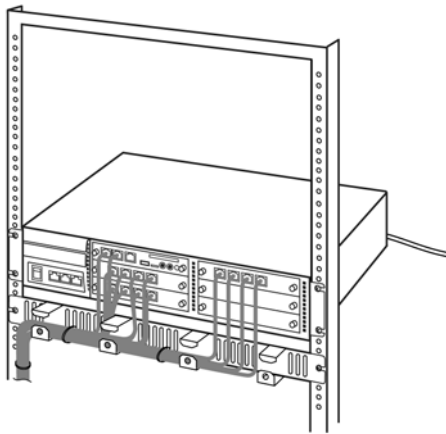
TIP

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

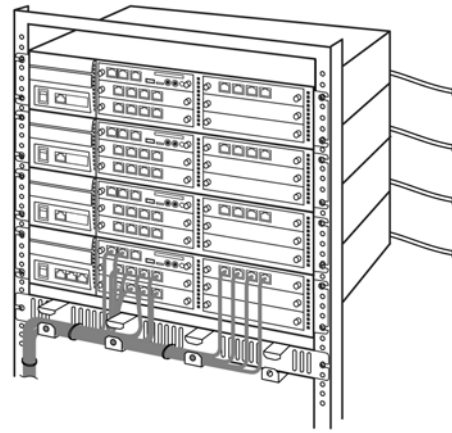
5. Secure the brackets to the rack using the screws supplied.

Repeat for additional chassis mounting.

**Figure 3-67 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 [1.1.3 Install Grounding on 19" Chassis on page 3-13](#) for complete details on grounding the system.



7. Refer to [1.1.5 Install AC Power Cords on 19" Chassis on page 3-15](#) to continue installation of the chassis or, Chapter 6 paragraph [2.1 Installation and Safety Precautions on page 4-3](#) for installation of blades.

## SECTION 6 BATTERY CONNECTION

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

### 6.1 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 CHS2UG BATT CABLE INT (internal cabling).

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

1. Power down the CHS2UG chassis

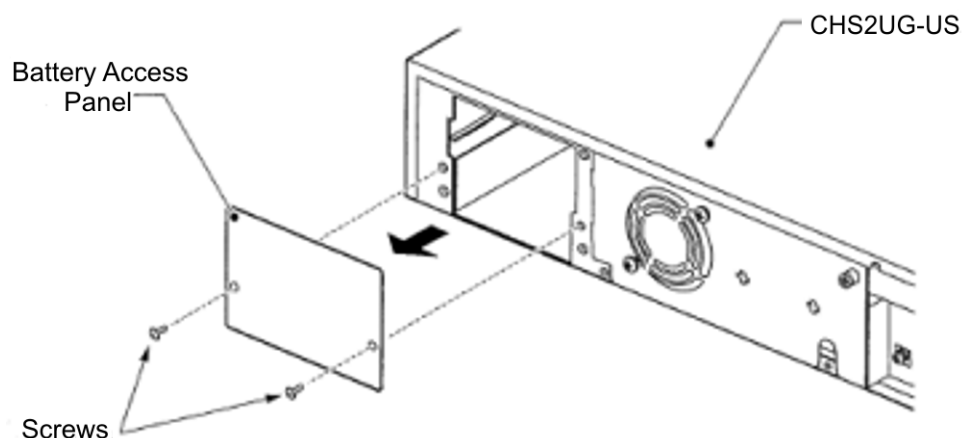


*Ensure the CHS2UG chassis is powered OFF.*

**IMPORTANT**

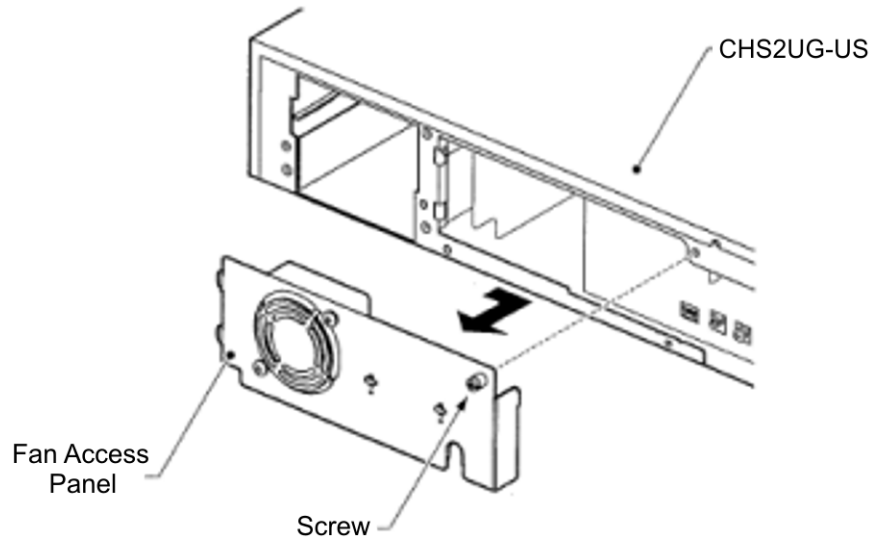
2. Disconnect AC power and grounding cable from rear of chassis.
3. Remove screws from battery access panel on rear of chassis.

**Figure 3-68 Removing Battery Access Panel**

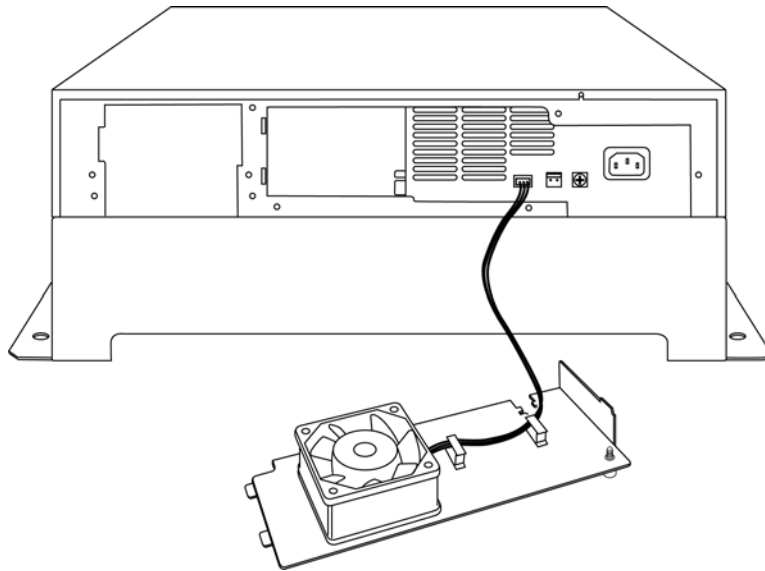


4. Remove access panel containing the fan. Refer to figures below

**Figure 3-69 Removing Access Panel**

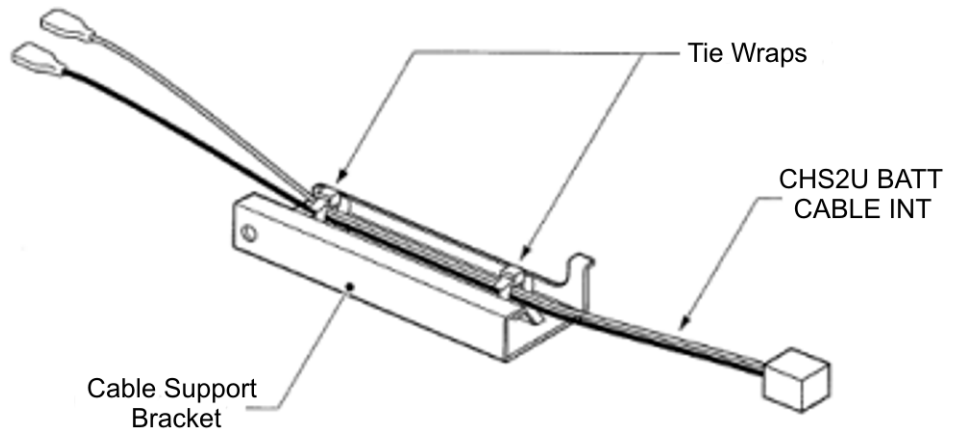


**Figure 3-70 Access Panel Removed**



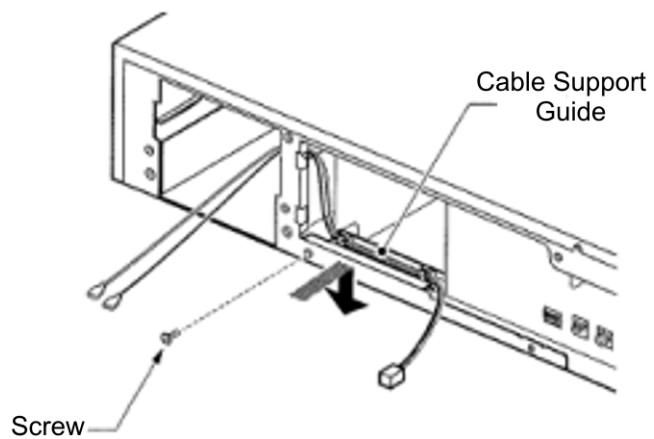
- Using tie wraps, secure CHS2UG BATT CABLE INT in cable guide bracket.

**Figure 3-71 Secure Cable in Support Bracket**



- With supplied screw, install cable guide in chassis.

**Figure 3-72 Installing Cable Support Guide**

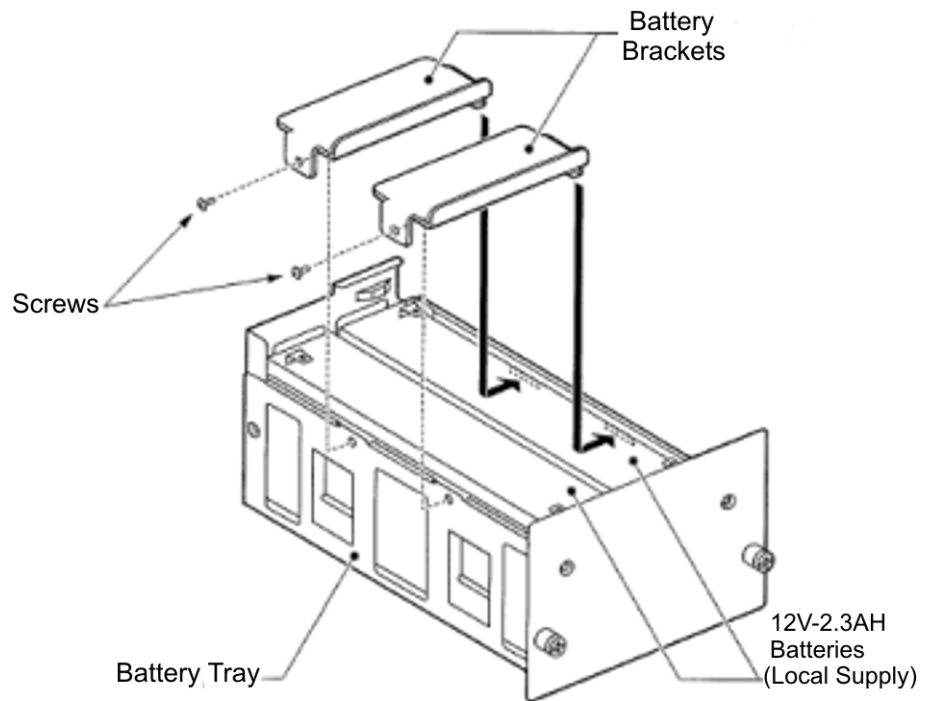


- Install two 2.3 AH-12V batteries (locally procured) into the CHS2UG BATT MTG KIT.



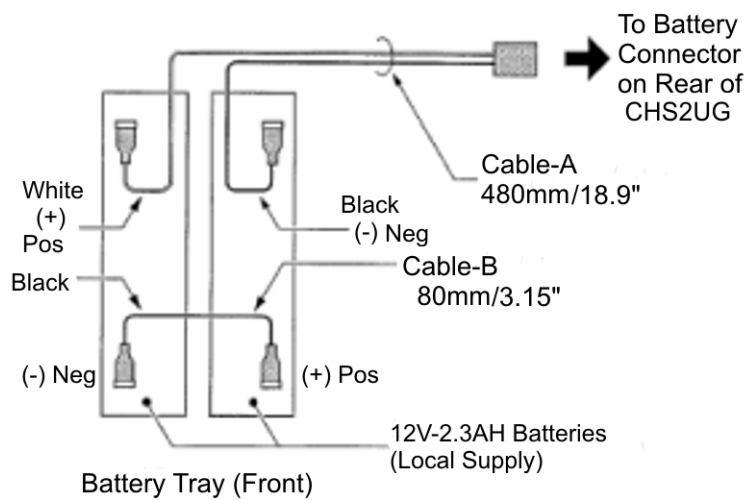
*The first battery must be installed on the left side, then slid to the right due to an installation tab on the mounting kit.*

**Figure 3-73 Installing Two Batteries**



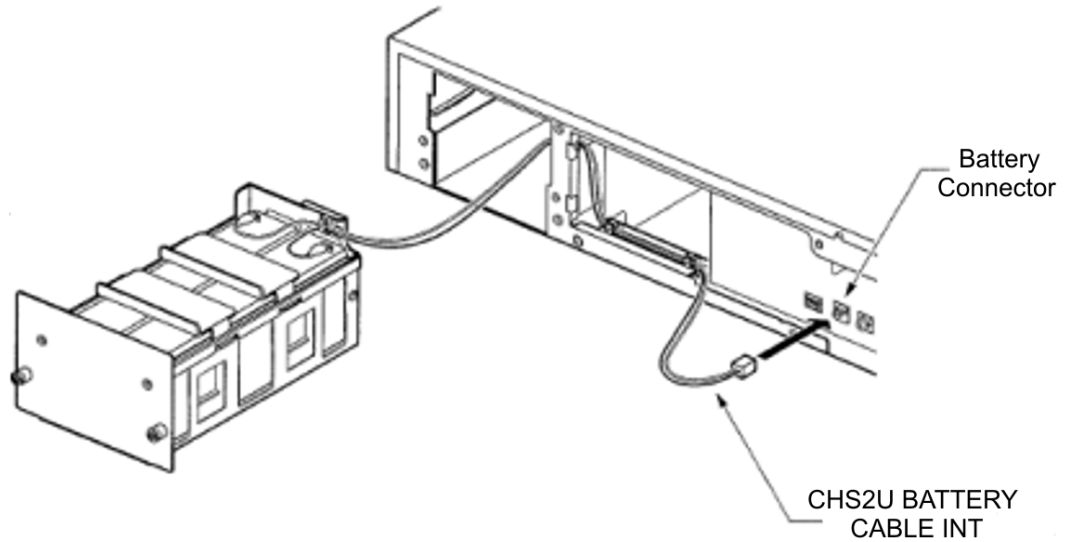
8. Using the supplied screws, secure the brackets to the CHS2UG BATT MTG KIT (refer to figure above).
9. Connect the provided battery cables to the batteries.

**Figure 3-74 Installing Battery Cable**



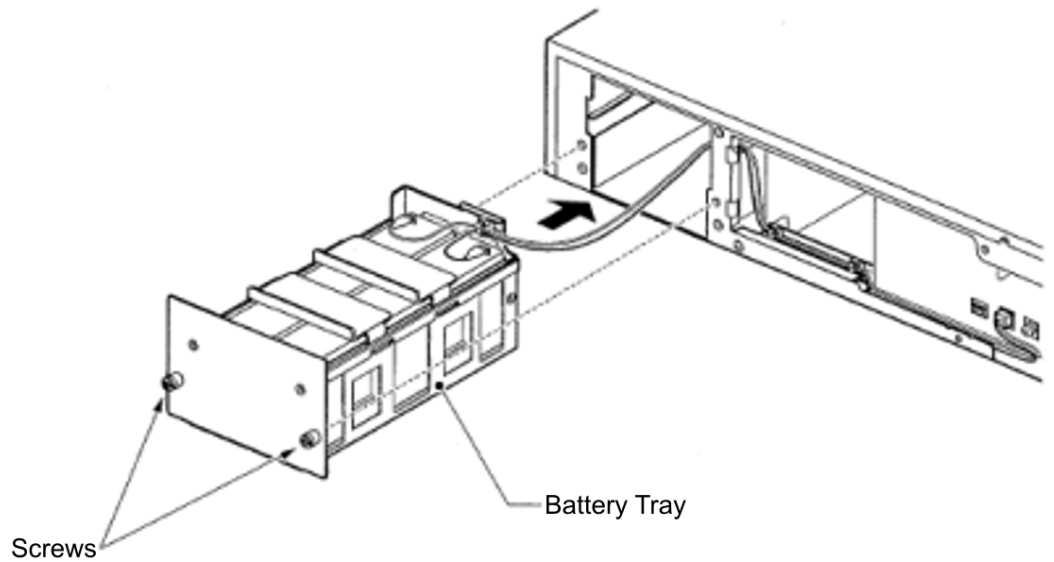
10. Connect CHS2UG BATT CABLE INT to battery connector.

**Figure 3-75 Connecting CHS2UG BATT CABLE INT**



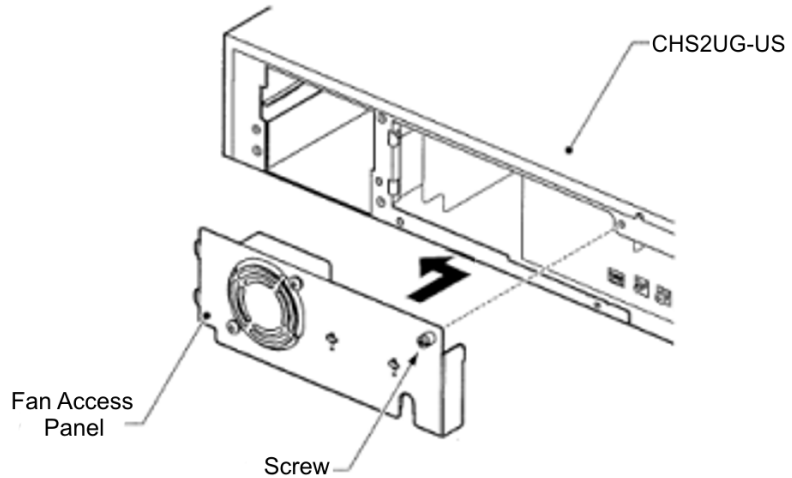
11. Install CHS2UG BATT MTG KIT into CHS2UG chassis and tighten the retaining screws.

**Figure 3-76 Installing Battery Tray into CHS2UG Chassis**



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

**Figure 3-77 Installing the Access Panel**



13. Connect grounding and AC power cable.

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

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

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

**Table 3-2 CHSG LARGE BATT BOX Capacity**

Configuration	Battery Capacity (Number of Batteries)	Number of CHSG LARGE BATT BOX
SV9100		
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

è *One CHSG LARGE BATT BOX can be used for 4 x 2U chassis for approximately 45 minutes.*

### 6.2.1 Floor Mounting the CHS LARGE BATT BOX



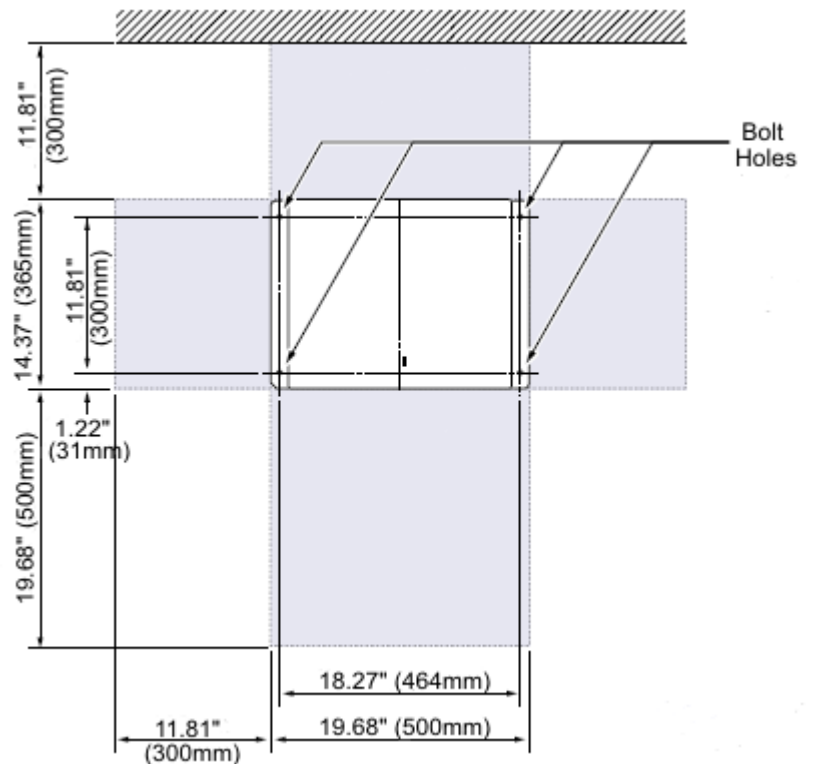
- *Because of injury from falling equipment, wall mounting the CHSG LARGE BATT BOX is not recommended.*
- *Mounting the CHSG LARGE BATT BOX directly on the floor is not recommended.*



- *The CHS BASE UNIT raises the height of the CHSG LARGE BATT BOX 120mm (4.72").*
- *When the CHSG LARGE BATT BOX and CHS2UG are connected for long term use, the CHS2UG JOINT BRACKET KIT is used.*

1. Use the template shown in below for required spacing before drilling holes for 0.39" (10mm) anchor bolts (locally procured).

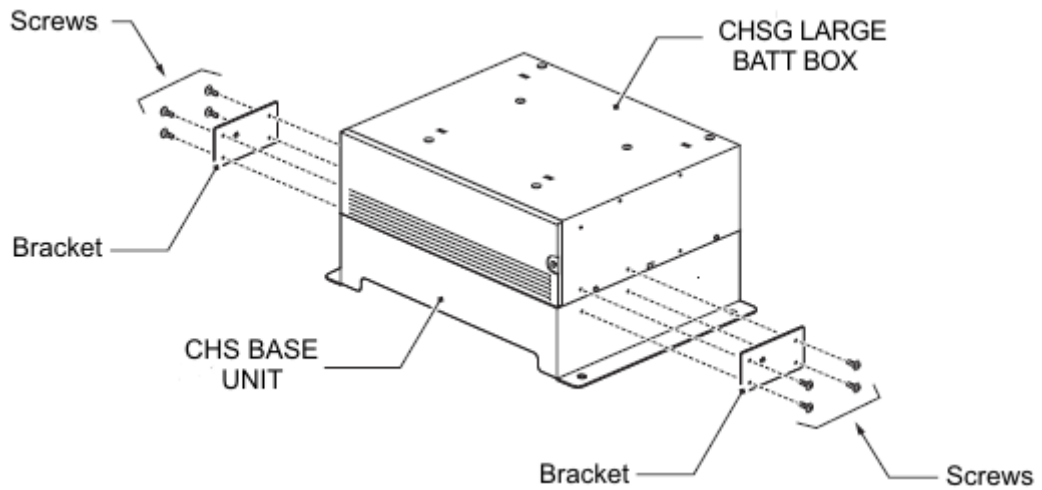
**Figure 3-78 Floor Mount Spacing Guide**



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

3. Align bolt holes in CHS BASE UNIT (see figure below) with holes drilled in floor and secure using four anchor bolts.
4. Align and install the CHS LARGE BATT BOX on top of the CHS BASE UNIT.

**Figure 3-79 Installing the CHSG LARGE BATT BOX using the CHS2UG JOINT BRACKET KIT**

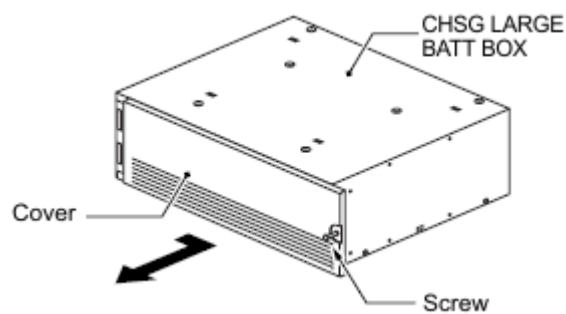


5. Secure the CHS LARGE BATT BOX to the CHS BASE UNIT using the CHS2UG JOINT BRACKET KIT. Refer to figure below.

### 6.2.2 Battery Installation

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

**Figure 3-80 Removing CHSG LARGE BATT BOX Cover**

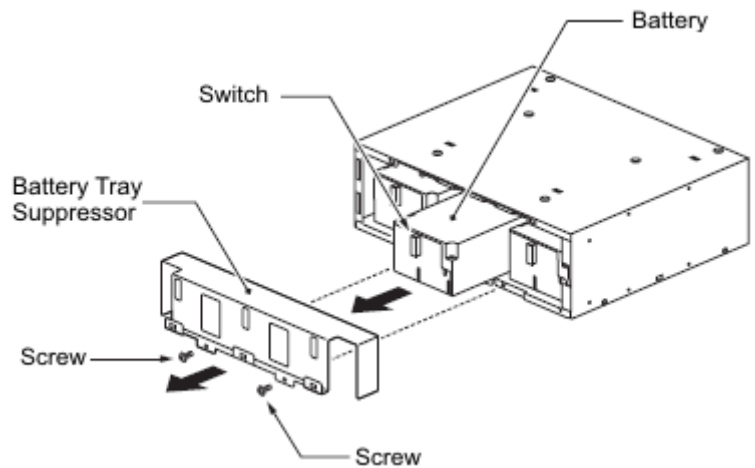


2. Swing cover outward and detach from CHS LARGE BATT BOX.



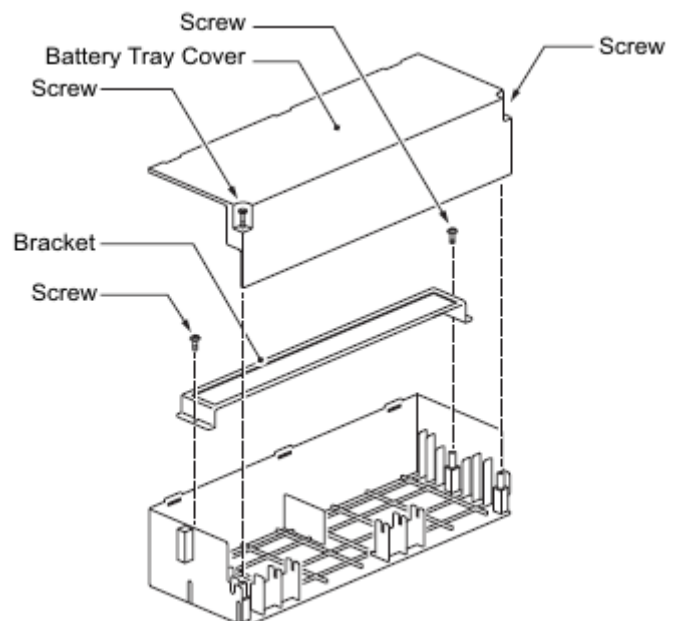
3. Remove two screws from front of Battery Tray Suppressor.

**Figure 3-81 Removing Battery Tray Suppressor**



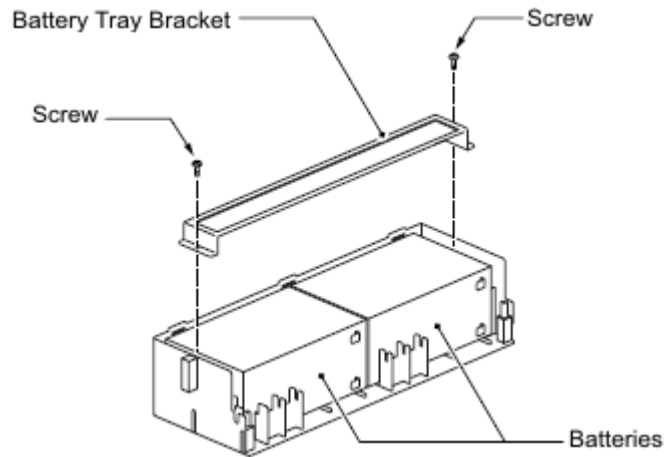
4. Slide Battery Tray Suppressor outward to remove.
5. Slide Battery Tray(s) out of CHS LARGE BATT BOX.
6. Loosen two screws and remove the Battery Tray Cover.

**Figure 3-82 Removing Battery Tray Cover**



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

**Figure 3-83 Removing Battery Tray Bracket**



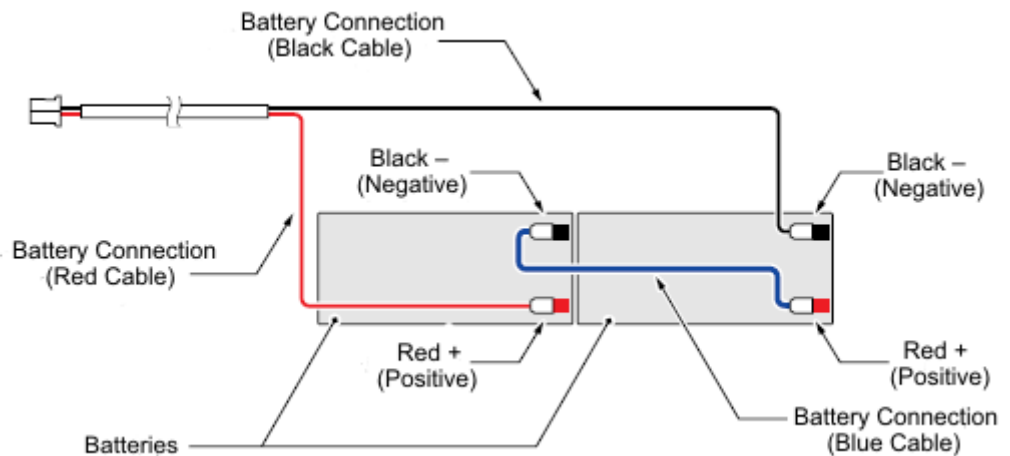
8. Refer to battery cable connection guide below for connection of battery cable to battery terminals. Repeat for additional battery connection.



**WARNING**

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

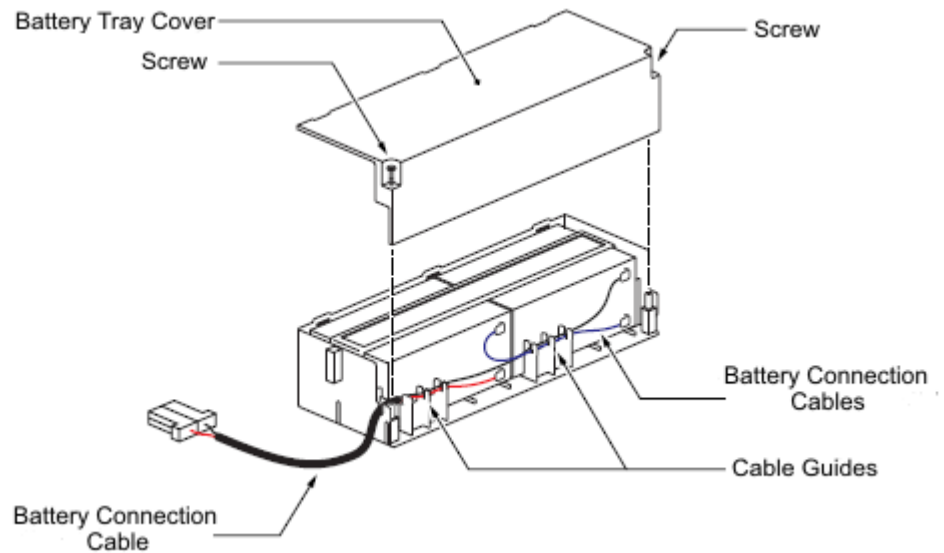
**Figure 3-84 Battery Cable Connection Guide**



9. Install batteries into Battery Tray. Refer to figure below.

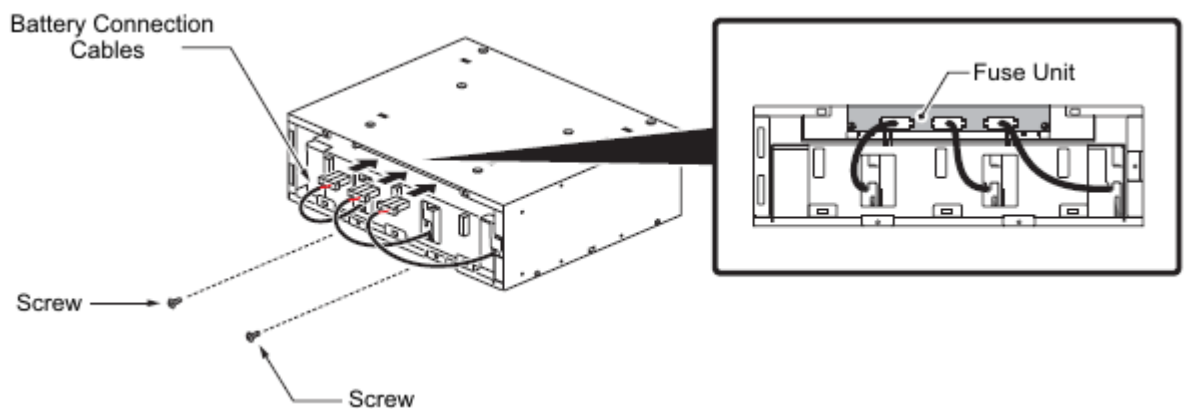
10. Using two screws, install the Battery Tray Bracket.

**Figure 3-85 Installing Battery Connection Cable**



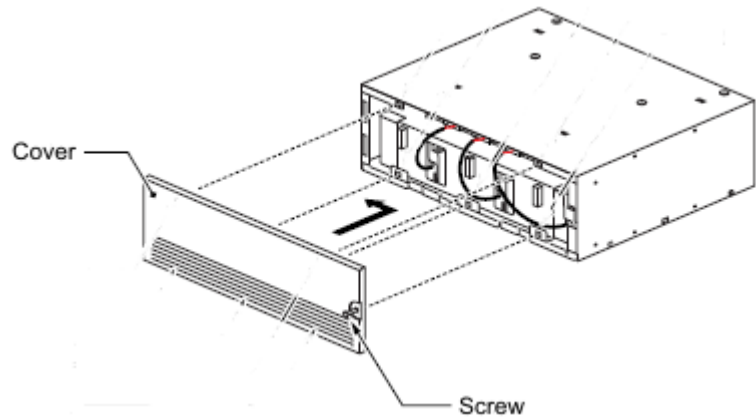
11. Insert Battery Connection Cable into cable guides.
12. Install the Battery Tray Cover and tighten the two screws.
13. Slide the Battery Trays into the CHS LARGE BATT BOX.
14. Install the Battery Tray Suppressor while pulling the Battery Connection Cable(s) through the cutouts provided. Secure with two screws.
15. Plug the Battery Connection Cable(s) into the Fuse Unit. Refer to figure below.

**Figure 3-86 Connecting Battery Cables**



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

**Figure 3-87 Installing Cover Battery**



### 6.2.3 CHS LARGE BATT BOX to CHS2UG Connection

1. Power down the CHS2UG chassis.

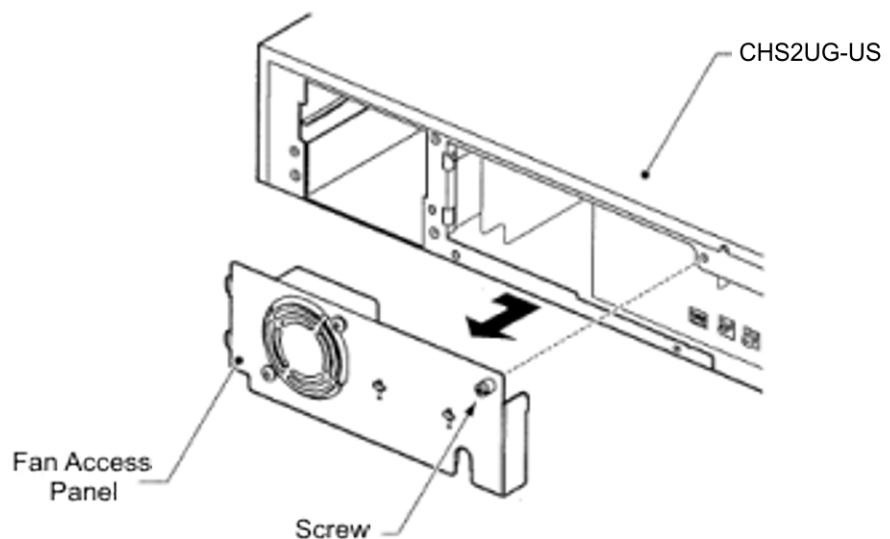


**WARNING**

*Ensure the CHS2UG chassis is powered OFF.*

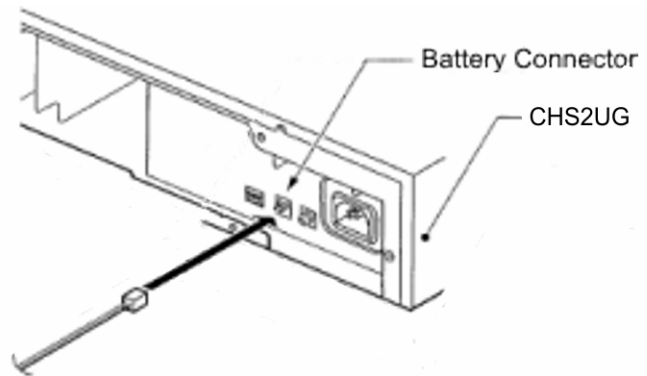
2. Disconnect AC power cable from rear of chassis.
3. Remove fan access panel from rear of CHS2UG chassis.

**Figure 3-88 Removing Fan Access Panel**



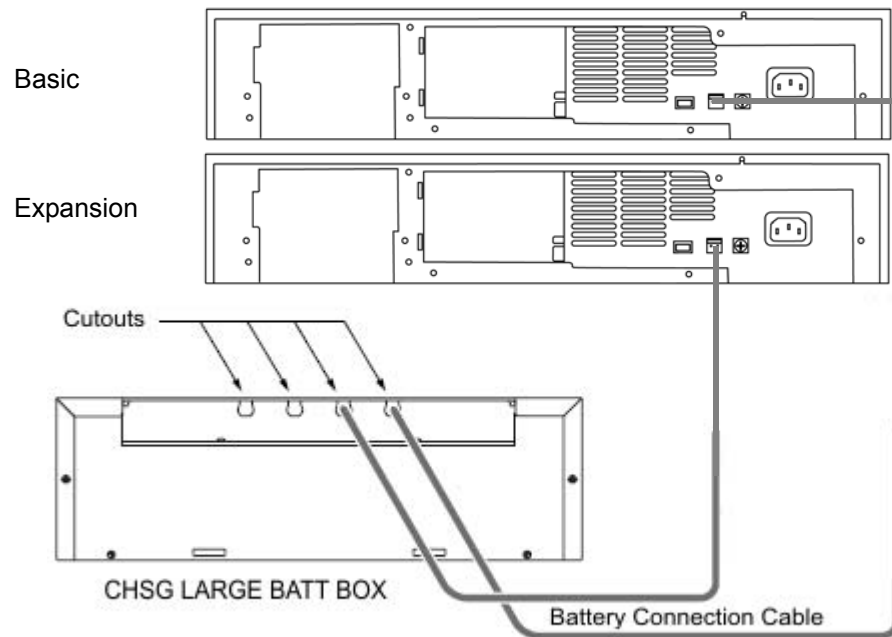
4. Connect one end of Battery Connection Cable to Battery Connector on rear of Basic and Expansion chassis.

**Figure 3-89 Connecting External Battery to CHS2UG**

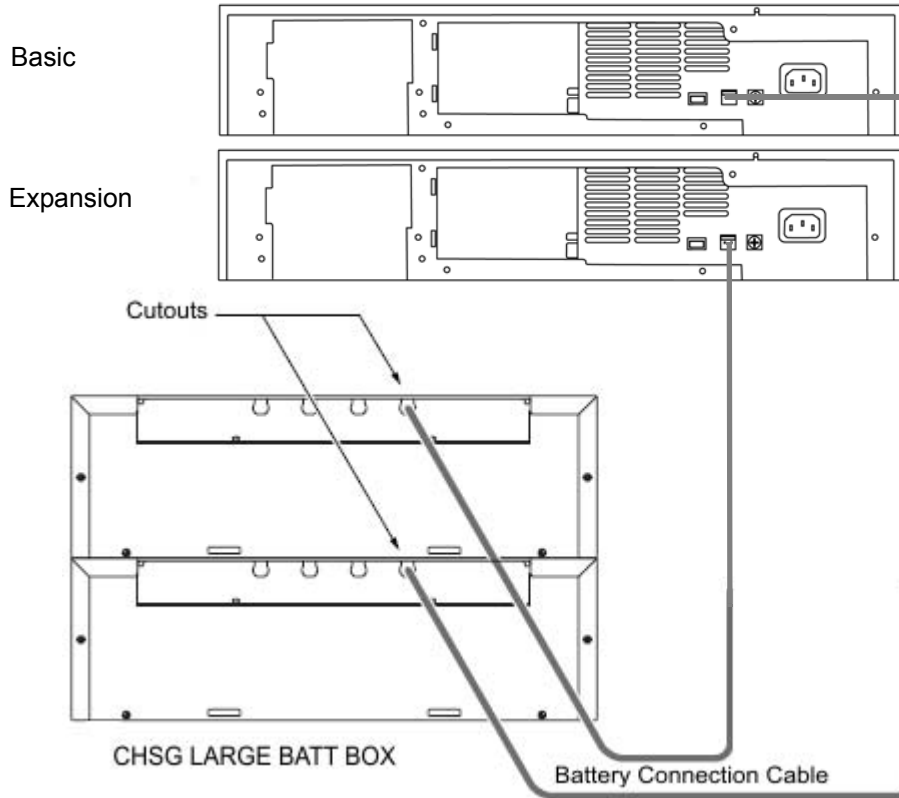


5. Connect other end of cable to Battery Connector on rear of CHS LARGE BATT BOX chassis.

**Figure 3-90 Single CHSG LARGE BATT BOX Connection**

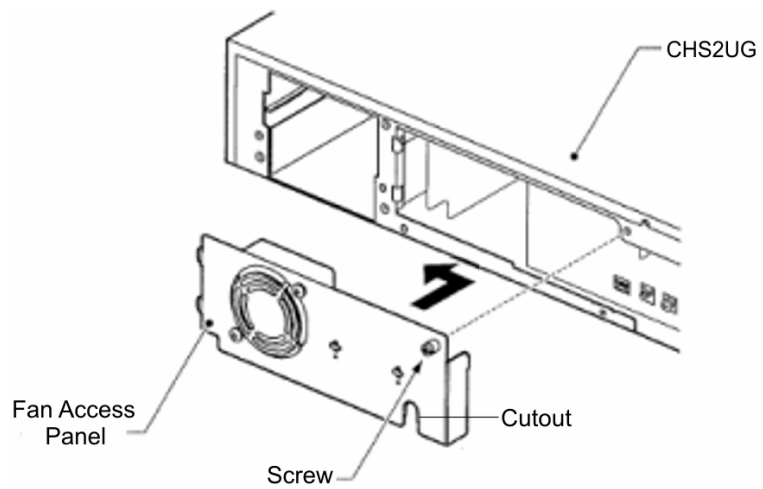


**Figure 3-91 Dual CHSG LARGE BATT BOX Connection**



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.

**Figure 3-92 Install the Fan Access Panel**



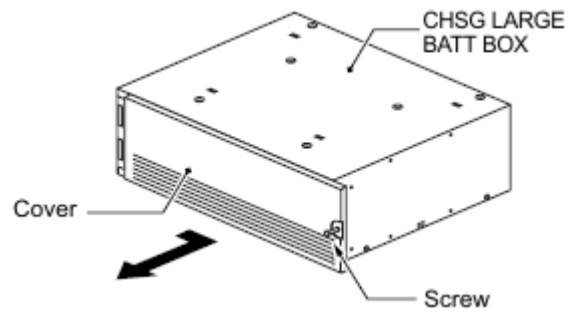
7. Connect grounding and AC power cables.

8. Apply power to chassis (refer to Chapter 4, [2.6 Powering Up the SV9100 on page 4-9](#)).

#### 6.2.4 CHS LARGE BATT BOX Fuse Replacement

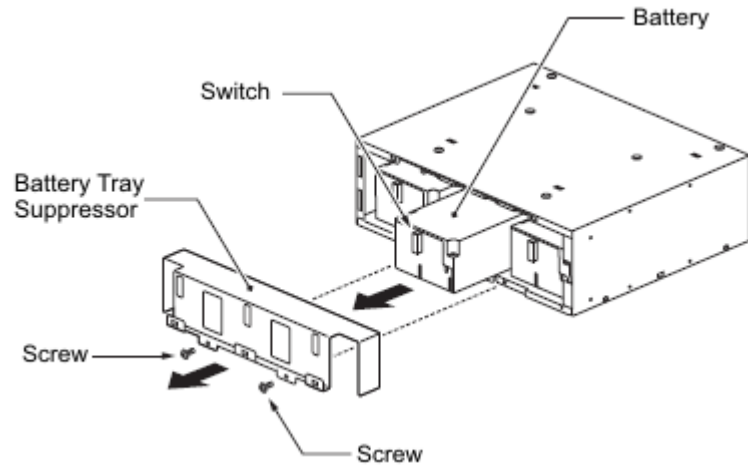
1. Loosen screw on front of CHS LARGE BATT BOX.

**Figure 3-93 Removing CHSG LARGE BATT BOX Cover**



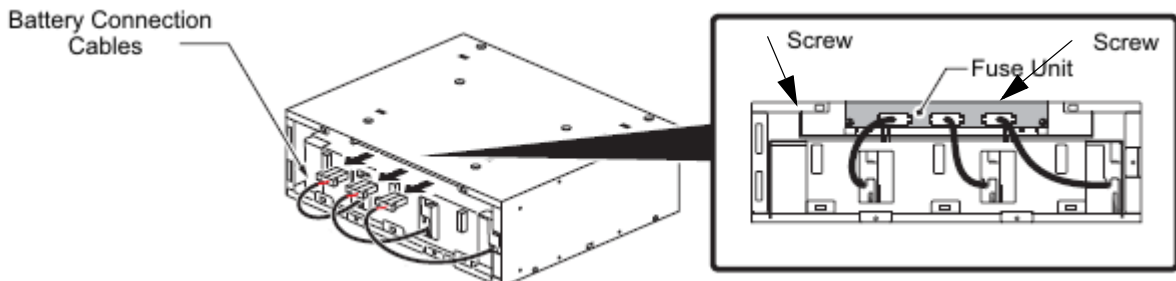
2. Remove two screws from front of Battery Tray Suppressor (Refer to [Figure 3-94 Removing Battery Tray Suppressor](#)).

**Figure 3-94 Removing Battery Tray Suppressor**



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

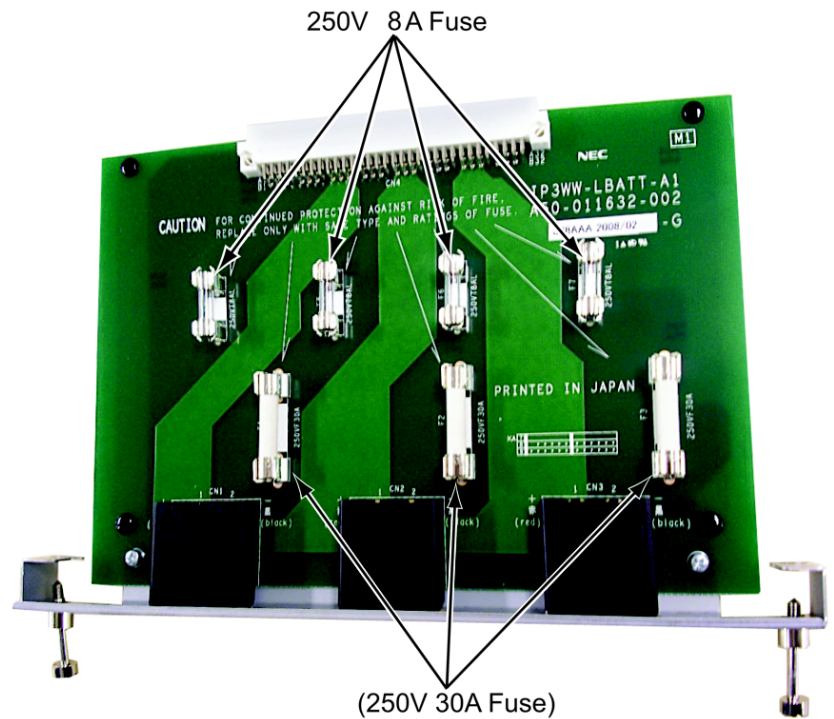
**Figure 3-95 Disconnecting Battery Cables**



5. Loosen two screws and pull Fuse Unit out of the CHS LARGE BATT BOX.
6. Refer to [Figure 3-96 CHSG LARGE BATT BOX Fuse Unit](#) on page [3-69](#) for replacement of 8A or 30A fuses.

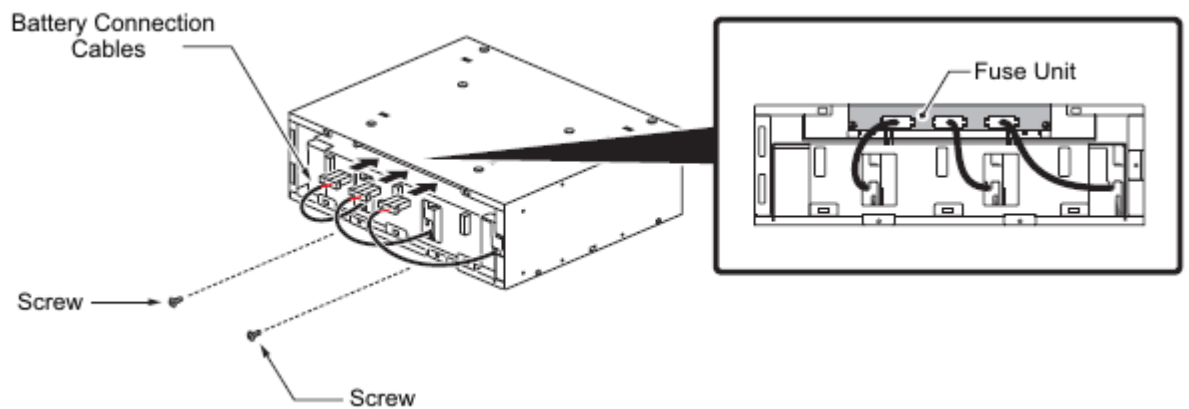


Figure 3-96 CHSG LARGE BATT BOX Fuse Unit



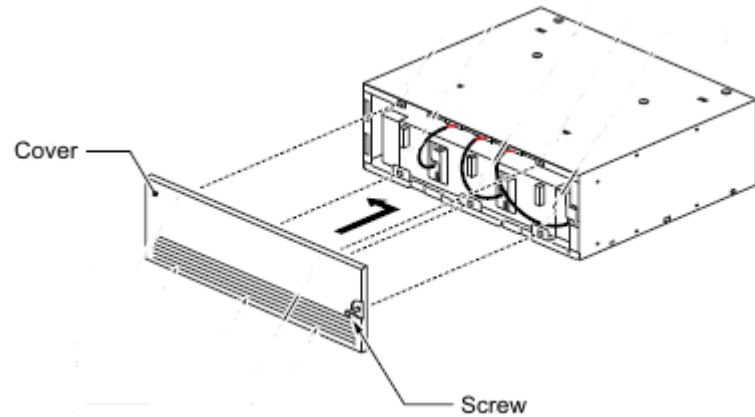
7. Slide the Fuse Unit into the and tighten the two screws (refer to [Figure 3-95 Disconnecting Battery Cables on page 3-68](#)).
8. Plug the Battery Connection Cables into the Fuse Unit.

Figure 3-97 Connecting Battery Cables



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

**Figure 3-98 Installing Cover Battery**



## 6.3 Installing the CHSGW SMALL BATT BOX on the 9.5" Chassis

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

### 6.3.1 CHSGW SMALL BATT BOX Installation

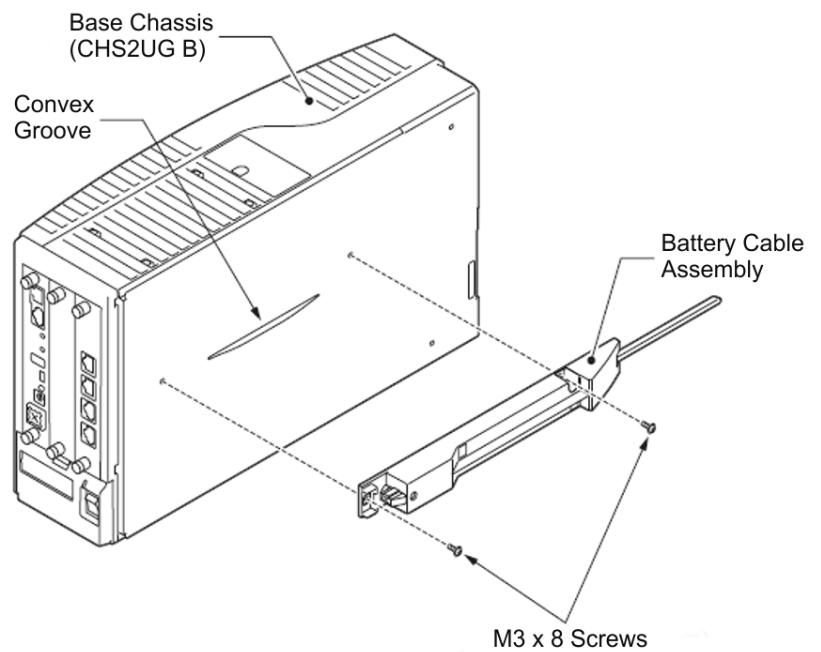
1. Power down the CHS2UG chassis.



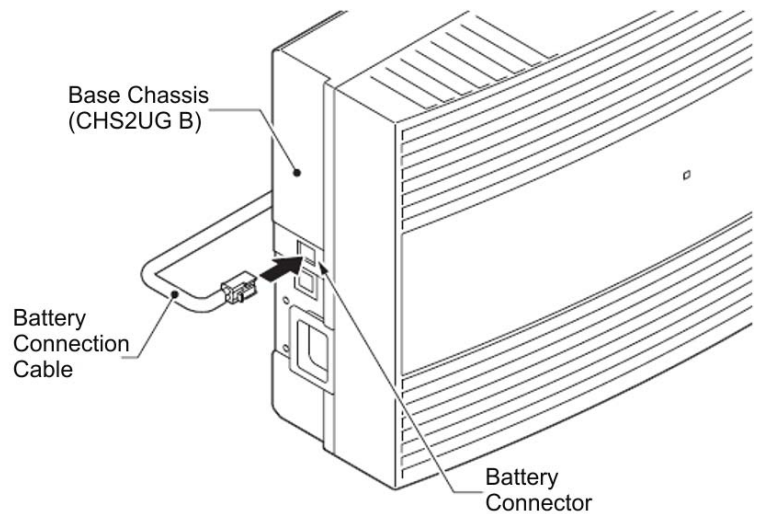
**WARNING**

*Ensure the CHS2UG 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) chassis. Use the two M3 x 8 screws provided to secure the cable assembly in place (refer to [Figure 3-99 Installing Battery Cable Assembly on page 3-71](#)).

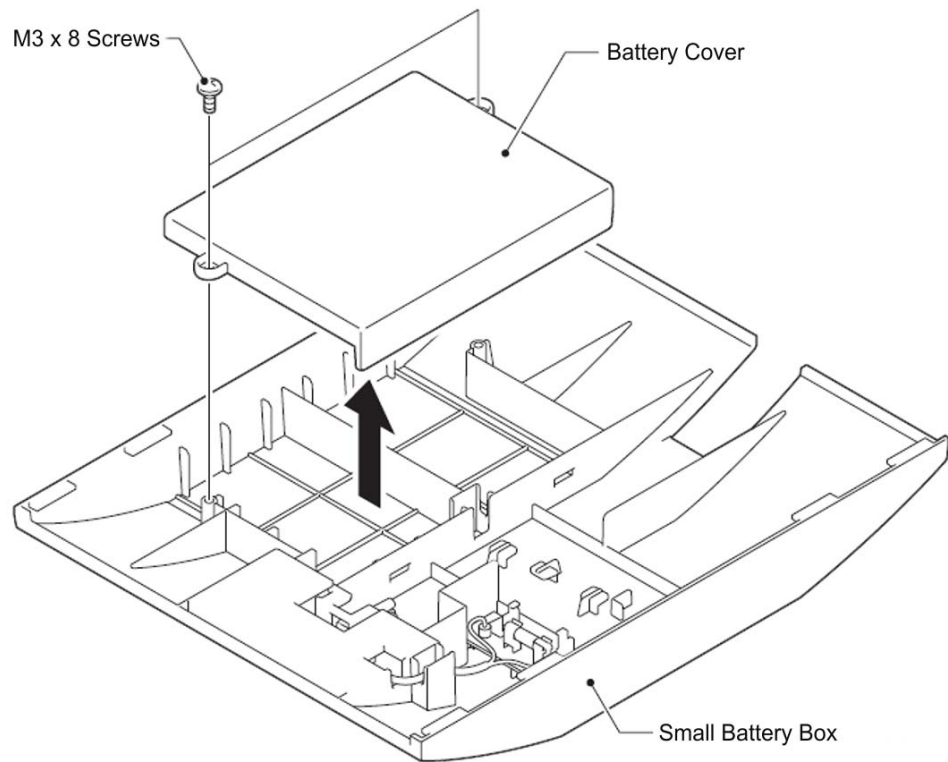
**Figure 3-99 Installing Battery Cable Assembly**

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

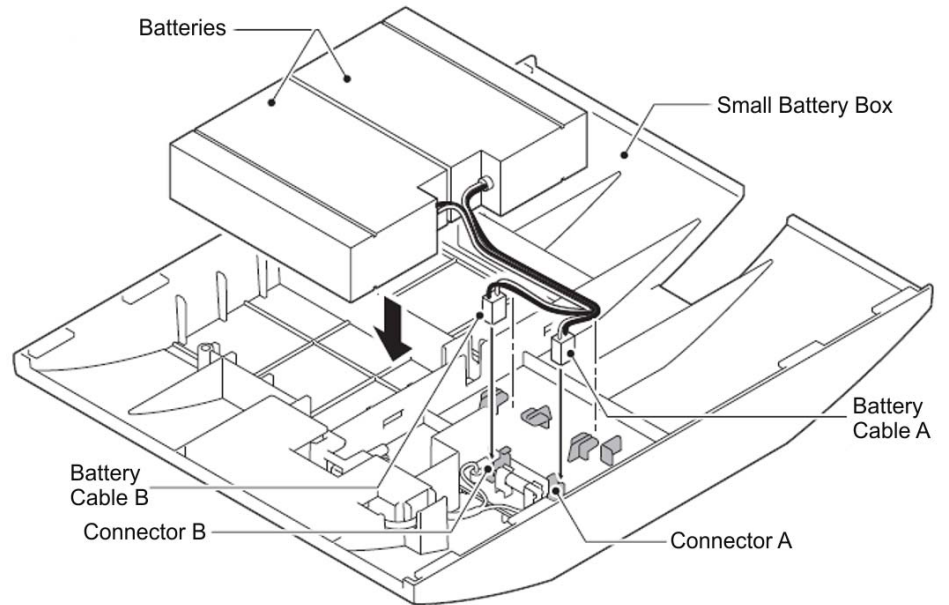
**Figure 3-100 Installing Battery Connection Cable**

5. Remove the two M3 x 8 screws from the Small Battery Box, then remove the battery cover.

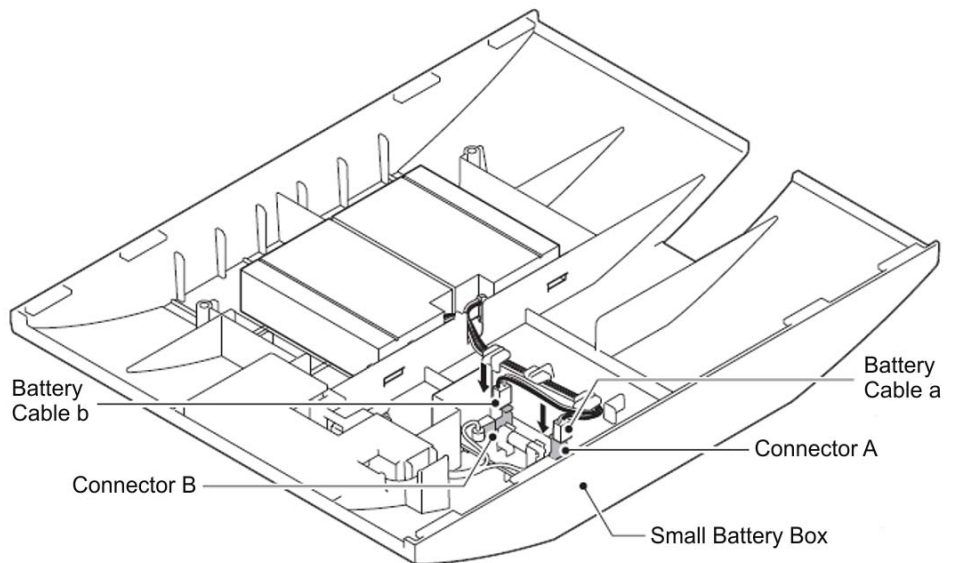
**Figure 3-101 Removing Battery Cover**



6. Place the two batteries into the Small Battery Box (refer to [Figure 3-102 Installing Batteries on page 3-73](#)).

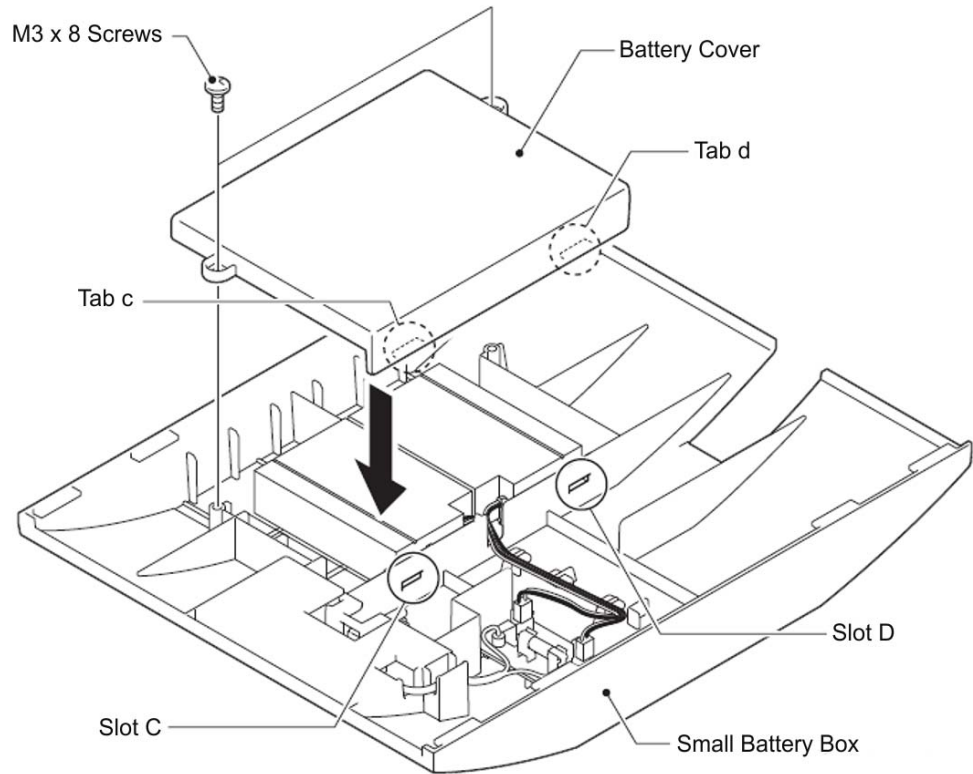
**Figure 3-102 Installing Batteries**

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

**Figure 3-103 Connecting Battery Cables**

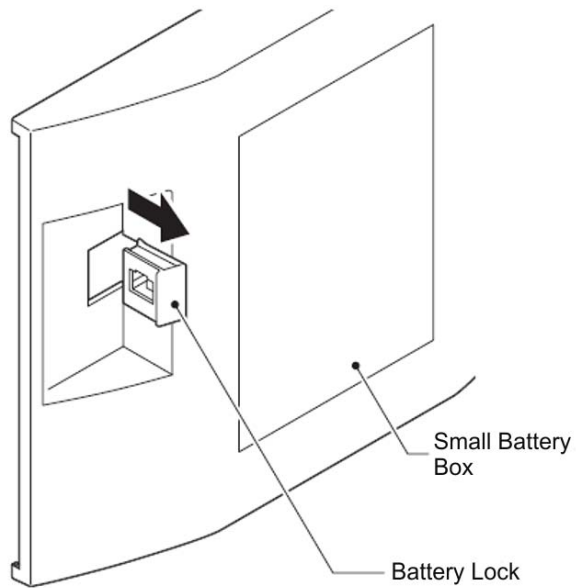
8. Insert tabs **c** and **d** of the battery cover into slots **C** and **D** of the Small Battery Box. Secure the cover using two M3 x 8 screws (refer to [Figure 3-104 Installing Battery Cover on page 3-74](#)).

**Figure 3-104 Installing Battery Cover**



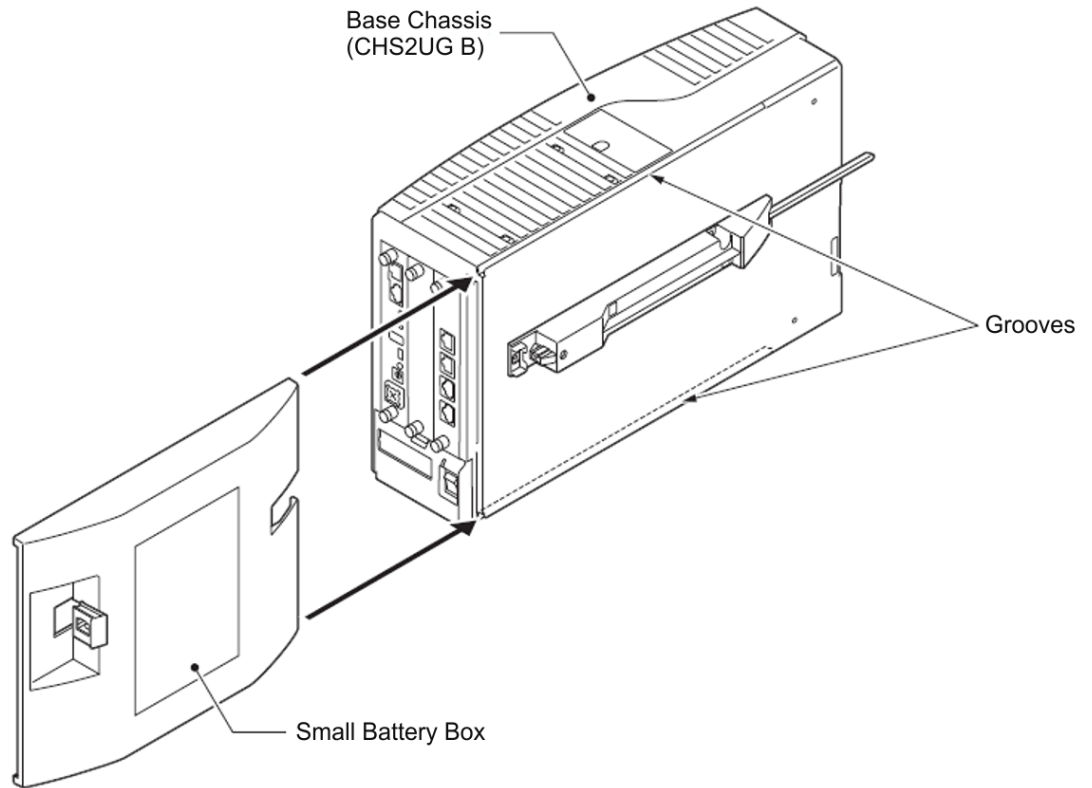
9. Pull the battery lock of the Small Battery Box forward to unlock it.

**Figure 3-105 Unlocking the Small Battery Box**



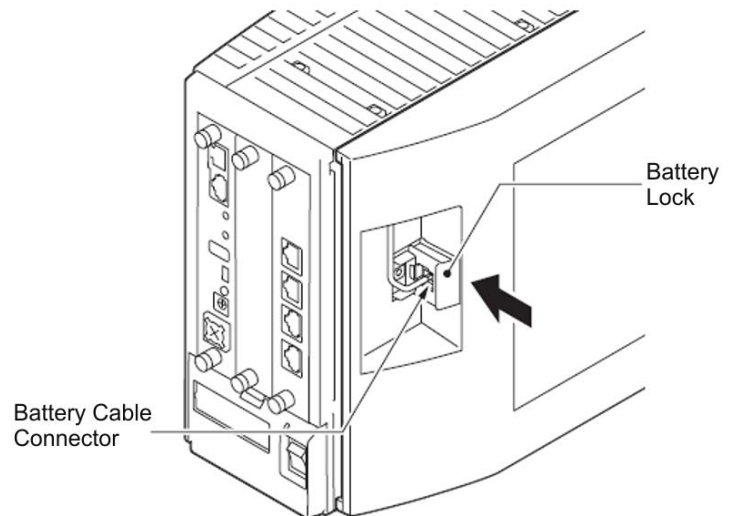
- Align the Small Battery Box with the grooves at the top and bottom of the Base chassis and slide into position.

**Figure 3-106 Installing Small Battery Box**



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

**Figure 3-107 Locking the Small Battery Box**





12. Connect grounding wire to chassis.

### 6.3.2 CHSGW 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.*

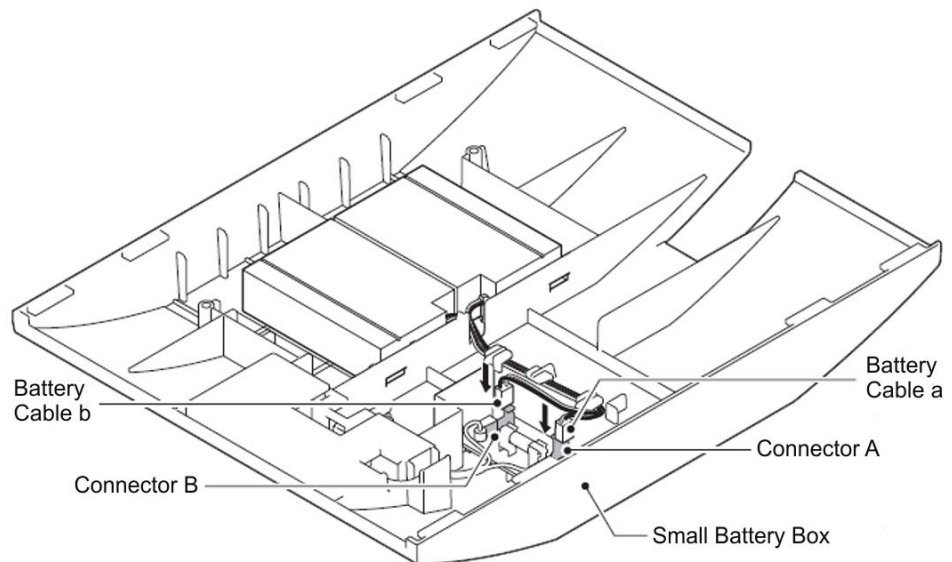
2. Disconnect AC power cable from rear of chassis.



*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.

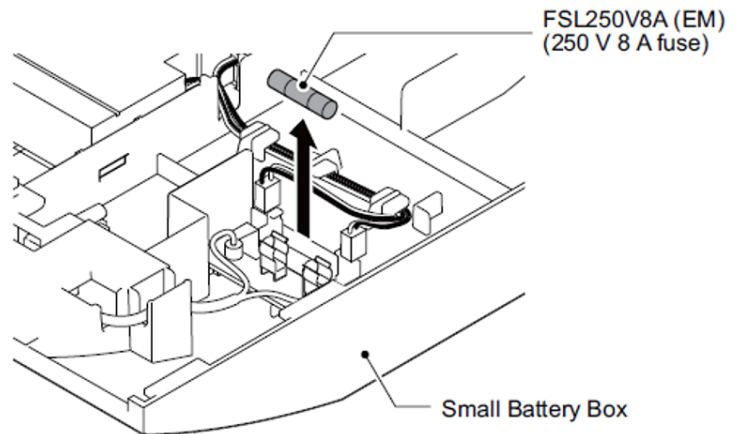
**Figure 3-108 Disconnecting the Battery Cables**





4. Remove and replace the fuse as needed.

**Figure 3-109 Removing the Fuse**



5. Reconnect battery cables **a** and **b** to connectors **A** and **B**.
6. To replace the battery, refer to section [6.3.1 CHSGW SMALL BATT BOX Installation on page 3-70](#).

#### 6.4 Installing the External Batteries (CHS LARGE BATT BOX) to the 9.5" Gateway (CHS2U GW) or Base (CHS2UG) Chassis

An optional, CHS LARGE BATT BOX can be installed to provide external battery power to the CHS2U 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").*

##### 6.4.1 CHS LARGE BATT BOX Installation

To install the batteries in the CHS LARGE BATT BOX, refer to [Chapter 3, section 6.2.2 Battery Installation on page 3-60](#).

### 6.4.2 CHS LARGE BATT BOX to 9.5" Chassis Connection

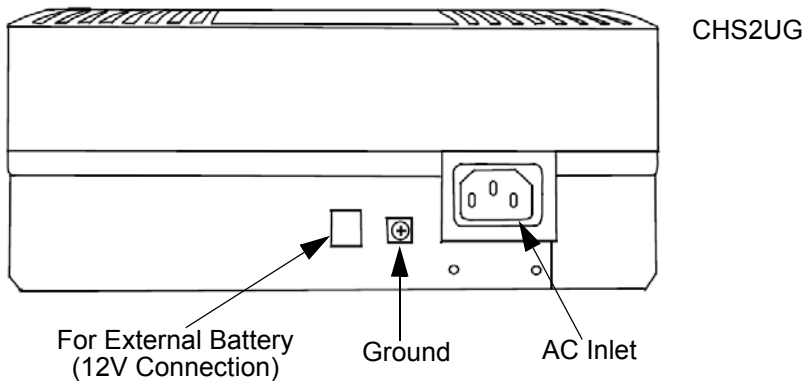
1. Power down the CHS2U GW or CHS2UG chassis.



*Ensure the CHS2UG GW-US or CHS2UG chassis is powered OFF.*

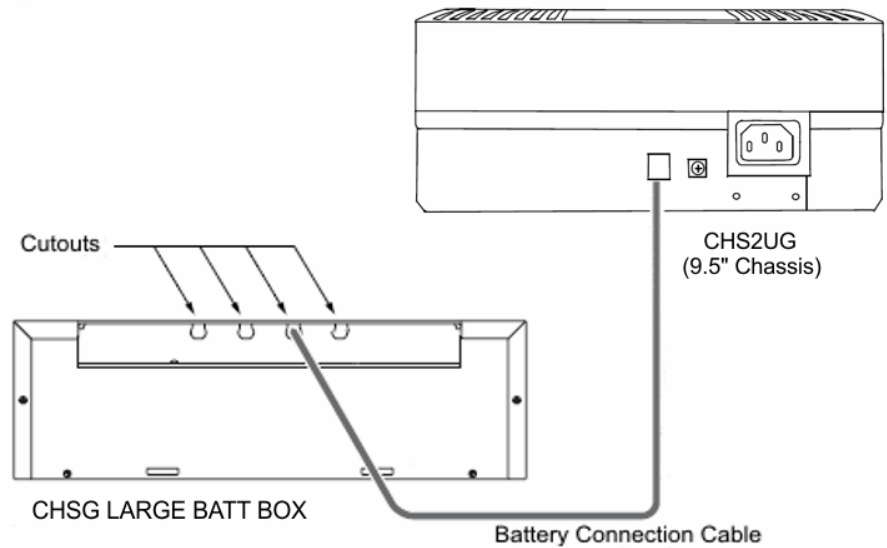
2. Disconnect AC power cable from rear of chassis.
3. From the back of the 9.5" chassis, remove the black plastic square covering the two-prong battery terminal leads (refer to [Figure 3-110 9.5" Chassis \(Rear View\)](#)).

**Figure 3-110 9.5" Chassis (Rear View)**



4. Connect one end of Battery Connection Cable to Battery Connector on rear of 9.5" chassis.
5. Connect other end of cable to Battery Connector on rear of CHS LARGE BATT BOX chassis (refer to [Figure 3-111 CHSG LARGE BATT BOX to CHS2UG Connection on page 3-79](#)).

Figure 3-111 CHSG LARGE BATT BOX to CHS2UG 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 on page 4-9](#).

#### 6.4.3 CHS LARGE BATT BOX Fuse Replacement

To replace the fuse(s) in the CHS LARGE BATT BOX, refer to Chapter 3, section [6.2.4 CHS LARGE BATT BOX Fuse Replacement on page 3-67](#).

## SECTION 7 POWER SUPPLY



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

## SECTION 8 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.

### 8.1 CHS2UG Chassis

### 8.1.1 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.*

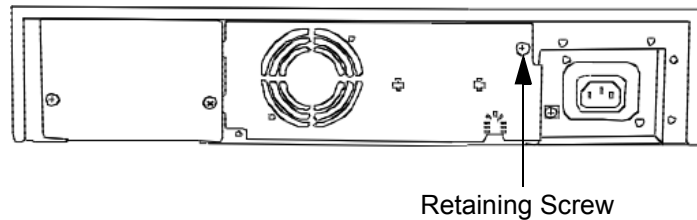
1. Ensure the chassis is powered down.



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

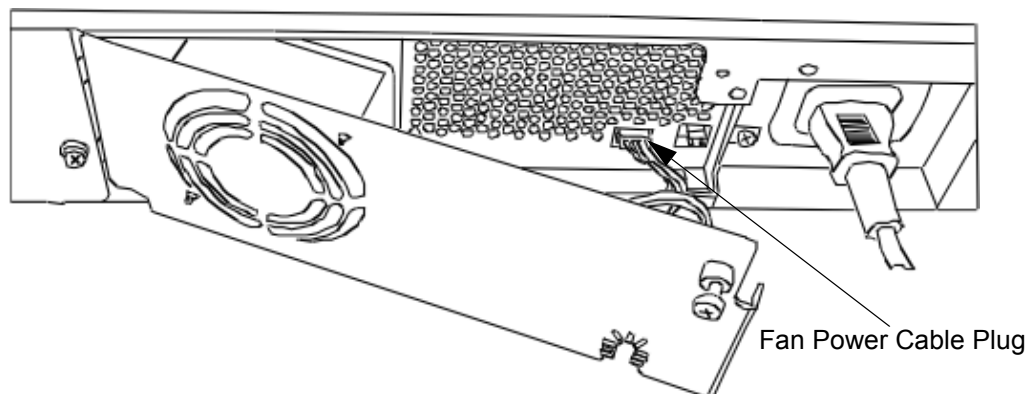
2. Loosen retaining screw from chassis access panel.

**Figure 3-112 19" Chassis Access Panel**



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

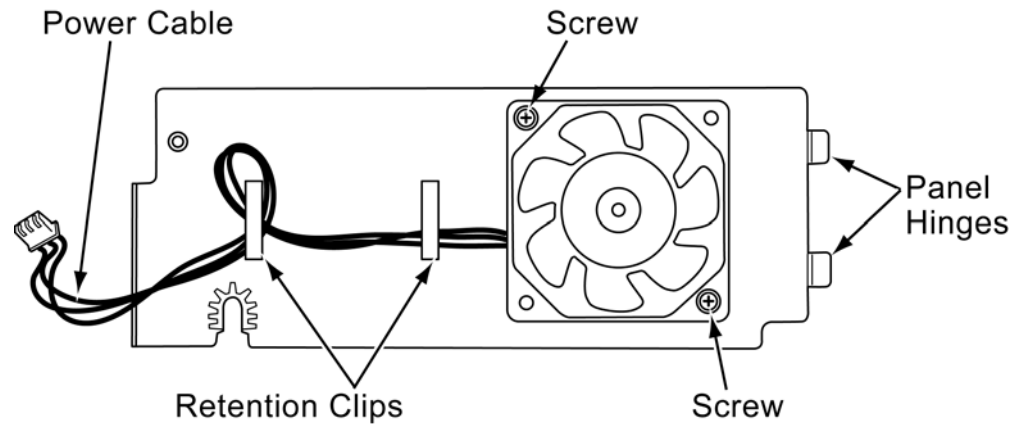
**Figure 3-113 Opening Chassis Access Panel (19" Chassis)**



4. Remove chassis access panel from rear of chassis.

5. Remove cabling from retention clips.

**Figure 3-114 Chassis Access Panel Removed (19" Chassis)**



6. Remove two screws securing fan to access cover. Keep screws for use when installing replacement fan.

#### 8.1.2 Install Cooling Fan

1. Align replacement fan with holes and secure with two screws.
2. Install cabling into retention clips.
3. Insert access panel hinges into slots on rear of chassis.
4. Plug fan power cable into three prong plug.
5. Reinstall access cover and secure with retaining screw.



# *Installing the SV9100 Blades*

## **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 CHS2U has six slots. In the Controlling Chassis, the GCD-CP10 must be installed in the first slot (slot 1). In the CHS2U GW, the GCD-CP10 must be installed in the first slot (slot 1).

#### **Slot Locations in the CHS2U (19" Controlling Chassis):**

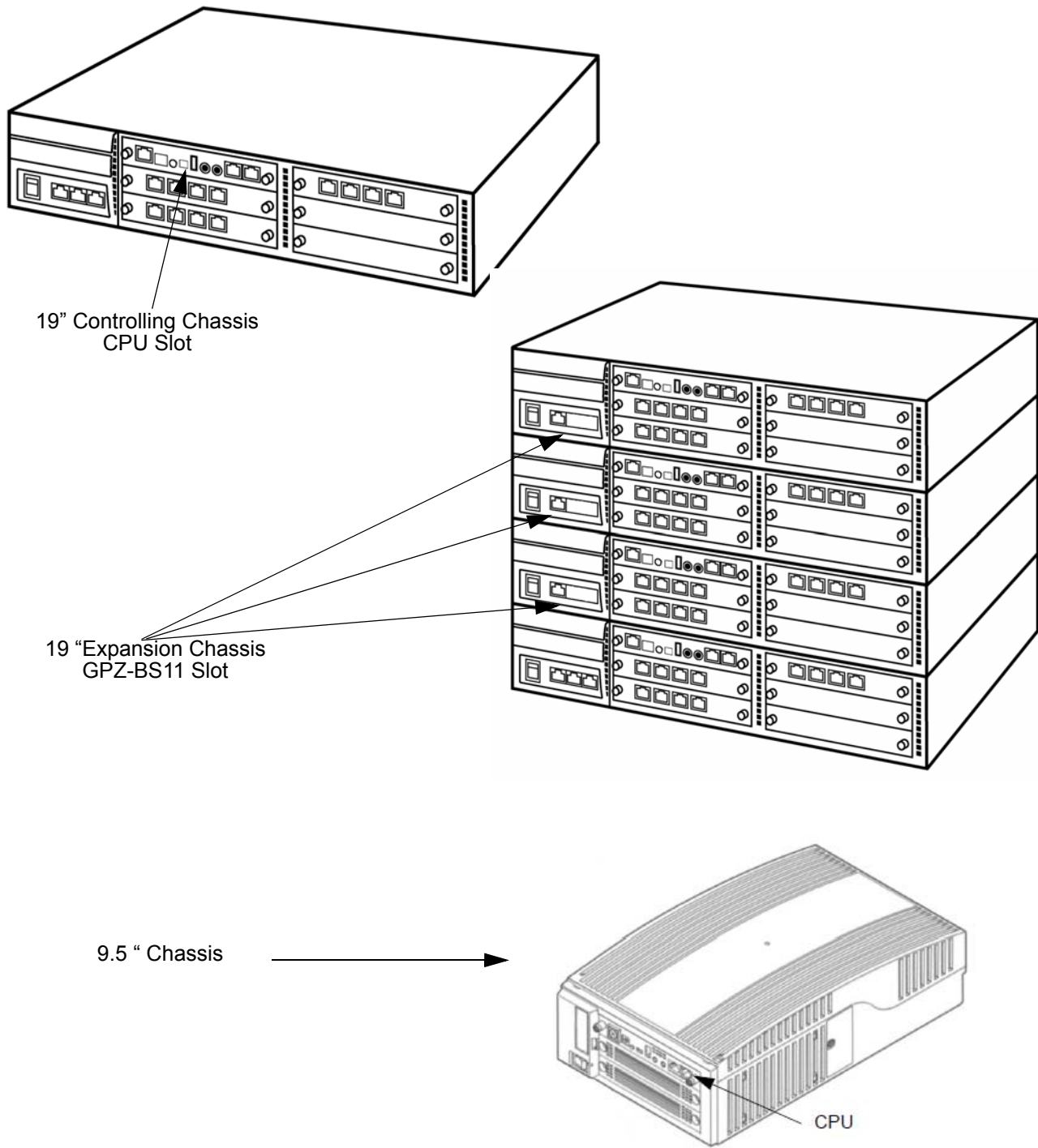
- ◆ Slot 1 – dedicated for the CPU
- ◆ Slots 2~6 – are universal

#### **Slot Locating in the CHS2U (19" Expansion Chassis):**

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

#### **Slot Locations in the CHS2U GW (9.5" Controlling Chassis):**

- ◆ Slot 1 – dedicated for the CPU
- ◆ Slots 2~3 – are universal



**Figure 4-1 Chassis CPU and Expansion Slot Locations**



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## 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.*

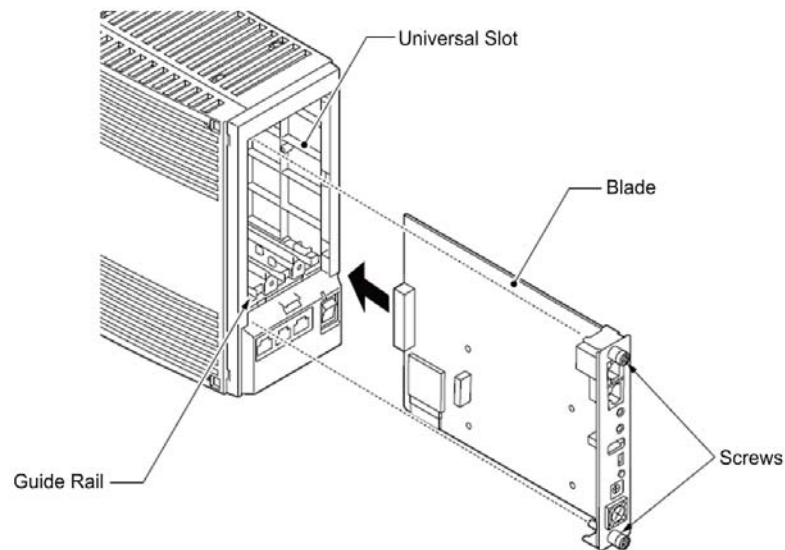
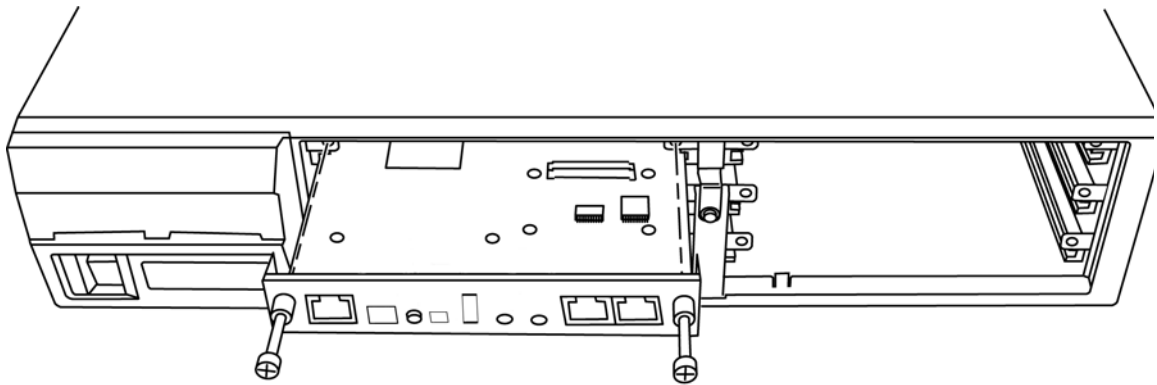
- ◆ Never install telephone wiring during a lightning storm.
- ◆ Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- ◆ Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- ◆ Use caution when installing or modifying telephone lines.
- ◆ Ground the Controlling and Expansion chassis before installing or removing the blades.
- ◆ The Expansion Chassis **must be installed with the system power OFF**.
- ◆ *Do not* touch the blade components.
- ◆ Carry the blade in a conductive polyethylene bag to prevent static electricity until ready to install the blade.
- ◆ 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
  - ◆ GPZ-BS10 and GPZ-BS11
  - ◆ GPZ-IPLE

## 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 within the guide rail and push the blade securely into position. Tighten the thumb screws on either side of the blade.
2. The Status LED starts flashing when the blade starts processing (15 seconds).



**Figure 4-2 Inserting Blades in the Chassis**

## 2.2.2 Order of Installing Extension Blades

The order in which the station blades (GCD-8DLCA, GCD-16DLCA, GPZ-8DLCA and GCD-4LCA, GCD-8LCA, 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 after the other types of extension and trunk blades have been installed.*

For example, when a digital station blade (GCD-16DLCA) is in Slot 1 (ext. 200~215) 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 on page 4-5](#) applies.

**Table 4-1 Extension Blade Installation Order Example**

Order of Installation	Blade Slot Number	Blade	Extension Numbers
1	1	GCD-16DLCA	200~215
2	2	GCD-16DLCA	216~231
3	4	GCD-8DLCA GPZ-8LCE	232~247
4	3	GCD-8DLCA	248~263

After the initial powering up of the system, subsequent powering up or resets do not change the slot identification. System programming (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, 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

Initial Blade			Updated Blade		
Blade Slot #	Blade	Extension Numbers	Blade Slot #	Blade	Extension Numbers
1	GCD-16DLCA	200~215	1	GCD-16DLCA	200~215
2	GCD-8DLCA (no daughter board)	216~223	2	—	—
3	GCD-16DLCA	224~239	3	GCD-16DLCA	224~239
—	—	—	4	GCD-8DLCA (with daughter board)	240~255

The system automatically recognizes each blade installed in the system. *If a blade has previously been installed* 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 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 previously used for a telephone and a DSS Console is to be installed in that same port, it must first 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-4COTA, GCD-4DIOPB, GCD-4ODTB or GCD-2BR1A 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 board registers with the system first, install these boards after the other types of extension and trunk blades have been installed.***

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

**Table 4-3 Trunk Blade Installation Order Example**

<b>Order of Installation</b>	<b>Blade Slot Number</b>	<b>Blade</b>	<b>Line Circuits</b>
1	4	GCD-4COTA with GPZ-4COTE	1~8
2	5	GCD-4COTA	9~12
3	7	GCD-4ODTB	13~16
4	6	GCD-4ODTB	17~20

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

The GCD-PRTA (T1/PRI) Interface blade uses the first block of 30 consecutive trunks.

For example, if an GCD-4COTA and GPZ-4COTE blade is installed for trunks 1~8, the GCD-PRTA (T1/PRI) blade automatically uses trunks 9~32. If GCD-4COTA and GPZ-4COTE blades are installed for trunks 1~8 and 17~24, the GCD-PRTA (T1/PRI) blade uses trunks 25~54. The GCD-PRTA (T1/PRI) blade cannot use trunks 9~16 (even if available) since they are not part of a consecutive block of 30 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 of the blades listed below, the system *must first be powered down*.

- ◆ GCD-CP10
- ◆ GPZ-BS10 and GPZ-BS11
- ◆ GPZ-IPLE

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 screws 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 capability. Refer to Program 90-05 in the Univerge SV9100 Programming Manual for detailed programming information.

## 2.5 Blade Capacities

The universal architecture of the UNIVERGE SV9100 provides flexibility when installing blades. With the exception of the GCD-CP10 blade, any blade can be installed in any slot. [Table 2-4 Maximum System Capacities – Blades on page 2-9](#) (SV9100) provides a list of the blades and the maximum capacities with various chassis configurations.

## 2.6 Powering Up the SV9100

### 2.6.1 Performing a Cold Start

This section describes the process for starting the system for the first time or starting a system that has been turned off.



### IMPORTANT CONSIDERATIONS

- ♦ *System software loaded from flash memory and the customer data is erased 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.

## 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 the customer data is loaded 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.

## 2.6.3 Resetting the System

This section describes the process of resetting a system that is running. Observe the important information listed in 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
- ◆ 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. **# \* # \***.

**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**

<b>Station Ports:</b>	Port 1~99 : 200~298 Port 100~300 : 299~499 Port 301~960 : 5000~5659
<b>Virtual Station Ports:</b>	Port 1~99 : Port 100~199 : Port 200~256 :
<b>Trunk Ports:</b>	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 will automatically detect and assign most circuit types when the device is connected.

1. Dial 10-03-01.
2. Press TRANSFER to Select the slot, port or channel (with ESIU 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 type of device connected, the type 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:

1. Press **EXIT** to exit the program options, if needed.
2. 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 of saving the database – either using the PCPro application or saving directly to USB Memory on GCD-CP10. 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 blade and, using Program 90-03, save the software. Due to the file naming structure, note that a USB Memory can only hold 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 will require 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 within 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 blade.

When restoring a database file, as the slot definitions may be different, remove all blades from the system except the GCD-CP10 and the GCD-8DLCA/GCD-16DLCA in slot 2. After the system has been reset, blades can be reinstalled. 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.



#### 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 blade. Use Program 90-03 to save the software to the USB Memory. Note that a USB Memory can only hold 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, 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 over-written, 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 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.*

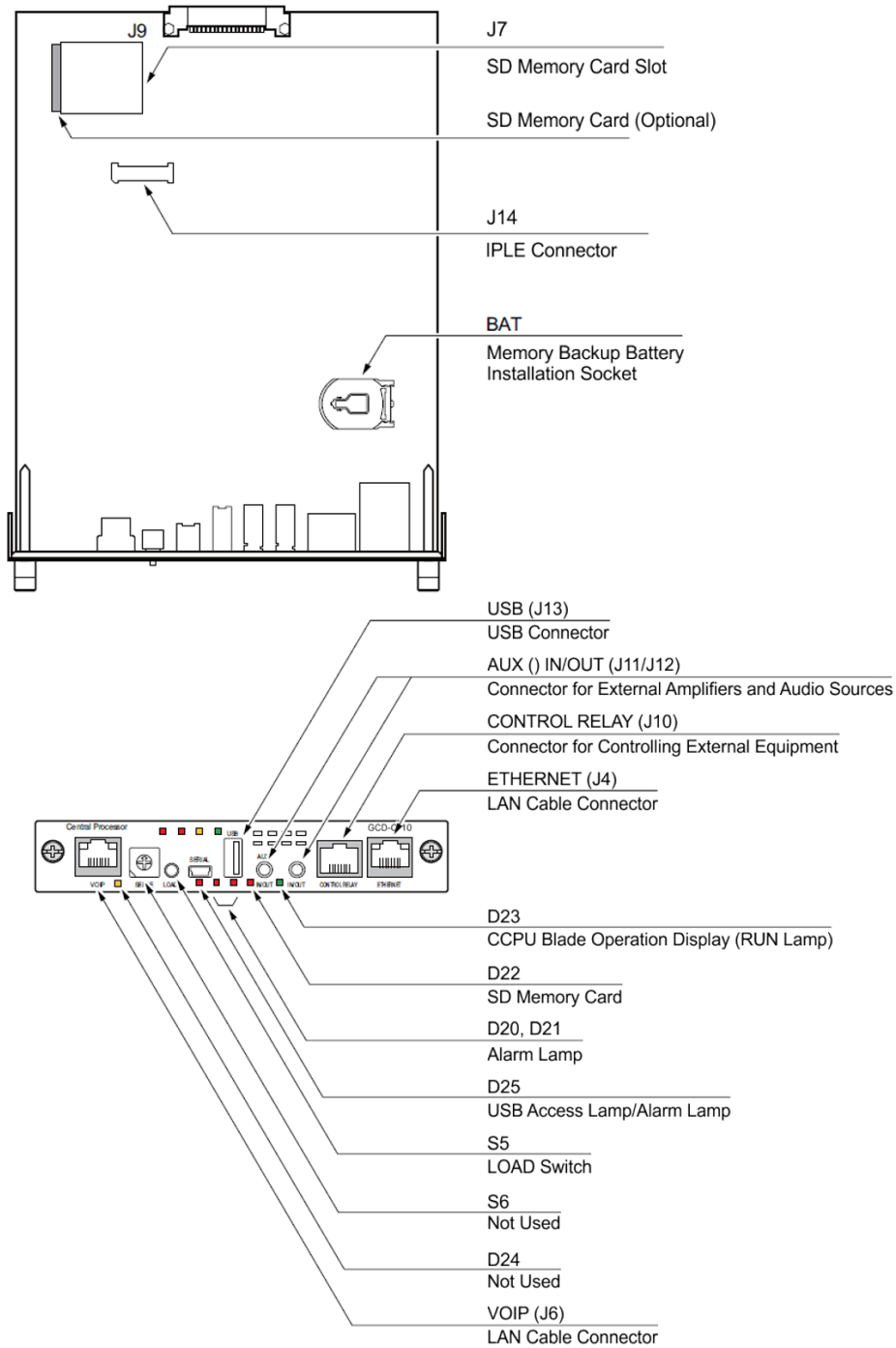
To perform a system software and firmware upgrade:

1. Turn the system power off.
2. Once the system has powered down, insert the USB Memory containing the software upgrade into the USB port on the GCD-CP10.
3. Push in and hold the **Load** button.
4. Turn the system power on.
5. Continue holding the **Load** button for approximately 10 seconds or until Status LED5 begins flashing red.
6. Release the **Load** button.
7. Wait until the Status LEDs on the GCD-CP10 have the following indications (approximately two minutes):  
  
LED 2: Flashing Red  
LED 3: Flashing Red  
LED 4: Flashing Red  
LED 5: Steady Red
8. Turn the system power off and un-install 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. The remaining four LEDs are off.
  - ◆ To confirm the new software version has been installed, the system version number can be viewed by pressing the FEATURE + 3 keys on any display multiline terminal.
  - ◆ The existing system software in the flash memory is replaced, but the customer data (stored in the RAM) is saved.

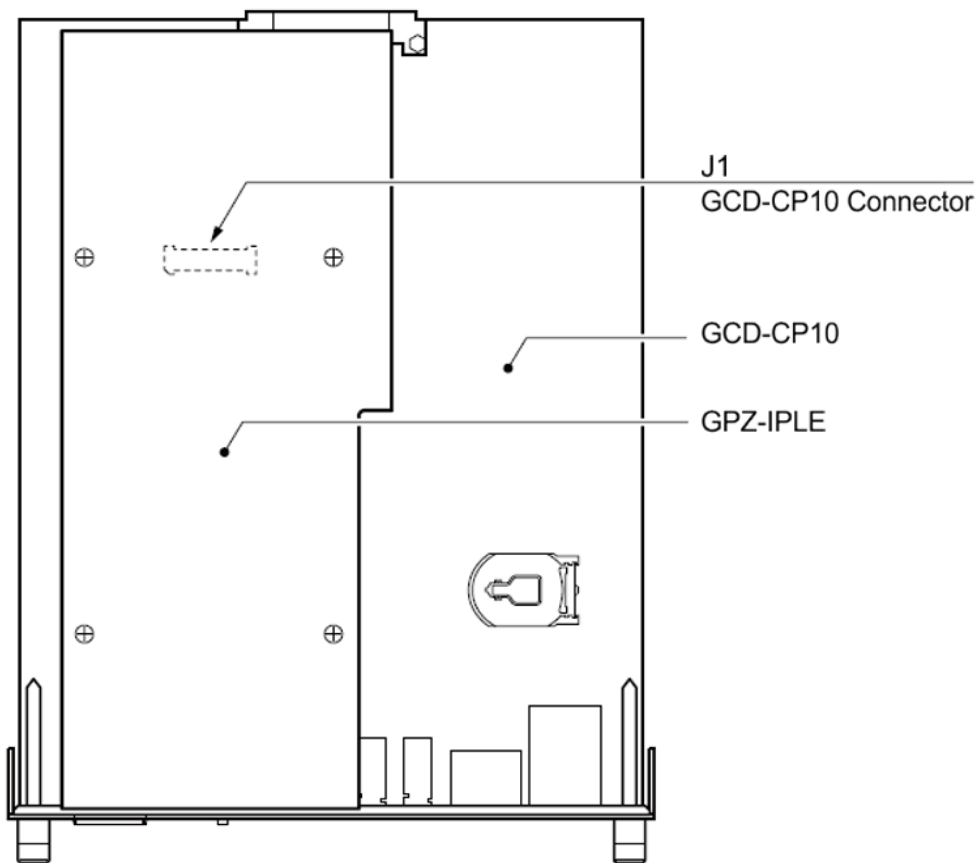
**SECTION 3      COMMON CONTROL BLADES**

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

### 3.1 GCD-CP10 (SV9100 Central Processing Unit)



**Figure 4-3 GCD-CP10 Blade Layout**



**Figure 4-4 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: 12 hours

SD-B1 memory card: 115 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
- ◆ 896 extension ports maximum
  - 896 ports digital/IP extensions maximum
  - 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 will be 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 Resources (e.g. for 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: 64 Channels (when built-in modem is enabled), or  
96 channels (when built-in modem is disabled)
- ◆ Caller ID Receiver; 32 Channels
- ◆ A load switch which is used for initial system startup, resetting the system, or when upgrading system software
- ◆ One Serial Port (null modem/cross-over cable required)
- ◆ One USB Port – USB 1.1/2.0
  - ☞ *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
- ◆ One CompactFlash Card Slot
- ◆ Background Music/EXSP Control Port
- ◆ Status LED
- ◆ Two Audio Input/Output terminals
- ◆ One Music on Hold External Source
- ◆ BGM LED
- ◆ EXSP Control LED
- ◆ Two Audio Input/Output Terminals
- ◆ One General Purpose Control Terminal
- ◆ One Music On Hold External Source
- ◆ HDLC Packet Processing
- ◆ Real Time Clock (tolerance 30 seconds/month)
- ◆ Internal MOH Generation
- ◆ Call Control Server (ex: Conference Bridge Server, Voice Mail Server, SIP Server, RTP Forwarding, VoCoder Conversion)
- ◆ One lithium battery (CR2032 or equivalent) 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 a compact flash card)
- ◆ 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 INSTALLATION NOTES

- ◆ *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.)*
1. Install the battery on the GCD-CP10. The polarity “+” symbol must be on top as illustrated in [Figure 4-5 GCD-CP10 Battery Installation](#).

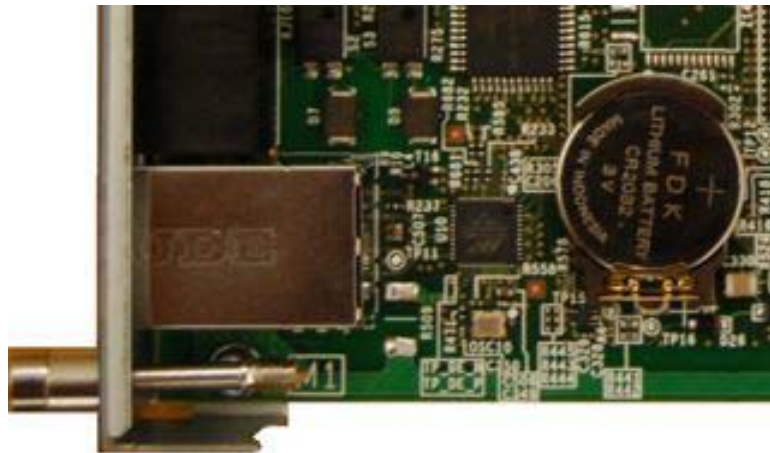


Figure 4-5 GCD-CP10 Battery Installation

2. Push down on the battery, opposite from the plus (+) symbol (refer to [Figure 4-5 GCD-CP10 Battery Installation](#)).

Battery Removal



CAUTION

- ◆ Before removing the GCD-CP10 from the chassis to install or replace a battery, ensure the system is powered Off.
- ◆ When removing the backup battery, SRAM data and system clock are initialized. Make a backup of the SRAM in advance and configure the system clock after battery replacement.



IMPORTANT

- ◆ Replace the battery every 6 years.
- ◆ Contact the reseller where you bought the product for a replacement battery.

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.

- ◆ Billing memory
- ◆ SMDR Billing data

When removing the backup battery, SRAM data and system clock are initialised. 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 .
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).
8. Load the SRAM data saved in step 1, above.
9. From the PCPro “System Data Save/Load/Verify” menu load the data from the specified file.

- OAI FLF Memory

Battery replacement is complete.

#### 3.1.2.1 GPZ-IPLD Daughter Board Installation

1. Install the GPZ-IPLD daughter board, if required.
2. Ensure the power supply is **OFF**, then slide the GCD-CP10 into Slot 1 in the Controlling Chassis.

#### 3.1.2.2 SD-A1 US/SD-B1 US Installation

1. Refer to [Figure 4-3 GCD-CP10 Blade Layout on page 4-16](#) to install the SD-A1 US or SD-B1 US 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.

#### 3.1.2.3 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 4-3 GCD-CP10 Blade Layout on page 4-16](#) shows the location of the SW1 switch on the GCD-CP10 blade.

**Table 4-6 GCD-CP10 Switch Settings**

	USB Memory Status	Operation
<b>Switch S5 - Load Switch</b>	<b>With a system restart or a system reset while holding the SW1 switch:</b>	
	When USB Memory is not installed:	Cold Start 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 4-7 GCD-CP10 Switch 6 Settings**

	Configuration	Note
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 CPU indicate the following:

- ◆ RUN (D23) = The CPU is operating (green)
- ◆ LED D20, and 21 = Alarms (red)
- ◆ LED D22 = SD Memory Card Access/Alarm indication (red)
- ◆ LED D25 = The USB memory connection status (red)  
(LED off when no USB memory installed)
- ◆ LED D24 = Not used
- ◆ Refer to Program 90-10: System Alarm Setup for details on assigning alarm LEDs.

[Table 4-8 GCD-CP10 LED Indications on page 4-24](#) provides a list of each LED and associated operation and status indications.

**Table 4-8 GCD-CP10 LED Indications**

LED Indication					Status
RUN (D23)	D20	D21	D22	D25	
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
Blinking	Off	On	Off	On Steady When USB Memory is Installing	SRAM error

**Table 4-8 GCD-CP10 LED Indications (Continued)**

LED Indication					Status
RUN (D23)	D20	D21	D22	D25	
Blinking	Off	On	On	On Steady When USB Memory is Installing	Flash memory booting error
Blinking	On	On	On	On Steady When USB Memory is Installing	Flash 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

### 3.1.5 Connectors

[Table 4-9 GCD-CP10 Connections](#) describes each connector on the GCD-CP10, [Table 4-10 GCD-LTA RJ45 Cable Connector Pin-Outs](#) describes the pin-outs for connectors on the CCPU-A..

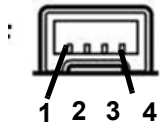
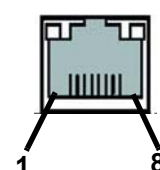

**Table 4-9 GCD-CP10 Connections**

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
J6/S4	Used for Debug
J7	SD Memory Card Connection
J9	Backboard connection
J14	GPZ-IPLE connection

**Table 4-9 GCD-CP10 Connections (Continued)**

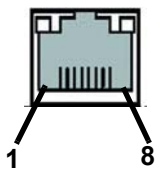
Connector	Connector Description
BAT	Lithium Battery Socket (for backup of SRAM memory data)
Load (S5)	Load Switch
S6	SENSE Switch

**Table 4-10 GCD-LTA RJ45 Cable Connector Pin-Outs**

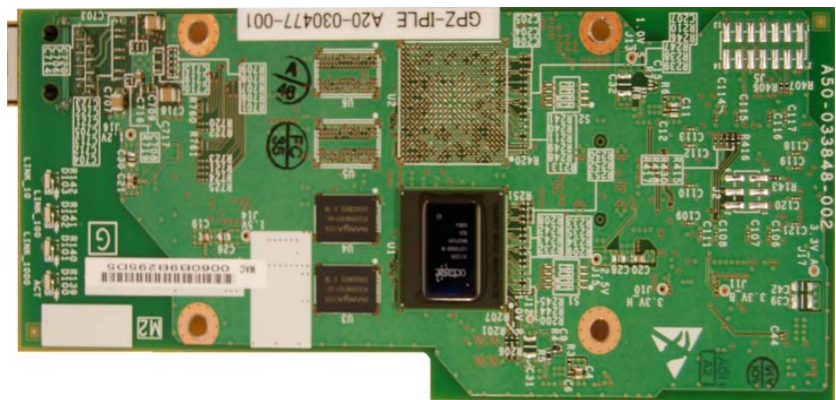
USB Cable Connector – J13 (Type A, Female) (USB 1.1/2.0 Standard)		
	Pin No.	Signal
	1	Vcc
	2	-D
	3	+D
	4	GND
Ethernet Cable Connector – J4 (RJ-45) (10Base-T/100Base-TX/1000Base-T Port)		
	Pin No.	Connection
	1	Tx+
	2	Tx-
	3	Rx+
	4	–
	5	–
	6	Rx-
	7	–
	8	–
Pin Jack – CJ11/J12 (Polarity)		
	Pin No.	Signal
	1	EXT1
	2	EXT2



**Table 4-10 GCD-LTA RJ45 Cable Connector Pin-Outs (Continued)**

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

### 3.2 GPZ-IPLE (Voice over IP Daughter Board)



**Figure 4-6 GPZ-IPLE VoIPDB Daughter Board**

#### 3.2.1 Description

The GPZ-IPLE daughter boards are used for converting the RTP (Real Time Transfer Protocol) packets via the IP network and PCM highway. The daughter board is installed on the GCD-CP10. The IP telephones are connected directly to the IP bus. When IP telephones

need to be connected to a conventional PCM-based digital circuit, this board converts the IP packet signal into a PCM signal format and connects to the PCM time division switch.

The GPZ-IPLD daughter board is required for IP telephones to communicate with non-VoIP UNIVERGE SV9100 telephones, and place or receive outside calls.

The VoIP daughter board provides the voice (RTP/RTCP) processing function. The call control function is mounted on the CPU.

The VOIPDB daughter board provides:

- ♦ 256 (GPZ-IPLD) channels

When installing a IPLD Daughter board, the system allocates the maximum number of trunk ports for the blade being installed.

This daughter board is installed on the GCD-CP10.

### 3.2.2 Installation

To install a GPZ-IPLD on the GCD-CP10 :



***Do not remove or install the GCD-CP10 with the power on.***

1. With the system power off, remove the GCD-CP10.
2. Install the IPLD Daughter board onto the GCD-CP10 blade.
3. Insert the GCD-CP10 into slot 1 in the Controlling Chassis or.
  - ☛ Refer to [Figure 3-3 19" Controlling Chassis – Guides Slot 1 on page 3-3](#) for more details.
4. Connect the IPLD Daughter board to the CD-RTB or to an external switching hub using an ethernet cable.

### 3.2.3 Switch Settings

These daughter boards do not have any switches that need to be set and do not require any hardware setting.

### 3.2.4 LED Indications

LED indications for the GPZ-IPLD Daughter Boards are indicated in [Table 4-12 IPLD Daughter Board LED CN1 Transmit/Receive Data Indications](#). Each LED is listed with its associated function and LED

and Operational status. Refer to [Figure 4-4 GCD-CP10 Blade with Daughter Boards Installed on page 4-17](#) for the location of the LEDs on the blades.

**Table 4-11 IPLA Daughter Board LED Indications**

LED	Function	LED Status	Operation Status
Link 10 (D103)	10Base-T link speed indicator	On Red	10Base-TX link up
LINK 100 (D102)	100Base-T link speed indicator	On Red	100Base-T link up
LINK 1000 (D101)	1000Base-T link speed indicator	On Red	1000Base-T link up
ACT (D100)	Link activity or data transmission and reception	On Green	LED lights when link up completed. LED flashes when data is transmitting or receiving.

The following table shows the LED indication when transmitting or receiving data on CN1

**Table 4-12 IPLE Daughter Board LED CN1 Transmit/Receive Data Indications**

LED				Operation Status
ACT	Link1000	Link100	Link10	
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	Blinking one by one			The firmware is being updated.

 The IPLE only supports full-duplex transmission.

### 3.2.5 Connectors

The figure below shows a typical connection layout. [Figure 4-8 Connecting a IPLA Daughter Board to a Network/PC](#) illustrates how to connect a VoIP Daughter Board to a Network or PC.

#### Connection Description

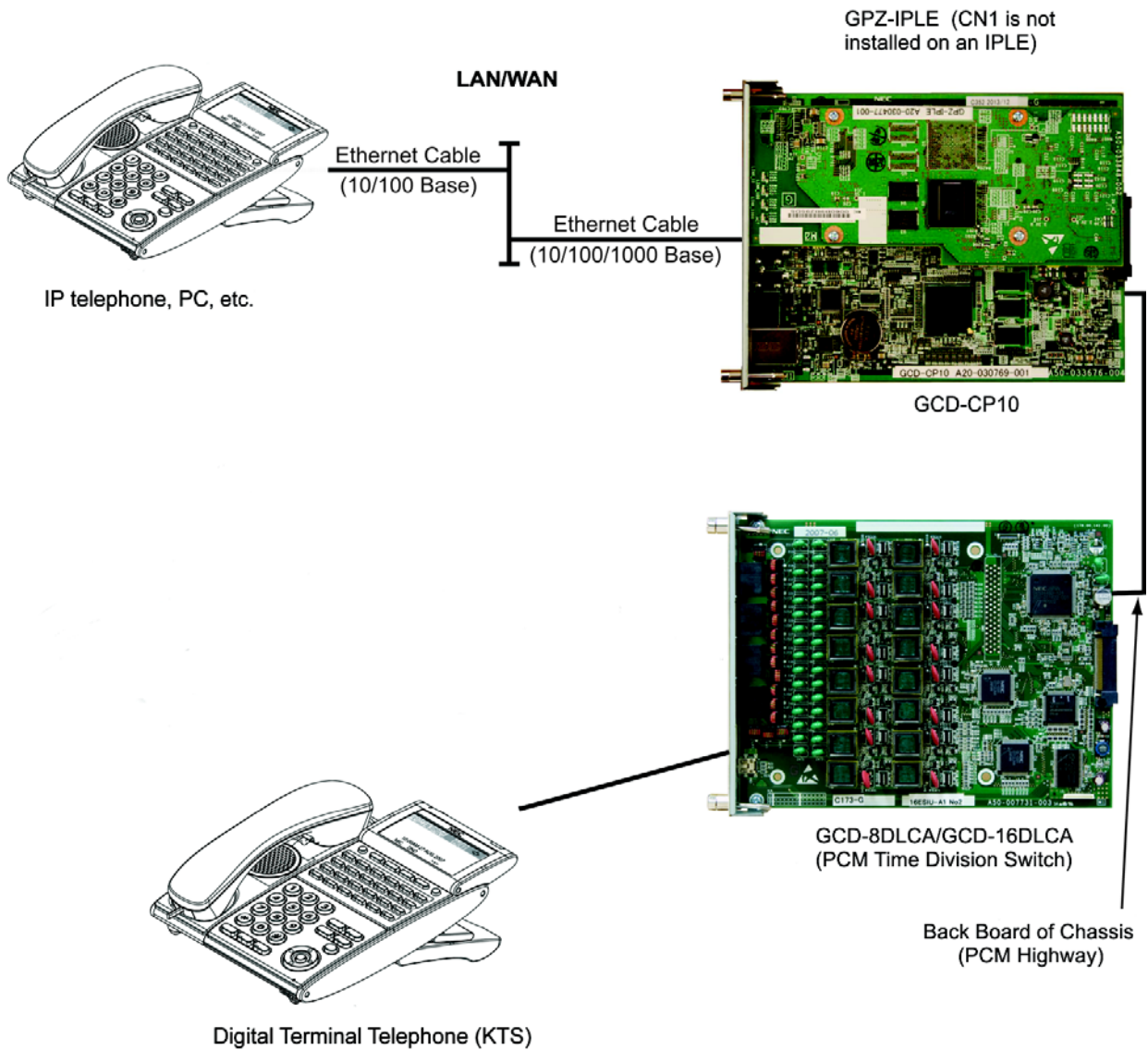
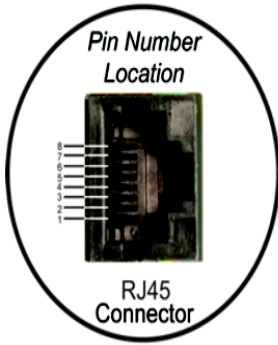


Figure 4-7 VoIP Connections

To WAN / LAN network:  
Ethernet cable  
(CAT5E, 10BASE-T/  
100BASE-TX/1000BASE-T)



LAN Connector  
(10BASE-T/100BASE-TX/1000BASE-T)

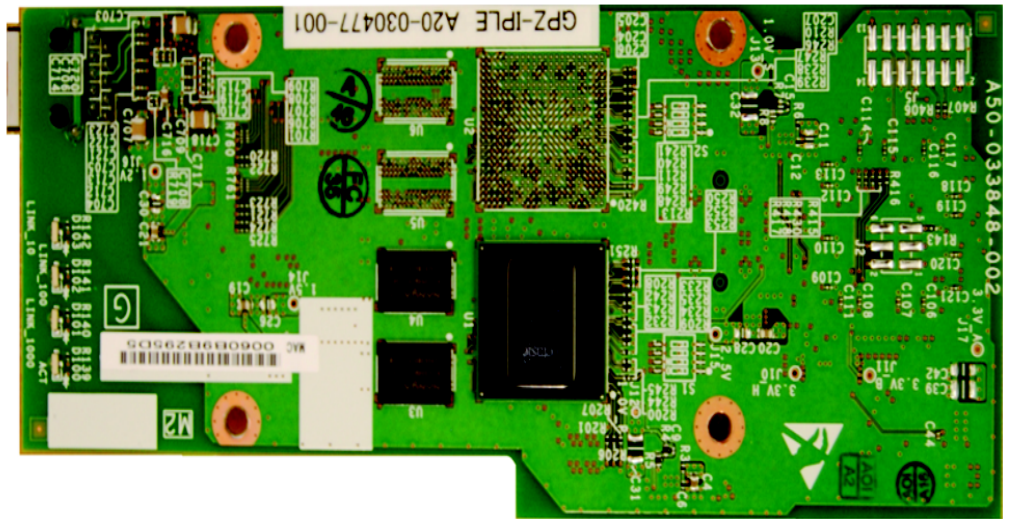
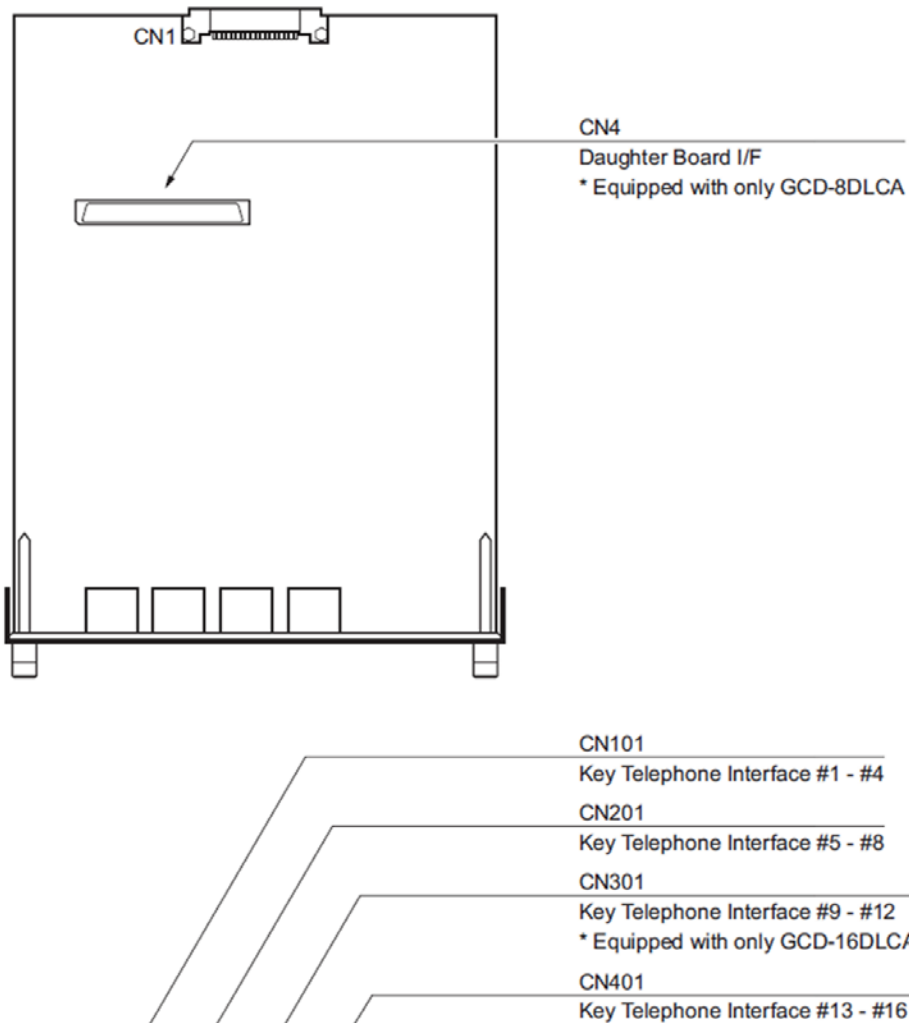


Figure 4-8 Connecting a IPLA Daughter Board to a Network/PC

## SECTION 4 STATION BLADES

### 4.1 GCD-8DLCA/GCD-16DLCA (Digital Station Interface)



**Figure 4-9 GCD-8DLCA/GCD-16DLCA/ Blade**

#### 4.1.1 Description

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

[Table 4-13 GCD-8DLCA/GCD-16DLCA Maximum Upgrade Capacities](#) provides the maximum capacities for the ESIU blades when they are upgraded.

**Table 4-13 GCD-8DLCA/GCD-16DLCA Maximum Upgrade Capacities**

ESIU	19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
GCD-8DLCA	5	6	23	32
GCD-16DLCA	5	5	20	32

#### 4.1.2 Installation

The GCD-8DLCA/GCD-16DLCA blades can be installed in any universal slot in the system and up to a maximum of 20 DLCA blades can be installed per system, providing up to 368 digital ports.

To install the GPZ-8DLCA/GCD-16DLCA:

1. If installing the GCD-8DLCA and the GPZ-8DLCA daughter board is to be attached, do so now. Refer to [4.2.2 Installation on page 4-38](#).
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 4-14 GCD-8DLCA/GCD-16DLCA LED Indications](#). Each LED is listed with its associated function and LED and Operational status. Refer to [Figure 4-9 GCD-8DLCA/GCD-16DLCA/ Blade](#) and for the location of the LEDs on the blades.

**Table 4-14 GCD-8DLCA/GCD-16DLCA LED Indications**

LED Indication		Operation Status	Remarks
Live LED (Green)	Busy LED (Red)		
On	On	System Initializing	–



**Table 4-14 GCD-8DLCA/GCD-16DLCA LED Indications (Continued)**

LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
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 (100ms)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		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.		–

#### 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 CN401 connectors are removed from the blade.

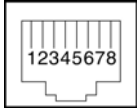


***Any cabling to the DLCA blade must be within the building - no outside cabling is permitted.***

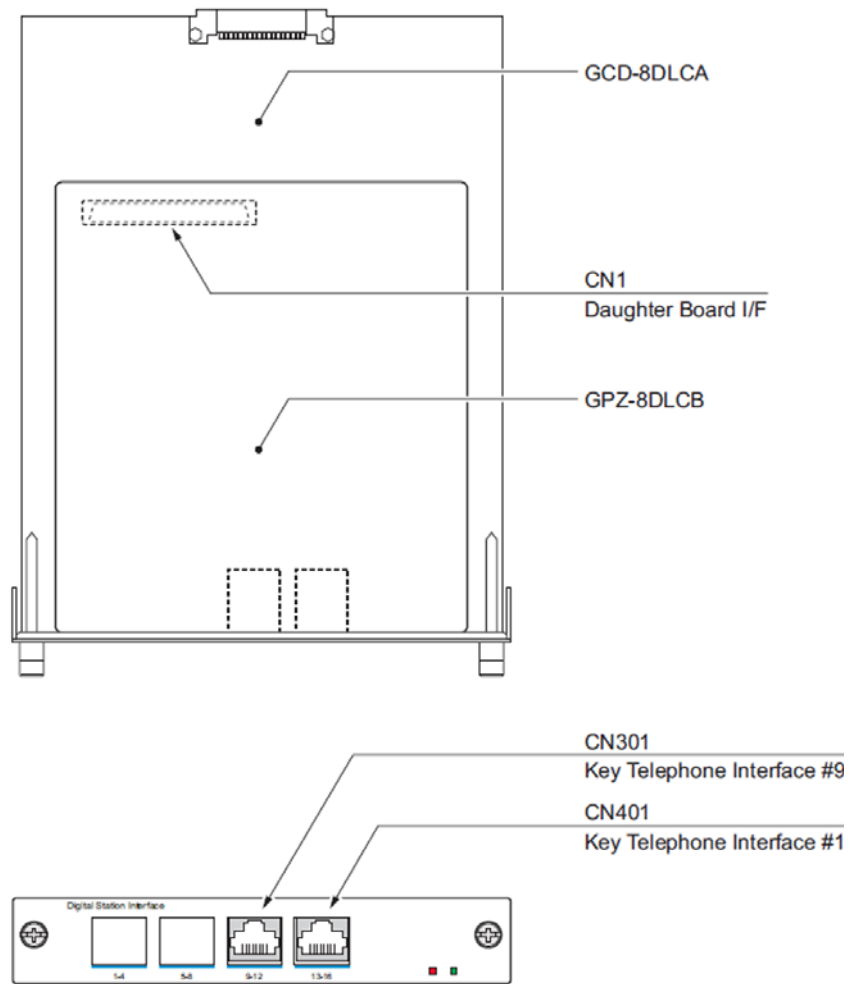
[Table 4-15 GCD-8DLCA/GCD-16DLCA/ RJ-61 Cable Connector Pin-Outs](#) on page 4-35 show the pin-outs for the RJ-61 connector. Refer to [Figure 4-9 GCD-8DLCA/GCD-16DLCA/ Blade](#) on page 4-32 for the location of the connectors on the ESIU blades.



**Table 4-15 GCD-8DLCA/GCD-16DLCA/ RJ-61 Cable Connector Pin-Outs**

<b>RJ-61 Cable Connector</b> <b>GCD-8DLCA – CN101 (ports 1~4), CN201 (ports 5~8)</b> <b>GCD-16DLCA – CN101 (ports 1~4), CN201 (ports 5~8),</b> <b>CN301 (ports 9~12), CN401 (ports 13~16)</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	T4 (Tip for port 4)
	2	T3 (Tip for port 3)
	3	T2 (Tip for port 2)
	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 4-10 GPZ-8DLCB Blade**

### 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.

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Table 4-16 GPZ-8DLCB Maximum Upgrade Capacities provides the maximum capacities for the ESIU blades when they are upgraded.

**Table 4-16 GPZ-8DLCB Maximum Upgrade Capacities**

<b>19" Chassis with CPU</b>	<b>19" Chassis without CPU</b>	<b>19" Chassis x4</b>	<b>Networked Chassis</b>
5	5	20	32

#### 4.2.2 Installation

The GPZ-8DLCB is installed on the GCD-8DLCA. To install:

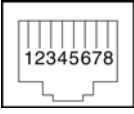
1. Connect the GPZ-8DLCB to the CN2 connector on the GCD-8DLCA blade. Refer to [Figure 4-9 GCD-8DLCA/GCD-16DLCA/ Blade on page 4-32](#) for the location of the connectors on the blade.
2. Install the GCD-8DLCA into a slot.
3. Each CNx01 connector (CN101, CN201, CN301, CN401) is used to connect up to four digital extensions.

#### 4.2.3 GPZ-8DLCB Daughter Board Cable Connection

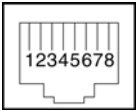
The GPZ-8DLCB blade has connections for CN301 and CN401. Refer to [Figure 4-17 GPZ-8DLCB CN301 Connection](#) for connector locations.

The following tables show the cable connections of the two RJ-61 connectors on the GPZ-8DLCB.

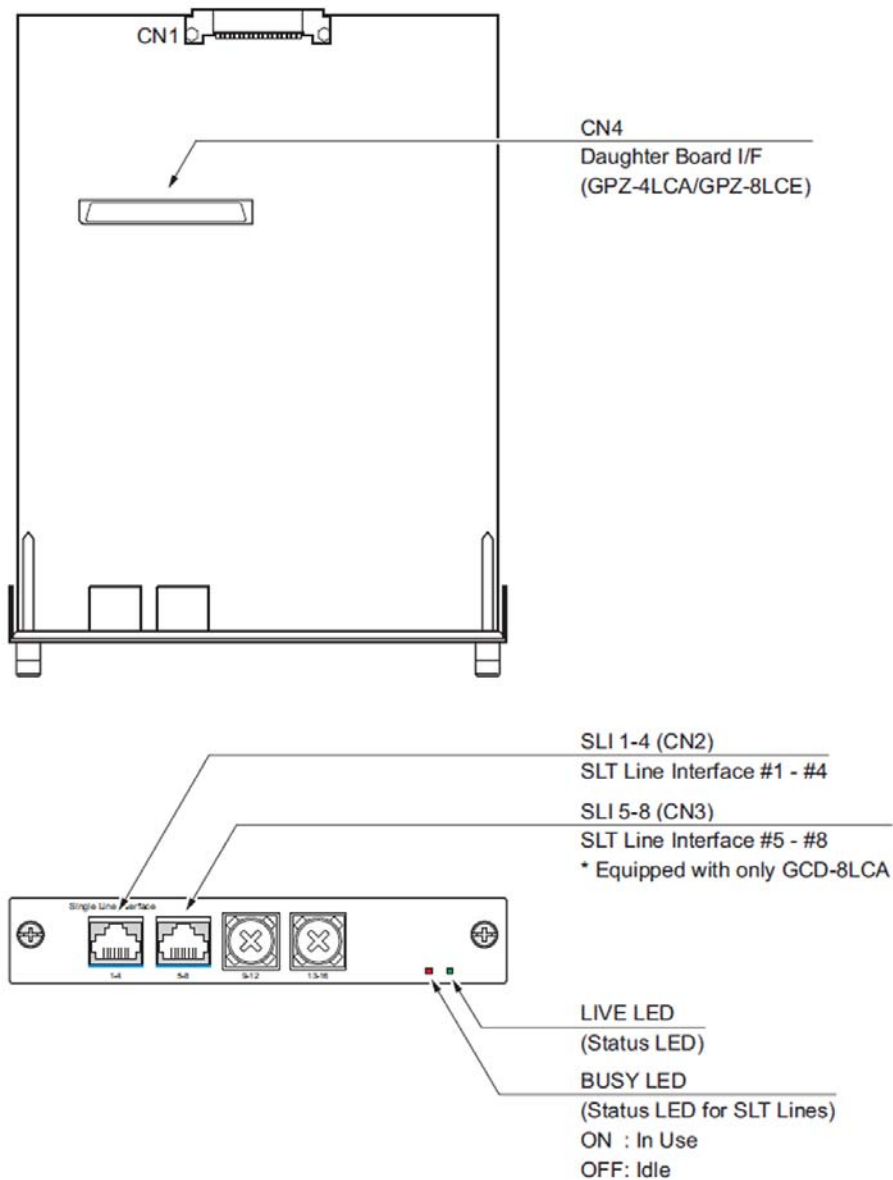
**Table 4-17 GPZ-8DLCB CN301 Connection**

<b>RJ-61 Cable Connector CN301 (ports 9~12)</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	(T4) Tip for port 12
	2	(T3) Tip for port 11
	3	(T2) Tip for port 10
	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 4-18 GPZ-8DLCB CN401 Connection**

<b>RJ-61 Cable Connector CN401 (ports 13~16)</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	(T4) Tip for port 16
	2	(T3) Tip for port 15
	3	(T2) Tip for port 14
	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

### 4.3 GCD-4LCA/ GCD-8LCA (4-Port/8-Port Single Line Interface)



**Figure 4-11 GCD-4LCA/GCD-8LCA Blade**

#### 4.3.1 Description

The GCD-4LCA/GCD-8LCA 4/8SLIU blade provides four (4SLIU) analog extension ports or eight (8SLIU) analog extension ports (used for on-premise analog telephones, fax machines, and analog modems).

The 4SLIU and 8SLIU are not rated for OPX use. A 4DIOPU 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
- ◆ Two blade status LEDs
- ◆ Constant current type battery feeding (25mA / -28Vdc)
- ◆ DC Voltage (On hook) (-28Vdc)
- ◆ Feeding Polarity Reverse Ability
- ◆ Connector for GPZ-4LCA/GPZ-8LCE Daughter Boards
- ◆ Ring Generator (75Vrms, 16Hz/20Hz/25Hz selectable by CM82-04-02)
- ◆ Caller ID Sending Ability
- ◆ Message Wait Lamping Ability (110V DC)
- ◆ Cable length = 600ohms (including the SLT). Approximately 1Km

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.

**Table 4-19 GCD-4LCA/GCD-8LCA Maximum Upgrade Capacities**

SLIU	19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
GCD-4LCA	5	6	23	32
GCD-8LCA	5	6	23	32

## 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 SLIU and SLIDB are categorized as TNV2. With this designation, off-premise wiring is not acceptable. Any cabling to the SLIU blade must be within the building – no outside cabling is permitted.*
- ◆ *Branch connection is not acceptable.*



Install the GCD-4LCA/ GCD-8LCA blade into any available universal slot.

☞ *If the GPZ-4LCA/GPZ-8LCE is used, install this 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 4-11 GCD-4LCA/GCD-8LCA Blade on page 4-40](#) for the location of the LEDs on the blades.

**Table 4-20 GCD-4LCA/GCD-8LCA LED Indications**

LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
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 (100ms)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		All channels are idle.	–



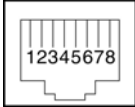
Table 4-20 GCD-4LCA/GCD-8LCA LED Indications (Continued)

LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
Off	On	Unit Busy	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		All channels are idle.	–
	Flash (100ms On/Off)	Downloading firmware.		–

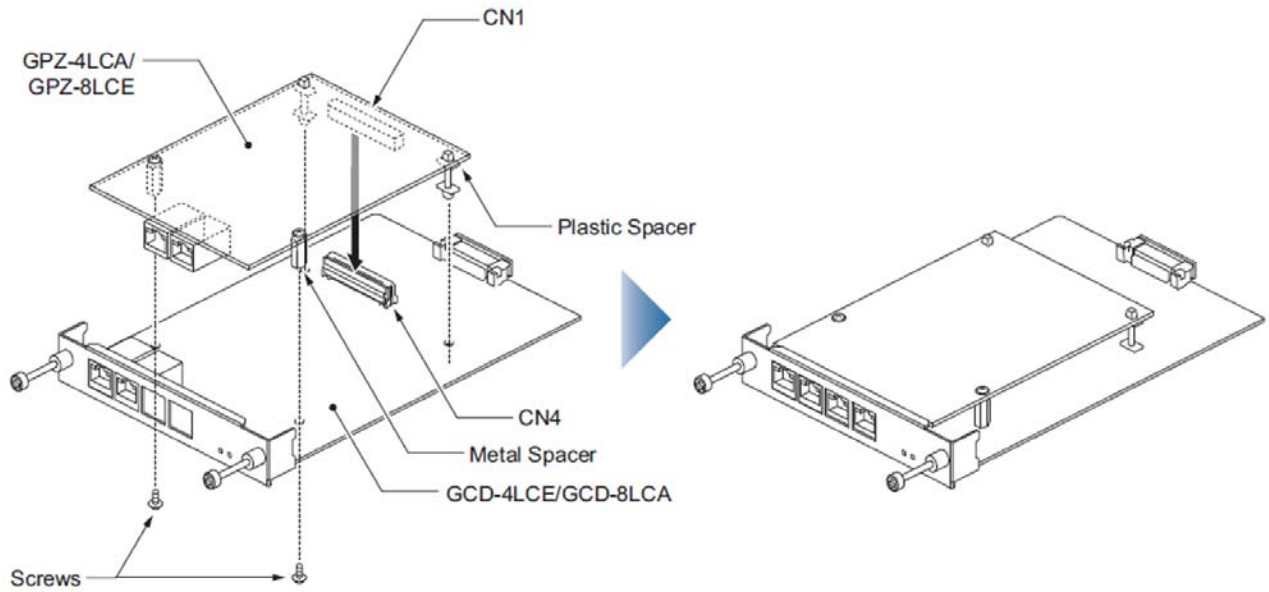
#### 4.3.4 Connectors

Table 4-21 GCD-4LCA/GCD-8LCA RJ-61 Cable Connector Pin-Outs show the pin-outs for the RJ-61 connector. Refer to [Figure 4-11 GCD-4LCA/GCD-8LCA Blade on page 4-40](#) for illustrations showing the location of the connectors and the pin number locations on the SLIU blades

**Table 4-21 GCD-4LCA/GCD-8LCA RJ-61 Cable Connector Pin-Outs**

<b>RJ-61 Cable Connector</b> <b>8SLIU – CN2 (ports 1~4)</b> <b>8SLIU – CN2 (ports 1~4), CN3 (ports 5~8)</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	T4 (Tip for port 4)
	2	T3 (Tip for port 3)
	3	T2 (Tip for port 2)
	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)

#### 4.4 GPZ-4LCA/GPZ-8LCE (4-Port/8-Port SLI Daughter Boards)



**Figure 4-12 Installing the GPZ-4LCA 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-4DIOPB 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
- ◆ One extension status LED
- ◆ Two status LEDs
- ◆ Ring Generator (75Vrms, 16Hz/20Hz/25Hz selectable by CM82-04-02)
- ◆ Caller ID Sending Ability
- ◆ Message Wait Lamping Ability (110Vdc)
- ◆ Constant current type battery feeding (25mA / -28Vdc)
- ◆ DC voltage (on-hook) (-28Vdc)
- ◆ Feeding Polarity Reverse Ability

The CN2 (GPZ-4LCA/GPZ-8LCE) and CN3 (GPZ-8LCE only) connectors each provide connection to four analog station ports and are not polarity sensitive. The GPZ-8LCE consumes eight ports ranging between ports 001~256 (remember that the 8SLIU consumes eight ports).

**Table 4-22 GCD-4LCA/GCD-8LCA Maximum Upgrade Capacities**

SLIU	19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
GPZ-4LCA	5	6	23	32
GPZ-8LCE	5	6	23	32

#### 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 SLIU and SLIDB are categorized as TNV2. With this designation, off-premise wiring is not acceptable. Any cabling to the SLIDB PCB must be within the building – no outside cabling is permitted.*
- ♦ *Branch connection is not acceptable.*

These daughter boards can be installed on the GCD-4LCA or GCD-8LCA blades.

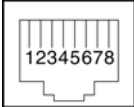
To install the GPZ-4LCA/GPZ-8LCE:

1. Included with the SLIDB are four plastic spacers. Install the plastic spacers onto 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 4-12 Installing the GPZ-4LCA Daughter Board on page 4-45](#).
2. Position the SLIDB CN1 connector over the CN4 connector on the SLIU blade. Press the boards together, ensuring the plastic spacers lock in place. Refer to [Figure 4-12 Installing the GPZ-4LCA Daughter Board on page 4-45](#).
3. Install the SLIU blade into the slot on the chassis.

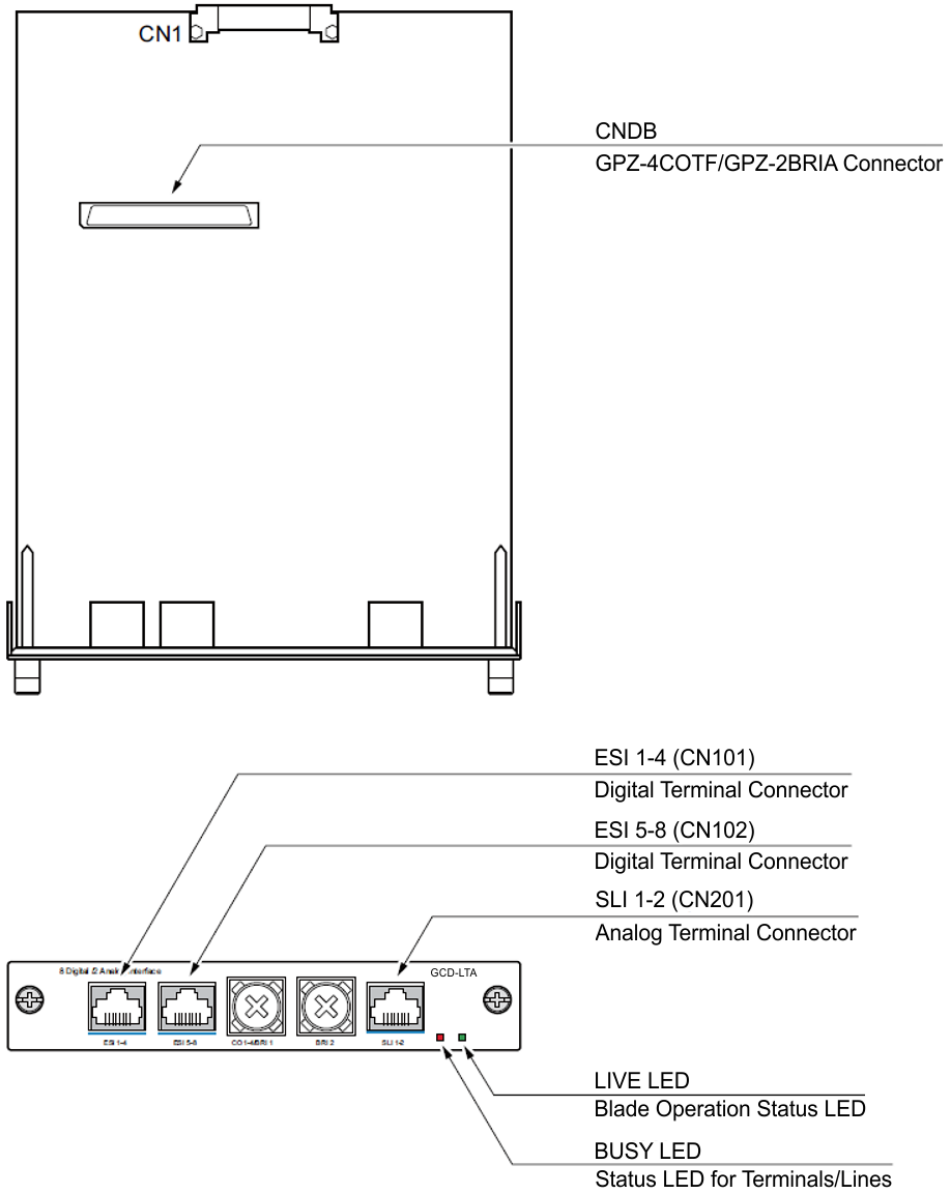
4.4.3 Connectors

Table 4-23 GPZ-4LCA/GPZ-8LCE/ RJ-61 Cable Connector Pin-Outs show the pin-outs for the RJ-61 connector. Refer to [Figure 4-12 Installing the GPZ-4LCA Daughter Board on page 4-45](#) for illustrations showing the location of the connectors on the SLIDB blades.

**Table 4-23 GPZ-4LCA/GPZ-8LCE/ RJ-61 Cable Connector Pin-Outs**

<b>RJ-61 Cable Connector –                      48SLIDB – CN2 (ports 9~12)                      8SLIDB – CN2 (ports 9~12), CN3 (ports 13~16)</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	T4 (Tip for port 4)
	2	T3 (Tip for port 3)
	3	T2 (Tip for port 2)
	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-LTA ( $D^{term}$ /SLT Combination)



**Figure 4-13 GCD-LTA Blade**

#### 4.5.1 Description

The Digital Station/SLT Combination blade provides eight Digital Station ports and two analog ports. This blade allows for either a GPZ-4COTE analog trunk daughter board or PZ-2BR1A daughter board to be installed.

The blade provides:

- ◆ Eight Digital Station ports
- ◆ Two analog extension ports
- ◆ Two status LEDs

#### 4.5.2 Installation

Install the GCD-LTA blade into 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 SLIU and SLIDB are categorized as TNV2. With this designation, off-premise wiring is not acceptable. Any cabling to the SLIDB PCB must be within the building – no outside cabling is permitted.*
- ◆ *Branch connection is not acceptable.*
- ◆ *CTA adapter fitted to Model C telephone is not supported on an LTA blade.*



### 4.5.3 LED Indications

LED indications for the GCD-LTA are indicated in [Table 4-24 GCD-LTA LED Indications](#). Each LED is listed with its associated function and LED and Operational status. Refer to [Figure 4-13 GCD-LTA Blade on page 4-49](#) for the location of the LEDs on the blade.

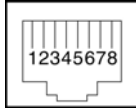
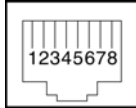
**Table 4-24 GCD-LTA LED Indications**

LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
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 (100ms)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		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.		–

## 4.5.4 Connectors

Table 4-25 GCD-LTA RJ61 Cable Connector Pin-Outs on page 4-52 shows the pin-outs for the RJ-61 connector. Refer to Figure 4-13 GCD-LTA Blade on page 4-49 for an illustration showing the location of the connectors on the GCD-LTA blade.

Table 4-25 GCD-LTA RJ61 Cable Connector Pin-Outs

<b>RJ61 Cable Connector</b> Digital: CN101 (ports 1~4) Digital: 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)
	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)	
<b>RJ61 Cable Connector</b> Analog: CN201 (ports 1~2)		
	Pin No.	Connection
	1	–
	2	–
	3	T2 (Tip for port 2)
	4	R1 (Ring for port 1)
	5	T1 (Tip for port 1)
	6	R2 (Ring for port 2)
	7	–
8	–	

## SECTION 5 TRUNK BLADES

### 5.1 GCD-4COTA (4 Loop Start Interface)

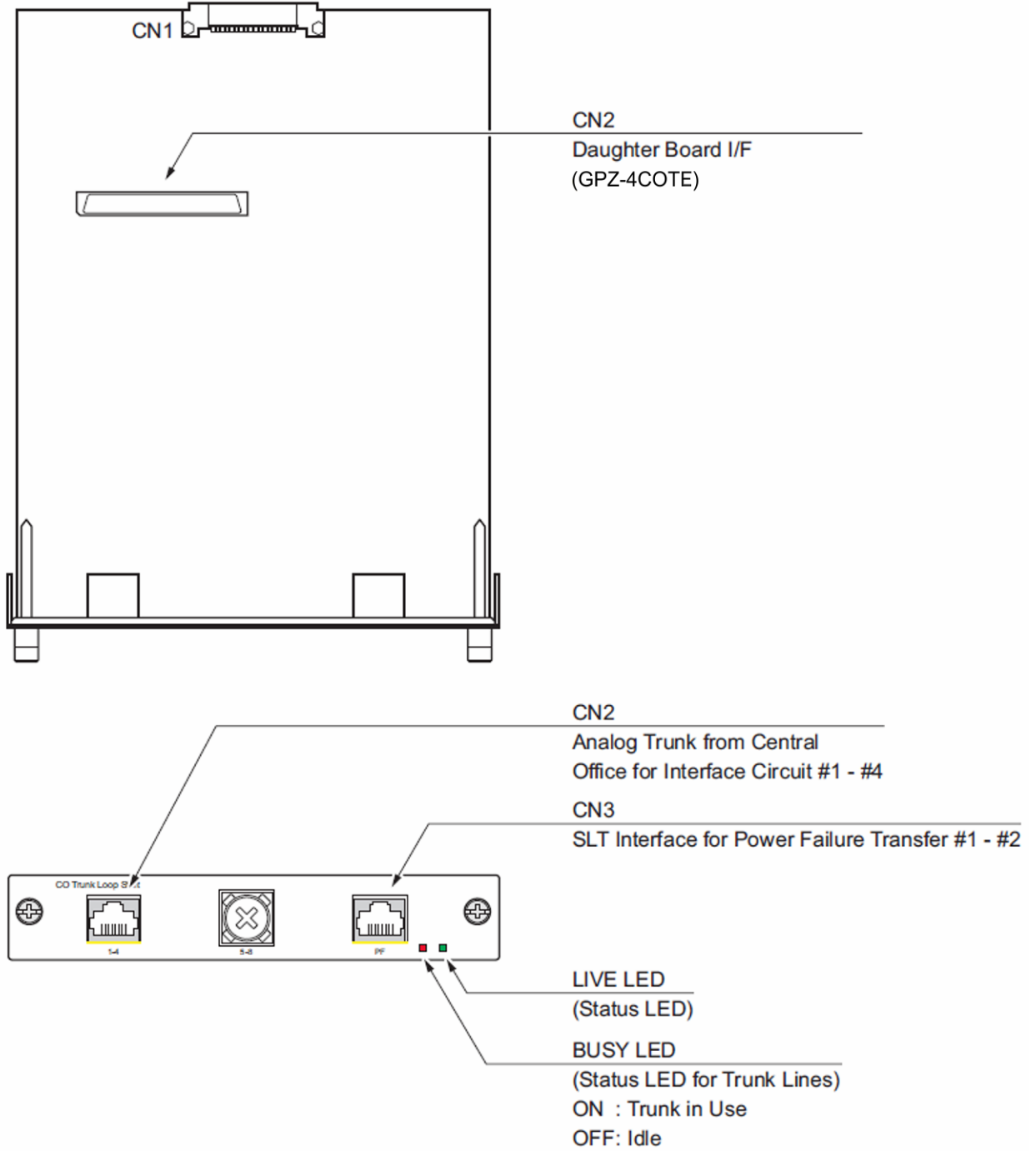


Figure 4-14 GCD-4COTA Blade

### 5.1.1 Description

The COIU blade provides:

- ◆ GCD-4COTA: Four analog loop start trunk circuits
- ◆ One trunk status LED
- ◆ One Blade status LED
- ◆ Four Caller ID Circuits
- ◆ Two Power Failure Transfer Circuits
- ◆ Connection for COIDB Daughter Board

The 4COIU blade consumes four trunk ports ranging between ports 001~200. 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.

- ◆ *The trunk ports are polarity sensitive. Be careful when wiring the trunks.*
- ◆ *When connecting the RJ-61 cables to the GCD-4COTA blades, note the position of the Power Failure connector (CN3). Do not confuse this connector as the trunk connector (CN2).*
- ◆ *Do not wire an RJ-11 directly to the GCD-4COTA interface. Use the appropriate RJ-61 wiring when connecting to the GCD-4COTA.*



Table 4-26 [GCD-4COTA Maximum Upgrade Capacities](#) provides the maximum capacities for the 4COIU blades when they are upgraded.

**Table 4-26 GCD-4COTA Maximum Upgrade Capacities**

19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
5	6	23	25

### 5.1.2 Installation

Install the COIU blade into an available slot in the chassis. (Refer to [Figure 4-14 GCD-4COTA Blade on page 4-53](#) for a layout of the blade.)

- ☞ *If the GPZ-4COTE is to be used, install this prior to inserting the GCD-4COTA blade into the chassis.*

### 5.1.3 LED Indications

LED indications for the GCD-4COTA are listed in [Table 4-27 GCD-4COTA LED Indications](#). Each LED is listed with its associated function and LED and Operational status. Refer to [Figure 4-14 GCD-4COTA Blade on page 4-53](#) for the location of the LEDs on the blades.

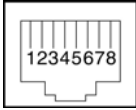
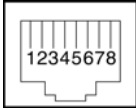
**Table 4-27 GCD-4COTA LED Indications**

LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
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 (100ms)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		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.		–

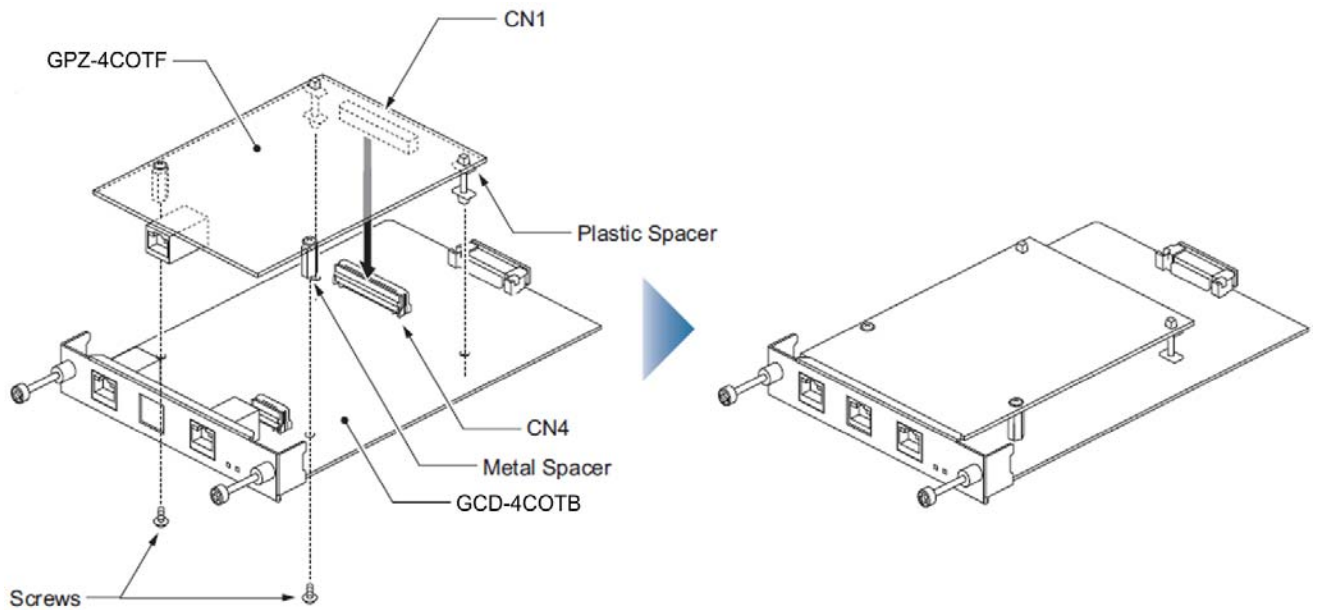
5.1.4 Connectors

Table 4-28 GCD-4COTA RJ-61 Cable Connector Pin-Outs on page 4-56 shows the pin-outs for the RJ-61 connector. Refer to Figure 4-14 GCD-4COTA Blade on page 4-53 for an illustration showing the location of the connectors on the 4COIU blades.

Table 4-28 GCD-4COTA RJ-61 Cable Connector Pin-Outs

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
	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 Interface for Power Failure		
	Pin No.	Connection
	1	–
	2	–
	3	Circuit 2 – Tip
	4	Circuit 1 – Ring
	5	Circuit 1 – Tip
	6	Circuit 2 – Ring
	7	–
8	–	

## 5.2 GPZ-4COTE (4 Loop Start Interface Daughter Board)



**Figure 4-15 Installing the GPZ-4COTE Daughter Board**

### 5.2.1 Description

The GPZ-4COTE blade provides:

- ◆ GPZ-4COTE: Four analog loop start trunk circuits
- ◆ Four Caller ID Circuits
- ◆ Connector for COIU Blade
- ◆ Connector for GCD-LTA

The GPZ-4COTE consumes four trunk ports ranging between ports 001~200. 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.



- ♦ *The trunk ports are polarity sensitive. Be careful when wiring the trunks.*
- ♦ *When connecting the RJ-61 cable to the GPZ-4COTE blade, note the position of the Power Failure connector (CN3). Do not confuse this connector as the trunk connector (CN2).*
- ♦ *Do not wire an RJ-11 directly to the GCD-4COTA interface. Use the appropriate RJ-61 wiring when connecting to the GCD-4COTA.*

Table 4-29 [GPZ-4COTE Maximum Upgrade Capacities](#) provides the maximum capacities for the ESIU blades when they are upgraded.

**Table 4-29 GPZ-4COTE Maximum Upgrade Capacities**

<b>19" Chassis with CPU</b>	<b>19" Chassis without CPU</b>	<b>19" Chassis x4</b>	<b>Networked Chassis</b>
5	6	23	32



### 5.2.2 Installation

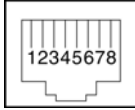
To install the GPZ-4COTE:

1. Four plastic spacers are included with the COIDB. Install the plastic spacers on the GCD-4COTA 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.
2. Position the GPZ-4COTE CN1 connector over the CN4 connector on the GCD-4COTA or GCD-LTA. Press the blades together, ensuring the plastic spacers lock in place.
3. Install the GPZ-4COTE blade (refer to [Figure 4-15 Installing the GPZ-4COTE Daughter Board on page 4-57](#)).

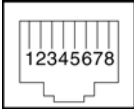
### 5.2.3 Connectors

[Table 4-30 GPZ-4COTE RJ-61 Cable Connector Pin-Outs on page 4-59](#) shows the pin-outs for the RJ-61 connector. Refer to [Figure 4-15 Installing the GPZ-4COTE Daughter Board on page 4-57](#) for an illustration showing the location of the connectors on the GPZ-4COTE blades.

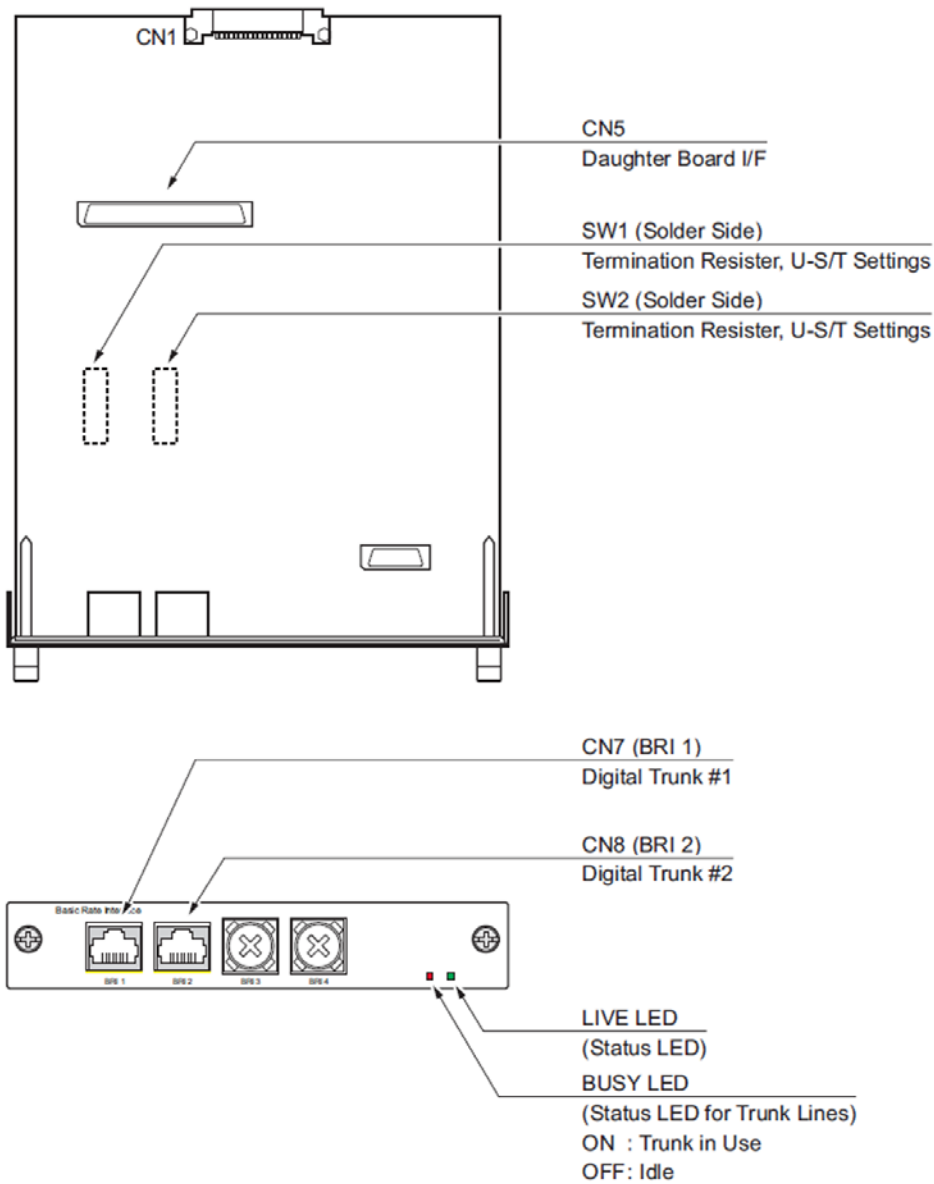
**Table 4-30 GPZ-4COTE RJ-61 Cable Connector Pin-Outs**

<b>RJ-61 Cable Connector</b> <b>CN2, Trunks – Connecting to COIU Blade</b> <b>The CN2 connector is <i>polarity sensitive</i> (tip-to-tip, ring-to-ring).</b>		
	Pin No.	Connection
	1	Circuit 8 – Tip
	2	Circuit 7 – Tip
	3	Circuit 6 – Tip
	4	Circuit 5 – Ring
	5	Circuit 5 – Tip
	6	Circuit 6 – Ring
	7	Circuit 7 – Ring
	8	Circuit 8 – Ring

**Table 4-30 GPZ-4COTE RJ-61 Cable Connector Pin-Outs (Continued)**

<b>RJ-61 Cable Connector                      CN2, Trunks – Connecting to                      CD-LTB/GCD-LTA Blade</b> 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
	4	Circuit 1 – Ring
	5	Circuit 1 – Tip
	6	Circuit 2 – Ring
	7	Circuit 3 – Ring
	8	Circuit 4 – Ring

### 5.3 GCD-2BR1A (2 Basic Rate Interface)



**Figure 4-16 GCD-2BR1A Blade**

#### 5.3.1 Description

This unit is an interface unit that accommodates an ISDN (Basic Rate) circuit.

The BRI blade provides:

- ◆ Two (GCD-2BR1A) 2-Channel Circuits (2B + D) configured as T-Bus

- ◆ 64 Kb/s Clear B-Channel and 16 Kb/s D-Channel
- ◆ Two Status LEDs
- ◆ Connector for PZ-2BRIA

These trunk circuits can be connected to either ISDN trunks or ISDN telephones, depending on the switch setting within 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.

In order to block new calls on the blade, system programming must be used. This program will prevent new calls from being established on the blade, but it will not terminate any existing calls.

With the maximum number of blades installed, the following can be provided:

- ☞ *The 2BRI provides 30 BRI circuits and 60 BRI channels.*

[Table 4-31 GCD-2BRIA Maximum Upgrade Capacities](#) provides the maximum capacities for the GCD-2BRIA blade when they are upgraded.

**Table 4-31 GCD-2BRIA Maximum Upgrade Capacities**

<b>19" Chassis with CPU</b>	<b>19" Chassis without CPU</b>	<b>19" Chassis x4</b>	<b>Networked Chassis</b>
5	6	23	25

### 5.3.2 Installation

To install the GCD-2BRIA:

1. Plug the GCD-2BRIA blade into the system chassis.
2. Before proceeding to Step 3, wait to verify that the STATUS LED starts to flash. (Refer to [Figure 4-16 GCD-2BRIA Blade on page 4-61](#) 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.*

3. Connect the cable from the NT1 Network Termination cable to the CN7 or CN8 connector on the GCD-2BRIA blade and/or PZ-2BRIA daughter board. (Refer to [Figure 4-16 GCD-2BRIA Blade on page 4-61](#) for the location of the connectors on the blade.)

### 5.3.3 LED Indications

LED indications for the GCD-2BRIA are listed in [Table 4-32 GCD-2BRIA LED Indications](#). Each LED is listed with its associated function and LED and Operational status. Refer to [Figure 4-16 GCD-2BRIA Blade on page 4-61](#) for the location of the LEDs on the blade.

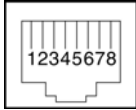
**Table 4-32 GCD-2BRIA LED Indications**

LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
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 (100ms)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		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.		–

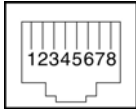
### 5.3.4 Connectors

Table 4-33 GCD-2BRIA RJ-45 T-Bus Cable Connector Pin-Outs show the pin-outs for the RJ-45 cable connector for S-Bus and T-Bus connections. Refer to Figure 4-16 GCD-2BRIA Blade on page 4-61 for an illustration showing the location of the connectors on the GCD-2BRIA blade.

**Table 4-33 GCD-2BRIA RJ-45 T-Bus Cable Connector Pin-Outs**

RJ-45 Cable Connector – CN2 S-Bus Connection		
	Pin No.	Connection
	1	—
	2	—
	3	RA
	4	TA
	5	TB
	6	RB
	7	—
8	—	

RJ-45 Cable Connector – CN7, CN8 T-Bus Connection		
	Pin No.	Connection
	1	
	2	TA
	3	RA
	4	RB
	5	TB
	6	TA
	7	
8		

### 5.3.5 Termination Switch Settings

When the card is installed it may be necessary to change the termination switch settings. These are found on the rear of the card, each circuit has one 8-position DIP switch.

The switches 6 and 7 define if the terminators are active. These should be set to ON, if the bus has no termination. If the bus is already terminated they may be set to OFF.

Every ISDN-Bus must be terminated with a set of 100Ohm resistors at its ends. Normally, NT's provide one set as they are assumed to be at one end of the bus. At the other end of the bus, either the last socket contains terminators or the attached device provides the terminators.

The purpose of these terminators is not only to simulate an infinite line which effectively sinks the signal in that direction. Their main purpose on ISDN bus lines is to sink the 0's. 1's and 0's are different in that way that 0's are actively sent to the line, and 1's are just high-ohmic drivers. So to get rid of the 0's, there must be a load resistor to discharge the line capacity. If there are no, or too few, terminators, this does not work.

### 5.4 PZ-2BRIA (2 Basic Rate Interface Daughter Board)

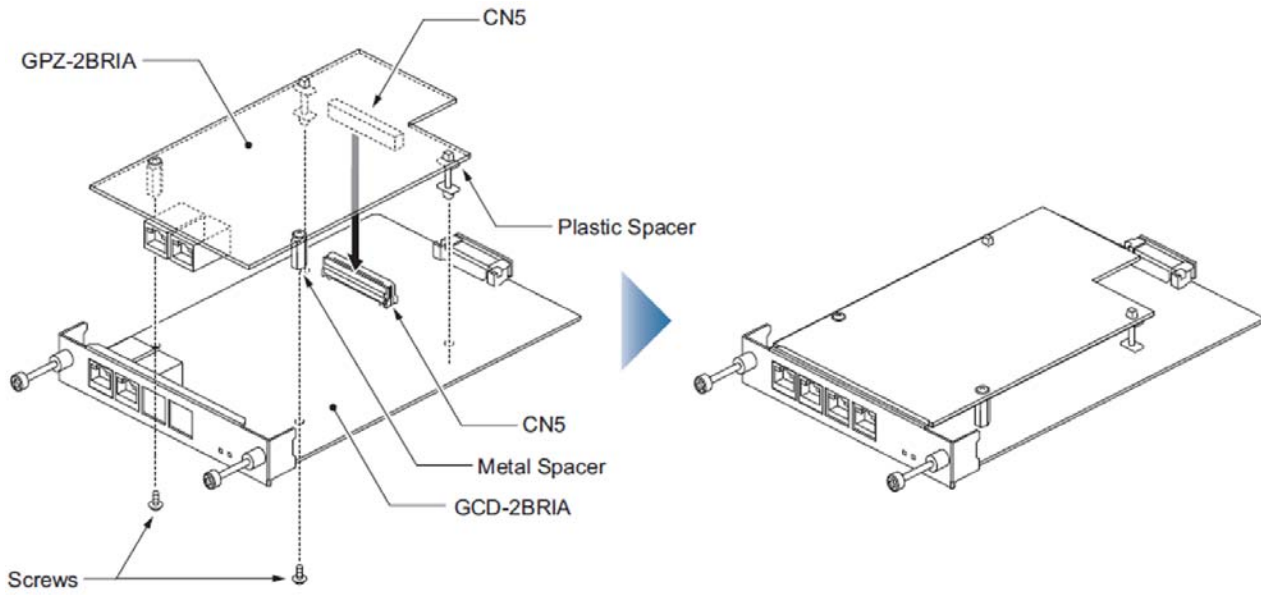


Figure 4-17 Installing the PZ-2BRIA Daughter Board



### 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 or S-Bus
- ◆ 64 Kb/s Clear B-Channel and 16 Kb/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 within 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 SV9100s systems.

System programming must be used to block new calls on the blade. This program will prevent new calls from being established on the blade, but it will not terminate any existing calls.

[Table 4-34 PZ-2BRIA Maximum Upgrade Capacities](#) provides the maximum capacities for the GCD-2BRIA blade when they are upgraded.

**Table 4-34 PZ-2BRIA Maximum Upgrade Capacities**

19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
5	6	23	25

### 5.4.2 Installation

To install the PZ-2BRIA on the GCD-2BRIA:

- ☞ *Attach the PZ-2BRIA daughter board to the GCD-2BRIA blade by lining up the CN5 connectors and pressing the boards together. (Refer to [Figure 4-17 Installing the PZ-2BRIA Daughter Board on page 4-66.](#))*

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.



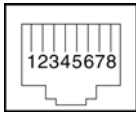
- ◆ *With normal operation, the status LED flashes fast. If trouble was found during the self diagnostics routine, the status LED flashes slow.*
- ◆ *Once connected, the PKG LED will not be indicated for the status of Layer 1 link.*

3. Connect the cable from the NT1 Network Termination cable to the CN7 or CN8 connector on the GCD-2BRIA and/or PZ-2BRIA daughter board.

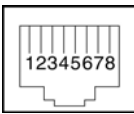
5.4.3 Connectors

Table 4-35 PZ-2BRIA RJ-45 T-Bus Cable Connector Pin-Outs show the pin-outs for the RJ-45 cable connector for S-Bus and T-Bus connections. Refer to Figure 4-17 Installing the PZ-2BRIA Daughter Board on page 4-66 for an illustration showing the location of the connectors on the PZ-2BRIA daughter board.

**Table 4-35 PZ-2BRIA RJ-45 T-Bus Cable Connector Pin-Outs**

RJ-45 Cable Connector – CN2 S-Bus Connection		
	Pin No.	Connection
	1	—
	2	—
	3	RA
	4	TA
	5	TB
	6	RB
	7	—
	8	—

**Table 4-35 PZ-2BRIA RJ-45 T-Bus Cable Connector Pin-Outs**

RJ-45 Cable Connector – CN7, CN8 T-Bus connection		
	Pin No.	Connection
	1	—
	2	—
	3	TA
	4	RA
	5	RB
	6	TB
	7	—
	8	—

#### 5.4.4 Termination Switch Settings

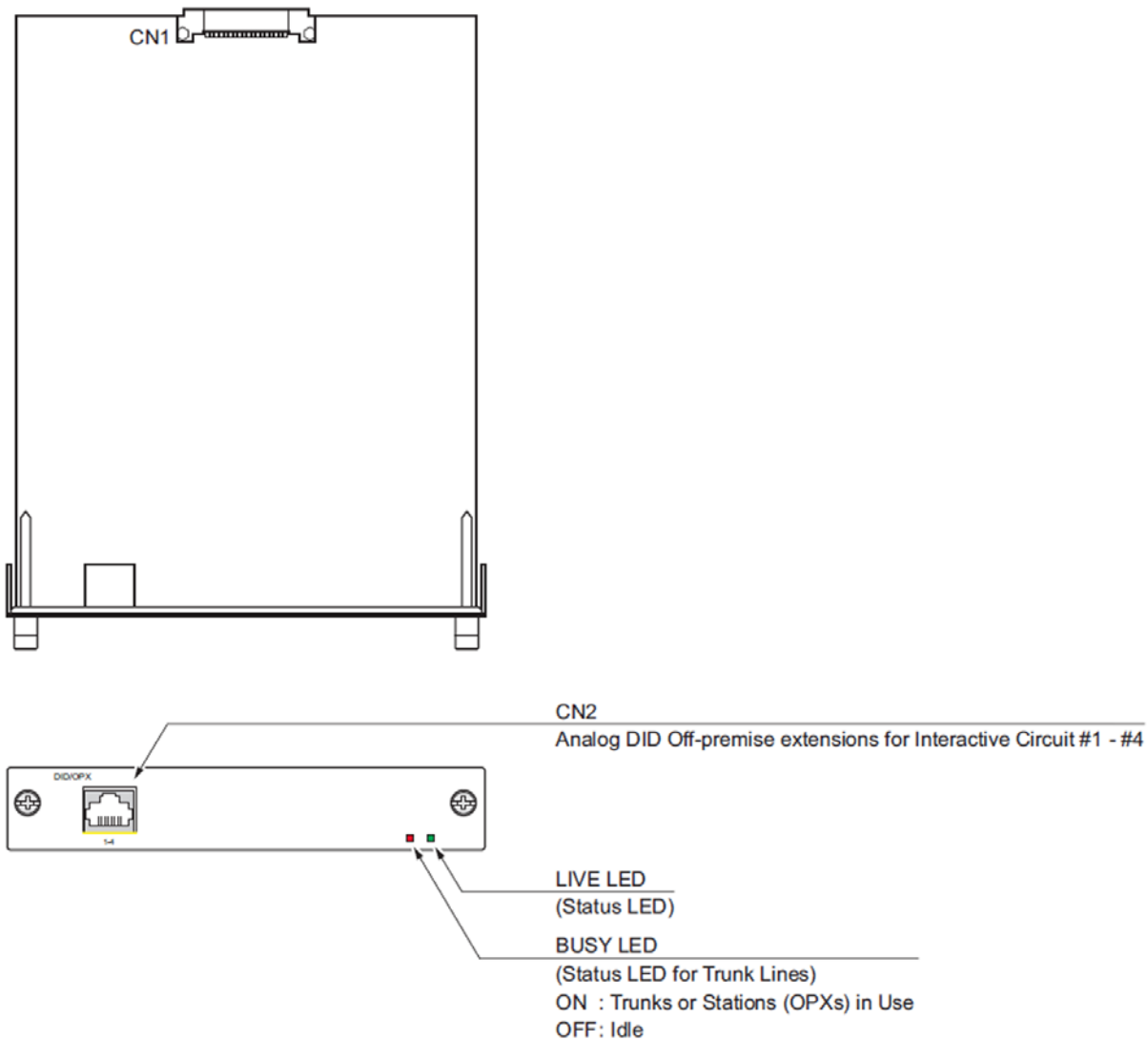
When the card is installed it may be necessary to change the termination switch settings. These are found on the rear of the card, each circuit has one 8-position DIP switch.

The switches 6 and 7 define if the terminators are active. These should be set to ON, if the bus has no termination. If the bus is already terminated they may be set to OFF.

Every ISDN-Bus must be terminated with a set of 100Ohm resistors at its ends. Normally, NT's provide one set as they are assumed to be at one end of the bus. At the other end of the bus, either the last socket contains terminators or the attached device provides the terminators.

The purpose of these terminators is not only to simulate an infinite line which effectively sinks the signal in that direction. Their main purpose on ISDN bus lines is to sink the 0's. 1's and 0's are different in that way that 0's are actively sent to the line, and 1's are just high-ohmic drivers. So to get rid of the 0's, there must be a load resistor to discharge the line capacity. If there are no, or too few, terminators, this does not work.

## 5.5 GCD-4DIOPB (DID/OPX Interface)



**Figure 4-18 GCD-4DIOPB Blade**

### 5.5.1 Description

The GCD-4DIOPB 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-4DIOPB provides:

- ◆ Four (4DIOPU) DID trunk circuits or four OPX circuits
- ◆ Two Blade status LEDs

[Table 4-36 GCD-4DIOPB Maximum Upgrade Capacities](#) provides the maximum capacities for the GCD-4DIOPB blades when they are upgraded.

**Table 4-36 GCD-4DIOPB Maximum Upgrade Capacities**

19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
5	6	23	50

### 5.5.2 Installation

The GCD-4DIOPB can be installed in any universal slot.

### 5.5.3 LED Indications

LED indications for the GCD-4DIOPB are listed in [Table 4-37 GCD-4DIOPB LED Indications](#). Each LED is listed with its associated function and LED and Operational status. Refer to [Figure 4-18 GCD-4DIOPB Blade on page 4-70](#) for the location of the LEDs on the blade.

**Table 4-37 GCD-4DIOPB LED Indications**

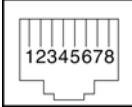
LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
On	On	System Initializing		–
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		–
Flash (100ms)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		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.		–

5.5.4 Connectors

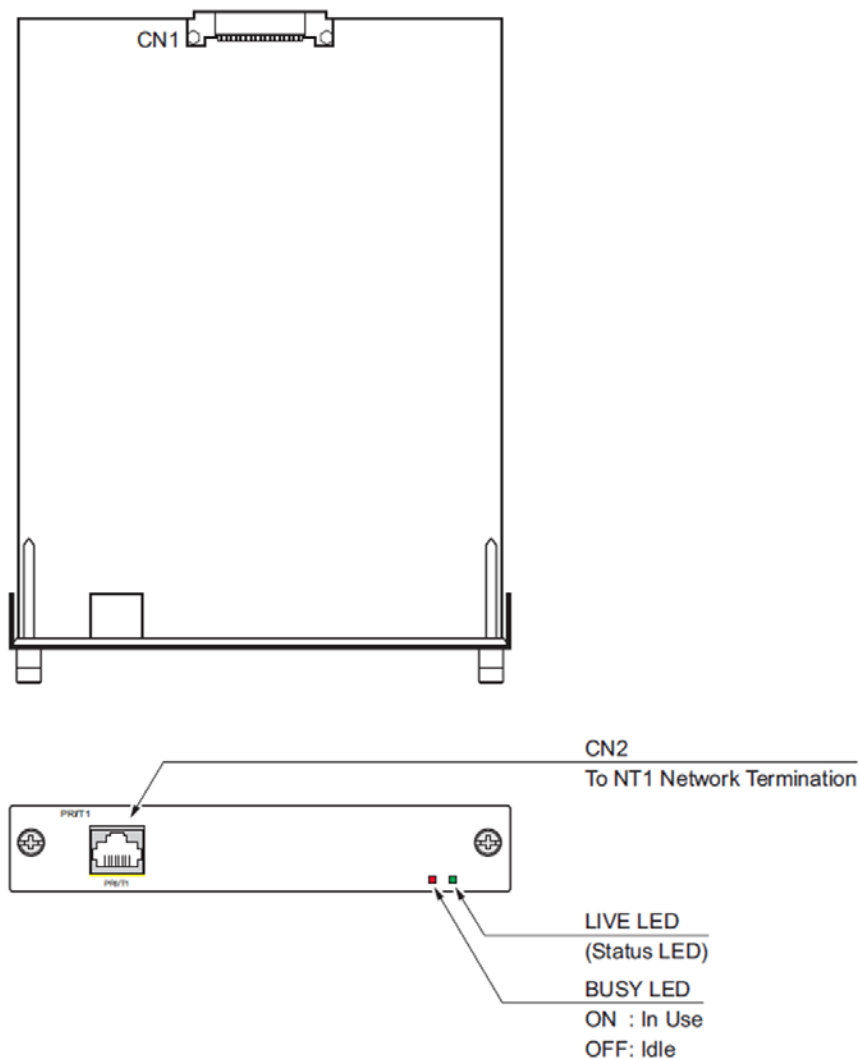
The CN2 connector provides connection to four analog DID trunk ports, **which are polarity sensitive (tip-to-tip, ring-to-ring)**. The OPX circuits, however, are not polarity sensitive. The DIOPU requires one universal slot. (Refer to [Figure 4-18 GCD-4DIOPB Blade on page 4-70](#).) If Program 10-03-01 has OPX defined, note that the blade consumes four (4DIOPU) trunks or eight (8DIOPU) trunks and extension ports when installed. If OPX is not defined, then only trunks ports are consumed.

[Table 4-38 GCD-4DIOPB RJ-61 Cable Connector Pin-Outs on page 4-72](#) shows the pin-outs for the RJ-61 connector. Refer to [Figure 4-18 GCD-4DIOPB Blade on page 4-70](#) for an illustration showing the location of the connectors on the 4DOIPU blade.

**Table 4-38 GCD-4DIOPB RJ-61 Cable Connector Pin-Outs**

RJ-61 Cable Connector – CN2			
	Line No.	Pin No.	Connection
	1	5	Tip
		4	Ring
	2	3	Tip
		6	Ring
	3	2	Tip
		7	Ring
	4	1	Tip
		8	Ring

## 5.6 GCD-PRTA (PRI Interface)



**Figure 4-19 GCD-PRTA Blade (Front and Side View)**

### 5.6.1 Description

The GCD-PRTA PRI blade provides an interface for ISDN Primary Rate Interface (PRI) applications. This blade has a single 30-channel 64Kb per second digital signal circuit configured for PRI. Each blade connects to the network via an NT1 Network Termination.

Each PRI blade provides 32 PRI (30 B & 2 D) channels running at 2.048Mbps with 64Kb/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 32 consecutive trunk ports. For example, if a COIU blade is installed for trunks 1~8, the GCD-PRTA automatically uses trunks 9~40. If the COIU blades are installed for trunks 1~8 and 17~24, GCD-PRTA uses trunks 25~56. The GCD-PRTA cannot use trunks 9~16 (even if available) since they are not part of a consecutive block of 32 trunks. Each GCD-PRTA requires 32 ports in the system, even if not all the ports are used, otherwise the blade does not function.

The GCD-PRTA requires one universal slot.

[Table 4-39 GCD-PRTA Maximum Upgrade Capacities](#) provides the maximum capacities for the GCD-PRTA blades when they are upgraded.

**Table 4-39 GCD-PRTA Maximum Upgrade Capacities**

19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
3	3	6	8

### 5.6.2 Installation

To install the GCD-PRTA:

1. Plug the GCD-PRTA into any universal slot on the chassis.
2. Use Program 10-51-01 (PRI/T-1) to set the GCD-PRTA blade to either PRI.



*With normal operation, LED 1 flashes green.*

3. Connect the cable from the NT1 Network Termination cable to the CN2 connector on the GCD-PRTA. (Refer to [Figure 4-20 PRI Layout for NT-1 Network on page 4-75](#) for 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 to the CSU. (Refer to Table 4-43 GCD-PRTA RJ48C Connector Pin-outs on page 4-79.)*
- *With PRI Networking, a cross-over cable must be used on the master system's T1/PRI blade or CSU to the telco demarcation. If the systems are networked side by side and not through telco, then a straight-through cable is used.*

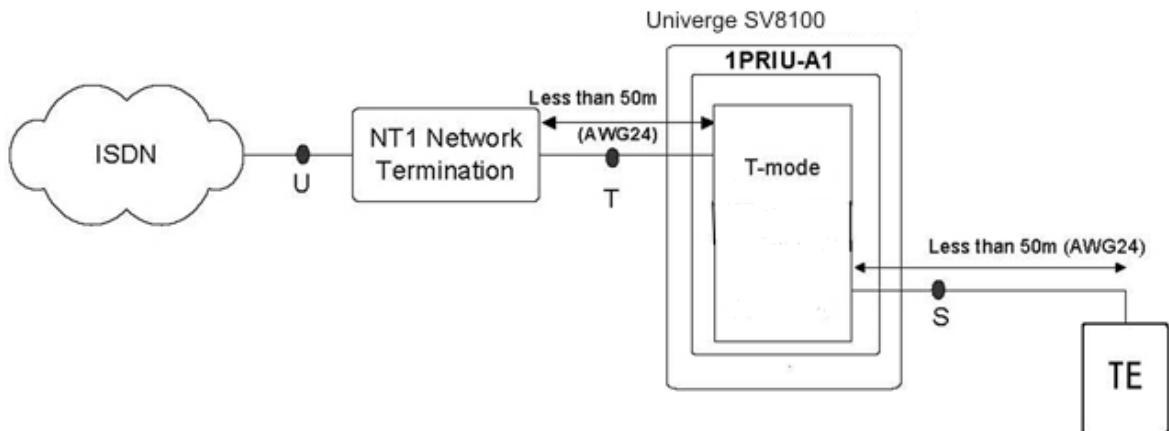


Figure 4-20 PRI Layout for NT-1 Network

## 5.6.3 LED Indications

LED indications for the GCD-PRTA are listed in [Table 4-40 GCD-PRTA LED Indications](#). Each LED is listed with its associated function and LED and Operational status. Refer to [Figure 4-21 GCD-PRTA LED Indication Pattern of Layer 1 on T1 Unit on page 4-77](#) for LED pattern information.

**Table 4-40 GCD-PRTA LED Indications**

LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
On	ON	System Initialising		
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 (100mS)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	-
	Off		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.		-

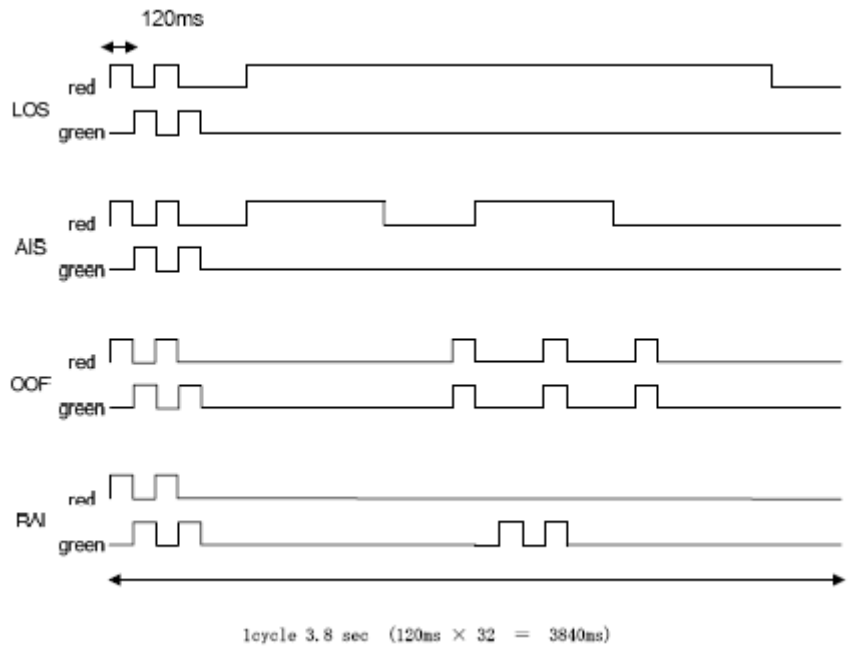


Figure 4-21 GCD-PRTA LED Indication Pattern of Layer 1 on T1 Unit

Table 4-41 ISDN LED Indications

Alarm	Details of the Alarm	LED Indication Pattern
<b>LOS</b>	Loss of Signal (Red alarm) No Signam (Analogue Interface)	Following an alarm blink (red, green, red, green) a Red LED will light.
<b>AIS</b>	Alarm Indication Signal (Blue Alarm)	Following an alarm blink (red, green, red, green) a Red LED slowly flashes On and Off twice.
<b>OOF</b>	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.
<b>RAI</b>	Remote Alarm Indication (Yellow Alarm)	Following an alarm blink (red, green, red, green) a Green LED flashes On and Off twice.
<b>No Alarm</b>	The system does the LED control.	

**Table 4-41 ISDN LED Indications**

Alarm	Details of the Alarm	LED Indication Pattern
-------	----------------------	------------------------

**Note:** The order of priority is set up to alarm in the order LOS>AIS>OOF>RAI.

5.6.4 Connectors

Table 4-42 GCD-PRTA RJ-45 Cable Connector Pin-Outs shows the pin-outs for the RJ-45 connector. Refer to Figure 4-19 GCD-PRTA Blade (Front and Side View) on page 4-73 for an illustration showing the location of the connectors on the PRIU blade.

**Table 4-42 GCD-PRTA RJ-45 Cable Connector Pin-Outs**

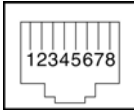
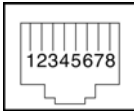
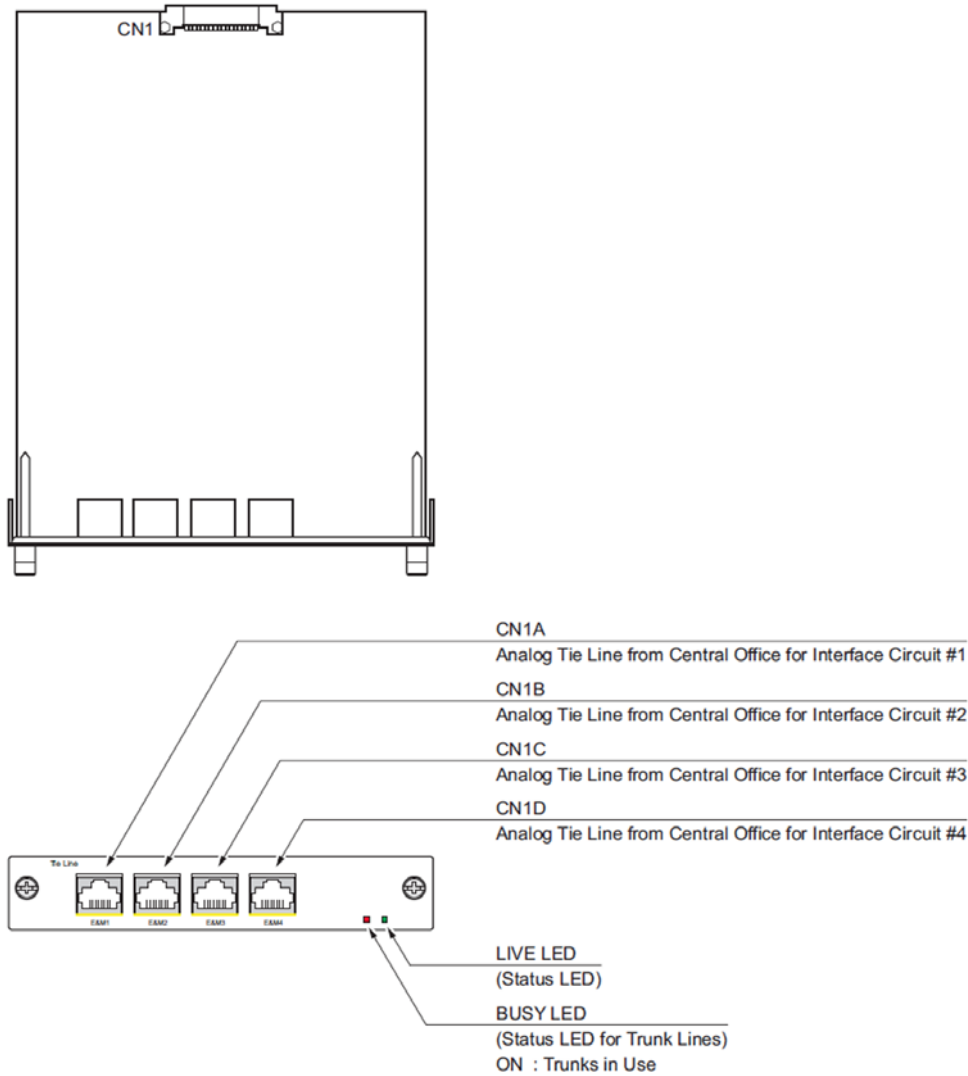
RJ-45 Cable Connector S-Bus Connection		
	Pin No.	Connection
	1	RB
	2	RA
	3	—
	4	TB
	5	TA
	6	—
	7	—
	8	—
RJ-45 Cable Connector – CN2 T-Bus Connection		
	Pin No.	Connection
	1	RA
	2	RB
	3	—
	4	TA
	5	TB
	6	—
	7	—
	8	—

Table 4-43 GCD-PRTA RJ48C Connector Pin-outs shows the pin-outs for the 8-pin RJ48C connector for the network and terminal interfaces.

**Table 4-43 GCD-PRTA RJ48C Connector Pin-outs**

Network Interface Pinout for the 8-Pin RJ48C Connector		For connection to T1 network: Use AT&T Type ABAM cable or equivalent (individually- shielded twisted pair, rated at 100 ohms at 1 MHz).	Terminal Interface Pinout for the 8-Pin RJ48C Connector	
Pin No.	Connection		Pin No.	Connection
1	RxD (R1)	1	RxD (R)	
2	RxD (T1)	2	RxD (T)	
4	TxD (R)	4	TxD (R1)	
5	TxD (T)	5	TxD (T1)	
3, 6	No Connection	3, 6	No Connection	
7, 8	No Connection	7, 8	No Connection	

## 5.7 GCD-4ODTB (4-Port Tie Line Interface Blade)



**Figure 4-22 GCD-4ODTB Blade**

### 5.7.1 Description

The GCD-4ODTB 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 (eight lead, tip/ring/tip 1/ ring 1) E&M signalling tie lines (determined in Program 10-13 ). System programming is also used to select the connection types with Type 1 or Type V. The GCD-4ODTB consumes 4 ports ranging between ports 001~200. Each blade requires one universal slot and provides:

- ◆ Four analog 4-circuit tie line interfaces
- ◆ Two Blade status LEDs
- ◆ Two straps and 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).*

Table 4-44 GCD-4ODTB Maximum Upgrade Capacities provides the maximum capacities for the ODT blades when they are upgraded.

**Table 4-44 GCD-4ODTB Maximum Upgrade Capacities**

19" Chassis with CPU	19" Chassis without CPU	19" Chassis x4	Networked Chassis
5	6	23	50

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.*

1. Set the straps for either the 2-wire or 4-wire. Refer to [Figure 4-22 GCD-4ODTB Blade on page 4-80](#).
2. Install the GCD-4ODTB into a slot in the chassis.

### 5.7.3 LED Indications

LED indications for the **GCD-4ODTB** are listed in [Table 4-45 GCD-4ODTB LED Indications](#). Each LED is listed with its associated function and LED and Operational status. Refer to [Figure 4-22 GCD-4ODTB Blade on page 4-80](#) for the location of the LEDs on the blade.

**Table 4-45 GCD-4ODTB LED Indications**

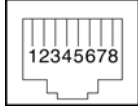
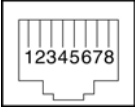
LED Indication		Operation Status		Remarks
Live LED (Green)	Busy LED (Red)			
On	On	System Initializing		–
Flash (1s)	On	The assignment of the unit is refused.		When you exceed the system capacity. When the main software version is not matched.
	Flash (1s)	Trouble found during self-diagnostics.		–
Flash (100ms)	On	Normal Operation	A Channel is busy (use another from CH1 ~ CHx).	–
	Off		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.		–

### 5.7.4 Connectors

[Table 4-46 GCD-4ODTB RJ-61 Cable Connector Pin-Outs on page 4-83](#) shows the pin-outs for the RJ-61 connector. Refer to [Figure 4-22 GCD-4ODTB Blade on page 4-80](#) for an illustration showing the location of the connectors on the ODT blade.



**Table 4-46 GCD-4ODTB RJ-61 Cable Connector Pin-Outs**

<b>RJ-61 Cable Connector – 2-Wire E&amp;M, CN1A~CN1D</b>																															
	Pin No.	Connection	Description																												
	1	—	Not Used																												
	2	M	Control signal to trunk																												
	3	—	Not Used																												
	4	R	Voice signal both ways																												
	5	T	Voice signal both ways																												
	6	—	Not Used																												
	7	E	Control signal from trunk																												
8	—	Not Used																													
<b>RJ-61 Cable Connector – 4-Wire E&amp;M, CN100~CN400</b>																															
	Pin No.	Connection	Description																												
	1	—	Not Used																												
	2	M	Control signal to trunk																												
	3	R	Voice signal to trunk																												
	4	R1	Voice signal from trunk																												
	5	T1	Voice signal from trunk																												
	6	T	Voice signal to trunk																												
	7	E	Control signal from trunk																												
8	—	Not Used																													
<p><i>Using Type I or Type V, a system loopback test can be performed by connecting E&amp;M1 to E&amp;M2.</i></p> <table border="0"> <thead> <tr> <th colspan="2">&lt;2-Wire E&amp;M&gt;</th> <th colspan="2">&lt;4-Wire E&amp;M&gt;</th> </tr> <tr> <th><u>E&amp;M1</u></th> <th><u>E&amp;M2</u></th> <th><u>E&amp;M1</u></th> <th><u>E&amp;M2</u></th> </tr> </thead> <tbody> <tr> <td>E →</td> <td>M</td> <td>E →</td> <td>M</td> </tr> <tr> <td>M →</td> <td>E</td> <td>M →</td> <td>E</td> </tr> <tr> <td>R →</td> <td>T</td> <td>R →</td> <td>T1</td> </tr> <tr> <td>T →</td> <td>R</td> <td>T →</td> <td>R1</td> </tr> <tr> <td></td> <td></td> <td>R1 →</td> <td>T</td> </tr> </tbody> </table>				<2-Wire E&M>		<4-Wire E&M>		<u>E&amp;M1</u>	<u>E&amp;M2</u>	<u>E&amp;M1</u>	<u>E&amp;M2</u>	E →	M	E →	M	M →	E	M →	E	R →	T	R →	T1	T →	R	T →	R1			R1 →	T
<2-Wire E&M>		<4-Wire E&M>																													
<u>E&amp;M1</u>	<u>E&amp;M2</u>	<u>E&amp;M1</u>	<u>E&amp;M2</u>																												
E →	M	E →	M																												
M →	E	M →	E																												
R →	T	R →	T1																												
T →	R	T →	R1																												
		R1 →	T																												

5.7.5 Connections

Figure 4-23 Voice Signal Connection for Type I And V on page 4-84 and Figure 4-24 Control Signal Connection on page 4-85 show the signaling methods for circuit types.

(1) Voice signal connection for type I and V.

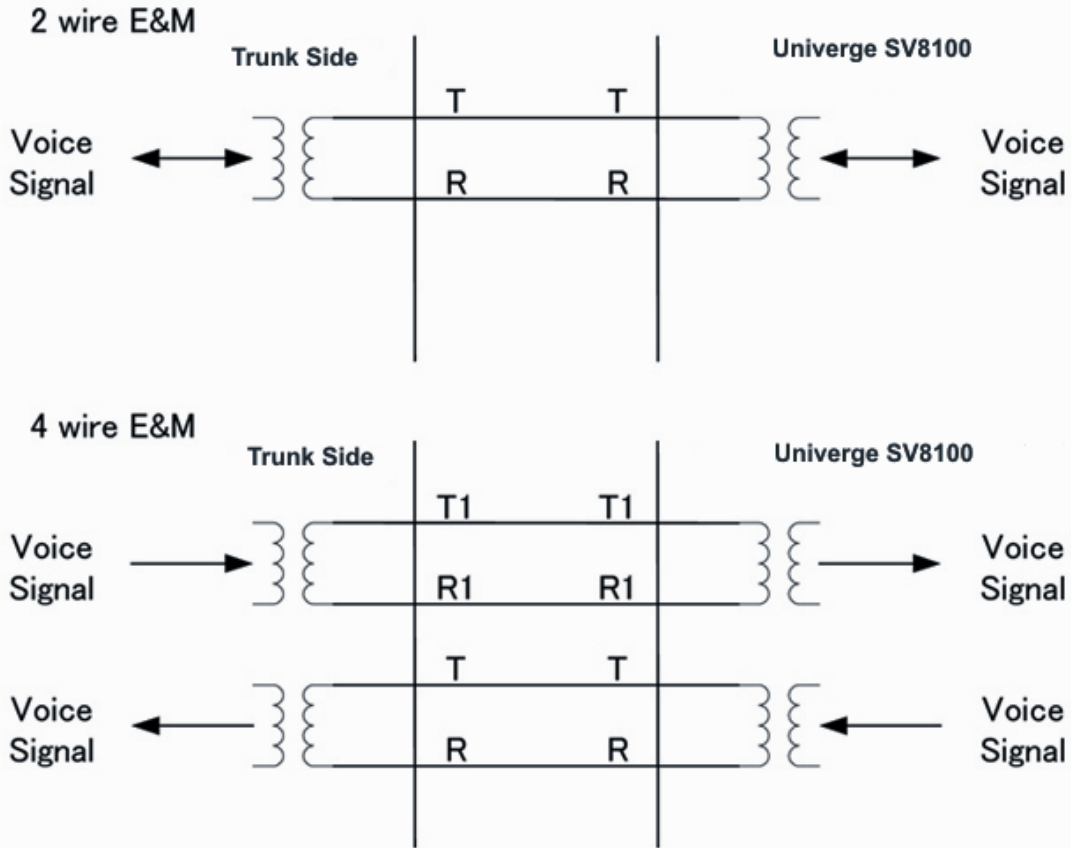
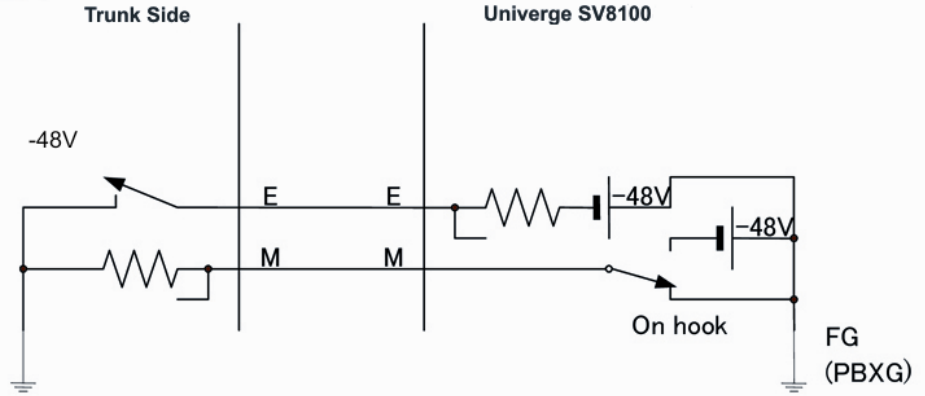


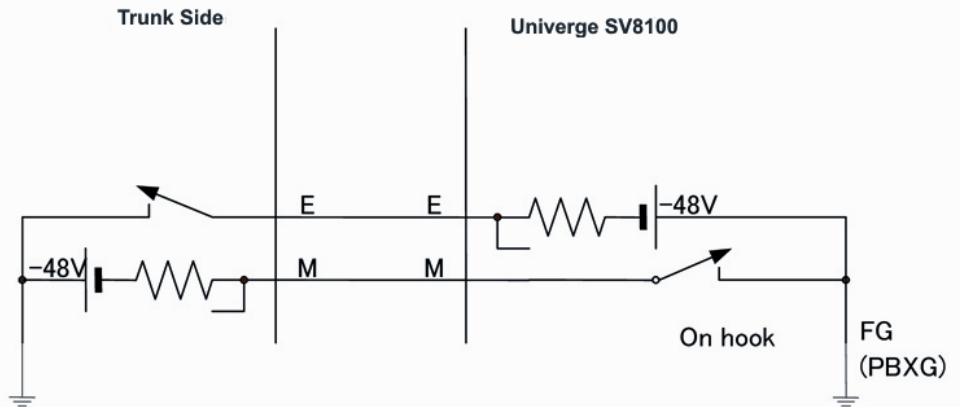
Figure 4-23 Voice Signal Connection for Type I And V

(2) Control Signal connection

Type I



Type V



Type V (Back to Back connection)

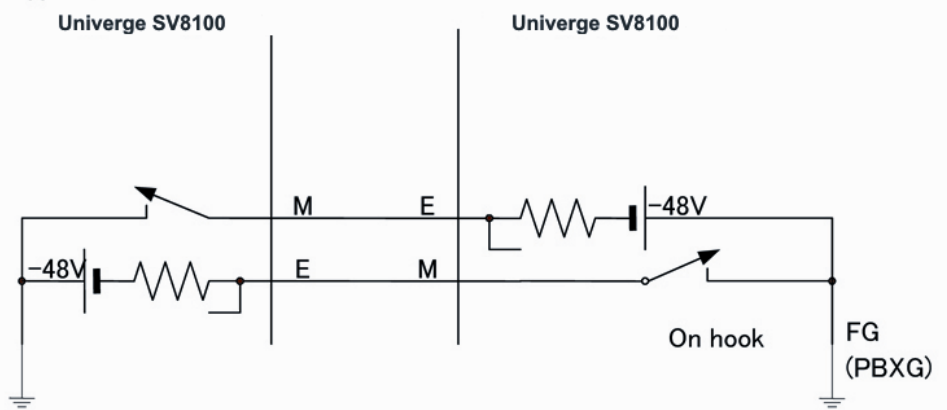
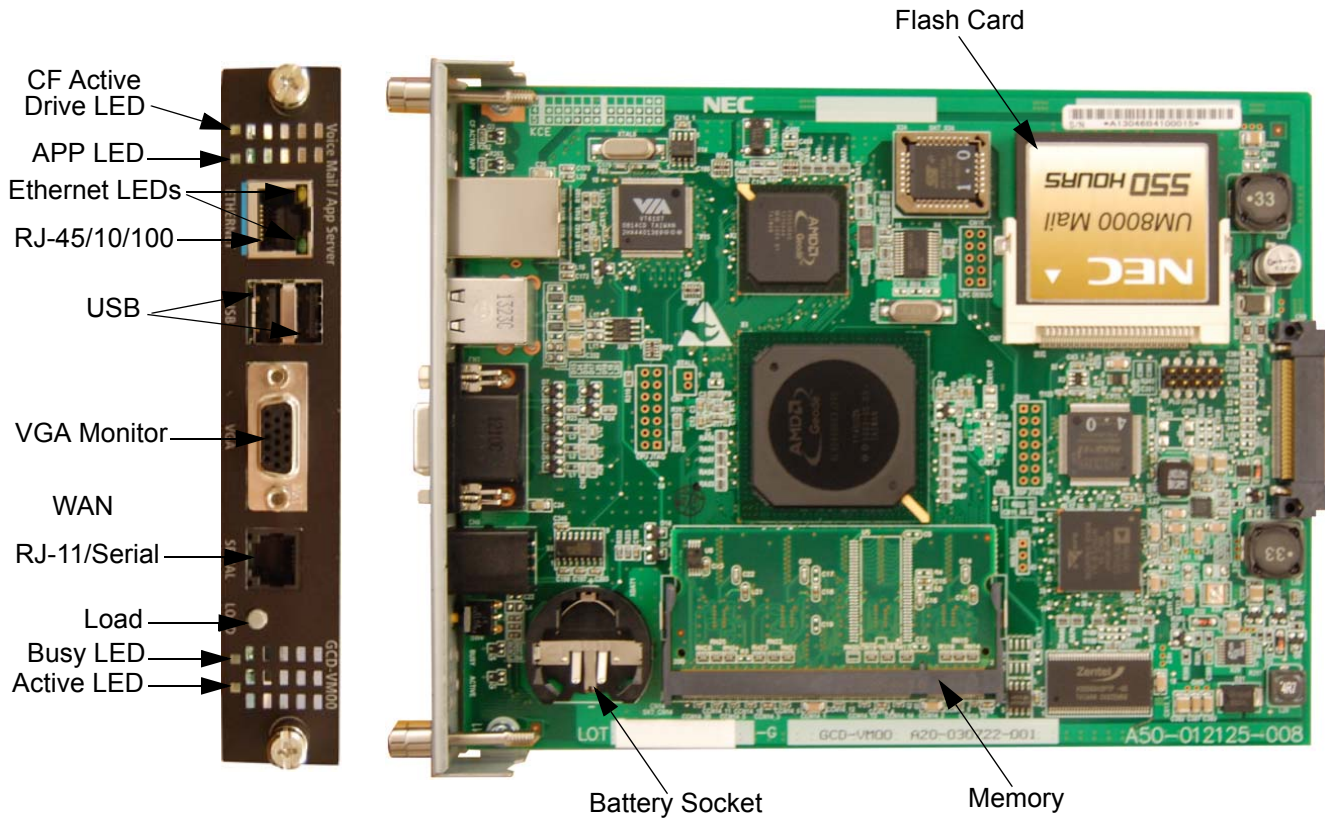


Figure 4-24 Control Signal Connection

## SECTION 6 OPTIONAL BLADES

### 6.1 CD-VM00 (Voice Mail and Server)

Figure 4-25 GCD-VM00 Blade



#### 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 CD-VM00 can be installed per system.



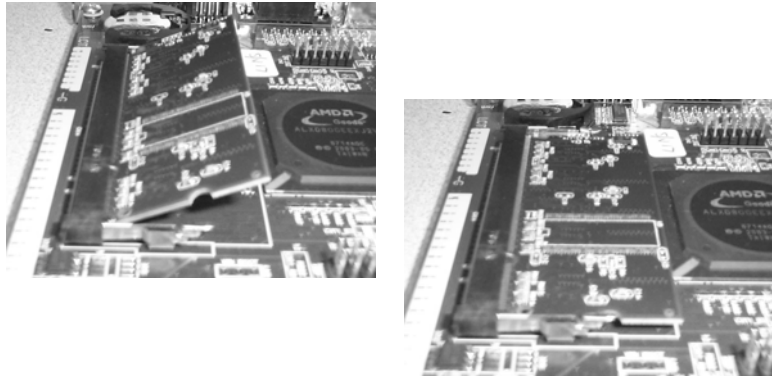
- ◆ *Handle the CF drive carefully. To prevent damage, do not drop the drive or apply pressure to it.*
- ◆ *This unit makes extensive use of CMOS technology and is very susceptible to static; extreme care must be taken to avoid static discharge when handling*

1. Wear a grounding strap while handling the CD-VM00 and lay it on a flat workspace.
2. Mount the CR-2032 battery with the + side up in the BATT slot on the CD-VM00 (refer to [Figure 4-26 Install the CR-2032 Battery](#)).

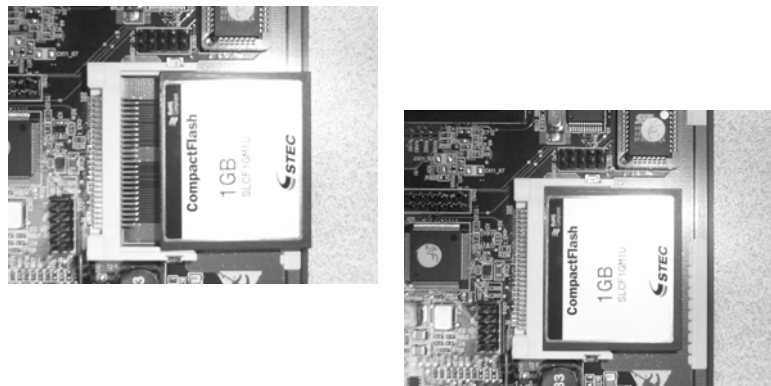
**Figure 4-26 Install the CR-2032 Battery**



3. To install the SO-DIMM memory on the CD-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 4-27 Install the SO-DIMM Memory on page 4-88](#)).

**Figure 4-27 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 4-28 Install the Compact Flash Drive](#)).

**Figure 4-28 Install the Compact Flash Drive**

### 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

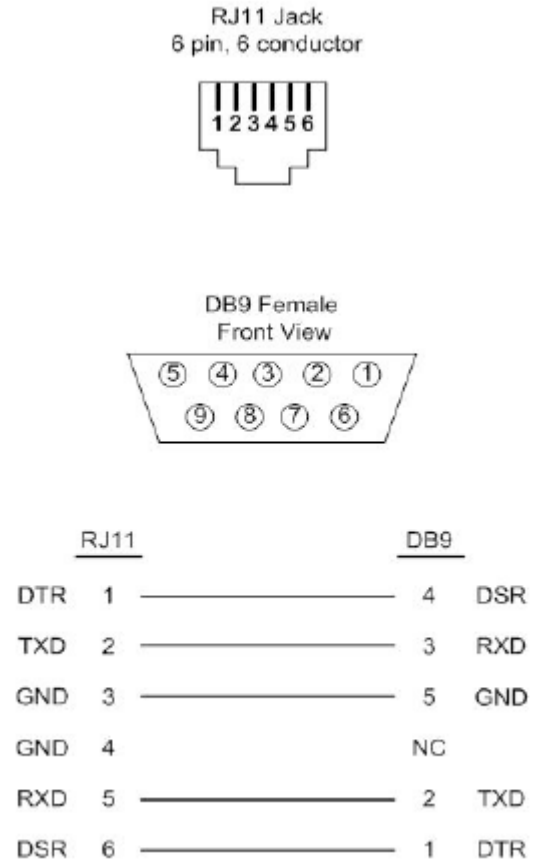
The following sections go into detail on each user interface.

#### 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 4-30 GCD-VM00 RS-232 Serial Cable \(DTE\) on page 4-90](#). The connection for a DCE device uses the swapped line cord shown in [Figure 4-31 GCD-VM00 RS-232 Serial Cable \(DCE\) on page 4-91](#).

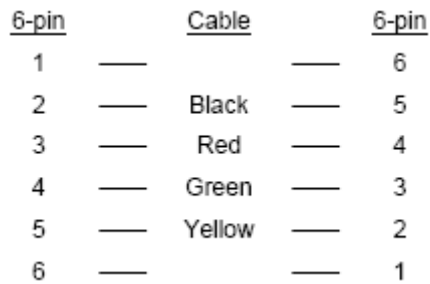
6.1.4.2 DB9 to 6-pin Modular RS-232 Adapter

**Figure 4-29 GCD-VM00 DB9 to 6-Pin Modular RS-232 Adapter**



6.1.4.3 RS-232 Serial Cable (DTE)

**Figure 4-30 GCD-VM00 RS-232 Serial Cable (DTE)**





#### 6.1.4.4 RS-232 Serial Cable (DCE)

**Figure 4-31 GCD-VM00 RS-232 Serial Cable (DCE)**

<u>6-pin</u>		<u>Cable</u>		<u>6-pin</u>
1	—		—	1
2	—	Black	—	2
3	—	Red	—	3
4	—	Green	—	4
5	—	Yellow	—	5
6	—		—	6

#### 6.1.4.5 USB Interface

The APSU provides two USB interfaces that can be used for the following devices:

- USB Keyboard
- USB Memory Device

#### 6.1.4.6 VGA Display Interface

The APSU card provides a VGA display interface through a standard DB-15 connector.

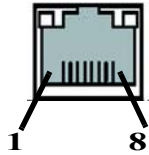
#### 6.1.4.7 10 Base-T/100 Base-TX Ethernet Interface

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:

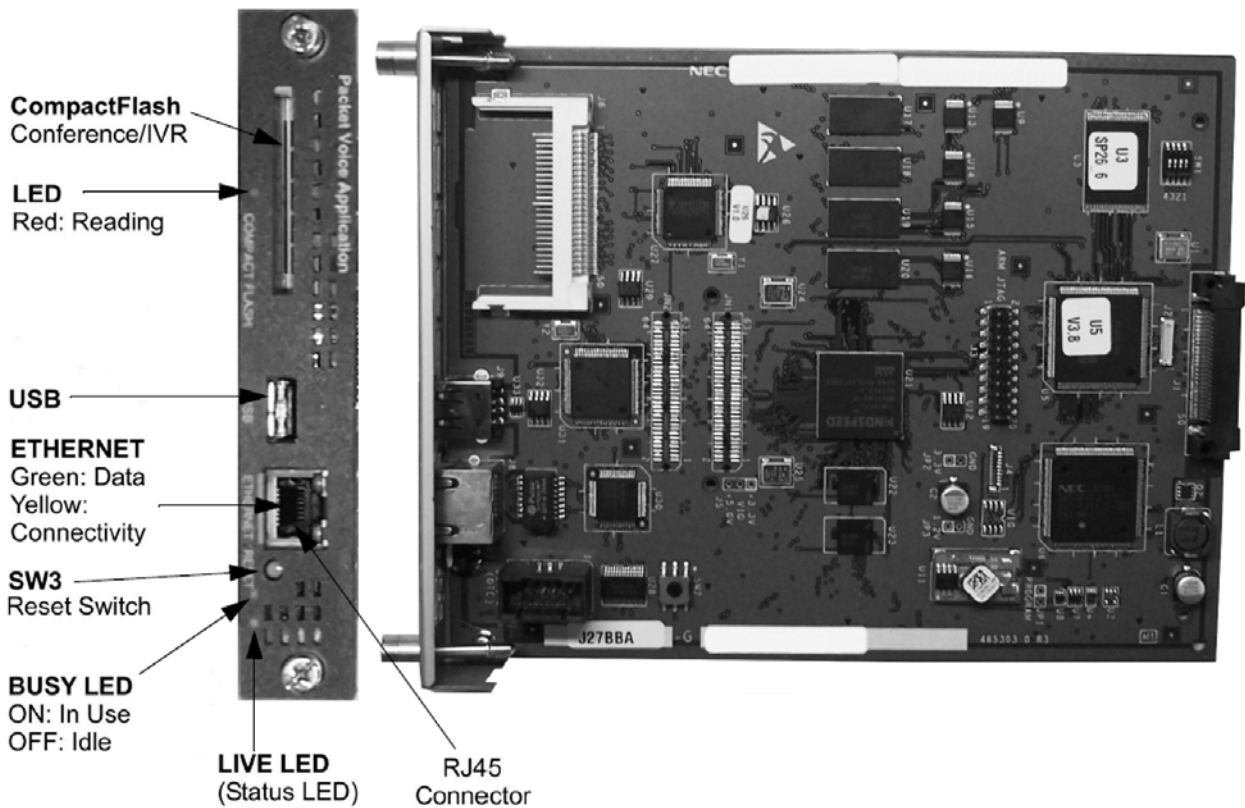
- Unified Messaging (Email)
- Software Update
- Application Configuration
- Text to Speech and Speech Recognition using an external server
- Network Attached Storage (NAS)

The RJ-45 connector pin-out is shown in [Figure 4-32 Ethernet Connector Pin-Out](#).

**Figure 4-32 Ethernet Connector Pin-Out**

View	Pin No.	Signal	Note
PIN1 ---- PIN8	1	Tx+	10 Base-T/100 Base-TX port (RJ-45 connector)
	2	Tx-	
	3	Rx+	
	4	NC	
	5	NC	
	6	Rx-	
	7	NC	
	8	NC	

## 6.2 CD-PVAA (Packet Voice Application)



**Figure 4-33 CD-PVAA Blade**

### 6.2.1 Description

The Packet Voice Application, CD-PVAA blade is an optional interface that supports Application Packages (Univerge Multimedia Conference Bridge, and Interactive Voice Response Application). This blade can be assigned as a CNF package to support Multimedia Conference Bridge or IVR package to support the Interactive Voice Response Application supporting a maximum of 16 ports.

The PVAA card is also used to support the PMS translation application package.

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 CNF or IVR package accounts for up to 16 Extension Ports of the Total Port capacity (One Conference or One IVR blade maximum).

### 6.2.2 Installation

To install the CD-PVAA

- ◆ Install CompactFlash into CD-PVAA.
- ◆ Plug the into any universal slot on the chassis.
- ◆ Refer to Program 10-55-01 to configure the IP Address of the CD-PVAA.
- ◆ Refer to Program 10-55-04 to configure the Subnet Mask of the CD-PVAA.
- ◆ Refer to Program 10-55-05 to configure the Gateway of the CD-PVAA.
- ◆ The CD-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 CD-PVAA blade has the following switches:

#### LOAD Switch SW3

- ◆ This switch allows the technician to reset the CD-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

- ◆ 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.

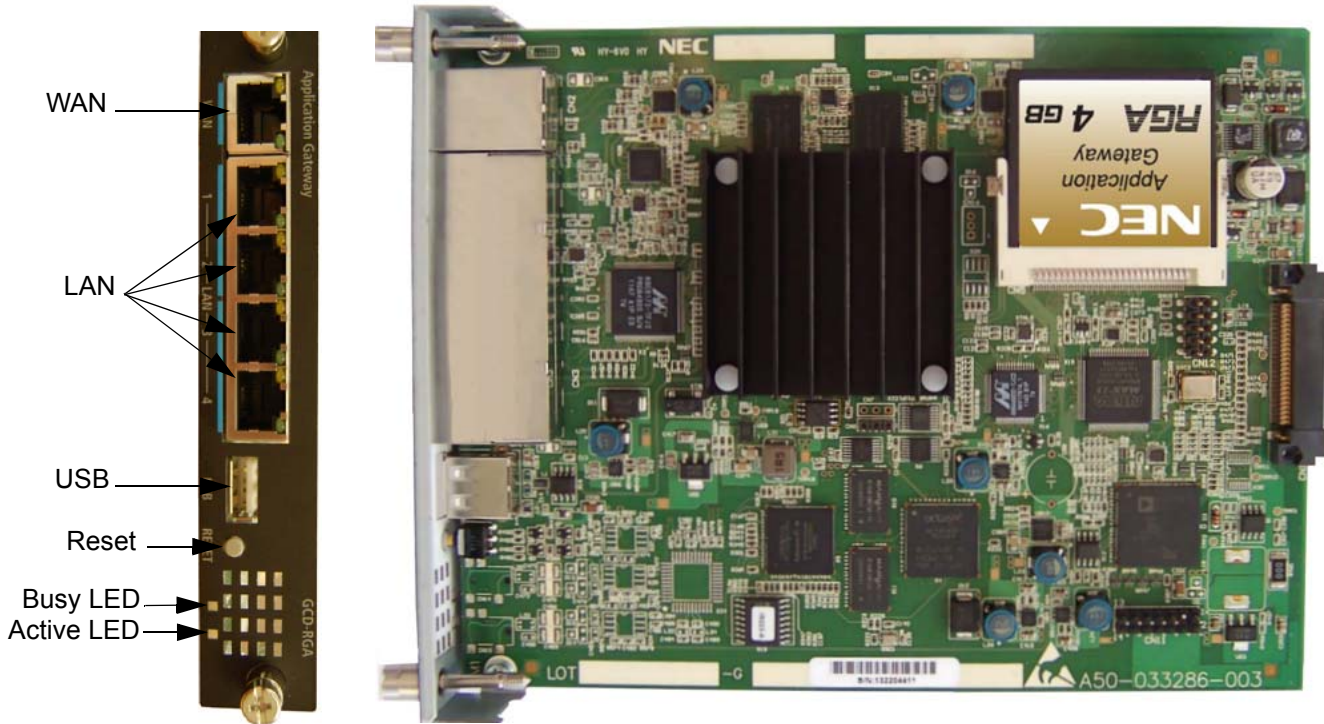
#### 6.2.5 Connectors

Ethernet Connector

This connector is a single 10/100 Mbps Ethernet connector. This port has Auto-Medium Dependent Interface Crossover (MDIX) to allow using either a straight-through Ethernet cable for connection to a PC or a crossover Ethernet cable.

## 6.3 GCD-RGA (Application Gateway)

Figure 4-34 GCD-RGA Blade



### 6.3.1 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 1000Mbps. 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:
  - DHCP
  - PPPoE
  - Static IP
- Dynamic DNS
- Virtual Private Network (VPN)

- Quality of Service (QOS):
  - DiffServ
  - 802.1p
  - 802.1Q
  - Traffic Shaping for Upstream and Downstream traffic
- Firewall:
  - Denial of Service (DoS) Protection
  - Black WAN Ping Requests
  - Multicast Pass Through
  - VPN Pass Through
  - Block Web Features (Java, Cookies, Active X, HTTP Proxy)
  - DMZ
  - Universal Plug and Play (UPnP)
  - IP Forwarding (1-1 NAT)
  - Port Forwarding
  - Port Range Forwarding
  - IP Based Access Restriction
  - Access Policy
- Services Management:
  - FTP
  - SSH
  - Telnet
  - SMTP
  - HTTP
  - Custom Service
- 4-Port Gigabit Ethernet Switch:
  - Switch Management
  - 64 VLANs
  - Port Mirroring
  - 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.

### 6.3.2 Installation

Only one GCD-RGA can be installed per system.



*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.

### 6.3.3 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.



### 6.3.4 Status LEDs

The table below shows the user-level description of the front panel LEDs in RGA mode.

**Table 4-47 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	<b>Slow Flash</b> <b>Medium Flash</b> <b>Fast Flash</b>							

### 6.3.5 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 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.

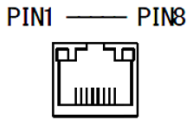
- Reset or main processor boot problem: red solid on, green solid on (orange).
- Main processor booting: solid green.
- Router application communicating on backplane: off.
- One or more ports active after third party application running: solid red.

### 6.3.6 Connectors

#### 10/100/1000 BASE-TX Ethernet Interface

The PVA2 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 4-48 GCD-RGA Ethernet Connector Pin-Outs](#)).

**Table 4-48 GCD-RGA Ethernet Connector Pin-Outs**

View	Pin No.	10/100 Signal	1000 Signal	Note
	1	Tx+	A+	10BASE-T/100BASE-TX/1000BASE-T port
	2	Tx-	A-	
	3	RX+	B+	
	4	NC	C+	
	5	NC	C-	
	6	RX-	B-	
	7	NC	D+	
	8	NC	D-	

## 6.4 CD-ETIA (Gigabit PoE Switch)

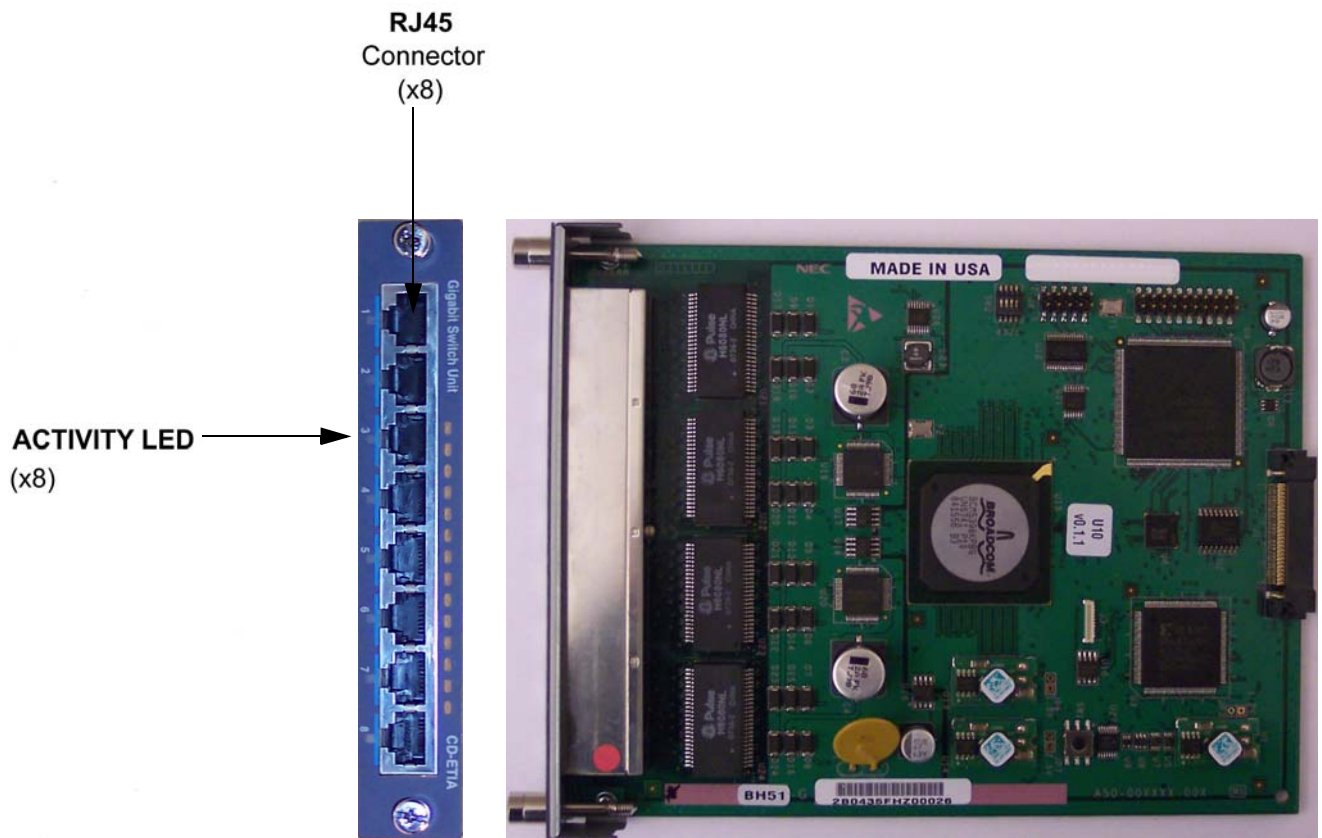


Figure 4-35 CD-ETIA Blade

### 6.4.1 Description

The CD-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 is based on this setup. This blade provides:

- ◆ 8 Gigabit Ethernet (10/100/1000) 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

## 6.4.2 Installation

### 6.4.2.1 Stacking Architecture

The idea of stacking is to allow the user the ability to manage the multiple GSWU cards in one system as one switch, instead of individual units and IP addresses, etc. For example, a set of three blades would appear to the UI as a 24 port switch instead of three 8-port switches. The stacking will work 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 not assigned an IP address signifying them 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 within a system, the additional units will not have any of the software features specified in this document. They will behave as an unmanaged Gigabit Ethernet switch, as defined later in this document.

The three GSWU boards can be categorized into one **Main** board, with two additional **Add-on** boards.

#### 6.4.2.2 GCD-CP10IP Address Assignment

The GSWU Main board will be provided with an IP address from the back plane CPU during the initialization sequence. The provision of an IP address from the back plane will identify the Main board. If during initialization, the IP address is set to **0** by the CPU, the blade is then 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.

#### 6.4.2.3 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 will acknowledge by sending port identification information to the Add-on board.

#### 6.4.2.4 Port Number Determination

When a Main board is initialized, the board assigns the first eight ports as port 1 ~ 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 the 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 ~ 8; Add-on board has ports 9 ~ 16.

1. User inserts a new Add-on board in slot 2.
  - ◆ 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.

#### 6.4.2.5 Unmanaged Switch Functions

In the unmanaged mode, a GSWU unit will have the following functions only:

- ◆ 10/100/1000 Ethernet ports (x8)
- ◆ PoE Class 3 (lowest power class)

#### 6.4.3 LED Indications

**Table 4-49 CD-ETIA LED Indications**

Port State	LED Display
1000Mbps Link	Green Solid
10/100Mbps Link	Yellow Solid
No Link	Off
Port Activity	LED Blinking

#### 6.4.4 Connectors

Backplane Connector – J1 connection to system CPU board and other boards in the chassis.

**-- NOTES --**





# Installing DT Series Digital and IP Multiline Terminals

## 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.

**Table 5-1 Terminal Category Reference Chart**

Series Name		Equipment ID	Comments
DT 300 Series Digital Terminal (TDM)	DT 310 (Economy)	DTL-2E-( )	<input type="checkbox"/> Economical terminal providing access to basic telephony and messaging service
		DTL-6DE-( )	<input type="checkbox"/> Fully functional keypad providing standard business functions such as hold, transfer, speaker, microphone and other features
		DTL-12E-( )	<input type="checkbox"/> 2-button terminal is non-display <input type="checkbox"/> 6-button terminal equipped with LCD and full-featured keypad <input type="checkbox"/> 12-button terminal is non-display <input type="checkbox"/> Available in black
	DT 330 (Value)	DTL-8LD-( )	<input type="checkbox"/> 8-button DESI-Less LCD telephone
		DTL-12D-( )	<input type="checkbox"/> Also available are 12-, 24-, 32-button LCD telephones
		DTL-24D-( ) DTL-32-D-( )	<input type="checkbox"/> Provides access to more sophisticated system features and allowing room for growth <input type="checkbox"/> All DT 330s come with a standard LCD display, full duplex speakerphone capability, module support for expansion and feature add-on capability <input type="checkbox"/> 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 <input type="checkbox"/> Available in black and white
		DTL-12BT( )	<input type="checkbox"/> Bluetooth available in black
		DTL-12PA( )	<input type="checkbox"/> Power Save Adapter provides backup for analog trunk connection

**Table 5-1 Terminal Category Reference Chart**

Series Name		Equipment ID	Comments
DT 400 Series Digital Terminal (TDM)	DT 410 (Economy)	DTZ-2E-( ) DTZ-6DE-( )	<ul style="list-style-type: none"> <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>
	DT 430 (Value)	DTZ-8LD-( ) DTZ-12D-( ) DTZ-24D-( )	<ul style="list-style-type: none"> <li>❑ 8-button DESI-Less 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>

Table 5-1 Terminal Category Reference Chart

Series Name		Equipment ID	Comments
DT 700 Series IP Terminals	DT 710 (Economy)	ITL-2E-( ) ITL-6DE-( ) ITL-8LDE-( )	<ul style="list-style-type: none"> <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> </ul>
	DT 730 (Value)	ITL-8LD-( ) ITL-12D-( ) ITL-24D-( ) ITL-32-D-( )	<ul style="list-style-type: none"> <li>❑ 8-button DESI-Less 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 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 style="list-style-type: none"> <li>❑ Power Save Adapter provides backup for analog trunk connection</li> </ul>
	DT 730G (Value)	ITL-12CG-( ) ITL-12DG-( )	<ul style="list-style-type: none"> <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>
DT 750 (Sophisticated)	ITL-320C-( )	<ul style="list-style-type: none"> <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>	

Table 5-1 Terminal Category Reference Chart

Series Name		Equipment ID	Comments
Wireless Handset		G955	☐ SIP DECT
		G266	☐ SIP DECT
		G566	☐ SIP DECT
		ML440	☐ SIP DECT
Cordless		DTL-8R-1	☐ Cordless DECT
DT 800 Series IP Terminals	DT820 (Entry)	ITY-6D-( ) ITY- 8LDX-( )	<ul style="list-style-type: none"> <li>☐ 6-button terminal equipped with LCD and full featured keypad</li> <li>☐ 8-button DESI-Less LCD telephoen</li> <li>☐ All DT820s come with a standard backlit LCD display, fill duplex speakerphone capability, module support for expansion and feature add-on capability</li> <li>☐ Available in black only</li> </ul>
	DT 830 (Value)	ITZ-8LDG-( ) ITZ-12D-( ) ITZ-24D-( )	<ul style="list-style-type: none"> <li>☐ 8-button DESI-Less 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>
	DT 830G (Value)	ITZ-12CG-( ) ITZ-12DG-( )	<ul style="list-style-type: none"> <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>

The DT 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 for a variety of height positions.

There are several easy-to-read LCD displays available, including a new large color touch panel LCD.

The following tables list each terminal and the options available.

[Table 5-2 Terminal and Adapter Compatibility \(DT300/DT700\)](#) and [Table 5-3 Terminal and Adapter Compatibility \(DT400/DT800\)](#) show the compatibility between the terminals and adapter used in the system.

**Table 5-2 Terminal and Adapter Compatibility (DT300/DT700)**

Terminal	Adapter Unit						
	ADA-L	APR-L	ILPA	PSA-L	BCH-L	BHA-L	GBA-L
<b>IP Terminals:</b>							
ITL-2E-1 (BK) TEL	—	—	✓	—	—	—	✓
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	✓	—	✓ <sub>1</sub>	✓	—	—	2
ITL-12DG-3 (BK) TEL	✓	—	✓ <sub>1</sub>	✓	—	—	2
ITL-12PA-1 (BK) TEL	✓	—	✓	✓	—	—	✓
ITL-24D-1 (BK)/(WH) TEL	✓	—	✓	✓	—	—	✓
ITL-32D-1 (BK)/(WH) TEL	✓	—	✓	✓	—	—	✓
ITL-320C-1 (BK) TEL	✓	—	✓	✓	—	—	✓
<b>Digital Terminals:</b>							
DTL-2E-1 (BK) TEL	—	—	—	—	—	—	—
DTL-6DE-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	✓	✓	—	✓	✓	✓	—
DTL-32D-1 (BK)/(WH) TEL	✓	✓	—	✓	✓	✓	—

**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
<b>Console:</b>							
DCL-60-1 (BK)/(WH) CONSOLE	—	—	—	—	—	—	—

— = Option Not Available

✓ = Optional Available

1 = When the IPLA-L is connected to a 12CG/12DG terminal, max connection speed drops to 100Mbps.

2 = The 12CG/12DG terminals support Gigabit Ethernet, GBA-L Unit not required.

**Table 5-3 Terminal and Adapter Compatibility (DT400/DT800)**

Terminal	Adapter Unit				
	ADA-L	APR-L	ILPA*	BHA-L	BCA-Z
<b>Digital Terminals: DT400</b>					
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	✓	✓	—	✓	✓
<b>IP Terminals: DT800</b>					
ITY-6D-1P(BK) TEL	—	—	—	—	—
ITY-8LDX-1P(BK) TEL	—	—	—	—	—
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	✓	—	✓	—	✓
<b>Console:</b>					
DCZ-60-2 (BK)/(WH) CONSOLE	—	—	—	✓	—

\* = When the ILPA-R unit is used, 1000 BASE-T is not available.

Table 5-4 Terminal and Line Key/LCD Compatibility (DT300/DT700)

Terminal	Line Key/LCD					
	8 LK-L	8LKD(LD)-L	8LKI(LD)-L	12LK-L	LCD (BL-L)	DCL-60
<b>IP Terminals:</b>						
ITL-2E-1 (BK) TEL	—	—	—	—	—	—
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	✓	—	—	✓	—	✓
ITL-12PA-1 (BK) TEL	✓	—	✓	✓	✓	✓
ITL-24D-1 (BK)/(WH) TEL	✓	—	✓	—	✓	✓
ITL-32D-1 (BK)/(WH) TEL	✓	—	✓	—	✓	—
ITL-320C-1 (BK) TEL	✓	—	—	—	✓	✓
<b>Digital Terminals:</b>						
DTL-2E-1 (BK) TEL	—	—	—	—	—	—
DTL-6DE-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	✓	✓	—	—	✓	✓
DTL-32D-1 (BK)/(WH) TEL	✓	✓	—	—	✓	—

— = Option Not Available

✓ = Optional Available

**Table 5-5 Terminal and Line Key/LCD Compatibility (DT400/DT800)**

Terminal	Line Key/LCD		
	8 LK-Z	16LK-Z	DCL-60
<b>Digital Terminals: DT400</b>			
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	✓	—	✓
<b>IP Terminals: DT800</b>			
ITY-6D-1P(BK) TEL	—	—	—
ITY-8LDX-1P(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	✓	—	✓
ITZ-12DG-3 (BK)/(WH) TEL	✓	—	✓
ITZ-8LDG-3 (BK)/(WH) TEL	✓	—	✓

— = Option Not Available

✓ = Optional Available

**Table 5-6 Terminal and Tenkey Kit Compatibility DT300/DT700)**

Terminal	Tenkey Kit				
	BS(F)-L	BS(S)-L	BS(ACD)-L	BS(Braille)-L	BS(Retro)-I
<b>IP Terminals:</b>					
ITL-2E-1 (BK) TEL	—	—	—	—	✓
ITL-6DE-1 (BK) TEL	—	—	—	—	✓



**Table 5-6 Terminal and Tenkey Kit Compatibility DT300/DT700) (Continued)**

Terminal	Tenkey Kit				
	BS(F)-L	BS(S)-L	BS(ACD)-L	BS(Braille)-L	BS(Retro)-I
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	✓	✓	✓	✓	✓
ITL-12PA-1 (BK) TEL	✓	✓	✓	✓	✓
ITL-24D-1 (BK)/(WH) TEL	✓	✓	✓	✓	✓
ITL-32D-1 (BK)/(WH) TEL	✓	✓	✓	✓	✓
ITL-320C-1 (BK) TEL	✓	✓	✓	✓	✓
<b>Digital Terminals:</b>					
DTL-2E-1 (BK) TEL	—	—	—	—	✓
DTL-6DE-1 (BK) TEL	—	—	—	—	✓
DTL-8LD(BK)/(WH) TEL	✓	✓	✓	✓	✓
DTL-12D-1 (BK)/(WH) TEL	✓	✓	✓	✓	✓
DTL-12BT-1 (BK) TEL	✓	✓	✓	✓	✓
DTL-12PA-1 (BK) TEL	✓	✓	✓	✓	✓
DTL-24D-1 (BK)/(WH) TEL	✓	✓	✓	✓	✓
DTL-32D-1 (BK)/(WH) TEL	✓	✓	✓	✓	✓

— = Option Not Available

✓ = Optional Available

**Table 5-7 Terminal and Ten Key Kit Compatibility (DT400/DT800)**


Terminal	Ten Key Kit				
	BS(F)-Z	BS(S)-Z	BS(ACD)-Z	Sticker- Braille-Z KIT	BS (Retro-F)-Z
<b>Digital Terminals: DT400</b>					

**Table 5-7 Terminal and Ten Key Kit Compatibility (DT400/DT800) (Continued)**

Terminal	Ten Key Kit				
	BS(F)-Z	BS(S)-Z	BS(ACD)-Z	Sticker-Braille-Z KIT	BS (Retro-F)-Z
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	✓	✓	✓	✓	✓
<b>IP Terminals: DT800</b>					
ITY-6D-1P(BK) TEL	—	—	—	—	—
ITY-8LDX-1P(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	✓	✓	✓	✓	✓
ITZ-12DG-3 (BK)/(WH) TEL	✓	✓	✓	✓	✓
ITZ-8LDG-3 (BK)/(WH) TEL	✓	✓	✓	✓	✓

— = Option Not Available

✓ = Optional Available

 The Sticker-Braille-Z kit consists of stickers to be installed.

**Table 5-8 Terminal and Optional Equipment Compatibility (DT300/DT700)**

Terminal	Equipment		
	PSA-L	WM-L*	PANEL-L
<b>IP Terminals:</b>			
ITL-2E-1 (BK) TEL	—	✓	✓
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	✓	✓	✓
ITL-12PA-1 (BK) TEL	—	✓	✓
ITL-24D-1 (BK)/(WH) TEL	✓	✓	✓
ITL-32D-1 (BK)/(WH) TEL	✓	✓	✓
ITL-320C-1 (BK) TEL	✓	✓	✓
<b>Digital Terminals:</b>			
DTL-2E-1 (BK) TEL	—	✓	✓
DTL-6DE-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	✓	✓	✓
DTL-32D-1 (BK)/(WH) TEL	✓	✓	✓
<b>Console:</b>			
DCL-60-1 CONSOLE **	—	✓	—

**Table 5-8 Terminal and Optional Equipment Compatibility (DT300/DT700)**

Terminal	Equipment		
	PSA-L	WM-L*	PANEL-L

— = Option Not Available

✓ = Optional Available

\* The WM-L is required if the ADA-L UNIT or APR-L UNIT are installed on the telephone.

\*\* DCL-60-1 = Special Wall Mount

**Table 5-9 Terminal and Optional Equipment Compatibility (DT400/DT800)**

Terminal	Equipment	
	WM-L*1	PANEL-L
<b>Digital Terminals: DT400</b>		
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	✓	✓
<b>IP Terminals: DT800</b>		
ITZ-8LD-3 (BK) TEL	✓	✓
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 5-9 Terminal and Optional Equipment Compatibility (DT400/DT800)**

Terminal	Equipment	
	WM-L*1	PANEL-L
<b>Console:</b>		
DCZ-60-2 (BK)/(WH) CONSOLE <sup>Q2</sup>	✓	—

— = 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 SERIES DIGITAL MULTILINE TERMINALS

The DT300 Series offers a new exciting line up of digital 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.

### 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)
- ◆ Four soft keys (Help, Exit)
- ◆ Three color LED

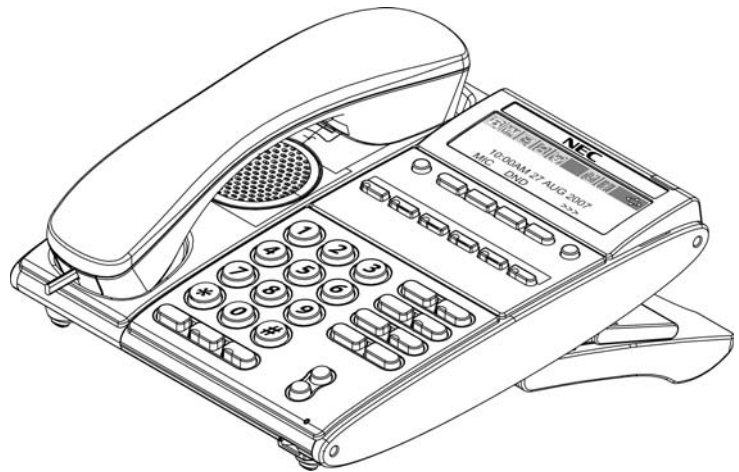


**Figure 5-1 DTL-2E-1 TEL**

### 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 soft keys (Help, Exit)
- ◆ Three color LED
- ◆ 24 X 3 character LCD display with cursor keys



**Figure 5-2 DTL-6DE-1 TEL**

### 2.1.3 DTL-8LD-1 (BK) TEL/DTL-8LD-1 (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 soft keys (Help, Exit)
- ◆ DESI-less 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 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation



**Figure 5-3 DTL-8LD-1 TEL**



#### 2.1.4 DTL-12BT-1 (BK) TEL

This digital value Multiline Terminal has 12 line keys and is available in black only. The terminal features:

- ◆ Keypad-like Handset
- ◆ Eight Line Buttons
- ◆ Function Button
- ◆ Dial Button
- ◆ Display
- ◆ All Keypad Functions with Main Unit
- ◆ Cradle Charges Handset
- ◆ Base Side RF Block (50 meters, Class 1)
- ◆ Bluetooth Distance: 50 Meters
- ◆ Full-duplex handsfree operation

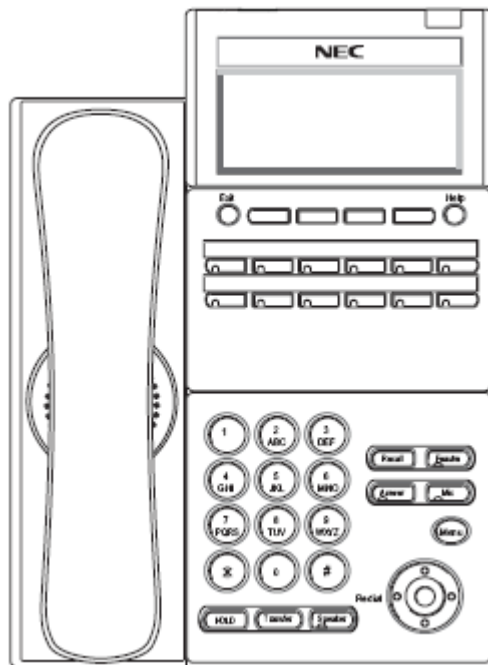


**Figure 5-4 DTL-12BT-1 TEL**

### 2.1.5 DTL-12D-1 (BK) TEL/DTL-12D-1 (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
- ◆ Eight line keys (Red, Green)
- ◆ Four soft keys (Help, Exit)
- ◆ Three color LED
- ◆ 168 X 58 dot matrix backlit LCD with cursor keys
- ◆ Menu/Softkey operation provided on the LCD
- ◆ Backlit 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation

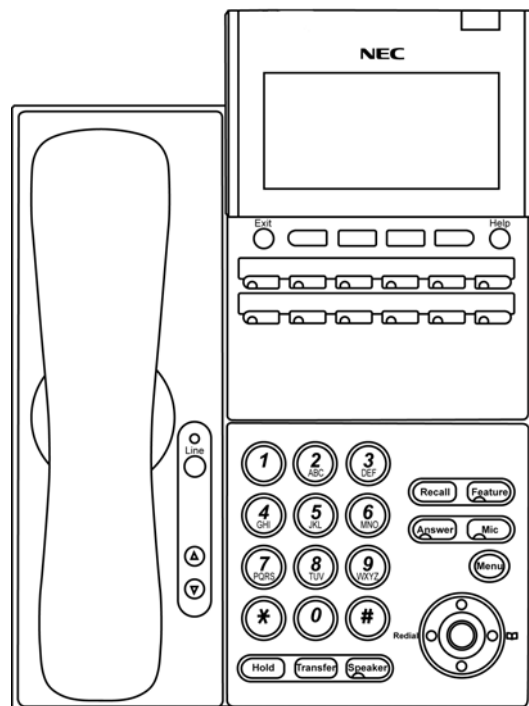


**Figure 5-5 DTL-12D-1 TEL**

### 2.1.6 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
- ◆ Eight line keys (Red, Green)
- ◆ Four soft keys (Help, Exit)
- ◆ Three color LED
- ◆ 168 X 58 dot matrix backlit LCD with cursor keys
- ◆ Menu/Softkey operation provided on the LCD
- ◆ Backlit 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation
- ◆ PSA-L adapter



**Figure 5-6 DTL-12PA-1 TEL**

### 2.1.7 DTL-24D-1 (BK) TEL/DTL-24D-1 (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
- ◆ Eight line keys (Red, Green)
- ◆ Four soft keys (Help, Exit)
- ◆ Three color LED
- ◆ 168 X 58 dot matrix backlit LCD with cursor keys
- ◆ Menu/Softkey operation provided on the LCD
- ◆ Backlit 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation



**Figure 5-7 DTL-24D-1 TEL**

### 2.1.8 DTL-32D-1 (BK) TEL/DTL-32D-1 (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
- ♦ Eight line keys (Red, Green)
- ♦ Four soft keys (Help, Exit)
- ♦ Three color LED
- ♦ 168 X 58 dot matrix backlit LCD with cursor keys
- ♦ Menu/Softkey operation provided on the LCD
- ♦ Backlit 10-key dial pad for easy viewing
- ♦ Full-duplex handsfree operation

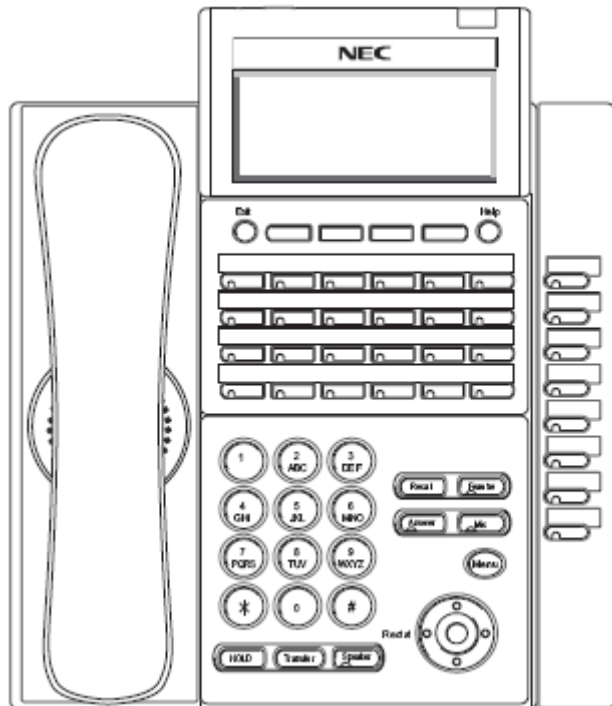


Figure 5-8 DTL-32D-1 TEL

## 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 5-9 DTZ-2E-3 TEL

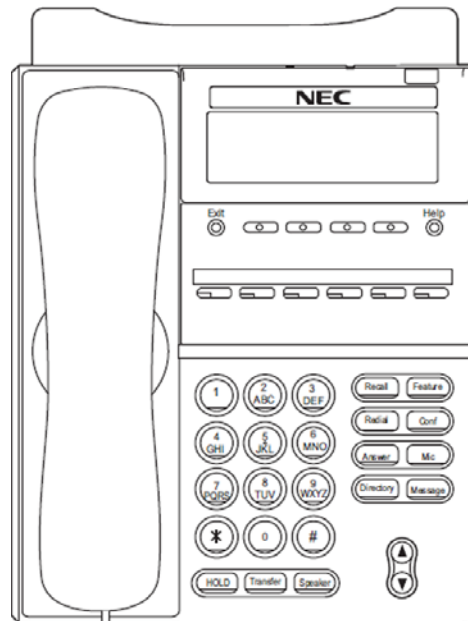


## 2.2.2 DTZ-6DE-3 (BK) TEL

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 5-10 DTZ-6DE-3 TEL**

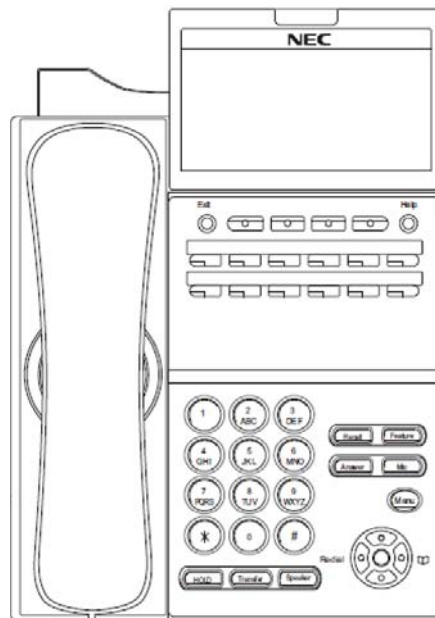


### 2.2.3 DTZ-12D-3 (BK)/(WH) TEL

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 5-11 DTZ-12D-3 TEL**



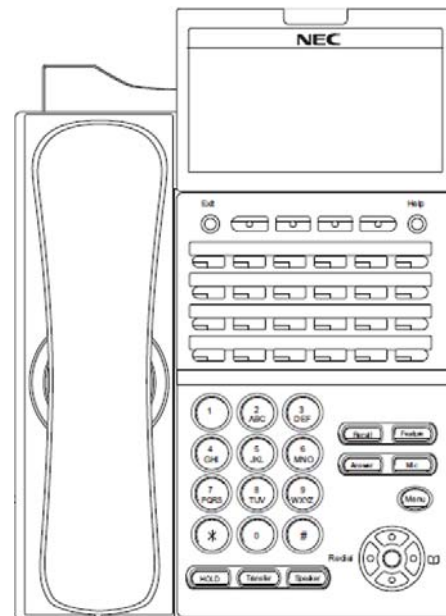


## 2.2.4 DTZ-24D-3 (BK)/(WH) TEL

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 5-12 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)
- ◆ DESI-Less 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 5-13 DTZ-8LD-3 TEL**



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## SECTION 3 DT700/DT800 SERIES IP MULTILINE TERMINALS

The DT700 Series 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 IP MultilineTerminals

#### 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)
- ◆ 10Base-T/100Base-TX network interface
- ◆ Remote Login and Maintenance



Figure 5-14 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)
- ◆ 10Base-T/100Base-TX network interface



Figure 5-15 ITL-6DE-1 TEL

### 3.1.3 ITL-8LDE-1 (BK) TEL

This IP value Multiline Terminal has eight line keys with display and is available in both black only. The terminal features:

- ◆ Non-Modular design
- ◆ Four step adjustable base
- ◆ Full-duplex speaker phone
- ◆ DESI-less line key displays eight lines
- ◆ Function key changes from HOME to DESI-Less screen
- ◆ Three-colour LED for message waiting
- ◆ 224 x 96 dot matrix gray scale backlit LCD
- ◆ IEEE 802.3af compliant
- ◆ XML open interface (limited)
- ◆ 10 Base-T/100 Base-TX network interface
- ◆ Wide Band Handset



**Figure 5-16 ITL-8LDE-1 TEL**

### 3.1.4 ITL-8LD-1 (BK) TEL/ITL-8LD-1 (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
- ◆ DESI-less 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 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation
- ◆ Wideband handset
- ◆ IEEE 802.3af compliant
- ◆ XML open interface
- ◆ 10Base-T/100Base-TX network interface
- ◆ Backlit LCD

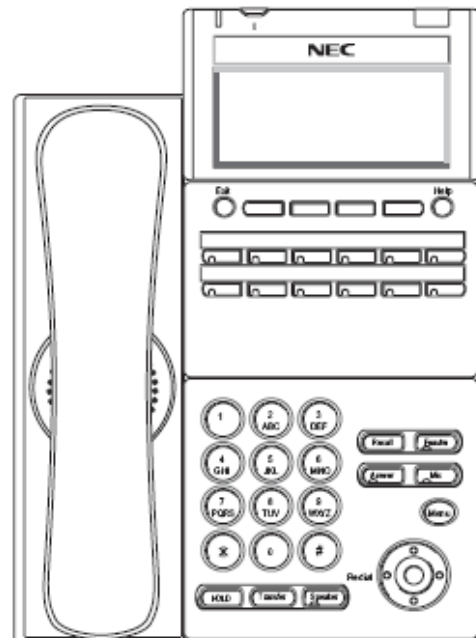


**Figure 5-17 ITL-8LD-1 TEL**

### 3.1.5 ITL-12D-1 (BK) TEL/ITL-12D-1 (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 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation
- ◆ IEEE 802.3af compliant
- ◆ XML open interface
- ◆ 10Base-T/100Base-TX network interface
- ◆ Backlit LCD



**Figure 5-18 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-colour 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 colour LCD
- ◆ IEEE 802.3at Type 1 compliant
- ◆ XML open interface
- ◆ 10 Base-T/100 Base-TX/1000 BASE-T network interface

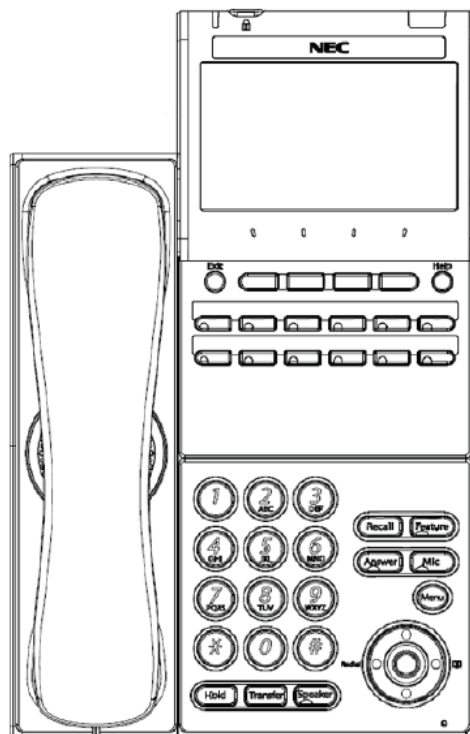


Figure 5-19 ITL-12CG-3 TEL



### 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-colour LED for message waiting
- ◆ 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

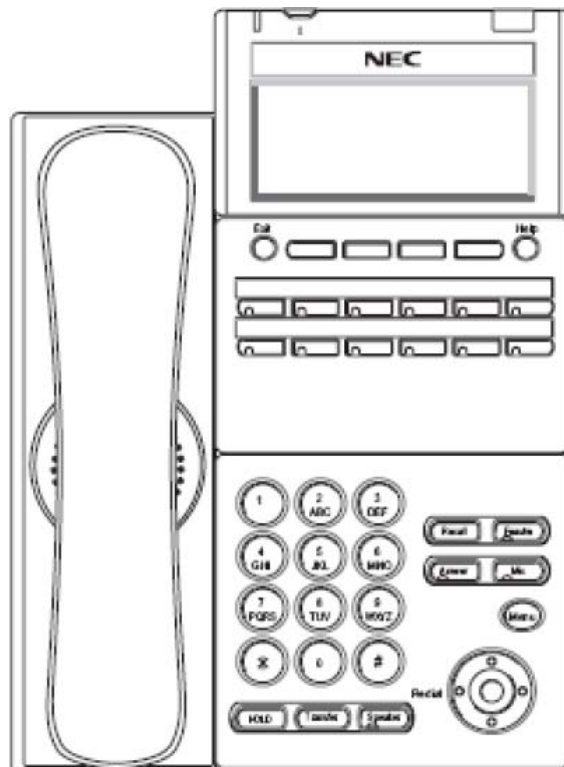
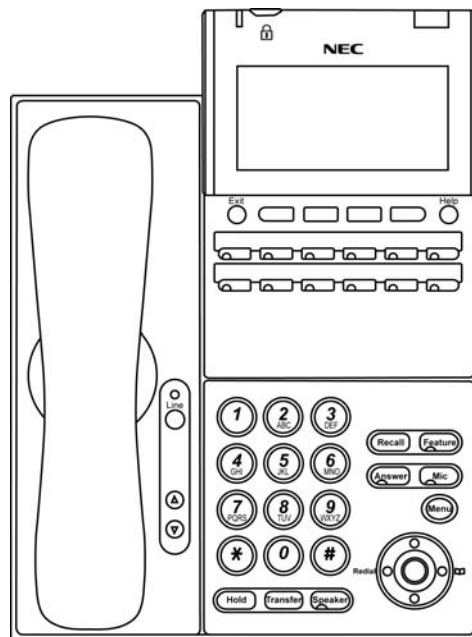


Figure 5-20 ITL-12DG-3 TEL

### 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 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation
- ◆ IEEE 802.3af compliant
- ◆ XML open interface
- ◆ 10Base-T/100Base-TX network interface
- ◆ Backlit LCD
- ◆ PSA Adapter for Power Failure



**Figure 5-21 ITL-12PA-1 TEL**

### 3.1.9 ITL-24D-1 (BK) TEL/ITL-24D-1 (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 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation
- ◆ IEEE 802.3af compliant
- ◆ XML open interface
- ◆ 10Base-T/100Base-TX network interface
- ◆ Backlit LCD



**Figure 5-22 ITL-24D-1 TEL**

### 3.1.10 ITL-32D-1 (BK) TEL/ITL-32D-1 (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 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation
- ◆ IEEE 802.3af compliant
- ◆ XML open interface
- ◆ 10Base-T/100Base-TX network interface
- ◆ Backlit LCD

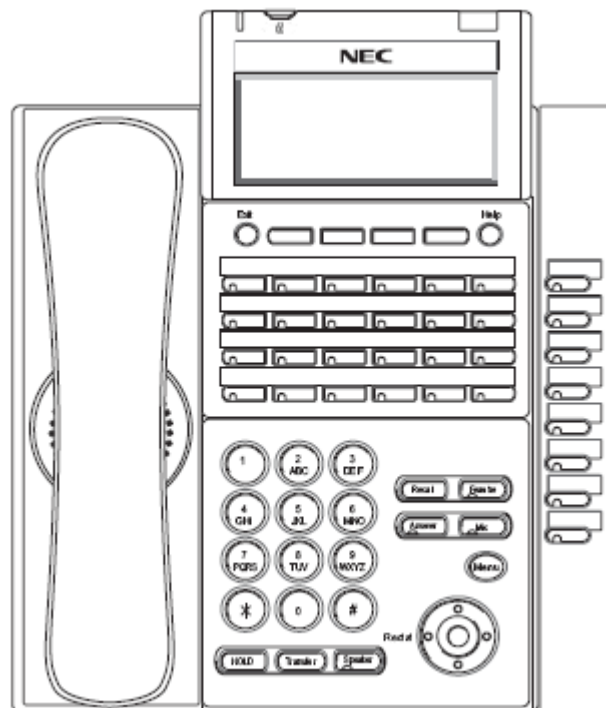


Figure 5-23 ITL-32D-1 TEL

### 3.1.11 ITL-320C-1 (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 touch color LCD
- ◆ Menu/Softkey operation provided on the LCD
- ◆ Backlit 10-key dial pad for easy viewing
- ◆ Full-duplex handsfree operation
- ◆ IEEE 802.3af compliant
- ◆ XML open interface
- ◆ 10Base-T/100Base-TX network interface
- ◆ Backlit LCD



**Figure 5-24 ITL-320C-1 TEL**

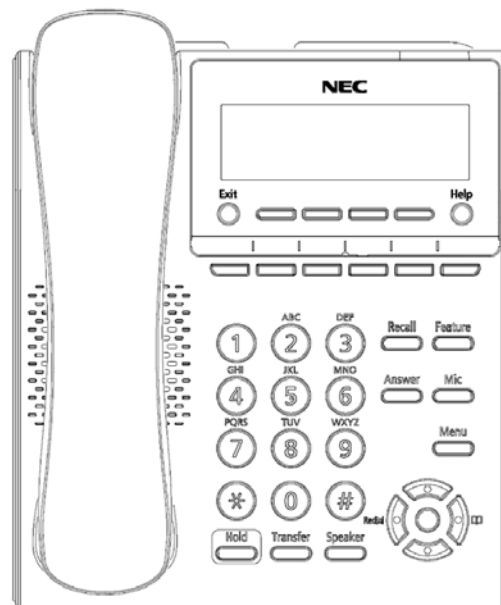
## 3.2 DT800 Series IP Multiline Terminals

### 3.2.1 ITY-6D-1P(BK) TEL

This IP entry multiline terminal has 6 line keys 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 gray scale LCD with cursor keys
- ◆ 10 Base-T/100 Base-TX network interface
- ◆ Full-duplex handsfree operation
- ◆ Narrowband handset
- ◆ IEEE 802.3at type 1 compliant
- ◆ PoE only
- ◆ Backlit LCD
- ◆ Headset Jack

Figure 5-25 ITY-6D-3P TEL

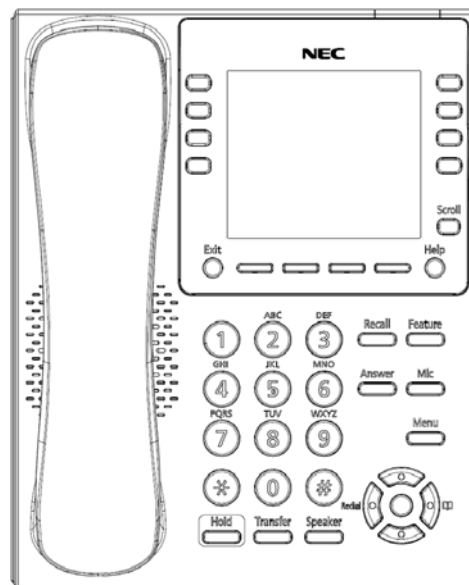


### 3.2.2 ITY-8LDX-1P(BK) TEL

This IP entry multiline terminal has 8 line keys 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 gray scale LCD with cursor keys
- ◆ DESI-Less line key display eight lines
- ◆ 10 Base-T/100 Base-TX network interface
- ◆ Full-duplex handsfree operation
- ◆ Narrowband handset
- ◆ IEEE 802.3at type 1 compliant
- ◆ PoE only
- ◆ Backlit LCD
- ◆ Headset Jack

**Figure 5-26 ITY-8LDX-1P TEL**



### 3.2.3 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 5-27 ITZ-12D-3 TEL**



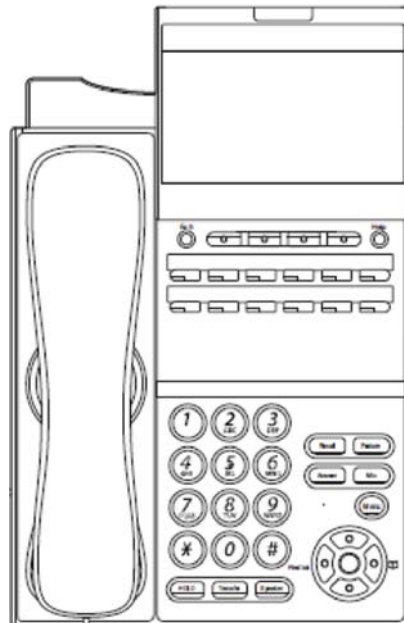


### 3.2.4 ITZ-12CG-3 (BK)/(WH) TEL

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 5-28 ITZ-12CG-3 TEL**

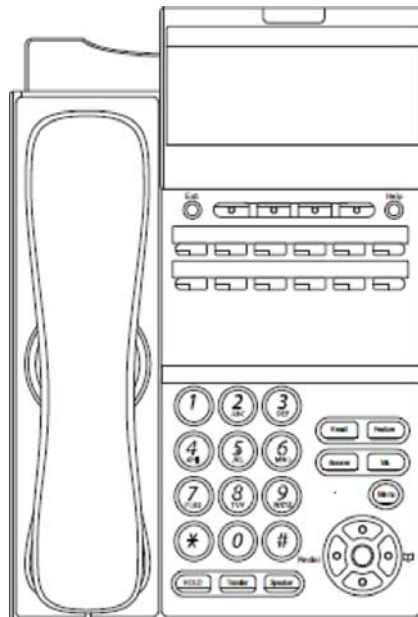


### 3.2.5 ITZ-12DG-3 (BK)/(WH) TEL

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 5-29 ITZ-12DG-3 TEL**

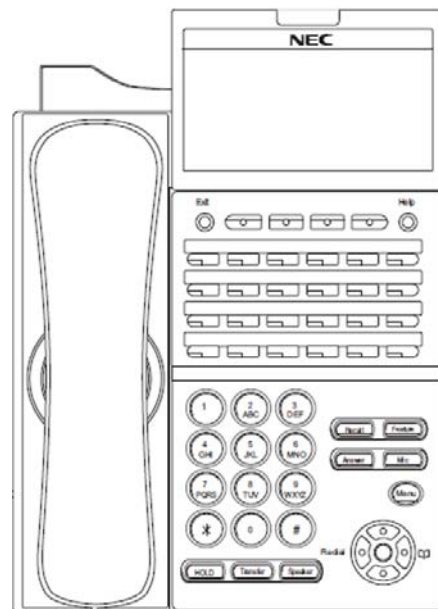


### 3.2.6 ITZ-24D-3 (BK)/(WH) TEL

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 5-30 ITZ-24D-3 TEL**



### 3.2.7 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
- ◆ DESI-Less 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 5-31 ITZ-8LDG-3 TEL**



## SECTION 4 INSTALL MULTILINE TERMINALS

### 4.1 Connecting the DT300/DT400 Series Multiline Terminal to the System

This instruction applies to all DT300/DT400 Series Multiline Terminals.

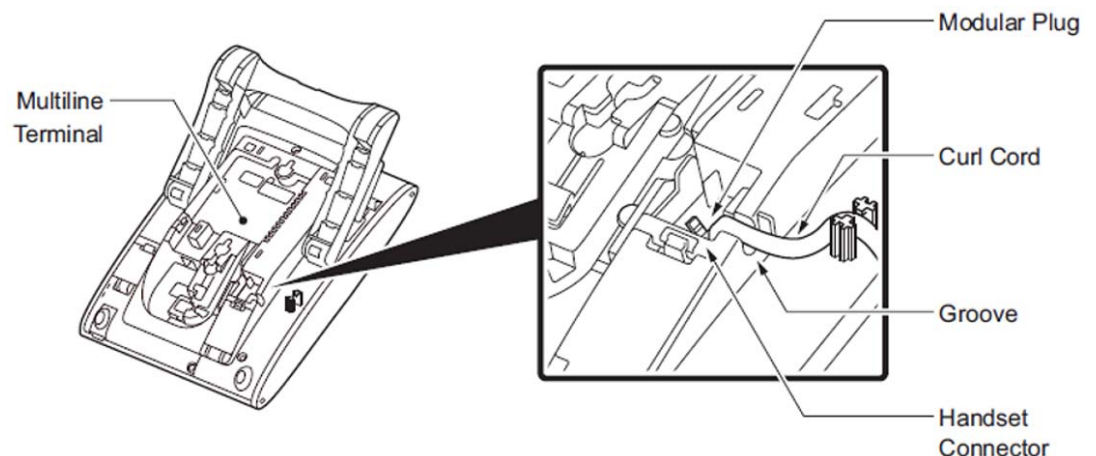
#### 4.1.1 Connecting the Handset

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 5-32 Installing the Handset \(DT300\)](#).

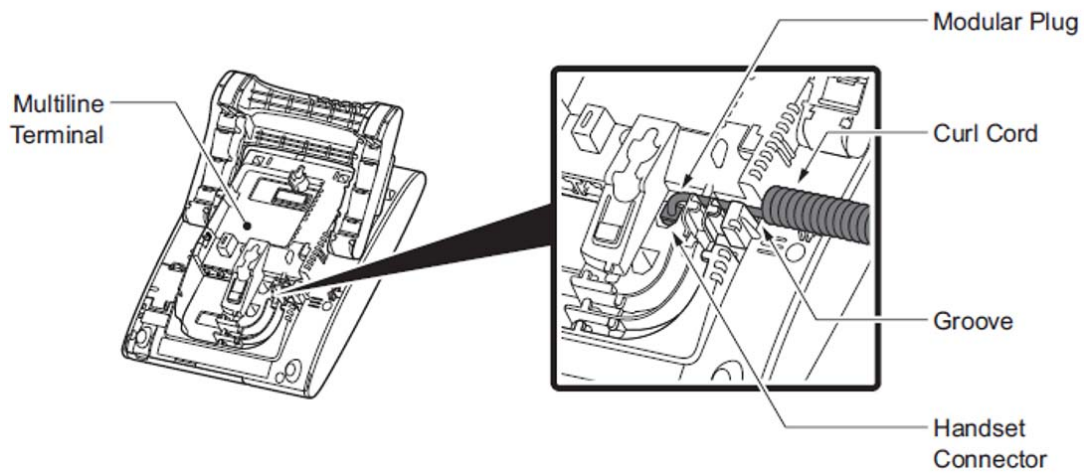
**Figure 5-32 Installing the Handset (DT300)**



##### 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 5-33 Installing the Handset \(DT400\)](#) on page 5-46.

**Figure 5-33 Installing the Handset (DT400)**



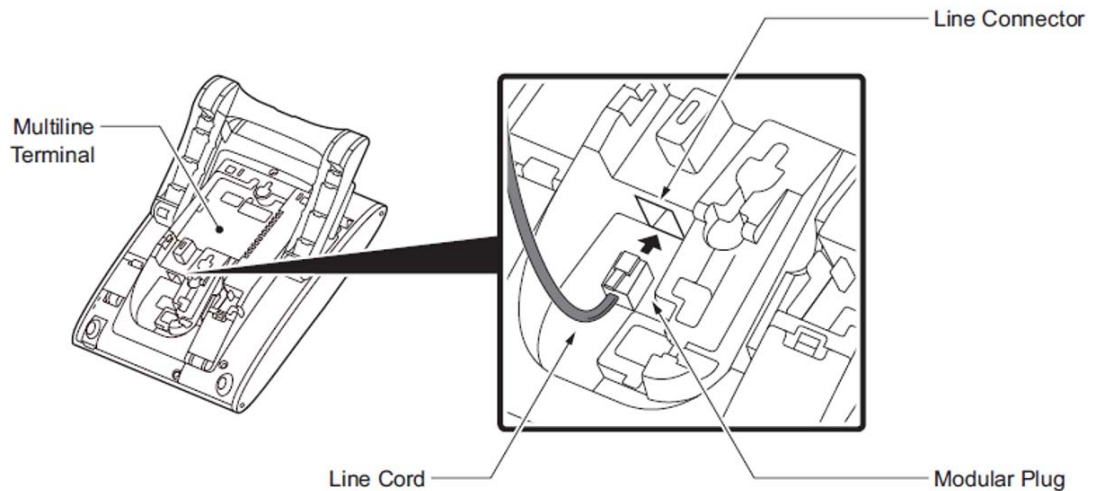
#### 4.1.2 Connecting the Line Cord

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 5-34 Installing the Line Cord \(DT300\)](#).

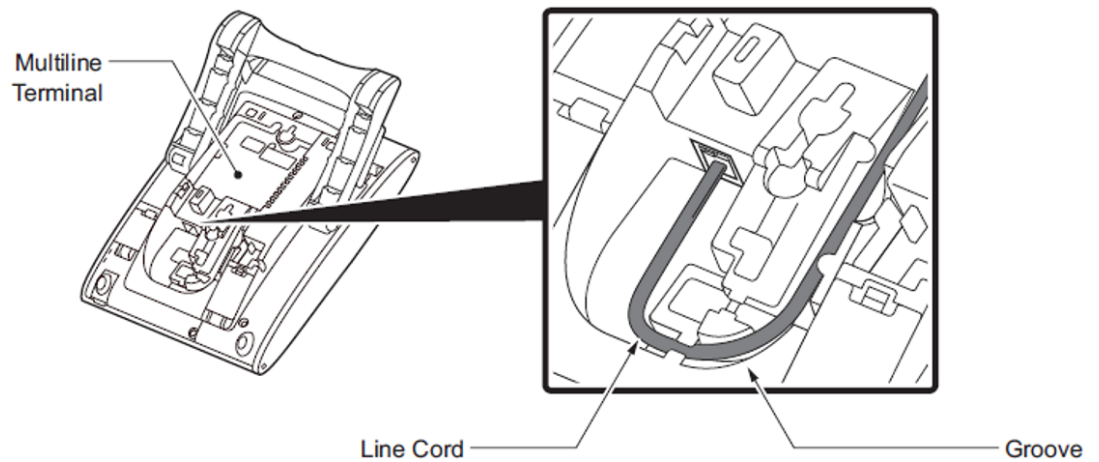
**Figure 5-34 Installing the Line Cord (DT300)**



2. Install the Line Cord in the groove. Refer to [Figure 5-35 Line](#)

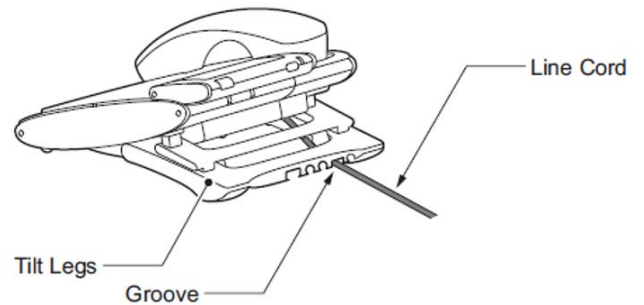
Cord Groove (DT300).

**Figure 5-35 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 5-36 Line Cord Groove Back of Terminal \(DT300\)](#).

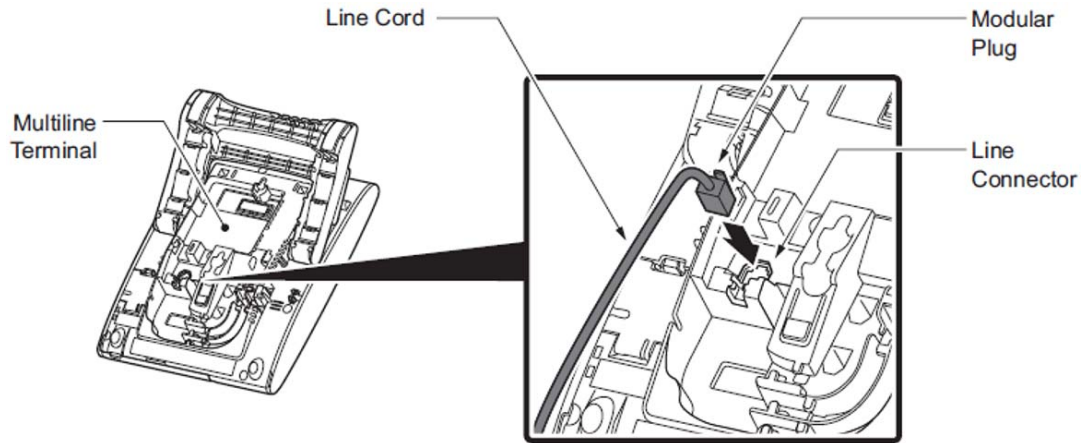
**Figure 5-36 Line Cord Groove Back of Terminal (DT300)**



#### 4.1.2.2 Line Cord Connection DT400

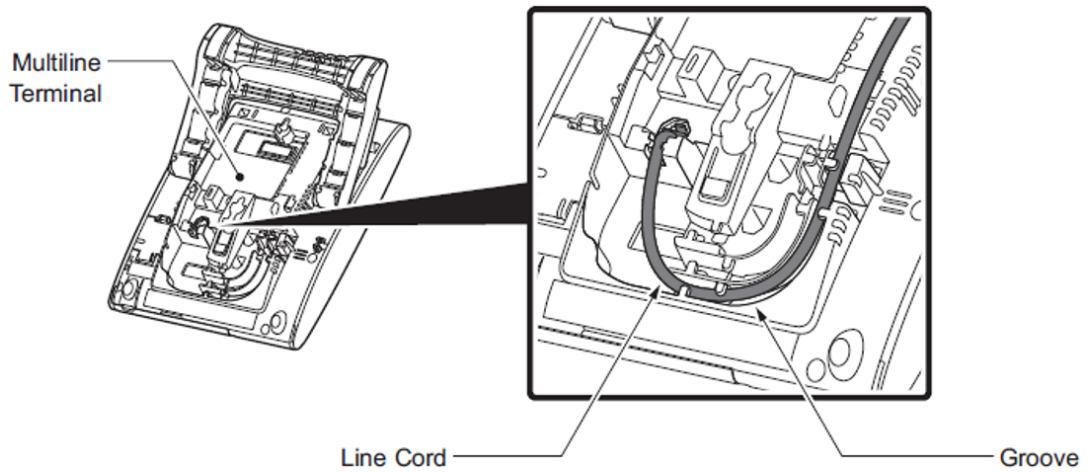
4. Install the modular plug of the Line Cord into the Line Connector at the back of terminal. Push until it snaps into place. Refer to [Figure 5-37 Installing the Line Cord \(DT400\)](#) on page 5-48.

**Figure 5-37 Installing the Line Cord (DT400)**



5. Install the Line Cord in the groove. Refer to [Figure 5-38 Line Cord Groove \(DT400\)](#).

**Figure 5-38 Line Cord Groove (DT400)**

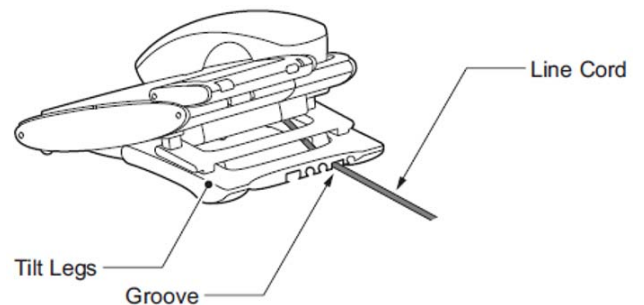


6. Turn the terminal over and place it so the Line Cord can be passed through the groove between the tilt legs. Refer to [Figure 5-36 Line Cord Groove Back of Terminal \(DT300\)](#) on page 5-47.



## 4.2 Applying Power to the DT700 Multiline Terminals

Figure 5-1 Line Cord Groove Back of Terminal (DT400)



The DT700/DT800 terminals support two different methods to power the terminal:

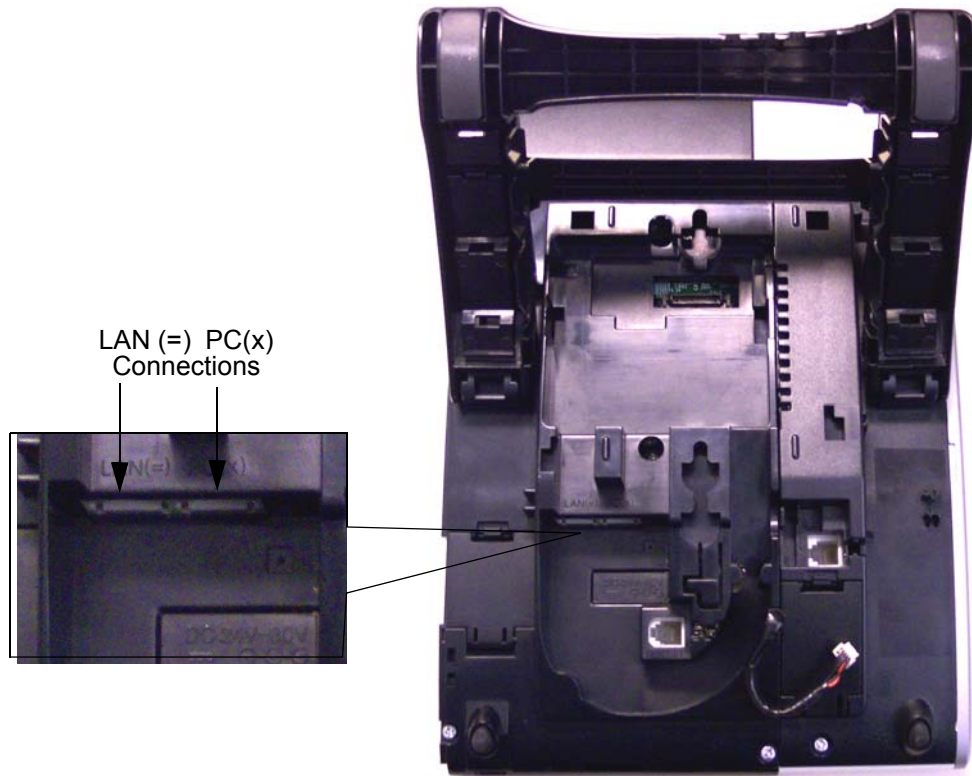
- AC-2R/AC-3R  
Plug the optional AC-2R/AC-3R AC Adapter input Jack in the terminal base unit, and plug the wall plug of the AC Adapter in a standard 230 Vac wall outlet.
- In-Line Power/PoE (Power over Ethernet)  
In-Line Power (sometimes called Power Over Ethernet) is a LAN technology that allows standard 10 Base-T/100 Base-TX data cables to pass electrical current from a power source to a requesting end device.

### 4.3 Connecting the DT700/DT800 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 series Multiline Terminals. Refer to [Figure 5-39 IP Terminal Connector Locations](#).

1. Connect the LAN Network 10Base-T/100Base-TX cable to the LAN (=) connector.
2. 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.

Refer to [Figure 5-40 Typical Network IP Connection on page 5-51](#).



**Figure 5-39 IP Terminal Connector Locations**

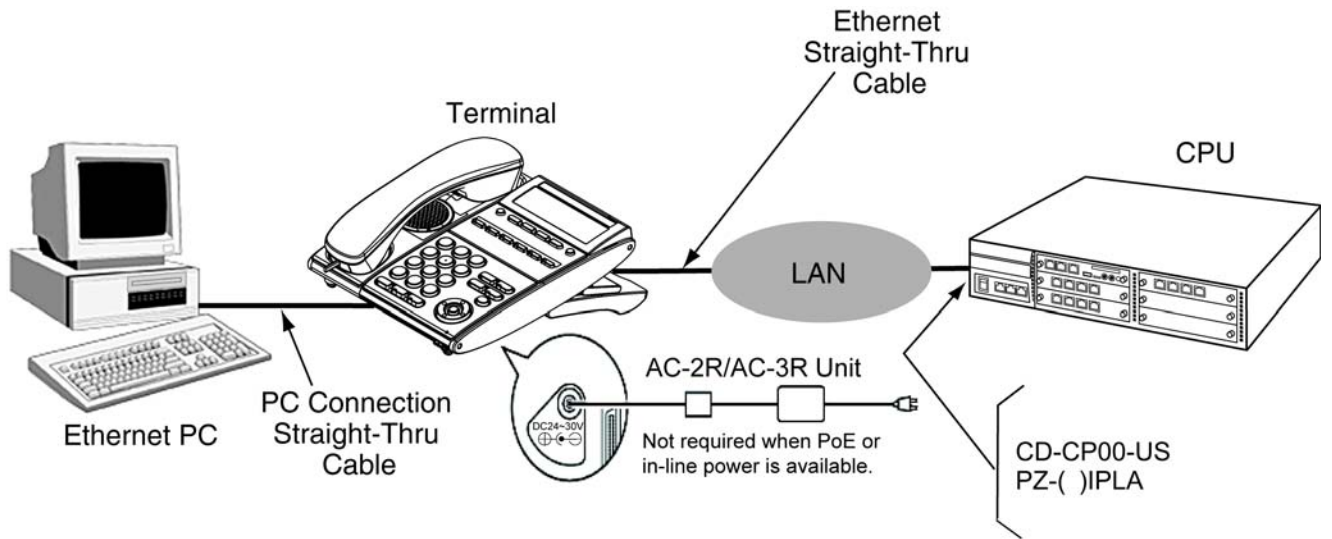


Figure 5-40 Typical Network IP Connection

#### 4.4 Adjusting the LCD on the Multiline Terminal

DT Series display Multiline Terminals have an adjustable Liquid Crystal Display (LCD). The LCD can be adjusted by pulling up or pushing down as desired.



Figure 5-41 Adjusting the LCD on a Multiline Terminal

## 4.5 Installing Line Key Kit (12LK-L KIT)

The 12LK-L KIT Provides twelve 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 5-42 12LK-L Kit

### 4.5.1 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 5-43 Removing the Line Key Panel on page 5-53](#)).



**Figure 5-43 Removing the Line Key Panel**

4. Lift and remove the DESI sheet.



**Figure 5-44 Removing the DESI Sheet**

5. Press the right end of the Line Key placeholder and lift to remove (refer to [Figure 5-45 Removing the Line Key Placeholder on page 5-54](#)).



**Figure 5-45 Removing the Line Key Placeholder**

6. Install the 12LK-L KIT and press down until click is heard.



**Figure 5-46 Installing the 12LK-L KIT**

7. If desired, print and install the new DESI sheet.



**Figure 5-47 Installing the DESI Sheet**

8. Install the supplied Line Key Panel (refer to [Figure 5-48 Installing the Line Key Panel](#)).



**Figure 5-48 Installing the Line Key Panel**

9. Install the side panel.
10. Connect the line cord/LAN cable and the AC/DC adapter to the DTL/ITL multiline terminal.

#### 4.5.2 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 R/W mode. The MW LED should be lit.*

2. Press **1** to enter the Line Key Type mode.

*The MW LED should flash.*

3. Follow the directions below for the type of line key module installed:

**Table 5-10 Numbered Keypad Type**

Numbered Keypad 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 MW LED will be lit Red.

5. Press **Exit** to return the telephone to the idle condition.

#### 4.5.3 Configuring the IP Telephone for the Correct Number of Line Keys

1. Enter the terminal's program mode by pressing HOLD CONF #.
2. At the Login screen, enter the user name (default = ADMIN) and password (default = 6633222) and press the **OK** Soft Key.
3. Press Soft Key **3** for Maintenance Setting.
4. Press Soft Key **4** for Adjust.




5. Press Soft Key **2** for Key Kit Type.
6. Select the type of keypad kit being used by pressing the Up/Down key.

**Table 5-11 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 Soft Key **4** for Next.
8. Select the type of line key kit being used by pressing the Up/Down key.

 *By default, the correct line key kit for the keypad kit selected above will be highlighted.*

**Table 5-12 Line Key Kit Type**

Line Key Kit Entry	Description
Kit12	Enhanced 12-Button
Kit24	Enhanced 24-Button
Kit32	Enhanced 32-Button
Kit8	DESI-Less
Kit6	Value 6-Button
Kit2	Value 2-Button
Kit0	IP-CTS

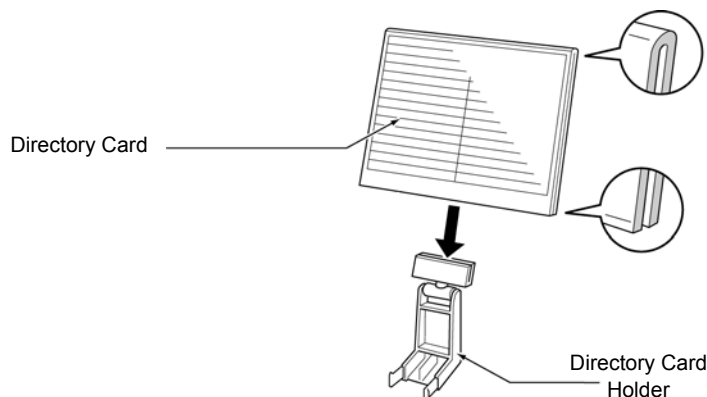
9. Press Soft Key **4** for OK to complete.

10. Continue pressing Soft Key **4** to exit (Exit-Exit-Save). The terminal will reset automatically.

#### 4.6 Installing the Directory Card on the 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.

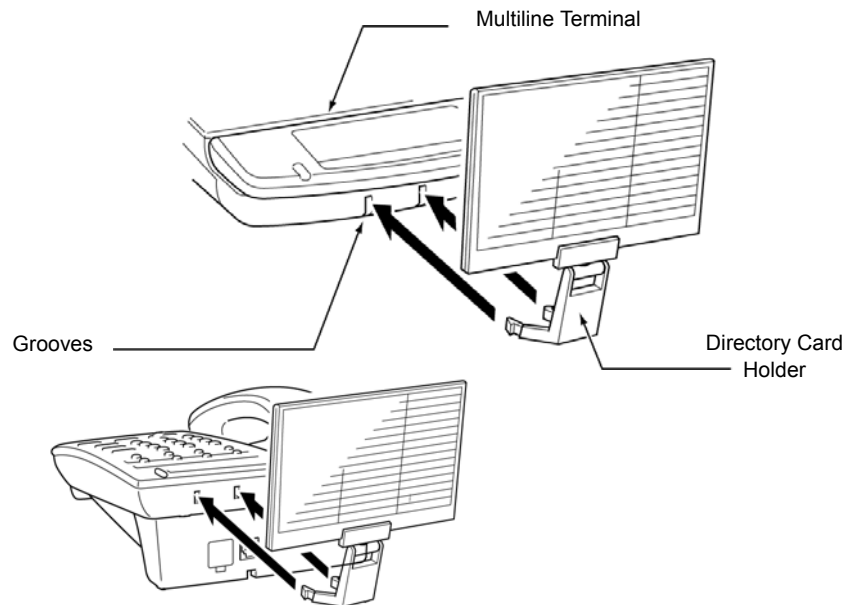
1. After recording the information on the lined insert, reinsert it between the plastic panels of the directory card. Attach the directory card to the directory card holder as illustrated in [Figure 5-49 Attaching Directory Card to Directory Card Holder](#). Note that the open end slides into the directory card holder.



**Figure 5-49 Attaching Directory Card to Directory Card Holder**

2. Locate the two grooves on the top of the telephone as illustrated in [Figure 5-50 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 5-50 Attaching Directory Card Holder to the Multiline Terminal**

#### **4.7 Installing a Numbered Keypad on the Multiline Terminal**

The BS( )-L Kits are keypad sets, which can be installed on a multiline terminal replacing the Standard Numbered Keypad.

- Standard Numbered Keypad  
The standard keypad (in black or white), is commonly delivered with the UNIVERGE SV9100 terminal (refer to [Figure 5-51 Standard Numbered Keypad on page 5-60](#)).

### Business Layout (Standard)



Figure 5-51 Standard Numbered Keypad

- BS (Retro)-L KIT

The optional Retro keypad (in black or white), is compatible with the *D<sup>term</sup>* Series i telephone, allowing the terminal to be used with the IPK II, IPC 500 and IPS multiline terminals.

### Retro Keypad



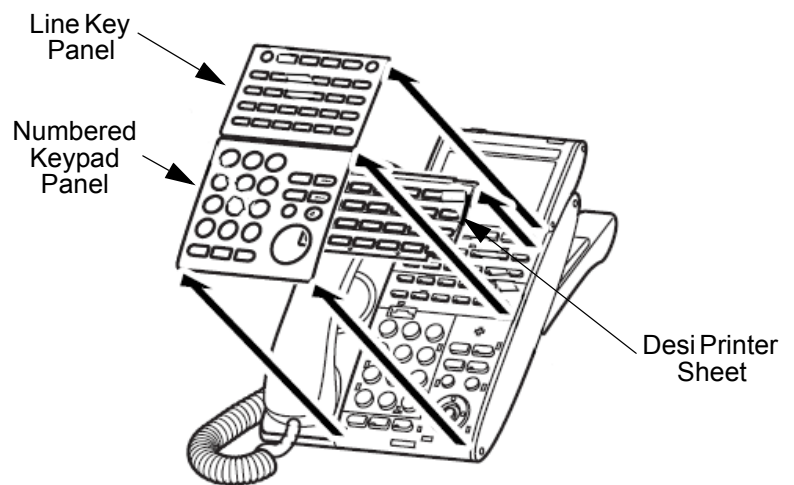
Figure 5-52 BS (Retro)-L KIT

## 4.7.1 Installing the Numbered Keypad on a Multiline Terminal



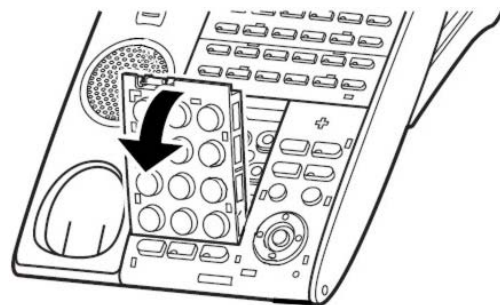
*To prevent possible damage to the Numbered Keypad or the DTL/ITL multiline terminal during installation or removal, disconnect the line cord/ LAN cable and the AC/DC adapter from the DTL/ITL multiline terminal.*

1. Remove the plastic panels. (Refer to paragraph [Figure 5-53 Remove Plastic Panels](#).)



**Figure 5-53 Remove Plastic Panels**

2. Pull down on the tab and lift the Numbered Keypad away from the telephone to remove the existing button. See [Figure 5-54 Removing Numbered Keypad from DT300/DT700 Series Terminal](#).



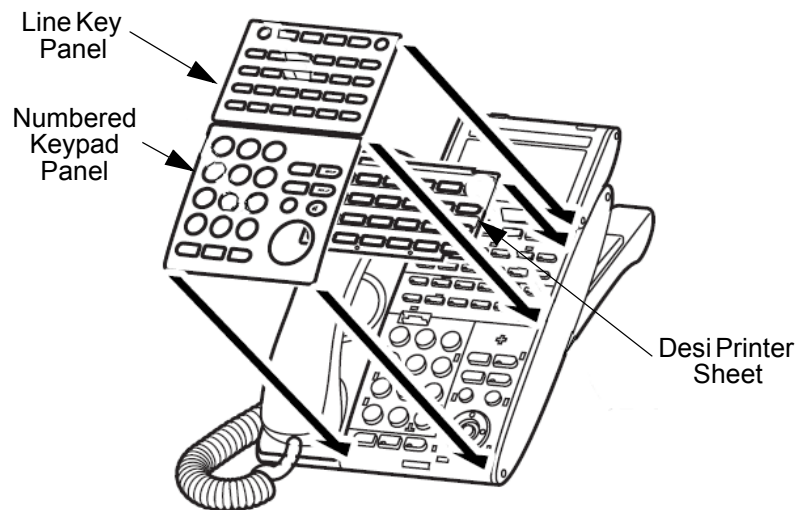
**Figure 5-54 Removing Numbered Keypad from DT300/DT700 Series Terminal**

- 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. See [Figure 5-55 Install New Numbered Keypad into DT300/DT700 Series Terminal](#).



**Figure 5-55 Install New Numbered Keypad into DT300/DT700 Series Terminal**

- Insert the DESI printer sheet and plastic panels on the multiline terminal. Refer to [Figure 5-56 Install Plastic Panels](#).



**Figure 5-56 Install Plastic Panels**

#### 4.7.2 Configuring the Digital Telephone for the Numbered Keypad

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 R/W mode. The MW LED should be lit.*
2. Press **2** on the numbered keypad to enter the Button Kit mode.
  - ☞ *The MW LED should flash.*
3. Follow the directions below for the type of keypad installed:

**Table 5-13 Numbered Keypad Type**

Numbered Keypad Type	Push	LED Indication
Japanese	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 Value	09	Line 1 and 2 LED flashing Red
Model A Value (retro)	10	Line 1 LED flashing Green
Model B Value	11	Line 2 LED flashing Green
Reserve	12	Line 1 and 2 LED flashing Green

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 MW LED will be lit Red.
5. Press **Exit** to return the telephone to the idle condition.

#### 4.7.3 Configuring the IP Telephone for the Numbered Keypad

1. Enter the terminal's program mode by pressing HOLD CONF #.

2. At the Login screen, enter the user name (default = ADMIN) and password (default = 6633222) and press the **OK** Soft Key.
3. Press Soft Key **3** for Maintenance Setting.
4. Press Soft Key **4** for Adjust.
5. Press Soft Key **2** for Key Kit Type.
6. Select the type of keypad kit being used by pressing the Up/ Down key.

**Table 5-14 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 Soft Key **4** for Next.
8. Select the type of line key kit being used by pressing the Up/ Down key.
  - ☛ *By default, the correct line key kit for the keypad kit selected above will be highlighted.*

**Table 5-15 Line Key Kit Type**

Line Key Kit Entry	Description
Kit12	Enhanced 12-Button
Kit24	Enhanced 24-Button
Kit32	Enhanced 32-Button
Kit8	DESI-Less



**Table 5-15 Line Key Kit Type (Continued)**

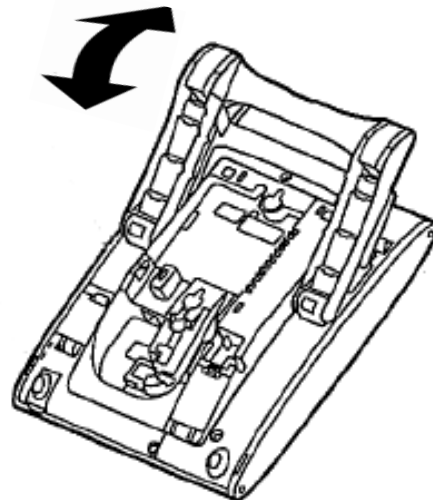
Line Key Kit Entry	Description
Kit6	Value 6-Button
Kit2	Value 2-Button
Kit0	IP-CTS

9. Press Soft Key **4** for OK to complete.
10. Continue pressing Soft Key **4** to exit (Exit-Exit-Save). The terminal will reset automatically.

#### 4.8 Adjusting the Height on the Multiline Terminal

The height of the DT300/DT700 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 5-57 Adjust Height of DT300/DT700 Series Terminal on page 5-65](#)).

**Figure 5-57 Adjust Height of DT300/DT700 Series Terminal**

3. Turn telephone over (button side up).

### 4.9 Install the BS (Braille)-L (BK) 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.

**Figure 5-58 Sticker-Braille-L KIT (Sheet 1)**

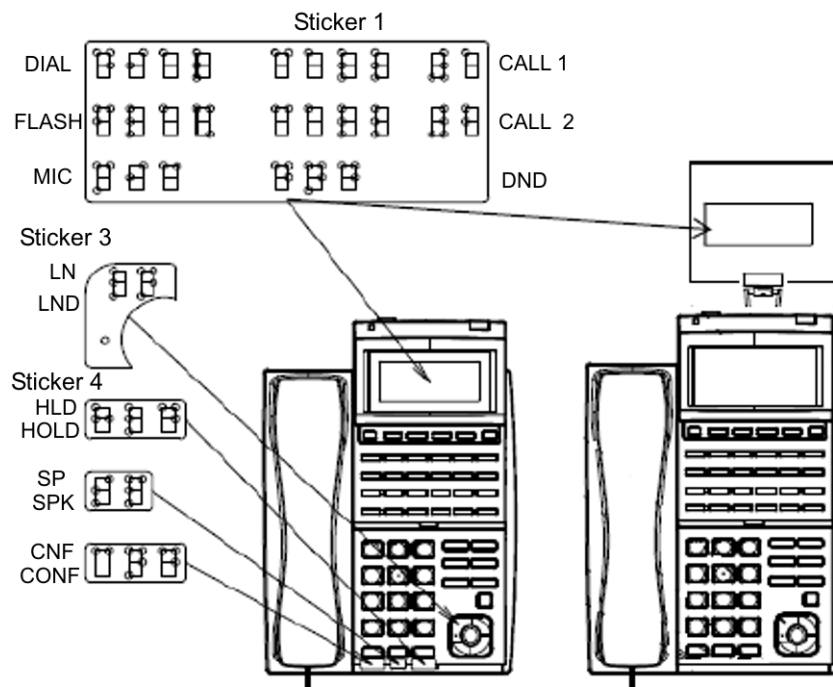
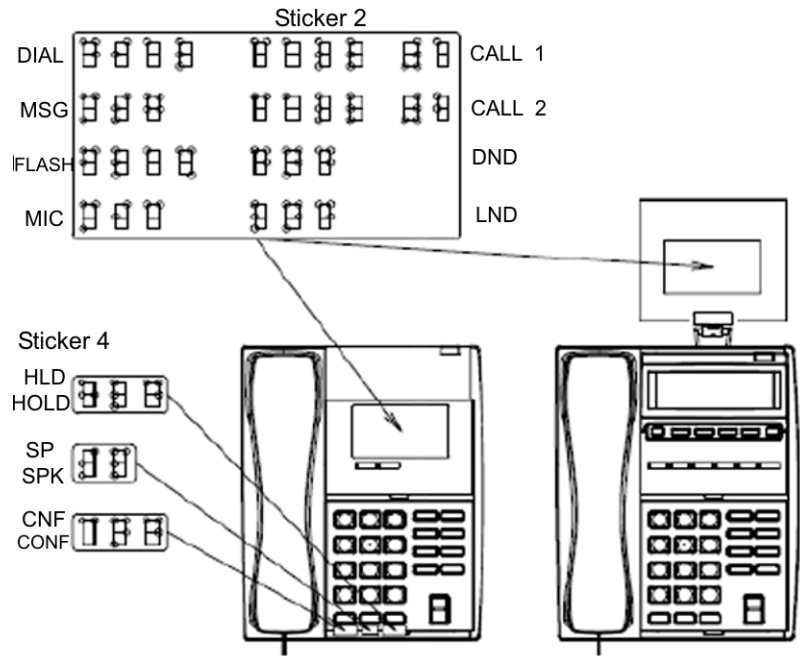


Figure 5-59 Sticker-Braille-L KIT (Sheet 2)

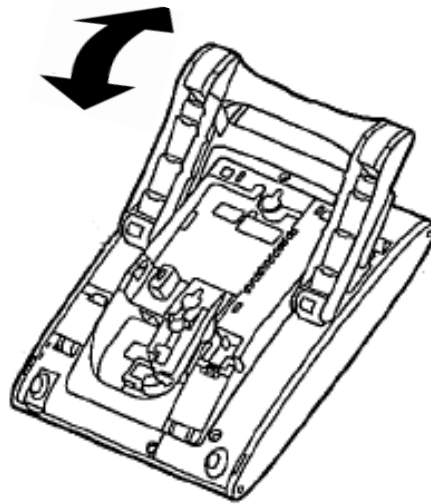


#### 4.10 Adjusting the Height on the Multiline Terminal

The height of the DT 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 5-60 Adjust Height of DT Series Terminal](#)).

**Figure 5-60 Adjust Height of DT Series Terminal**



3. Turn telephone over (button side up).

#### 4.11 Adjusting the Height on the DT820 Multiline Terminal

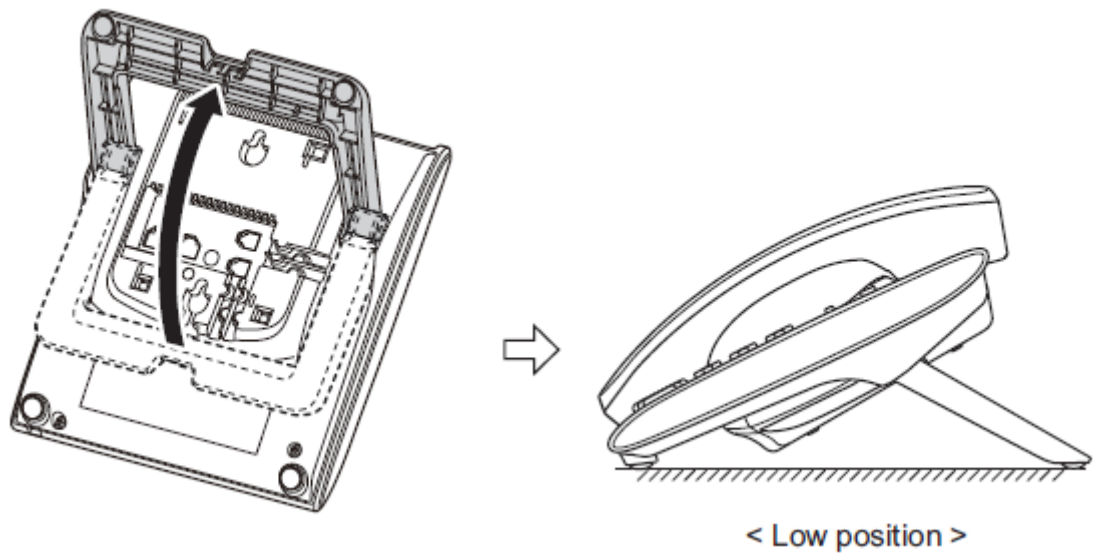
The height of the DT820 series multiline terminals can be adjusted to one of two settings by moving the legs attached to the bottom of the terminal.

##### ***Low Position Setting***

1. Turn telephone over (button side down).
2. Adjust legs to desired height (refer to [Figure 5-61 Adjust Height of](#)

DT820 Series Terminal).

**Figure 5-61 Adjust Height of DT820 Series Terminal**



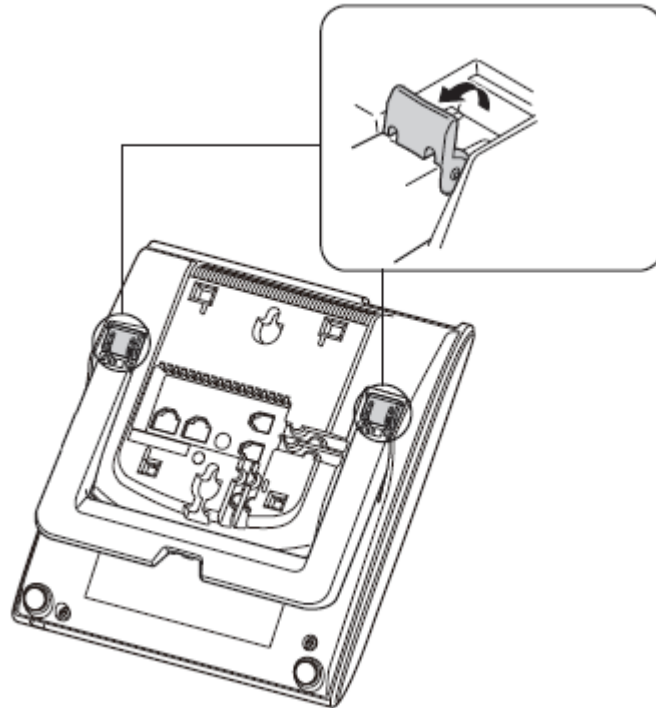
3. Turn telephone over (button side up).

#### ***High Position Setting***

1. Turn telephone over (button side down).
2. Pull up the leg stoppers (refer to [Figure 5-62 Pull up Leg Stoppers of](#)

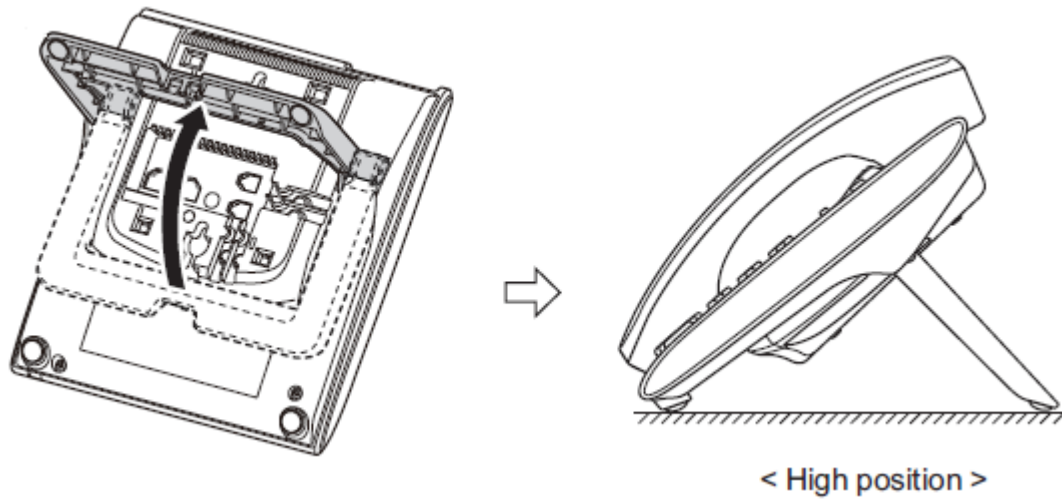
DT820 Series Terminal

Figure 5-62 Pull up Leg Stoppers of DT820 Series Terminal



3. Adjust the legs to the desired height (refer to [Figure 5-63 High Position Setting of DT820 Series Terminal](#))

Figure 5-63 High Position Setting of DT820 Series Terminal



## 4.12 Removing or Installing the Tilt Legs on the Multiline Terminal

The Tilt Legs can be removed or installed on the DT Series multiline terminal.

### 4.12.1 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. See [Figure 5-64 Separating the Tilt Legs](#).

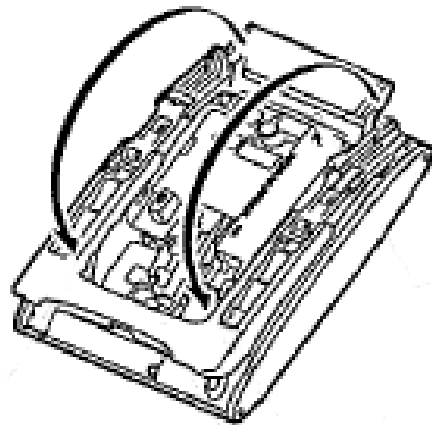


Figure 5-64 Separating the Tilt Legs

3. Push downward (two arrows) and slide downward (refer to [Figure 5-65 Remove Tilt Legs from Multiline Terminal](#)).

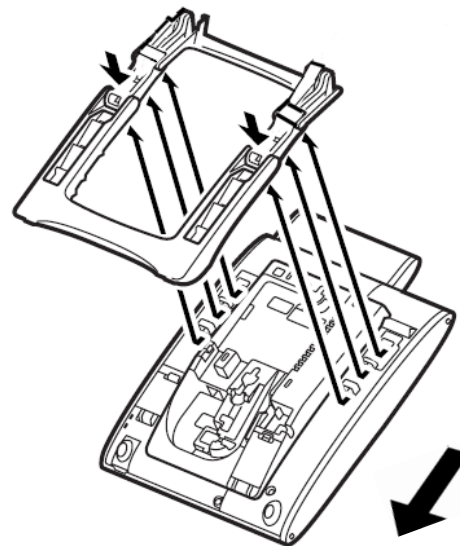
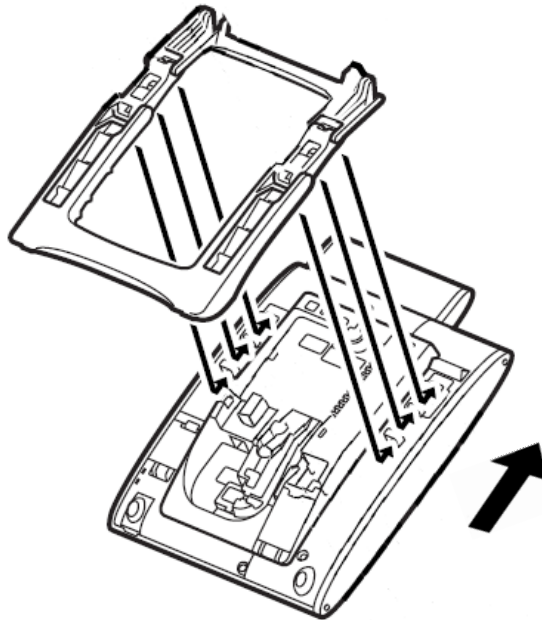


Figure 5-65 Remove Tilt Legs from Multiline Terminal

4. Lift and remove the Tilt Legs.

#### 4.12.2 Install Tilt Legs

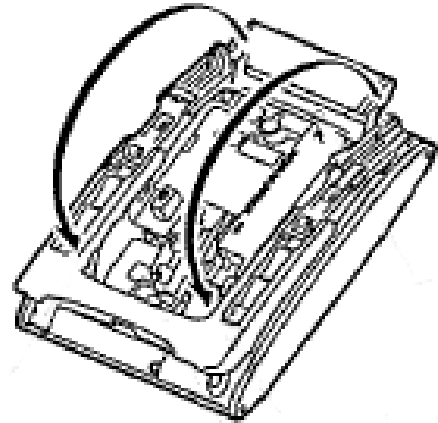
1. Place the telephone on a flat surface (button side down).
2. Lay the adjustable Tilt legs on top of the telephone. See [Figure 5-66 Attach Tilt Legs to Multiline Terminal](#).



**Figure 5-66 Attach Tilt Legs to Multiline Terminal**

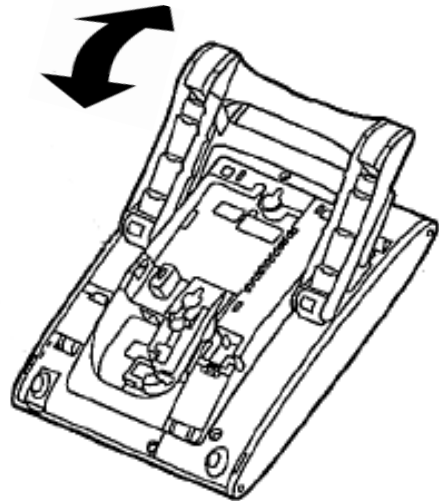
3. Push the Tilt Legs upward until they snap into place.
4. Lift both ends of Tilt Legs until they come together (refer to [Figure 5-67 Connecting the Tilt Legs on page 5-73](#)).





**Figure 5-67 Connecting the Tilt Legs**

5. Snap legs together and adjust to desired height. See [Figure 5-68 Adjust Height of Multline Terminal](#)).



**Figure 5-68 Adjust Height of Multline Terminal**

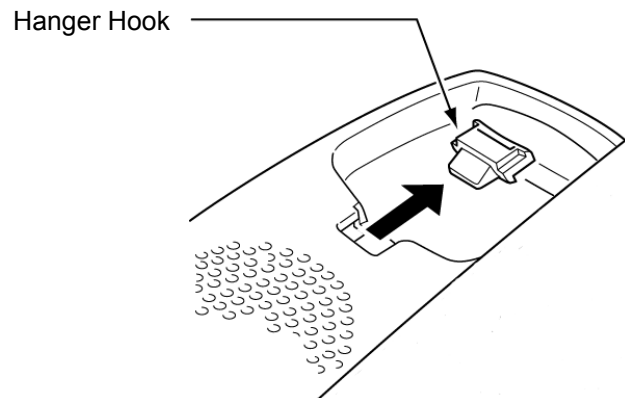
## 4.13 Wall Mounting the Multiline Terminal

You can wall mount a DT Series connection 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.

### 4.13.1 Wall Mounting a Multiline Terminal using the Base Plate

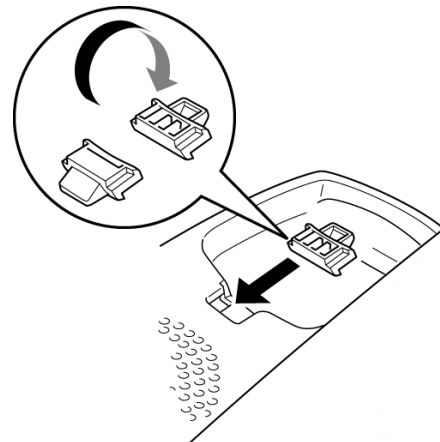
#### 4.13.1.1 Adjusting the Hanger Hook

1. Remove the hook from the unit.



**Figure 5-69 Removing the Hanger Hook on a DT Series Terminal**

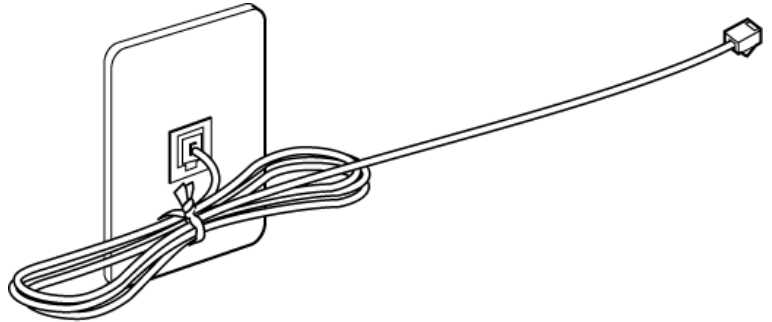
2. Turn the hook with the tab toward the top.
3. Slide the hook until it glides into position forming the hanger hook for the handset.



**Figure 5-70 Sliding the Hanger Hook into Position**

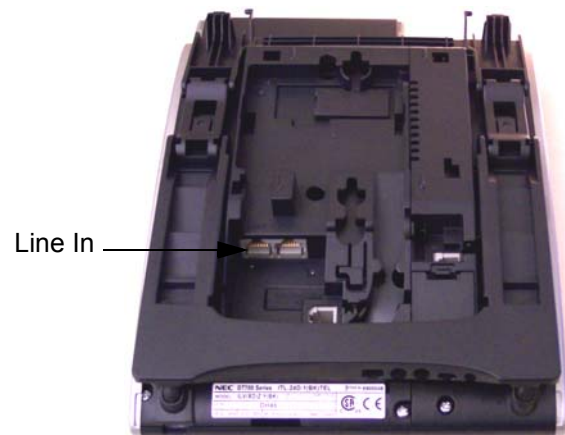
#### 4.13.1.2 Wall Mounting the Multiline Terminal

1. Plug line cord in the wall receptacle. Leave about eight inches of cord and bundle the rest as shown in [Figure 5-71 Bundling the Line Cord](#).



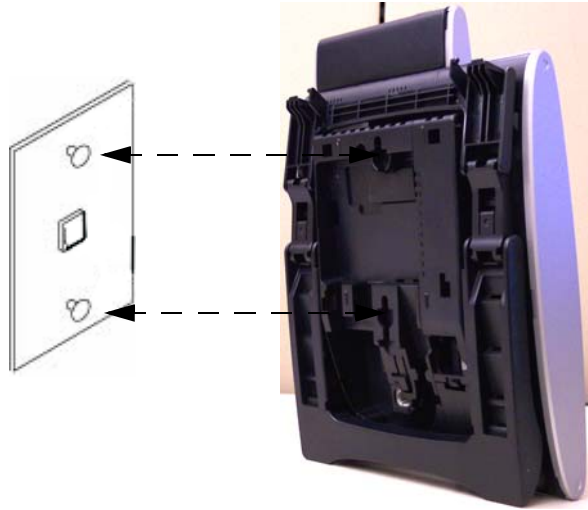
**Figure 5-71 Bundling the Line Cord**

2. Ensure the Tilt Legs are in the flat (unused position).
3. Plug the line cord into the Multiline Terminal as illustrated in [Figure 5-72 Plugging in Line Cord](#).



**Figure 5-72 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 5-73 Mount Multiline Terminal Wall on Wall Plate on page 5-76](#)).



**Figure 5-73 Mount Multiline Terminal Wall on Wall Plate**

5. Push spare line cord behind the Multiline Terminal.

#### 4.13.1.3 Removing the Multiline Terminal from the Wall Mounted Base Plate.

To remove the Multiline Terminal, push up on the telephone until it comes loose.



**Figure 5-74 Removing the Multiline Terminal**

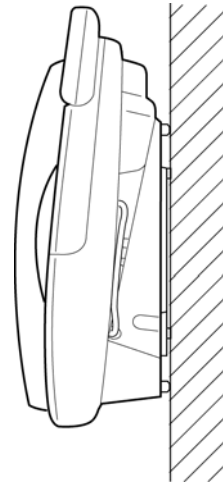
#### 4.13.1.4 Wall Mounting the Base on a Switch Box

1. Locate the screw holes on the base and hang the cover over the screws on the switch box as illustrated in [Figure 5-75 Wall Mounting Base on Switch Box](#).



**Figure 5-75 Wall Mounting Base on Switch Box**

2. Hang the Multiline Terminal on the base.



**Figure 5-76 Wall Mounted Multiline Terminal**

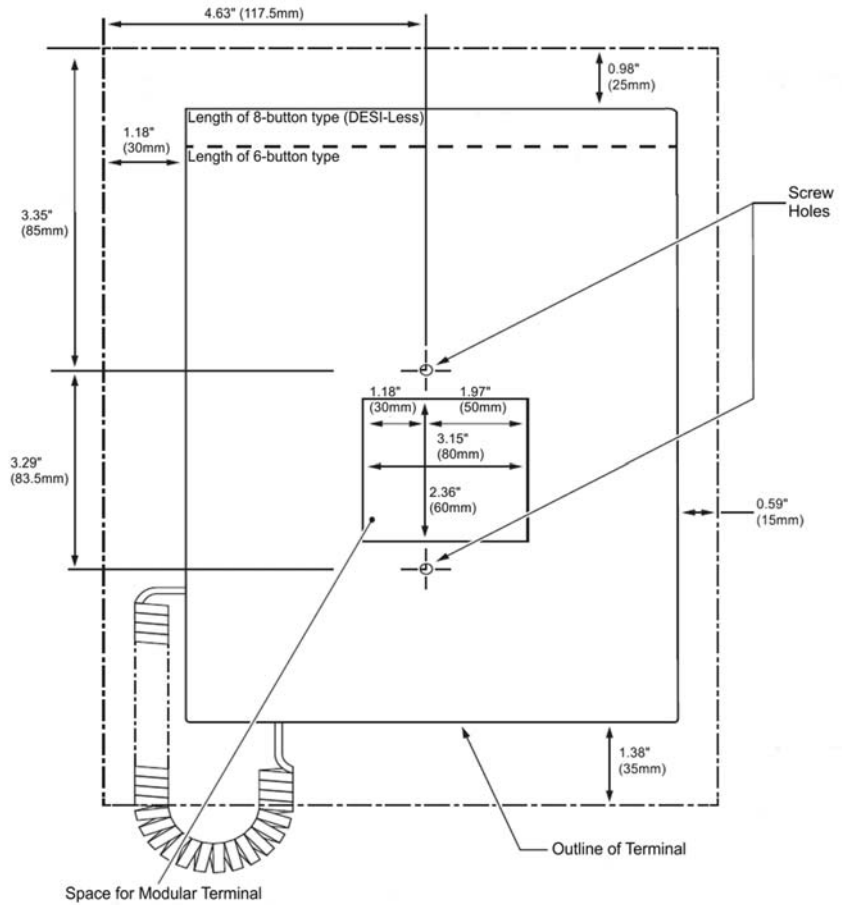
*Because of strength variation in switch boxes, this method is not recommended.*

### 4.14 Wall Mounting the DT820 Multiline Terminal

The IP4WW-Wall Mount Unit is used to mount the DT820 terminals to the wall.

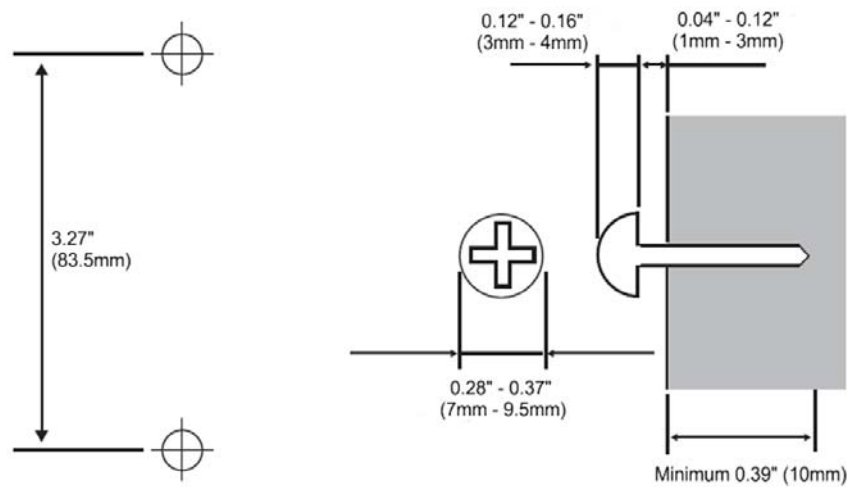
This unit connects to the back of the terminal.

Use the template in as shown in [Figure 5-77 IP4WW-WALL MOUNT UNIT Spacing Guide](#) for required spacing before drilling.



**Figure 5-77 IP4WW-WALL MOUNT UNIT Spacing Guide**

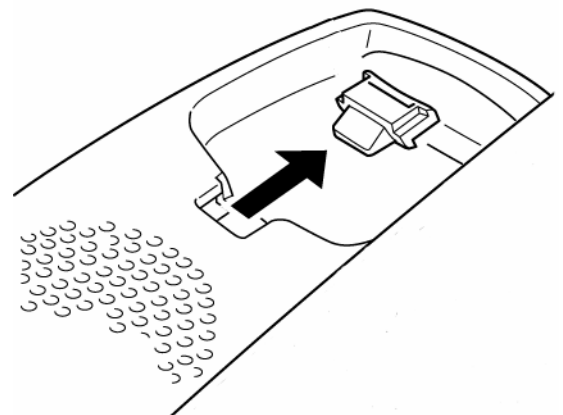
Install two screws into the wall. Leave about 0.12" (3mm) spacing between screw head and wall.



**Figure 5-78 Installing the screws.**

#### 4.14.1 Adjusting the Hanger Hook

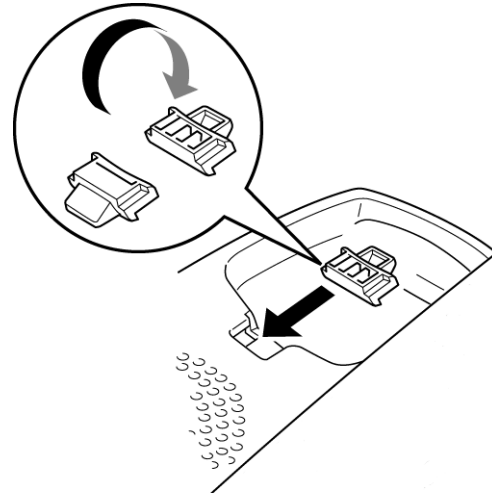
1. Remove the hanger hook from the unit.



**Figure 5-79 Removing the Hanger Hook.**

2. Turn the hook with the tab toward the to.
3. Slide the hook until it glides into position forming the hanger

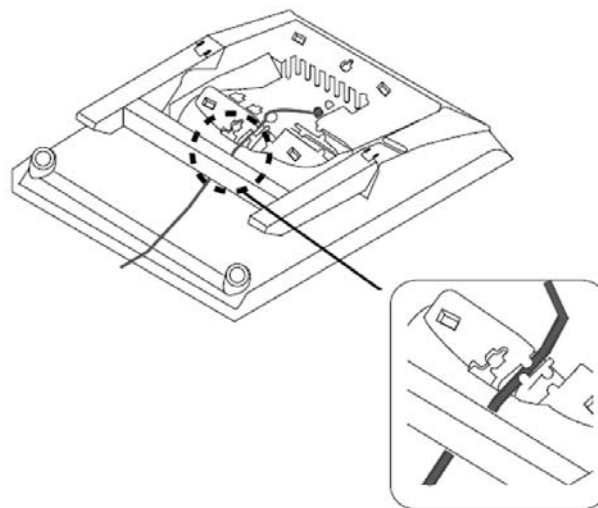
hook for the handset.



**Figure 5-80 Sliding the Hanger Hook into position.**

#### 4.14.2 Installing the IP4WW-Wall Mount Unit

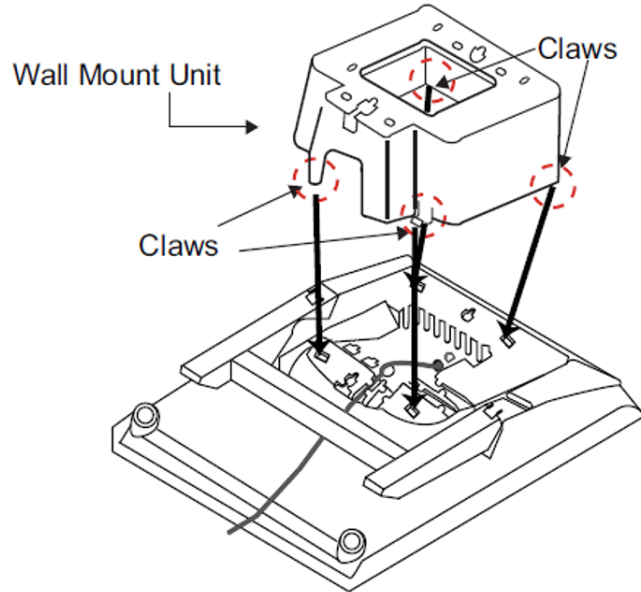
1. From the back of the terminal, move the handset cable to the cable groove shown (refer to [Figure 5-81 Relocating the Handset Cable.](#)).
- Before moving the leg to the folded position, the handset cable must be installed in the cable groove shown to prevent damage to the cable.*



**Figure 5-81 Relocating the Handset Cable.**

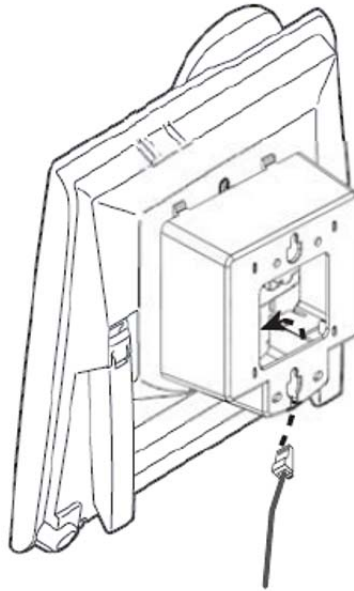


2. Move the leg to the folded position.
3. Attach the IP4WW-Wall Mount Unit to the terminal (refer to [Figure 5-82 Installing the IP4WW-Wall Mount Unit.](#)).



**Figure 5-82 Installing the IP4WW-Wall Mount Unit.**

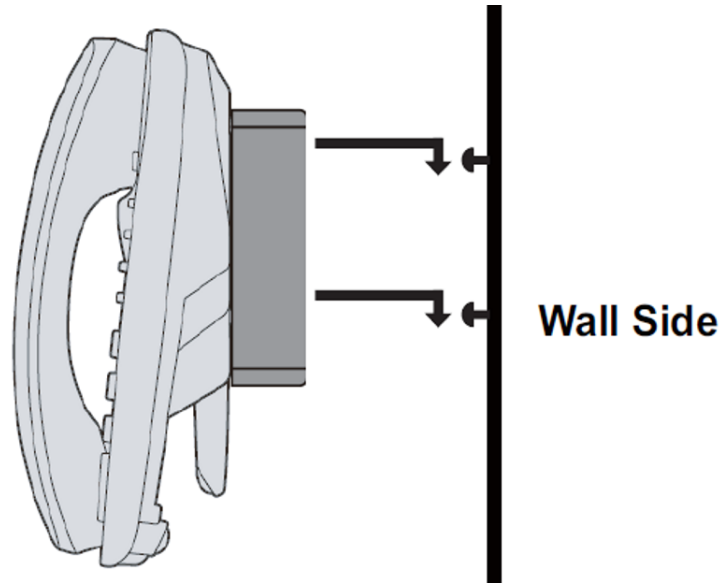
4. Pass the LAN cable through the bottom of the IP4WW-Wall Mount Unit and plug into the LAN port..



**Figure 5-83 Installing the LAN Cable.**

#### 4.14.3 Wall Mounting the DT820 Multiline Terminal

Using the screws previously installed, mount the terminal on the wall.



**Figure 5-84 Wall Mounting the DT820.**

## SECTION 5 MULTILINE TERMINALS OPTIONAL EQUIPMENT

### 5.1 DT Series Terminal Options

The following chart provides a quick overview of the options available with the DT Series telephones for UNIVERGE SV9100.

**Table 5-16 Connectivity of Options (DT300/DT700)**

Terminal Options		IP Terminals			Digital Terminals	
		Sophisticated ITL-320C-1	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 <b>ITL-8LDE-1</b>	Value DTL-8LD-1 DTL-12D-1 DTL-24D-1 DTL-32D-1	Economy DTL-2E-1 DTL-6DE-1
Key Kit	Ten Key Kit	✓	✓	✓	✓	✓
	12LK Kit	N/A (Built in)	✓	N/A	✓	N/A
	8LK Unit	✓	✓ (Except 8LD-1 Unit)	N/A	✓ (Except 8LD-1 Unit)	N/A
Common	ADA: Analog Recording Adapter	✓	✓	N/A	✓	N/A
	PSA: PSTN Adapter for analog	✓	✓	N/A	✓	N/A
	DSS: 60-Button DSS Console	✓	✓	N/A	Connect to Digital Port on KTS	
Digital	APR: Analog Port adapter with Ringer				✓	N/A
	DESI-less LK/LCD Unit				✓ (Except 8LD-1 Unit)	N/A
	Backlit LCD				✓ (Except 8LD-1 Unit)	N/A

Table 5-16 Connectivity of Options (DT300/DT700)

Terminal Options		IP Terminals			Digital Terminals	
		Sophisticated ITL-320C-1	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 <b>ITL-8LDE-1</b>	Value DTL-8LD-1 DTL-12D-1 DTL-24D-1 DTL-32D-1	Economy DTL-2E-1 DTL-6DE-1
IP	DESI-less LK/LCD Unit	N/A (Built in)	✓  (Except ITL-12CG-3 ITL-12DG-3)	N/A	N/A	
Headset	Built In Headset Port	✓	✓		✓	

Table 5-17 Connectivity of Options (DT400/DT800)

Terminal Options		IP Terminals		Digital Terminals	
		Entry ITY-6D-1 ITY-8LDX-1	Value 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
Key Kit	Ten Key Kit	N/A	✓	✓	✓
	8LK Unit	N/A	✓	✓	N/A
Common	ADA: Analog Recording Adapter	N/A	✓	✓	N/A
	DSS: 60-Button DSS Console	N/A	✓	Connect to Digital Port on KTS	
Digital	APR: Analog Port adapter with Ringer			✓	N/A

## 5.2 DT Series Optional Terminal Equipment

### 5.2.1 8LK-L (BK) UNIT/8LK-L (WH) UNIT

Provides eight additional line keys to IDT Series terminals (except Economy). The unit features:

- ◆ Mounts directly to right side of terminal
- ◆ Supports Red and Green LED colors

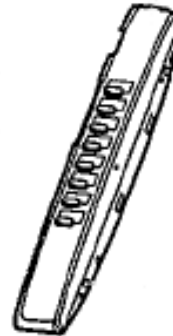


Figure 5-85 8LK-L UNIT

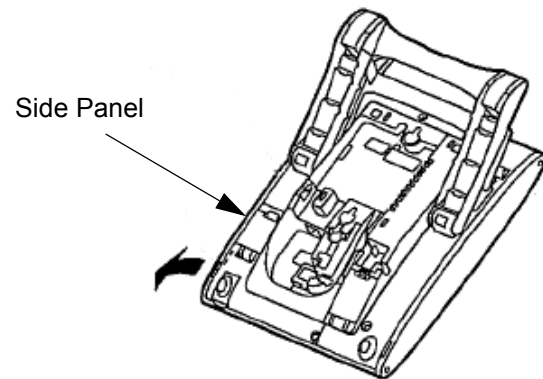
#### 5.2.1.1 Installing the 8LK-L UNIT



*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.*

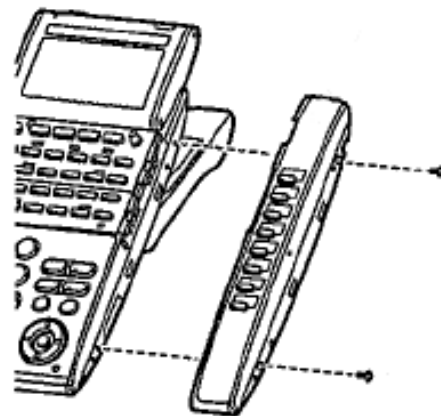
1. Remove both plastic panels from the front of the multiline terminal.
2. Turn multiline terminal upside down.
  - ◆ *Only one 8LK-L UNIT can be attached to the DT Series multiline terminal.*

3. Pry the side panel from the multiline terminal.



**Figure 5-86 Remove Side Panel from Multiline Terminal**

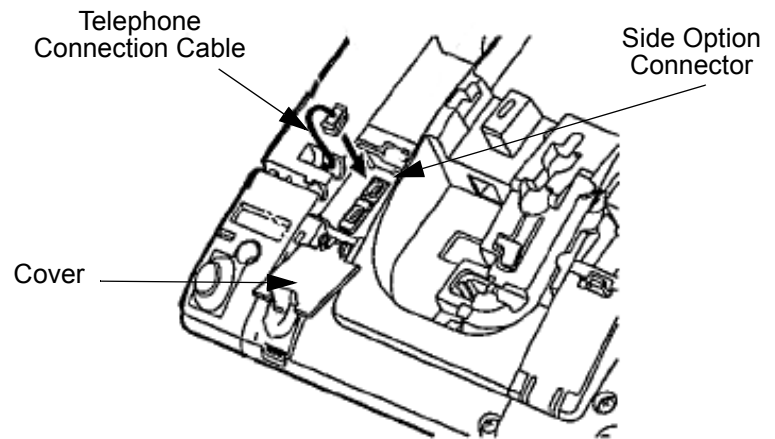
4. Return the multiline terminal to the buttons side up position.
5. Fit the projections on the side of the 8LK-L UNIT into the guide holes on the side of the multiline terminal.
6. Secure the 8LK-L UNIT with the two screws provided.



**Figure 5-87 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.



**Figure 5-88 Install the 8LK-L UNIT Cable**

9. Connect the cable from the 8LK-L UNIT to the side option connector (see [Figure 5-88 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 position.
12. Complete the installation by reattaching both plastic panels to the front of the multiline terminal.

### 5.2.2 8LKD (LD)-L (BK) UNIT/8LKD (LD)-L (WH) UNIT

Provides eight additional line keys to DT300 Series (DTL) terminals. The unit features:

- ◆ Mounts directly to top side of terminal
- ◆ Supports Desi-less 2 LCD panels
- ◆ Eight line keys by four pages



Figure 5-89 8LKD (LD)-L UNIT

#### 5.2.2.1 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.

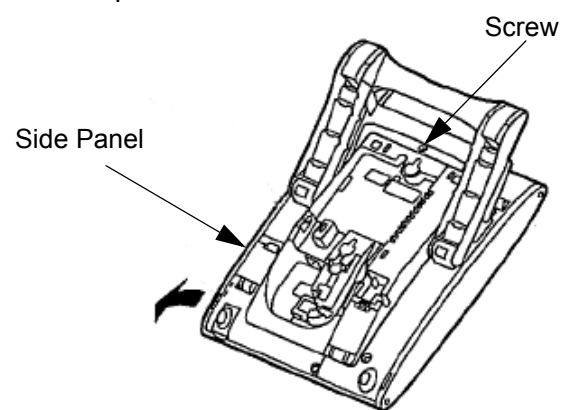


Figure 5-90 Remove Side Panel from Multiline Terminal

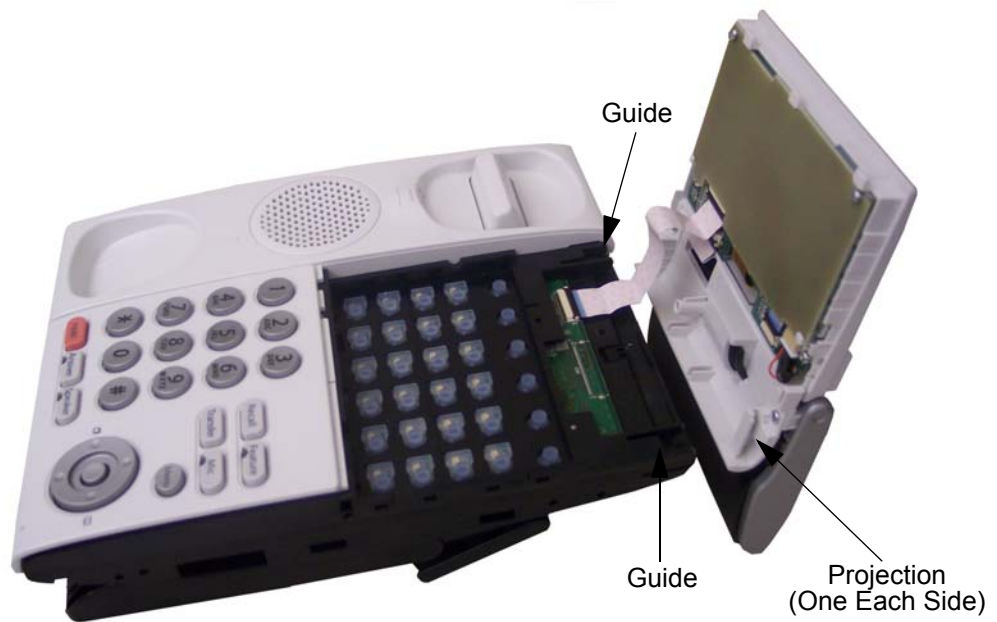


3. Remove the screw (refer to [Figure 5-90 Remove Side Panel from Multiline Terminal on page 5-88](#)).
4. Carefully, return the multiline terminal to the buttons side up position.
5. Remove the soft keys and line key kit from the telephone.
6. Gently lift the small black bar on the ribbon cable connector (refer to [Figure 5-91 Ribbon Cable Connector](#)).



**Figure 5-91 Ribbon Cable Connector**

7. Plug ribbon cable on back of 8LKD (LD)-L UNIT into connector until pressure is felt.
8. Press down on the black bar to lock the cable into place (refer to [Figure 5-92 Ribbon Cable Installed on page 5-90](#)).



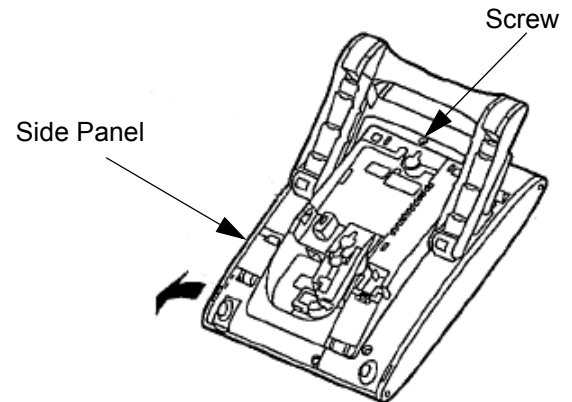
**Figure 5-92 Ribbon Cable Installed**

9. Align the projections on the bottom of the 8LKD (LD)-L UNIT into 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 5-93 8LKD \(LD\)-L UNIT Installed](#)).



**Figure 5-93 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 5-94 Install Screw](#)).



**Figure 5-94 Install Screw**

13. Attach the side panel to the side of the 8LKD (LD)-L UNIT (refer to [Figure 5-100 Install Screw on page 5-95](#)).
14. Return the multiline terminal to the buttons side up position.
15. Connect the line cord/LAN cable and the AC/DC adapter to the DTL multiline terminal.

### 5.2.3 8LKI (LD)-L (BK) UNIT/8LKI (LD)-L (WH) UNIT

Provides eight additional line keys to DT700 Series (ITL) DESI-less terminals. The unit features:

- ◆ Mounts directly to top side of terminal
- ◆ Supports Desi-less 2 LCD panels
- ◆ Eight line keys by four pages



Figure 5-95 8LKI (LD)-L UNIT

#### 5.2.3.1 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.

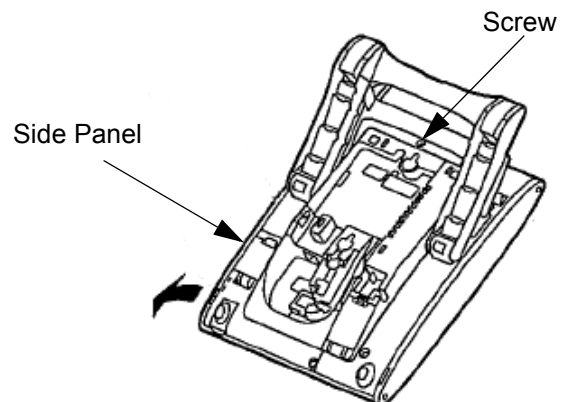
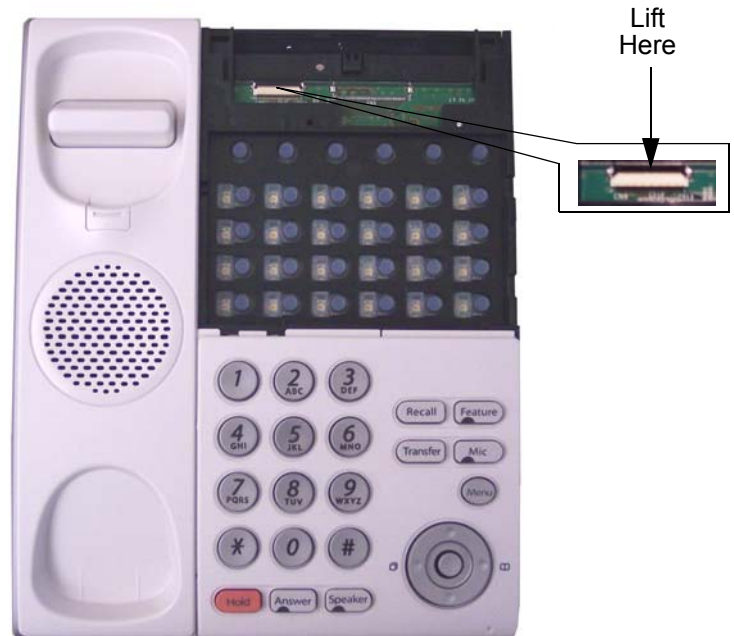


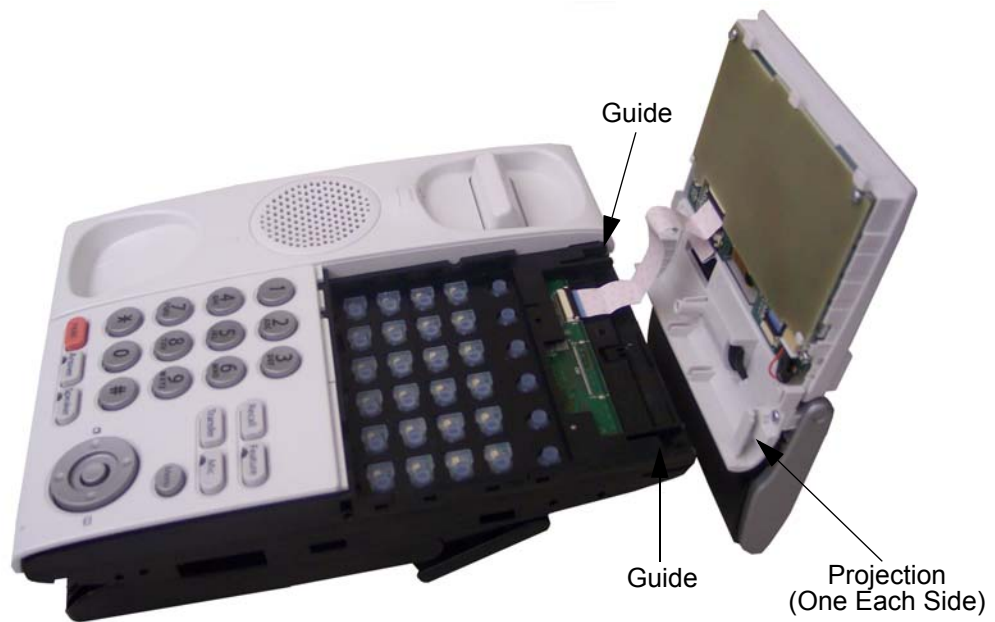
Figure 5-96 Remove Side Panel from Multiline Terminal

3. Remove the screw (refer to [Figure 5-96 Remove Side Panel from Multiline Terminal on page 5-92](#)).
4. Carefully, return the multiline terminal to the buttons side up position.
5. Remove the soft keys and line key kit from the telephone.
6. Gently lift the small black bar to open the ribbon cable connector.



**Figure 5-97 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 5-98 Ribbon Cable Installed on page 5-94](#)).



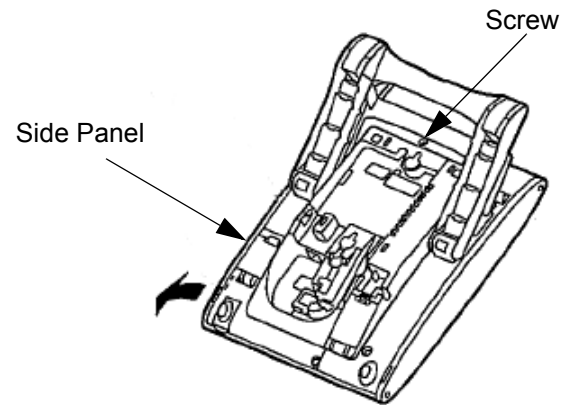
**Figure 5-98 Ribbon Cable Installed**

9. Align the projections on the bottom of the 8LKI (LD)-L UNIT into the guide holes on top of the multiline terminal (refer to [Figure 5-98 Ribbon Cable Installed](#)).
10. Slide the 8LKI (LD)-L UNIT toward the keypad buttons until snug (refer to [Figure 5-99 8LKI \(LD\)-L UNIT Installed](#)).



**Figure 5-99 8LKI (LD)-L UNIT Installed**

11. Holding the LCD in place, turn the multiline terminal button side down.
12. Install screw (refer to [Figure 5-100 Install Screw](#)).



**Figure 5-100 Install Screw**

13. Attach the side panel to the side of the 8LKI (LD)-L UNIT (refer to [Figure 5-100 Install Screw](#)).
14. Return the multiline terminal to the buttons side up position.
15. Connect the line cord/LAN cable and the AC/DC adapter to the ITL multiline terminal.

#### 5.2.4 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/ITZ or DTL/DTZ modular terminals
- ◆ Green and Red LEDs

The DSS Console gives a keyset user a Busy Lamp Field (BLF) and one-button access to extensions, trunks and system features.

The 60-Button DSS Console provides an additional page for additional programmable keys. This is provided by a page switching key that allows “shifting” between the first and second set of keys. If this key is used the amount of keys per page is reduced to 59 as one is used for the addition of this key.

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 keyset. For IP terminals, the first console is connected to the side option slot using a special cable.
- ◆ Only 1 console can be physically attached to an IP terminal, the remaining 3 must be hard wired from a TDM port.
- ◆ When fitted to an IP terminal the DSS console requires it's own power supply. PoE is not supported for the DSS console.
- ◆ Up to 32 different extensions with DSS Consoles can be set up
- ◆ A single extension can have up to four 60-button DSS Consoles (32 is the maximum allowed per system).
- ◆ Each DSS console fitted to a TDM port will require a TDM port license.



**Figure 5-101 DCL-60-1/DCZ-60-2 CONSOLE**

#### 5.2.4.1 Installing the DCL-60-1/DCZ-60-2 CONSOLE



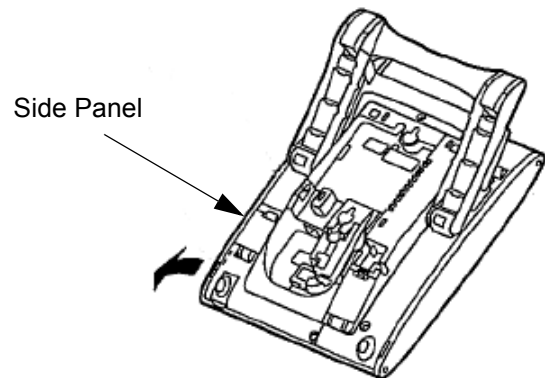
***To prevent possible damage to the DCL-60-1/DCZ-60-2 CONSOLE or the DTL/DTZ/ITL/ITZ multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DTL/DTZ/ITL/ITZ***

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 DTL/DTZ/ITL/ITZ multiline terminal at*



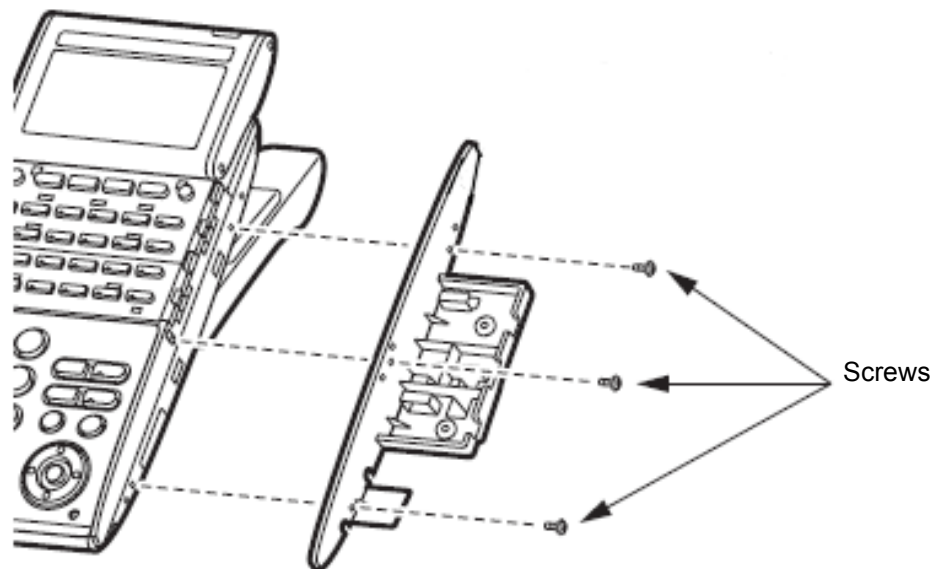
*a time.*

3. Pry the side panel from the multiline terminal.



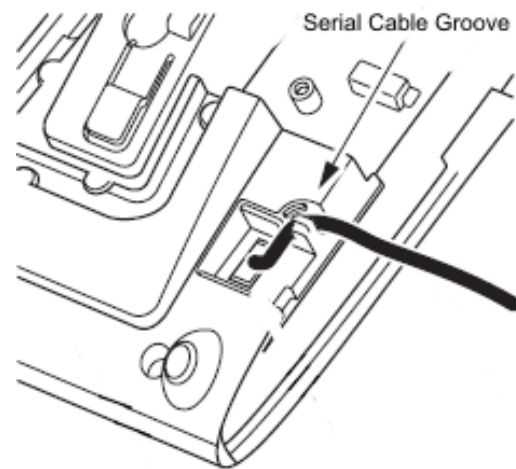
**Figure 5-102 Remove Side Panel from Multiline Terminal**

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.



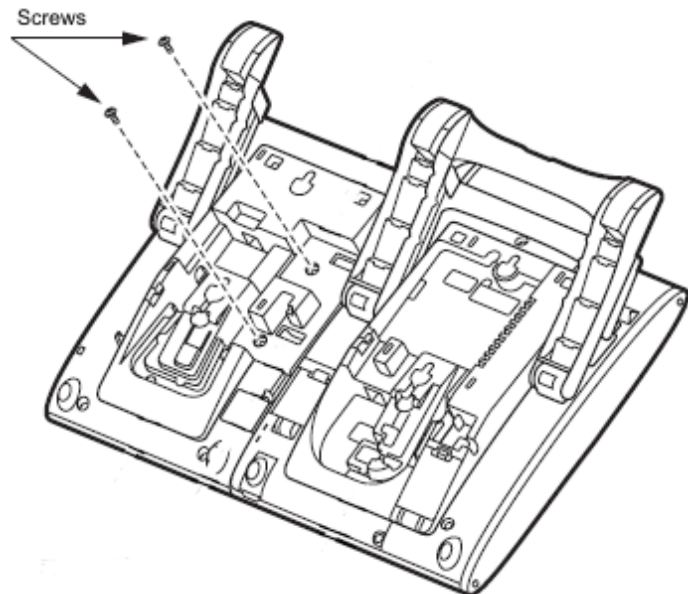
**Figure 5-103 Secure Bracket to Multiline Terminal with Screws**

7. Carefully push the Serial cable into the Serial Cable Groove (DT700/DT800 only).



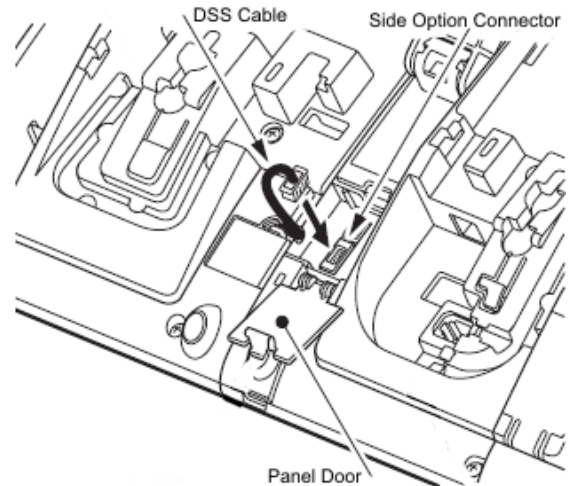
**Figure 5-104 Press Serial Cable into Groove**

8. Using the guides, slide the DCL-60-1 onto the installed bracket (refer to [Figure 5-104 Press Serial Cable into Groove](#)).
9. Secure the DCL-60-1/DCZ-60-2 CONSOLE to the bracket with the two screws provided.



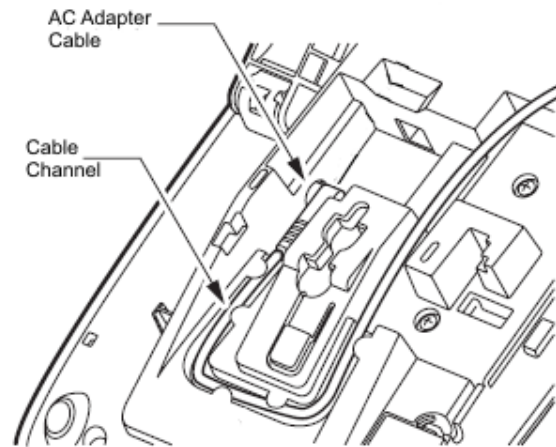
**Figure 5-105 Securing the DCL-60-1/DCZ-60-2 CONSOLE with Screws**

10. Open the small door covering the side option connectors by pulling the cover latch toward you (refer to [Figure 5-106 Serial Cable Installed](#), DT700/DT800 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 5-106 Serial Cable Installed**

12. Set the height of 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 Series).
17. Connect the AC Adapter cable (DT300/DT400/DT700/DT800 Series) See [Figure 5-107 Connect AC Adapter Cable](#) on page 5-100.



**Figure 5-107 Connect AC Adapter Cable**

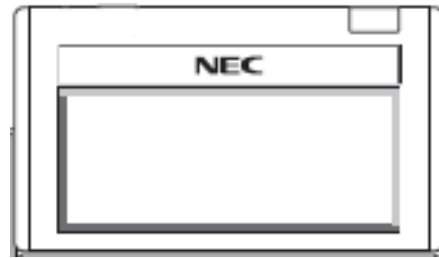
18. Complete the installation by reattaching both plastic panels to the front of the multiline terminal.



**Figure 5-108 DCL-60-1/DCZ-60-2 CONSOLE Installed**

#### 5.2.5 LCD (BL)-L (BK) UNIT/LCD (BL)-L (WH) UNIT

The LCD (BL)-L UNIT is an optional LCD unit for modular terminals and supports the backlit LCD feature (DT300 Series only).

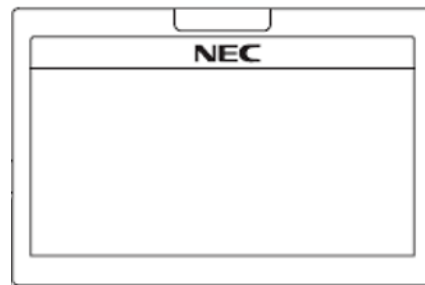


**Figure 5-109 LCD (BL)-L UNIT**

#### 5.2.6 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).

**Figure 5-110 LCD (BL)-Z UNIT**

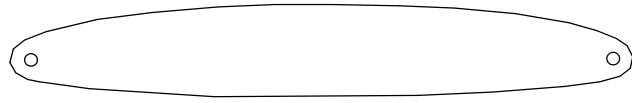


#### 5.2.7 PANEL( )-L UNIT

Optional plastic color side panels that allow users to customize the ITL/DTL terminals. The following colors are available for the Base (all), VLCD (Value LCD) and SLCD (Sophi LCD) terminals (refer to Chapter 1, [Table 1-10 DT300/DT700 Series Optional Equipment List on page 1-11](#)):

- ◆ Silver (original)
- ◆ Red
- ◆ Blue
- ◆ Clear
- ◆ Wood Grain
- ◆ Environmental

*Right and Left side panels are not interchangeable.*



**Figure 5-111 PANEL( )-L UNIT**

### 5.2.8 WM-L UNIT Attached to Wall

The WM-L UNIT (Wall Mount Unit) is used to attach any DT Series multiline terminal to the wall. This unit connects to the back side of the telephone.

When optional adapters are used, the multiline terminal must be installed on the wall using the WM-L UNIT.

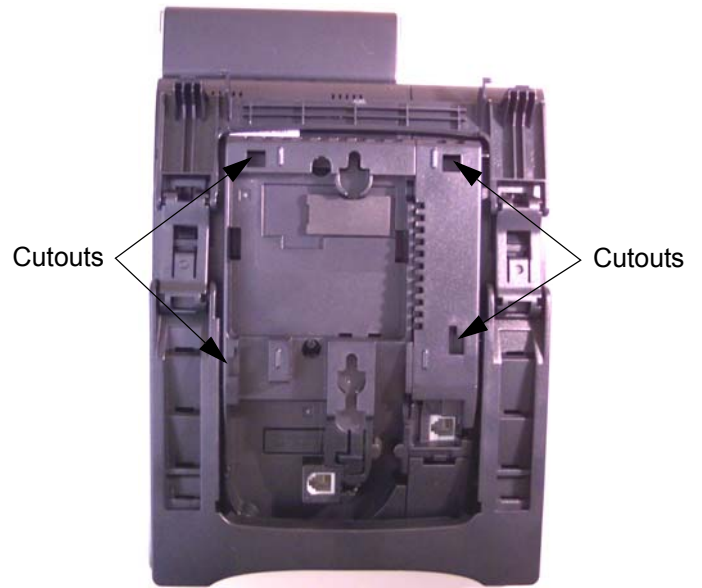
1. Plug line cord in the wall receptacle. Leave about eight inches of cord and bundle the rest.
2. Feed the line cord through the opening in the WM-L UNIT.
3. Attach the WM-L UNIT to the wall using four screws (refer to [Figure 5-112 Attach the WM-L UNIT to Wall](#)).



**Figure 5-112 Attach the WM-L UNIT to Wall**

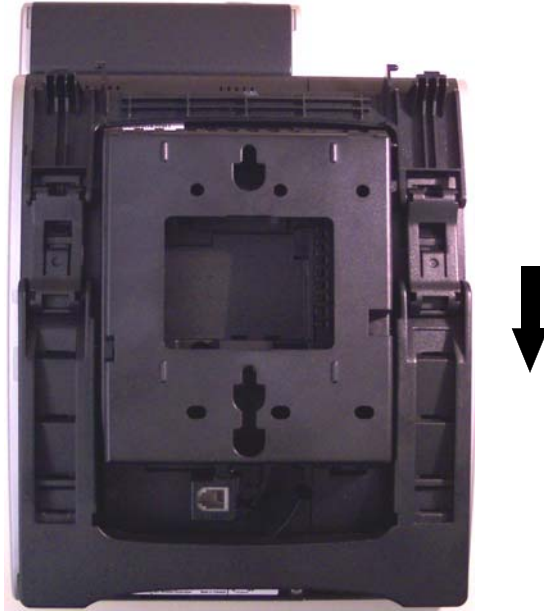
4. Align the four cutouts with the four tabs on the WM-L UNIT

(refer to [Figure 5-113 Cutouts for WM-L UNIT](#)).



**Figure 5-113 Cutouts for WM-L UNIT**

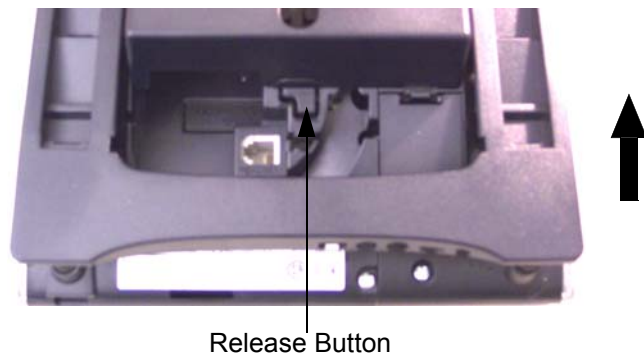
5. Push down on telephone until the WM-L UNIT snaps into place (refer to [Figure 5-114 WM-L UNIT Installed](#)).



**Figure 5-114 WM-L UNIT Installed**

#### 5.2.9 Release the WM-L UNIT

1. To release the telephone from the WM-L UNIT, press the release button and push the telephone up (refer to [Figure 5-115 WM-L UNIT Release Button](#)).



**Figure 5-115 WM-L UNIT Release Button**

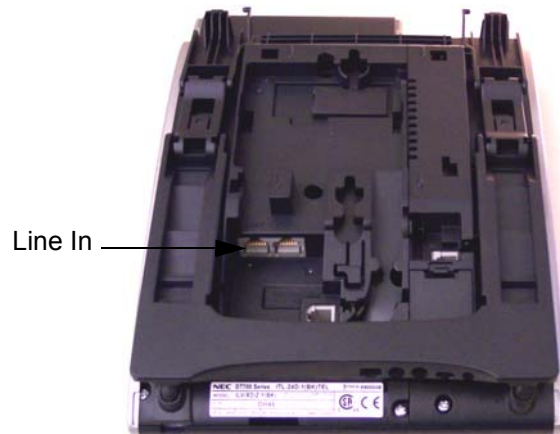


### 5.2.10 WM-L UNIT Attached to Wall Plate

The WM-L UNIT (Wall Mount Unit) is used to attach any DT Series multiline terminal to the wall plate. This unit connects to the back side of the telephone.

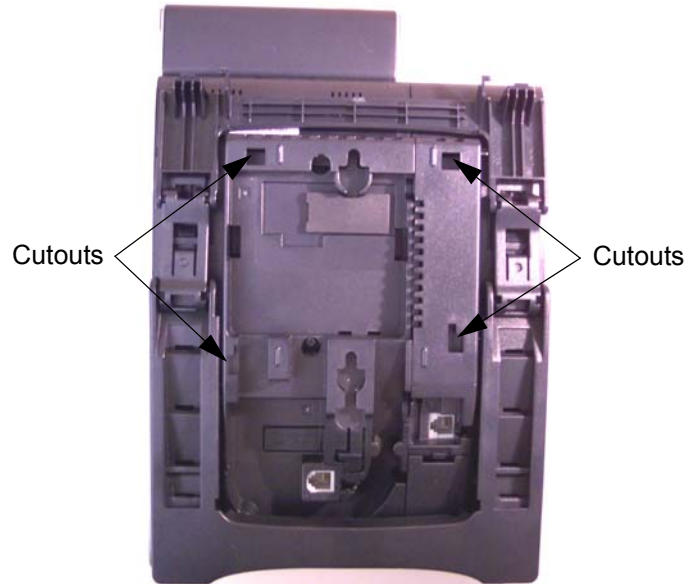
When optional adapters are used, the multiline terminal must be installed on the wall plate using the WM-L UNIT.

1. Plug line cord in the wall plate receptacle. Leave about eight inches of cord and bundle the rest.
2. Feed the line cord through the opening in the WM-L UNIT.
3. Plug the line cord into the Multiline Terminal as illustrated in [Figure 5-116 Plugging in Line Cord](#).



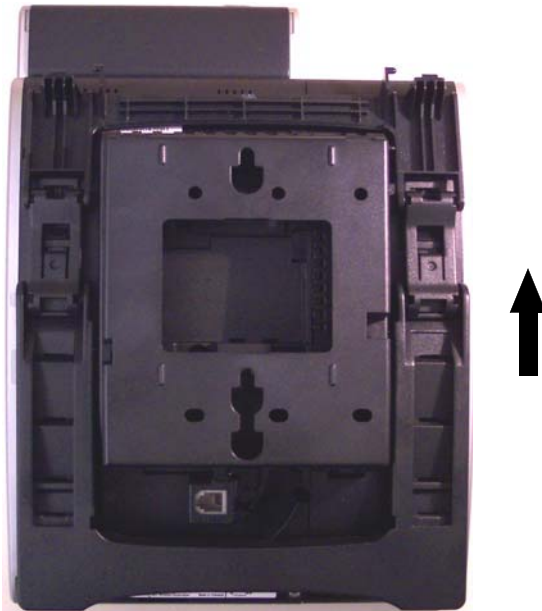
**Figure 5-116 Plugging in Line Cord**

4. Align the four cutouts with the four tabs on the WM-L UNIT (refer to [Figure 5-117 Cutouts for WM-L UNIT on page 5-106](#)).



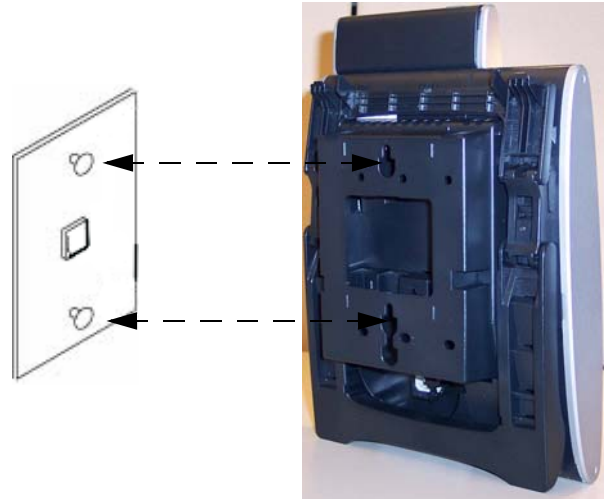
**Figure 5-117 Cutouts for WM-L UNIT**

5. Push up on the WM-L UNIT until it snaps into place (refer to [Figure 5-118 WM-L UNIT Installed](#)).



**Figure 5-118 WM-L UNIT Installed**

6. Align the two holes on the back of the WM-L UNIT with the two screws on the wall plate and slide downward (refer to [Figure 5-119 Mount Multiline Terminal Wall on Wall Plate](#)).



**Figure 5-119 Mount Multiline Terminal Wall on Wall Plate**

- *Because of strength variation in switch boxes, this method is not recommended.*

7. Push excess line cord behind the Multiline Terminal.

#### 5.2.11 Removing the Multiline Terminal from the Wall Mounted Plate.

To remove the Multiline Terminal, push up on the telephone until it comes loose.



**Figure 5-120 Removing the Multiline Terminal**

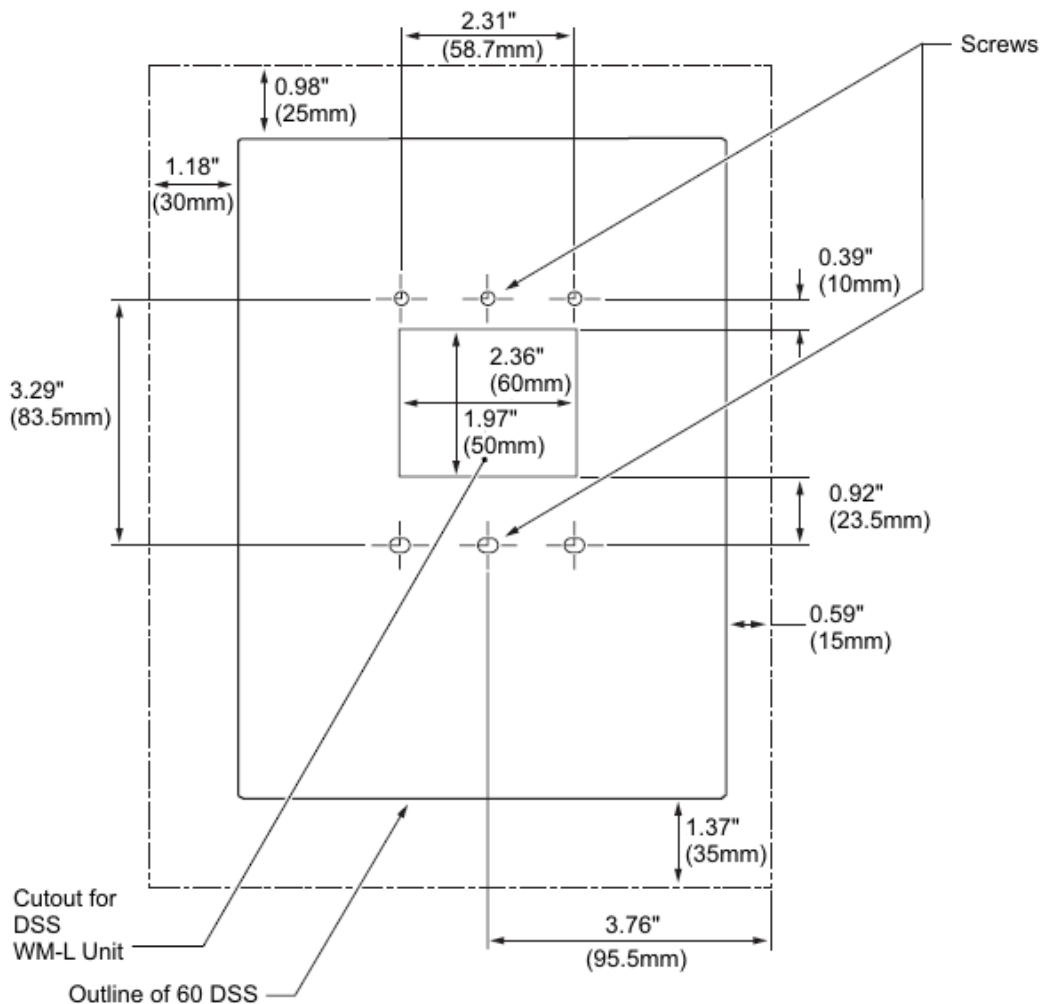
### 5.2.12 DSS WM-L UNIT

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.

#### 5.2.12.1 Mount DCL-60-1/DCZ-60-2 CONSOLE on Wall using DSS WM-L UNIT

Use the template shown in [Figure 5-121 Wall Mount Spacing Guide \(DSS WM-L UNIT\)](#) for required spacing before drilling.

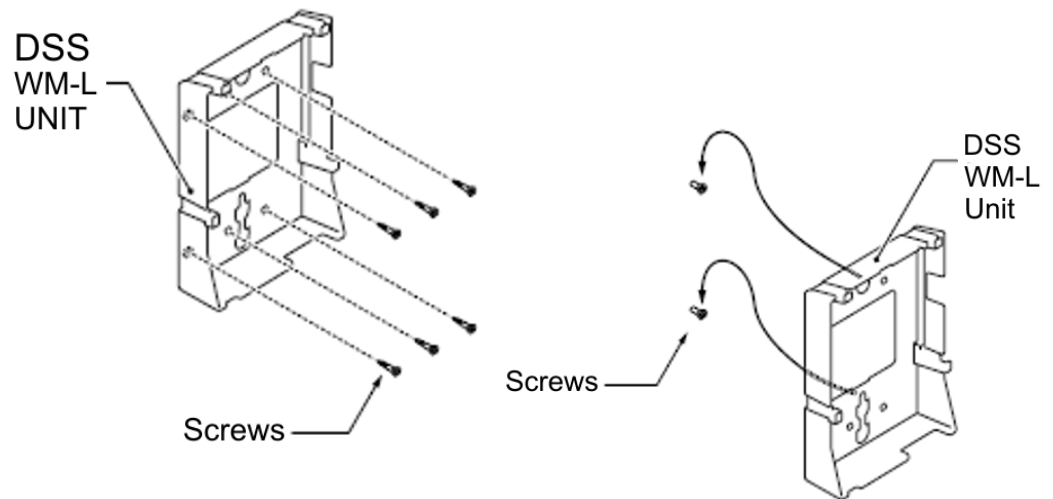
**Figure 5-121 Wall Mount Spacing Guide (DSS WM-L UNIT)**



1. Attach the DSS WM-L UNIT to the wall using six screws or, using two wall mounted screws (refer to [Figure 5-122 Attach](#)

DSS WM-L UNIT Using Screws).

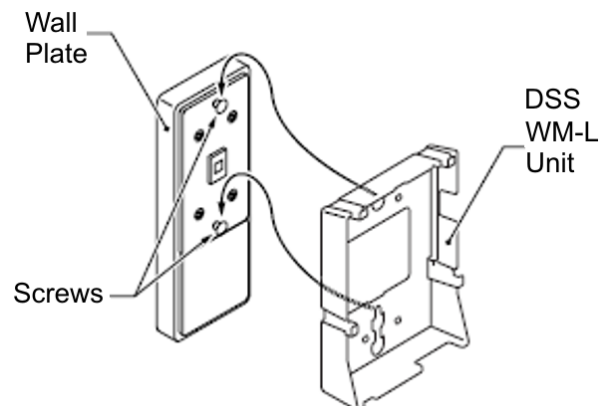
**Figure 5-122 Attach DSS WM-L UNIT Using Screws**



#### 5.2.12.2 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 5-123 Attach DSS WM-L UNIT to Wall Plate](#).

**Figure 5-123 Attach DSS WM-L UNIT to Wall Plate**

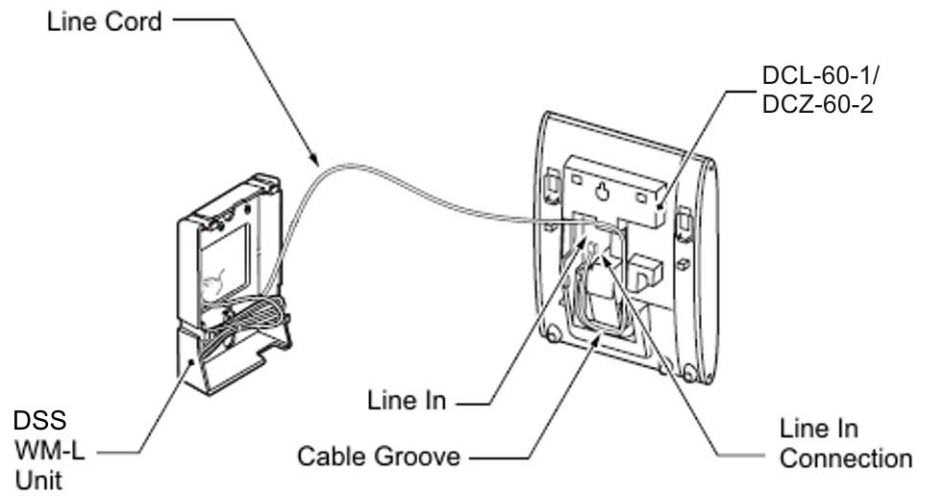


< *Because of variation in wall plates, this method is not recommended.*

2. Plug one end of the line cord into the wall receptacle. Leave

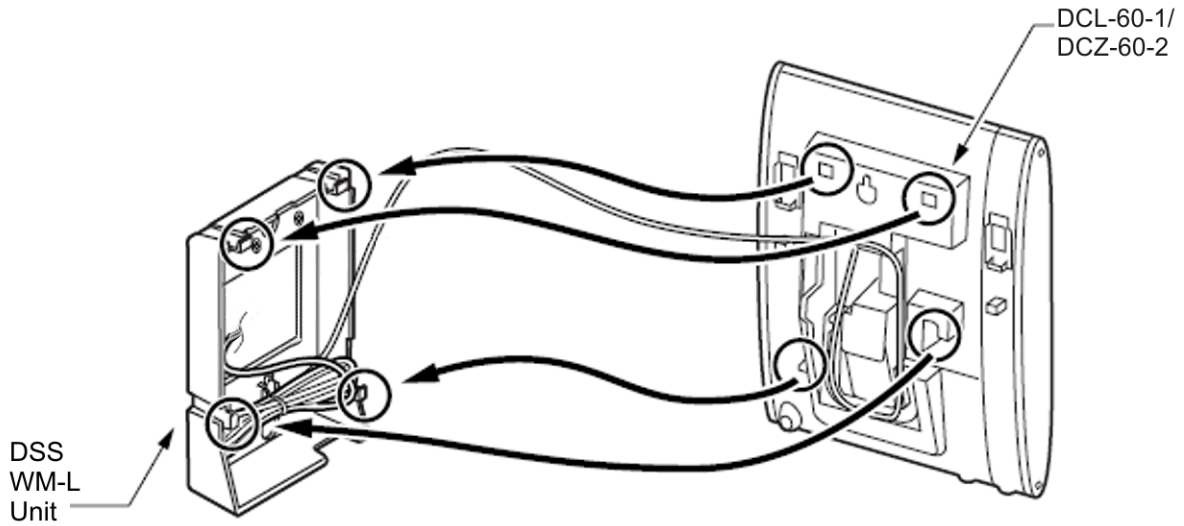
about eight inches of cord and bundle the rest.

**Figure 5-124 Plug Cable into Wall**



3. Plug the opposite end of the line cord into the DCL-60-1/DCZ-60-2 CONSOLE as illustrated in [Figure 5-125 Plugging Cable into DCL-60-1/DCZ-60-2 CONSOLE](#).

**Figure 5-125 Plugging Cable into DCL-60-1/DCZ-60-2 CONSOLE**



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## SECTION 6      **OPTIONAL HANDSETS**

### 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 5-126 ITL / DTL PTM Handset**

### 6.2      **ITL / DTL PTT Handset**

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.



**Figure 5-127 ITL / DTL PTT Handset**

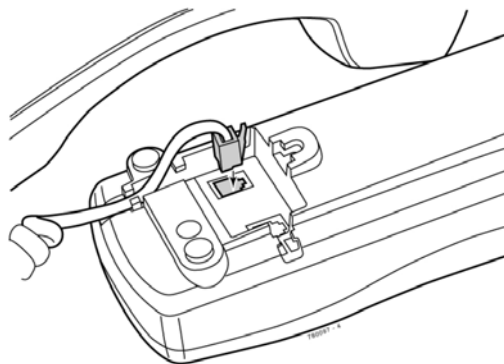
## 6.3 UTR-1-1 USB Handset

The NEC USB telephone can be plugged directly into a PC USB port, enabling the high quality voice input and output capabilities 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 and shoulder. The user immediately hears a dial tone upon 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

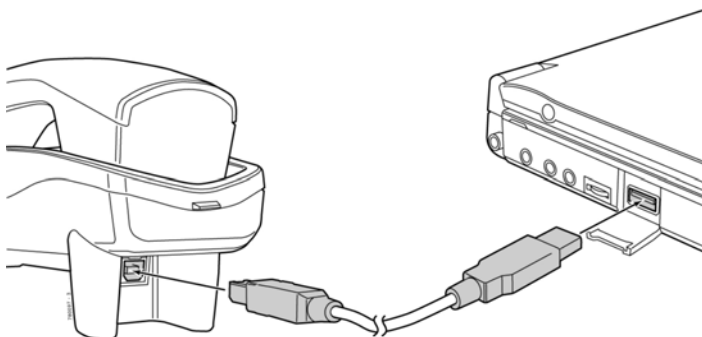
Plug the handset cable (RJ-11 connector) into the bottom of the cradle. Route the handset cable in the handset groove.



**Figure 5-128 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) into the USB port of a PC.

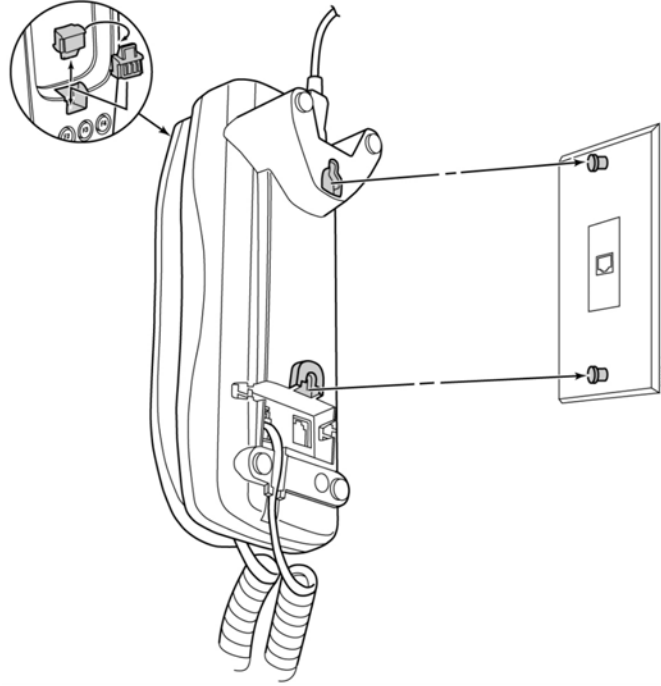


**Figure 5-129 Installing the UTR-1-1 USB Handset to a PC**



### 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.



**Figure 5-130 Wall Mounting the UTR-1-1 USB Handset**

*Because of strength variation in switch boxes, this method is not recommended.*

## SECTION 7 BLUETOOTH CORDLESS HANDSET

### 7.1 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:

- Keypad-like Handset
- Eight 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

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.

When charging the BCH, the following LEDs provide indications of the status:

**Table 5-18 BCH Charging LEDs**

On-Hook Charging:	Red = Charging	Green = Charging Complete
Off-Hook (Idle):	No LED = Idle	Flashing Red = Incoming Call

The BCH will retain call histories for up to 10 outgoing and 10 incoming calls. For outgoing calls, this would include completed and uncompleted calls. For incoming calls, this would include 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.

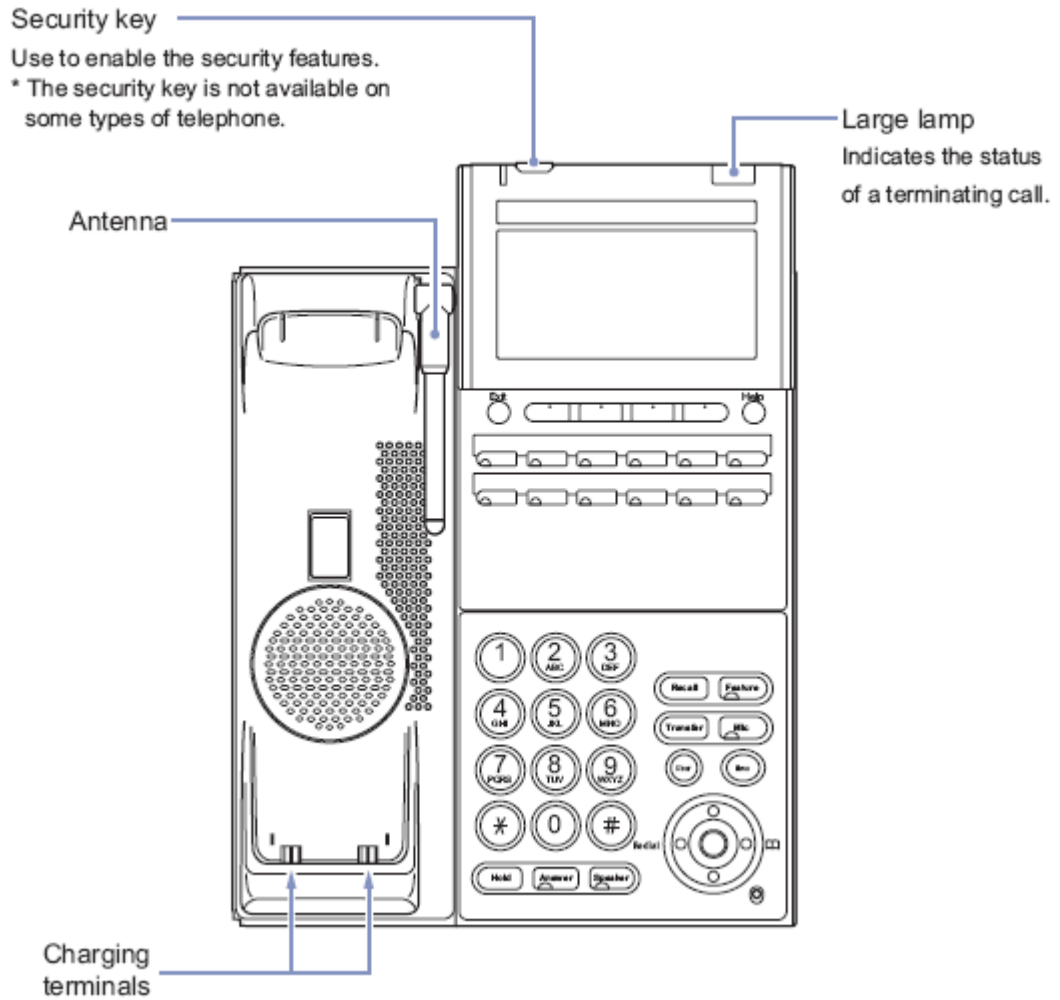
## 7.2 Selecting a Location

Before choosing a location for your new telephone, consider these important guidelines:

- If multiple cordless terminals are installed, keep their Bluetooth cradles at least 3.3 feet (1meter) apart from one another.
- 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.
- Keep the Bluetooth cradle at least 9.8 feet (3 meters) apart from any of the devices listed below. Be also 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 2.4 GHz band)
  - Manufacturing equipment, such as plasma strippers (LSI manufacturing)
  - Electronic toll gates
  - Bluetooth devices

### 7.3 Controls and Indicators

Controls and indicators can be found in [Figure 5-131 Bluetooth Cradle Controls and Indicators](#) or [Figure 5-132 Bluetooth Handset Controls and Indicators](#) on page 5-117.



**Figure 5-131 Bluetooth Cradle Controls and Indicators**

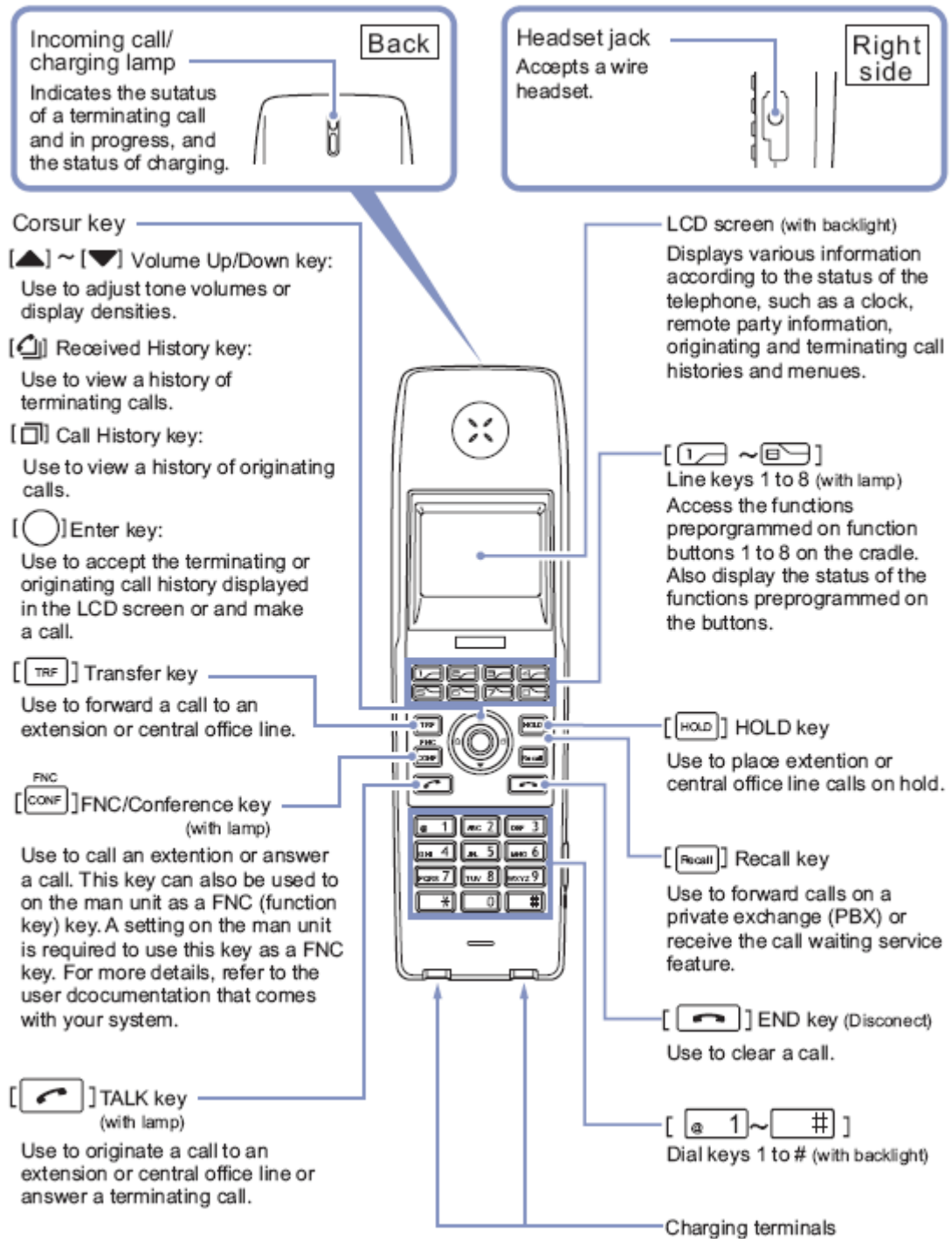


Figure 5-132 Bluetooth Handset Controls and Indicators

## 7.4 Installing the Bluetooth Cordless Handset

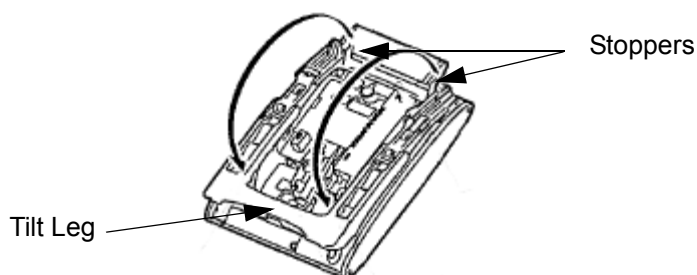
The BCH-L (BK) UNIT is an optional device that transforms the standard DT300 series multifunctional telephone into a cordless terminal. This section explains how to transform the standard hand-set into a BCH-L (BK) UNIT. The BCH-L (BK) UNIT cannot be connected to the DTL-2E-1, DTL-6DE-1, DT400, DT700 or DT800 telephones.

### 7.4.1 Installing the Bluetooth Handset Cradle



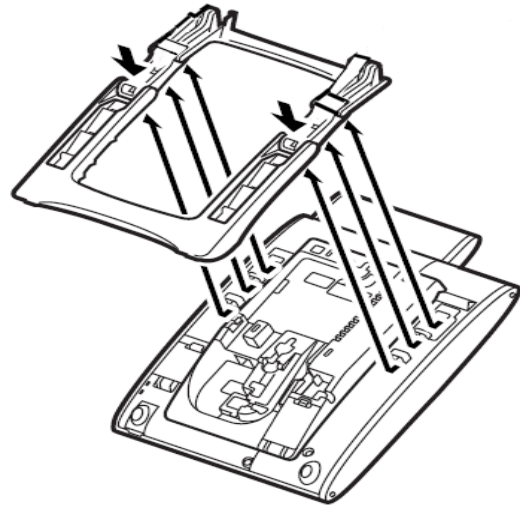
***Before installing or removing the BCH-L (BK) UNIT, remove the line cord and the AC adapter from the outlet.***

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 5-133 Separate Tilt Leg from Leg Support](#)).



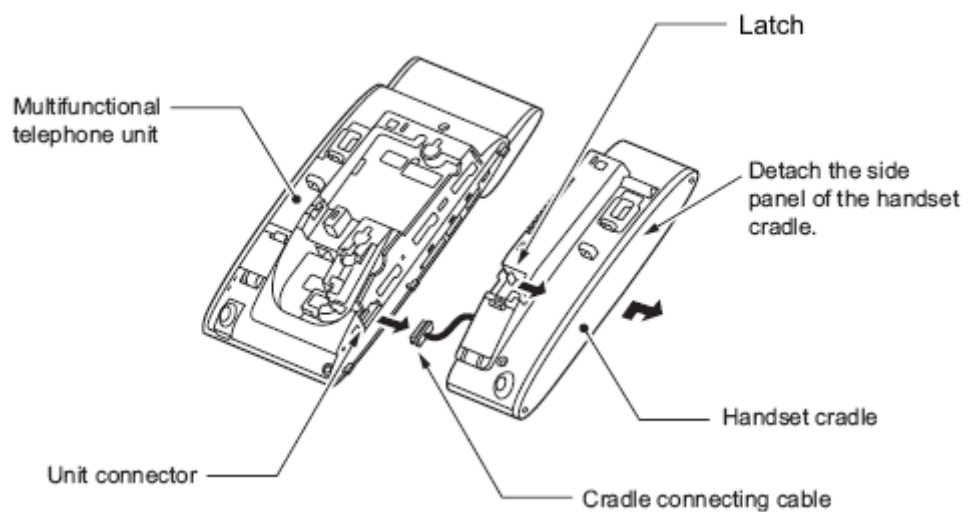
**Figure 5-133 Separate Tilt Leg from Leg Support**

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 5-134 Remove Legs From Multiline Terminal on page 5-119](#)).



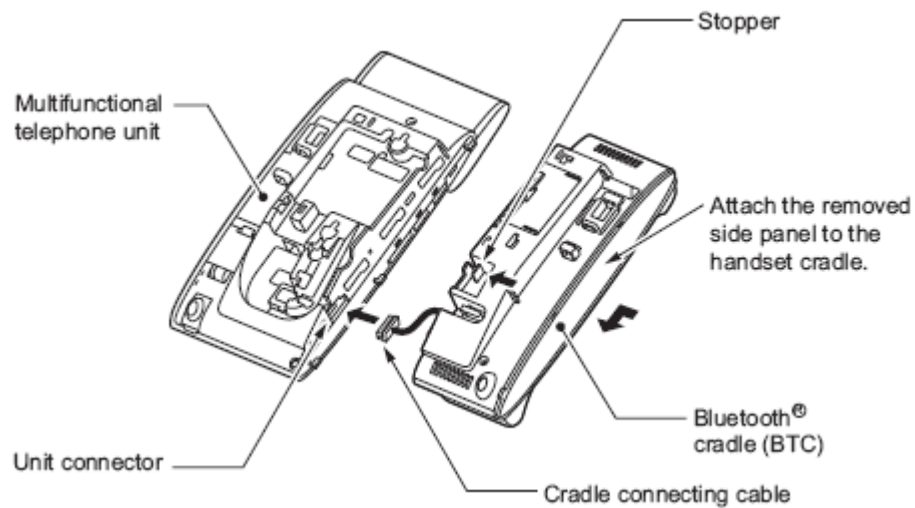
**Figure 5-134 Remove Legs From Multiline Terminal**

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 5-135 Detach Cradle from Multiline Terminal](#)).



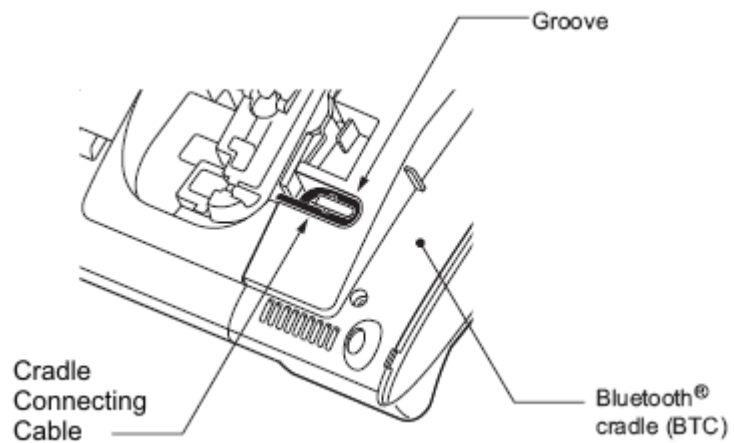
**Figure 5-135 Detach Cradle from Multiline Terminal**

10. Insert the cradle connecting cable of the Bluetooth Cradle (BTC) into the unit connector.



**Figure 5-136 Attach Bluetooth Cradle to the Multiline Terminal**

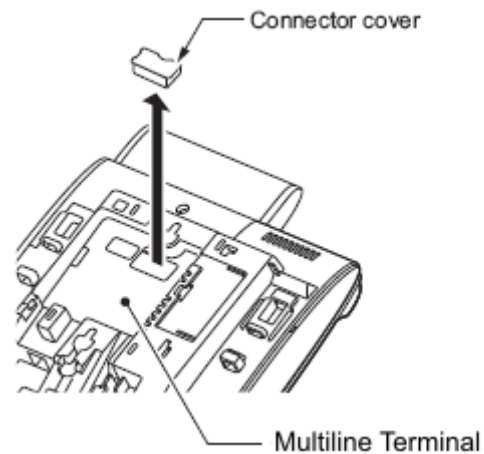
11. Fit the projections on the side of the Bluetooth Cradle into the guide holes on the side of the terminal and pull toward you ([Figure 5-136 Attach Bluetooth Cradle to the Multiline Terminal](#)) until the unit snaps into place.
12. Attach the side panel to the Bluetooth Cradle.
13. Press the connecting cable into the grooved cutout.



**Figure 5-137 Grooved Cutout for Connecting Cable**

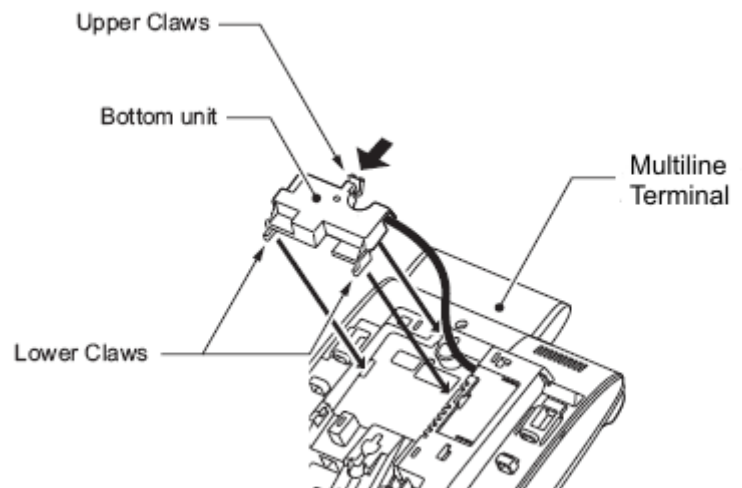


14. Remove the connector cover (rubber) from the bottom of the multiline terminal.



**Figure 5-138 Removing the Connector Cover**

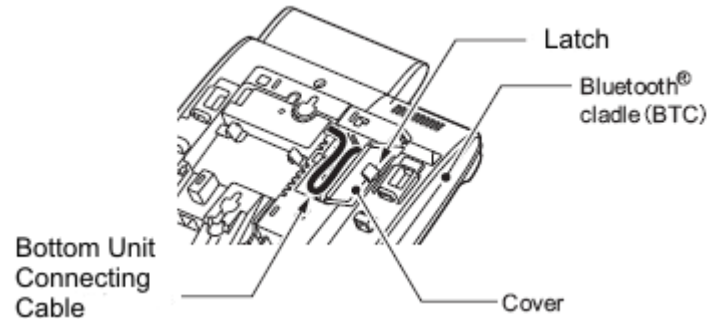
15. Insert the lower claws of the Bottom Unit (see [Figure 5-139 Installing the Bottom Unit](#)) into precut holes on the multiline terminal.



**Figure 5-139 Installing the Bottom Unit**

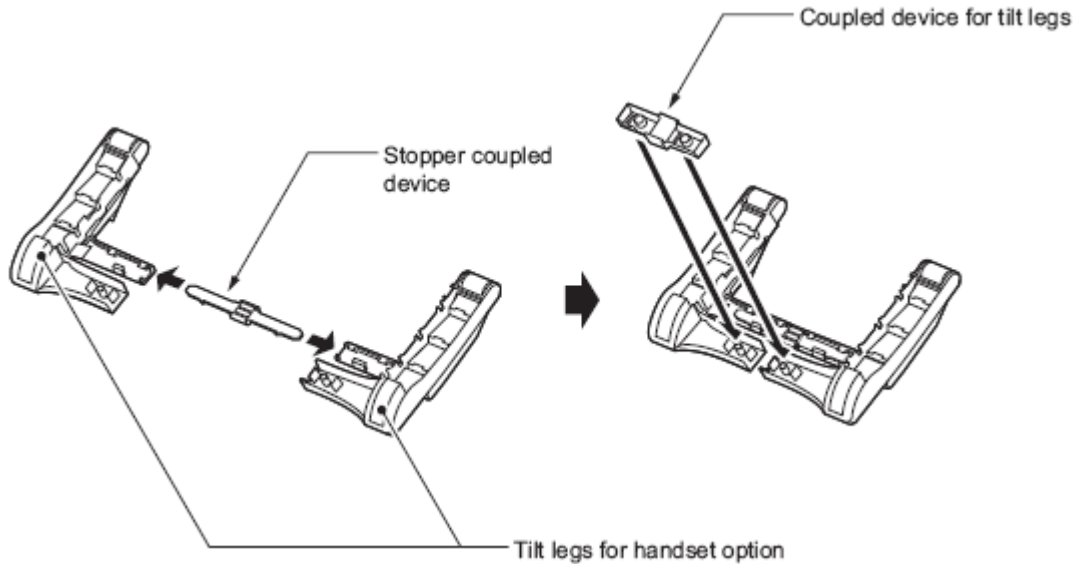
16. Align connector on inside of bottom unit and push down until unit snaps into place.

17. Push the latch to release the cover (see [Figure 5-140 Stowing the Bottom Unit Cable](#)). Stow the extra bottom unit connecting cable and close the cover.



**Figure 5-140 Stowing the Bottom Unit Cable**

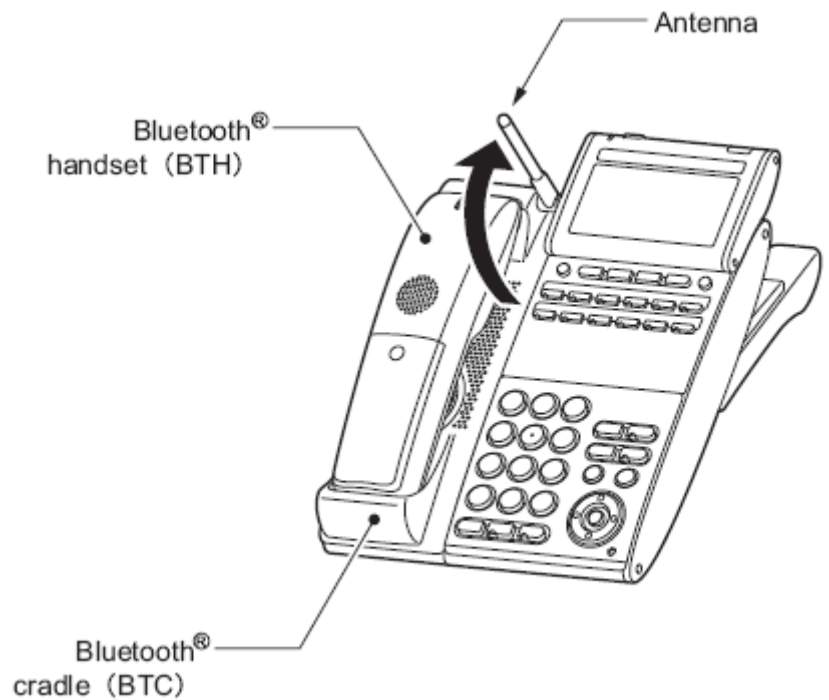
18. Cut or trim the supplied coupled device for the tilt legs handset option.
19. Insert the stopper coupled device into the right and left tilt legs (see [Figure 5-141 Insert Stopper for Handset Use](#)).



**Figure 5-141 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. Return the multiline terminal to the numbered keypad in the up position.
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 5-142 Bluetooth Handset Installed](#)).



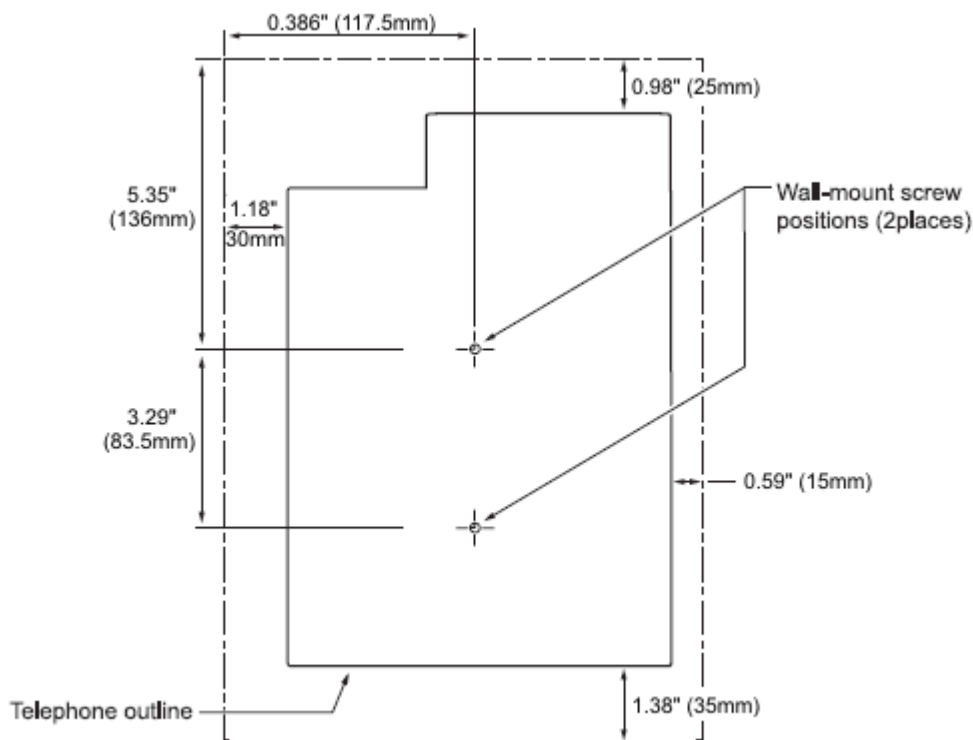
**Figure 5-142 Bluetooth Handset Installed**

## 7.4.2 Wall Mounting the Bluetooth Cradle



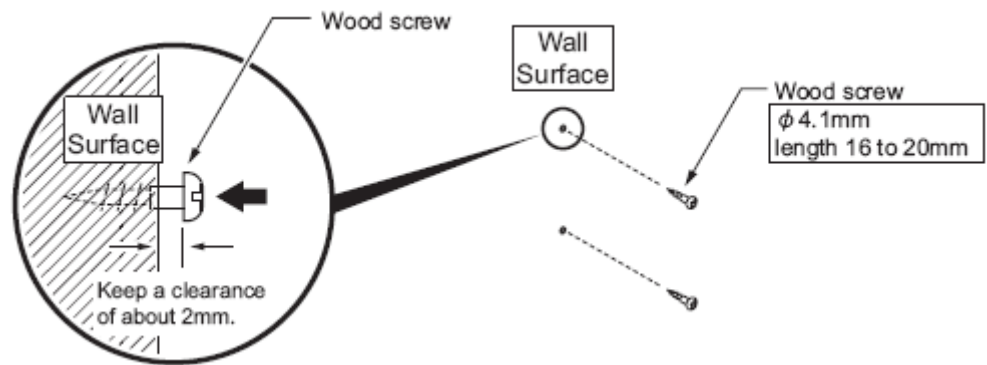
**To prevent possible damage to the BCH-L (BK) UNIT due to falling, NEC recommends installing the unit in a firm position so it will not fall due to its own weight.**

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 withstand the weight of the telephone and the load from pulling the telephone during operation.



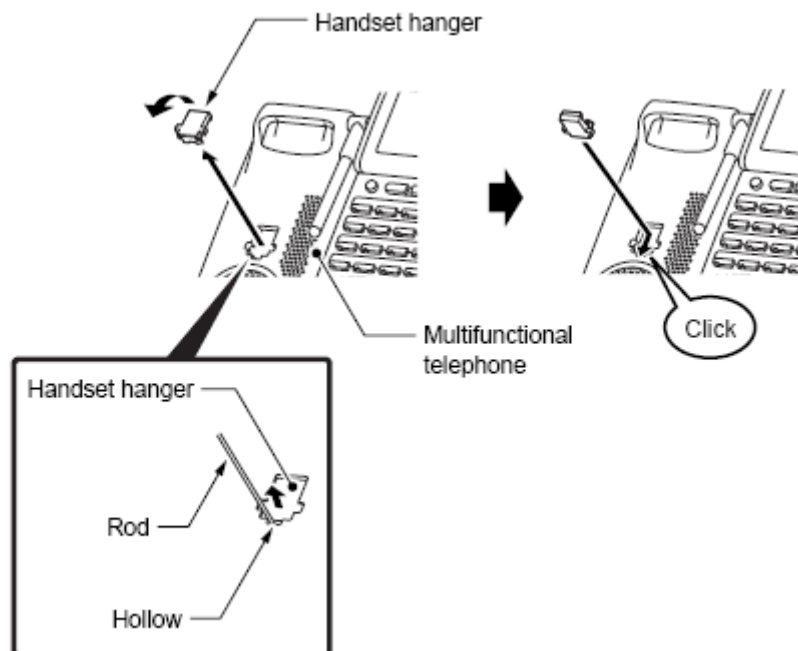
**Figure 5-143 Wall Mount Spacing Guide BCH-L (BK) UNIT**

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 5-144 Installing Wood Screws on page 5-125](#)).



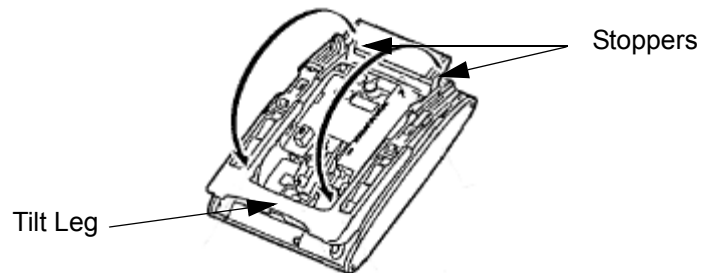
**Figure 5-144 Installing Wood Screws**

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.



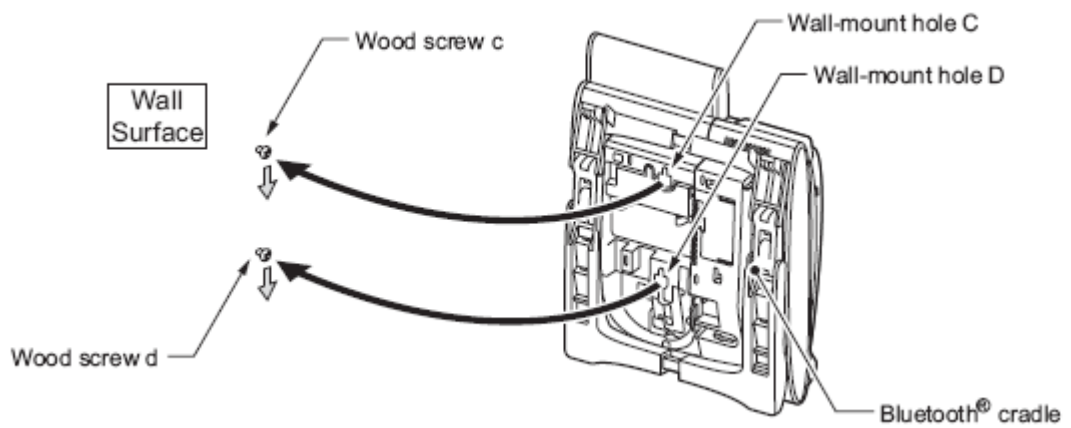
**Figure 5-145 Change Handset Hanger**

4. Turn multiline terminal upside down.
5. Lower the tilt leg to the first position (refer to [Figure 5-133 Separate Tilt Leg from Leg Support](#)).



**Figure 5-146 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.

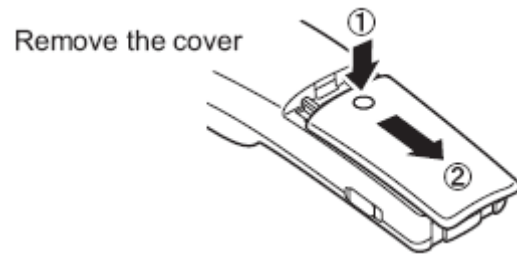


**Figure 5-147 Wall Mounting the Terminal**

### 7.4.3 Remove and Replace Handset Battery

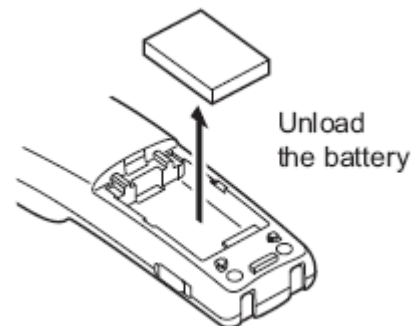
The battery loaded in the Bluetooth handset has a useful life of about two years, depending on how the handset is used. If the battery voltage diminishes quickly after the battery has been charged for a long time, replace with a new Li-ion battery.

1. Remove cover from back of handset.



**Figure 5-148 Removing Battery Cover from Handset**

2. Remove existing battery and dispose of properly.



**Figure 5-149 Removing Battery from Handset**

3. Install new Li-ion battery.
  - *Full charge takes approximately 16 hours.*
4. Reinstall battery cover.

## SECTION 8 BLUETOOTH HUB ADAPTER

### 8.1 Bluetooth Hub Adapter (BHA) Features

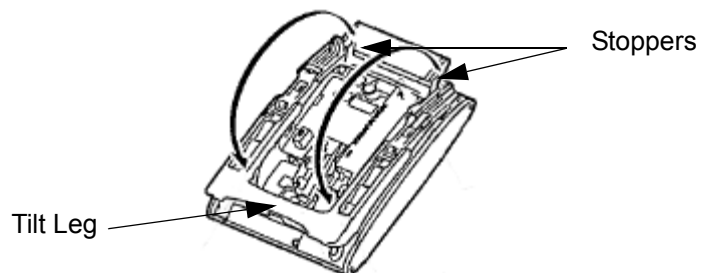
The BHA-L UNIT adapter connects a Bluetooth device to a DT300/DT400 multiline terminal. The BHA-L UNIT cannot be connected to the DTL-2E-1, DTZ-2E-3, DTL-6DE-1 or DTZ-6DE-3 telephone.

#### 8.1.1 Installing the BHA-L UNIT



***Before installing or removing the BHA-L UNIT, remove the line cord and the AC adapter from the outlet.***

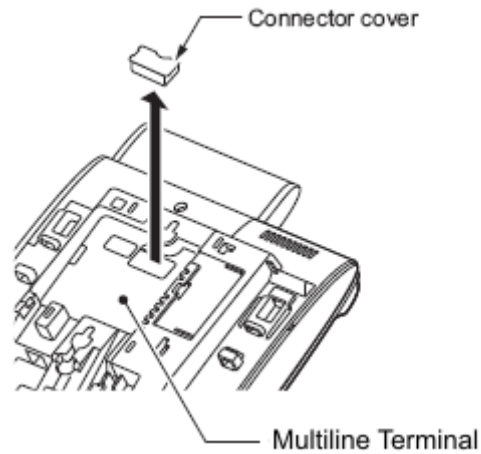
1. Turn multiline terminal upside down.
2. Unplug the line cord and handset cord from the multiline terminal.
  - *Only one BHA-L UNIT can be attached to the DTL multiline terminal.*
3. Lower the tilt leg to the first position (refer to [Figure 5-150 Separate Tilt Leg from Leg Support](#)).



**Figure 5-150 Separate Tilt Leg from Leg Support**

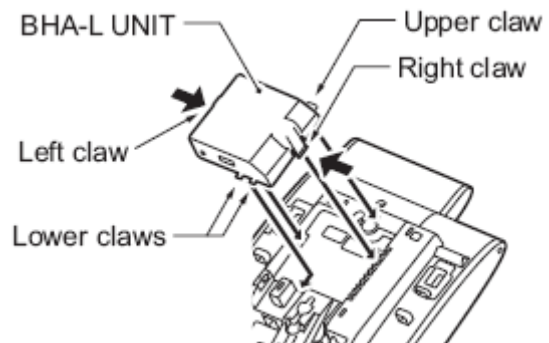
4. Remove the connector cover (rubber) from the bottom of the multiline terminal (see [Figure 5-151 Removing the Connector Cover on page 5-129](#)).





**Figure 5-151 Removing the Connector Cover**

5. Insert the lower claws of the Bottom Unit (see [Figure 5-152 Installing the BHA-L UNIT](#)) into precut holes on the multiline terminal.



**Figure 5-152 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. Return the multiline terminal to the numbered keypad in the up position.
9. Connect the Line cord and the AC adapter.

### 8.1.2 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.

#### 8.1.2.1 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 Aspire X:  
Press menu keys > [5. Optional Devices] > [1. Bluetooth].
- If the BHA-L UNIT is connected to a PBX (other than Aspire X):  
Press menu keys > [3. Setup] > [5. Optional Devices] > [1. Bluetooth].

#### 8.1.2.2 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.

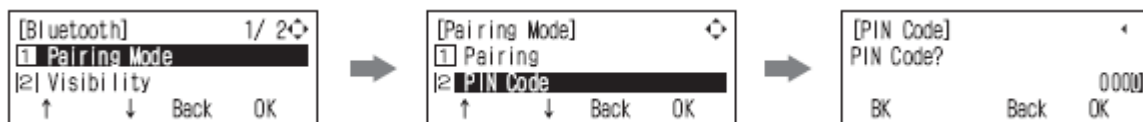
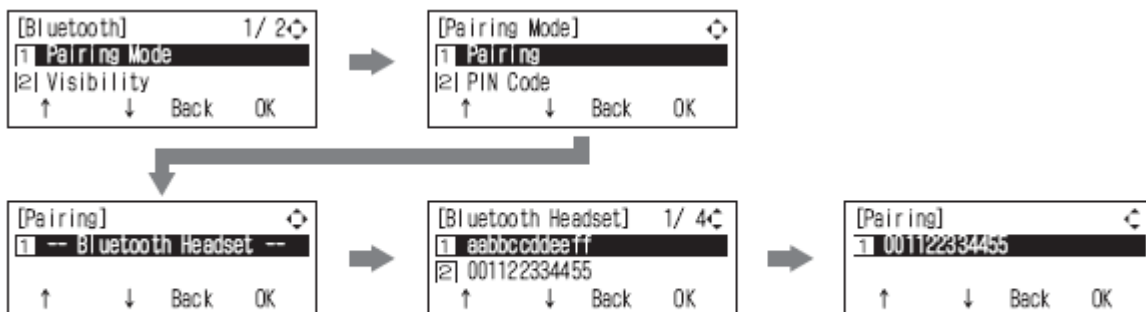


Figure 5-153 Entering a PIN Code

#### 8.1.2.3 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 5-154 Pairing a Device on page 5-130](#)).



It takes approximately one minute for locating.

Figure 5-154 Pairing a Device

8.1.2.4 Connecting the Paired Device

Enable the Bluetooth device. Select [2. Enable] in the connection 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.*

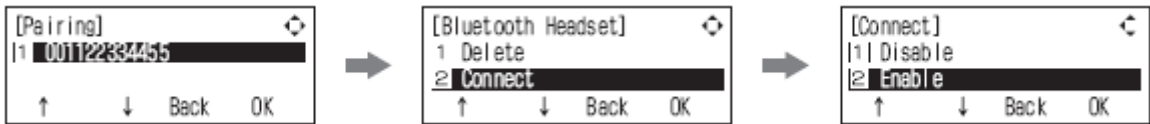


Figure 5-155 Connecting the Paired Device

8.1.2.5 Unpairing

To unpair a paired the Bluetooth device, select the device in the [Delete] screen.

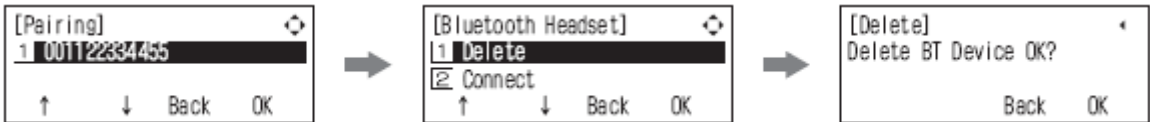


Figure 5-156 Unpairing a Device

8.1.2.6 Visibility Setting

Set whether to make information about the BHA-L UNIT visible to other Bluetooth devices (default: [1. Disable]).



Figure 5-157 Setting Visibility Option

### 8.1.2.7 BT Information

You can view the following kinds of information about the BHA-L UNIT:

- Firmware and hardware versions.
  - Bluetooth module information and standard.
  - Installed profile versions.
- Device address and name.



**Figure 5-158 Setting Bluetooth Information**

## SECTION 9 SINGLE LINE TELEPHONE

### 9.1 Installing the SLT Adapter

The Single Line Telephone adapter provides an interface for Single Line Telephones and other similar devices from an ESI channel.

This adapter can be connected to any ESI port.

1. Connect one end of the RJ-11 to the ESI port on the chassis and one end to the **ESI** jack on the SLT Adapter.
2. Connect one end of a second RJ-11 to the TEL jack on the SLT Adapter and the other end to the Single Line Telephone.

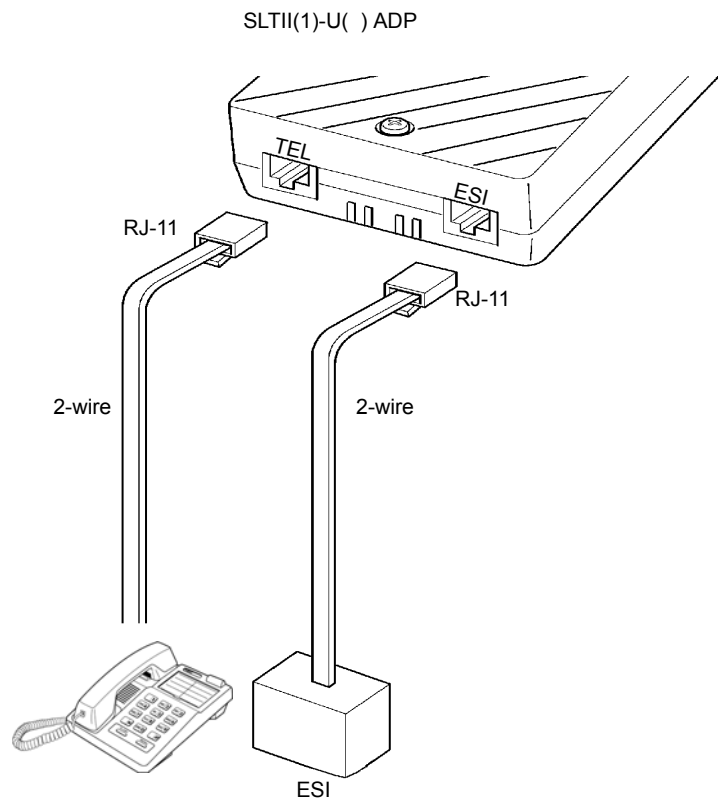


Figure 5-159 Installing SLT Adapter

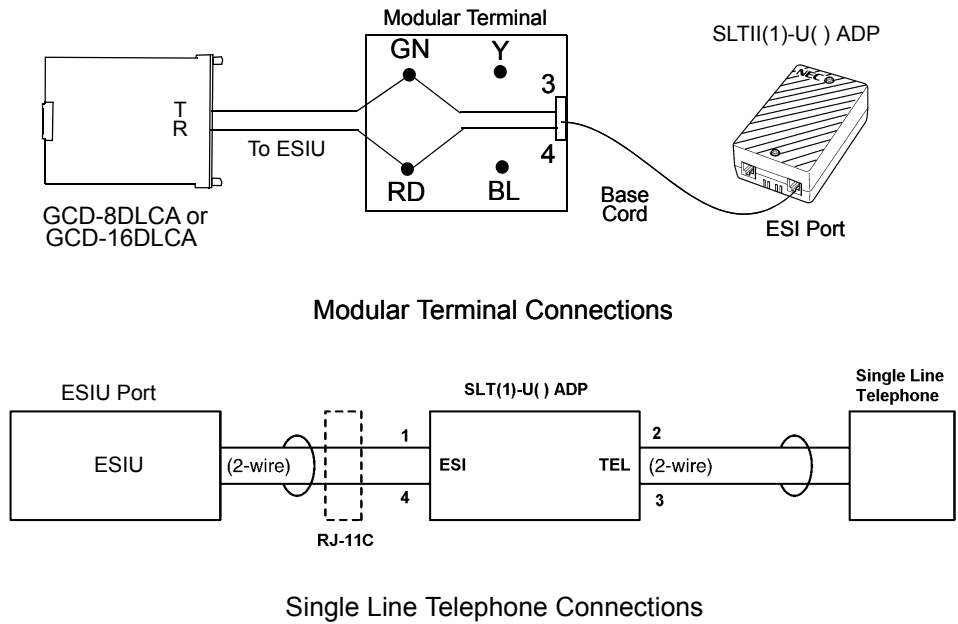


Figure 5-160 Connecting the SLT Adapter

## 9.2 Wall-Mounting the SLT Adapter

1. Unplug the two line cords from the SLT Adapter.
2. Remove the two screws from the front of the SLT Adapter.
3. Lift the cover off the adapter.

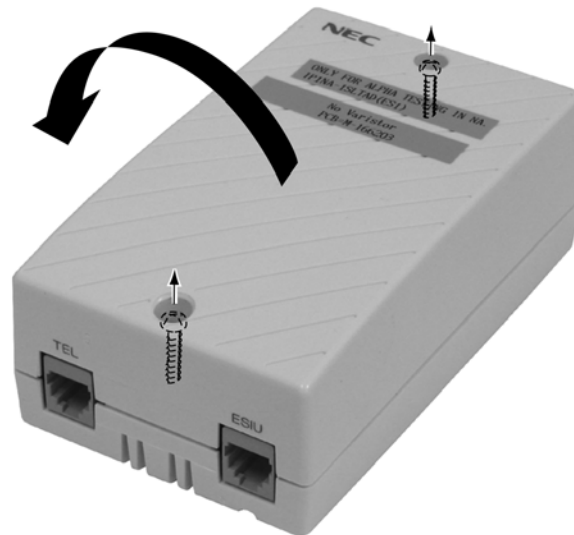
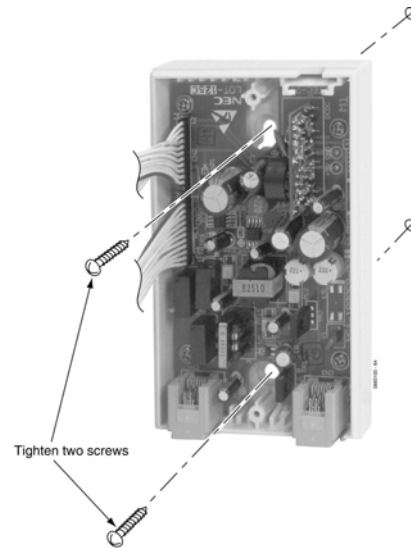


Figure 5-161 Removing the Cover

4. Using the two screws provided with the SLT Adapter, attach the back cover to the desired location.



**Figure 5-162 Attaching the Unit**

5. Replace the front cover and the two screws removed in Step 2.
6. Plug the two modular line cords back into the SLT Adapter which were removed in Step 1.

**SECTION 10** *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.

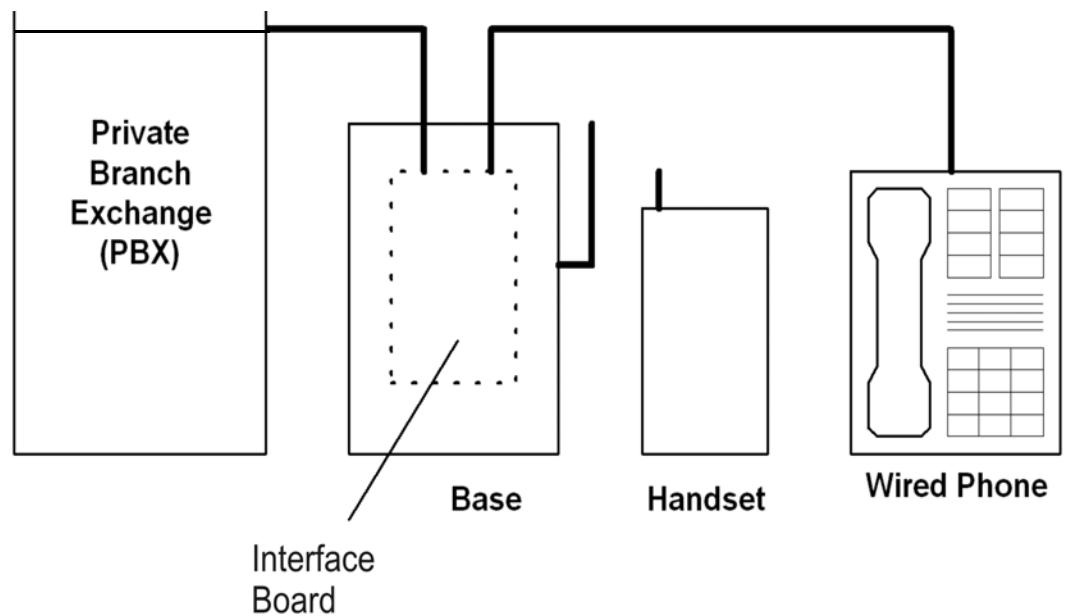


Figure 5-163 *D<sup>term</sup>*® Cordless DECT (DTL-8R-1)



- *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 5-164 System Overview**

## 10.1 Specifications

The UNIVERGE SV9100 complies with FCC and IC part 15.

### General

RoHs	Yes
Frequency	1.9G (1880 ~ 1900 MHz)
Audio Process	Digital (ADPCM)
Operating Temperature	0 ~ +50 C (+32 F to +122 F)
Transmission	TDMA/TDD
Channels	5
ID #	130,000 combinations
WiFi Friendly	Yes

### Base Unit

Receive/Transmit Frequency	1880 ~ 1900 MHz
----------------------------	-----------------

Power Requirements	10 Vdc from supplied AC adapter
Size	58mm (H) x 215mm (D) x 130mm (W)
Weight	410g

### Handset

Receive/Transmit Frequency	1880 ~ 1900 MHz
Power Requirements	Nickel-Metal Hydride battery pack
Size	163mm (H) x 31mm (D) x 55mm (W)
Weight	150g (Handset = 120g + Battery pack = 30g)
Battery	Capacity 910 mAh, 2.4V
Talk Mode	16 hours (typical)
Standby Mode	7 days (typical)

### Battery Charger

Power Requirements	9V DC from supplied AC adapter
Size	75mm (H) x 100mm (D) x 87mm (W)

## 10.2 Battery Safety



*To reduce the risk of fire or injury to persons by the battery, read and follow these instructions.*

- This equipment contains a rechargeable nickel-metal hydride battery.
- **Do not** short-circuit the battery.
- **Do not** charge the rechargeable nickel-metal hydride battery used in this equipment in any charger other than the one designed to charge this battery as specified in this manual. Using another charger can damage the battery or cause the battery to explode.
- Use only the appropriate type and size battery pack specified in this manual.
- **Do not** open or mutilate the battery pack. Released electrolyte is corrosive and can cause damage to the eyes or skin. It may be toxic if swallowed.
- Exercise care in handling the battery in order not to short the battery with conducting materials such as rings, bracelets, and buttons. The battery or conductor can overheat and cause burns.

- ❑ Charge the battery pack provided with or identified for use with this product only in accordance with the instructions and limitations specified in the instruction manual provided for this product.
- ❑ Observe proper polarity orientation between the battery pack and battery charger.
- ❑ **Do not** dispose of the battery pack in a fire, the cell may explode.
- ❑ **Do not** place the batteries in your regular trash. The nickel-metal hydride battery must be collected, recycled, or disposed of in an environmentally sound manner. Contact your local waste management officials for other information regarding the environmentally sound collection, recycling and disposal of the battery contained in this product.

### 10.3 Important Safety Instructions

When using the telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and injury to persons, including the following:

- ❑ Read and understand all instructions.
- ❑ Follow all warnings and instructions marked on the product.
- ❑ Unplug this product from the wall outlet before cleaning. **Do not** use liquid cleaners or aerosol cleaners. Use a dry cloth for cleaning.
- ❑ **Do not** use this product near water; for example, near a sink or in a wet area.
- ❑ **Do not** place this product on an unstable cart, stand, or table. The telephone can fall, causing serious damage to the unit.
- ❑ To protect the product from overheating, do not block or cover any slots or openings in the base unit. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless the proper ventilation is provided.
- ❑ This product should be operated only from the type of power source indicated on the marking label.
- ❑ **Do not** allow anything to rest on the power cord. Do not locate this product where the cord will be damaged by people walking on it.
- ❑ **Do not** overload wall outlets and extension cords, as this can result in the risk of fire or electrical shock.
- ❑ Never push objects of any kind into this product through the base unit slots, as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electrical shock. Never spill liquid of any kind on the product.
- ❑ To reduce the risk of electric shock, do not disassemble this product. Contact qualified service personnel when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other

risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.

- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - When the power supply cord is damaged or frayed.
  - If liquid has been spilled onto the product.
  - If the product has been exposed to water or rain.
  - If the product does not operate normally when following the operating instructions. Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls can result in damage, and will often require extensive work by a qualified technician to restore the product to normal operation.
  - If the product has been dropped, or the cabinet has been damaged.
- If the product exhibits a distinct change in performance.
- **Do not** use the telephone to report a gas leak in the vicinity or the leak.
- To reduce the risk of fire or injury to persons by the battery, read and follow these instructions.
  - Use only the appropriate type and size battery pack specified in the manual.
  - Exercise care in handling the battery in order not to short the battery with conducting materials such as rings, bracelets, and buttons. The battery or conductor can overheat and cause burns.

## Privacy

Cordless telephones are radio devices. Communications between the handset and base of the cordless telephone are accomplished by means of radio waves which are broadcast over the open airways. Because of the inherent physical properties of radio waves, communication can be received by radio receiving devices other than your own telephone unit, consequently, any communications using the cordless telephone may not be private.

## 10.4 Important Electrical Considerations



***Do not attempt to unplug any appliance during an electrical storm.***

Unplug all electrical appliances when you know an electrical storm is approaching. Lightning can pass through your household wiring and damage any device connected to it. This telephone is no exception.

### Caution:



***Changes or modifications to this product not expressly approved by NEC Unified Solutions, or operation of this product in any way other than as detailed by this manual, could void your authority to operate this product.***

## Range

Nominal values of the DECT system are:

- 164 feet (50 meters) – Indoor
- 984 feet (300 meters) – Outdoor

The telephone is designed to achieve a maximum range of up to 350 feet (107 metres) (depending upon the environment). This phone has been rated to operate at a maximum distance with the qualification that the range depends upon the environment in which the telephone is used. Many factors limit range, and it would be impossible to include all of the variables in our rating. The maximum range rating of this telephone is meant to be used as a means of comparison against other range claims.

## Radio Interference

Radio interference may occasionally cause buzzing and humming in your cordless handset, or clicking noises in the base unit. This interference is caused by external sources such as TV, fluorescent lighting, or electrical storm. Your unit is NOT DEFECTIVE. If these noises continue and are too distracting, check around your office to see what appliances may be causing the problem. In addition, we recommend that the base not be plugged into a circuit that also powers a major appliance because of the potential of interference.

In the unlikely event that you consistently hear other voices or distracting transmissions on your telephone, you may be receiving radio signals for another cordless telephone or other source of interference.

Finally, it should be noted that some cordless telephones operate at frequencies that may cause interference to nearby TVs and VCRs. To minimize or prevent such interference, the base of the cordless telephone should not be placed near or on top of a TV or VCR. If interference is experienced, moving the cordless telephone farther away from the TV or VCR will often reduce or eliminate the interference.

## More than One Cordless Telephone

If you want to use more than one cordless telephone in your office, they must operate on different channels and more than 20 feet apart.

If more than eight DTL-8R-1s are used in the same area, there is a possibility that the following problem occurs:

- Difficulty connecting the Handset with the Base Unit
- Some noises can be heard during conversation

The DTL-8R-1 is limited to five RF channels. The RF channel is changed automatically to find the best channel.

Depending on your environment, the maximum number of cordless devices used without interference varies.

Multiple base and handset units should not be closer than 20 feet at any time.

Radio interference causes interruptions in conversation. When this happens, your unit is not defective. When noise continues, move to a different location while you talk. (You might even need to move the base unit.)

## 10.5 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 230 Vac 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).

## 10.6 Installation Precautions

To ensure optimum performance follow these guidelines.

- Each base unit 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.
- Place the base away from any electrical component such as a PC, monitor and other telephone.

## 10.7 Connecting the Telephone Cords

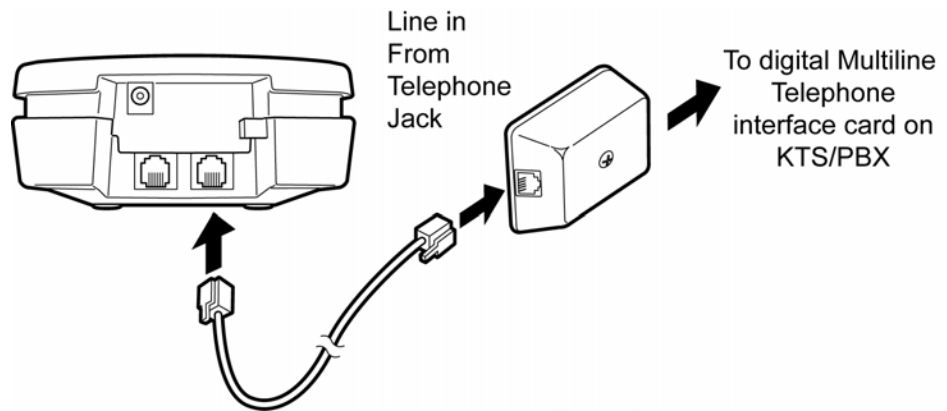
When connecting the telephone cords, observe the following precautions.



- *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.*

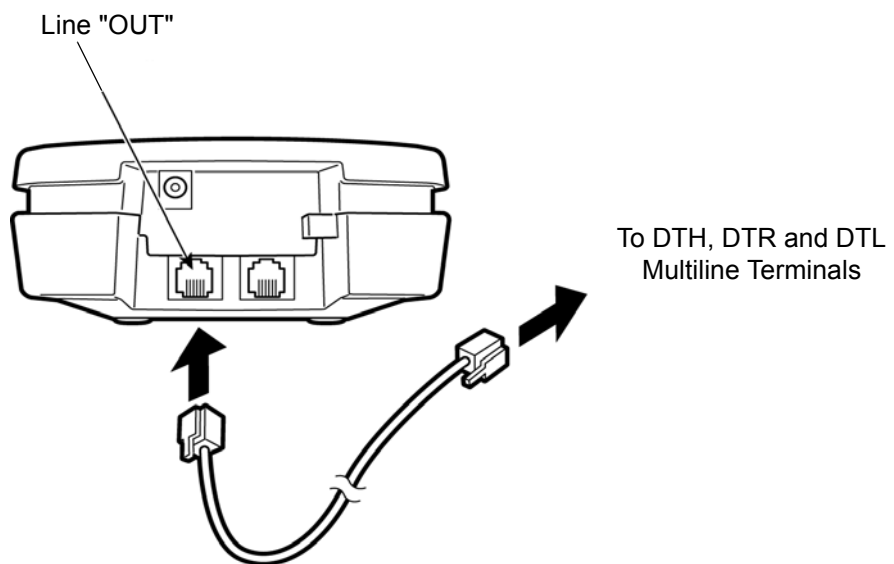
To connect the telephone cords:

1. Connect the cord from the telephone jack to the Line In on the  $D^{term}$  Cordless DECT.



**Figure 5-165 Connecting Telephone Cords to the Telephone Jack**

2. Connect a qualified NEC digital multiline terminal to the  $D^{term}$  Cordless DECT.

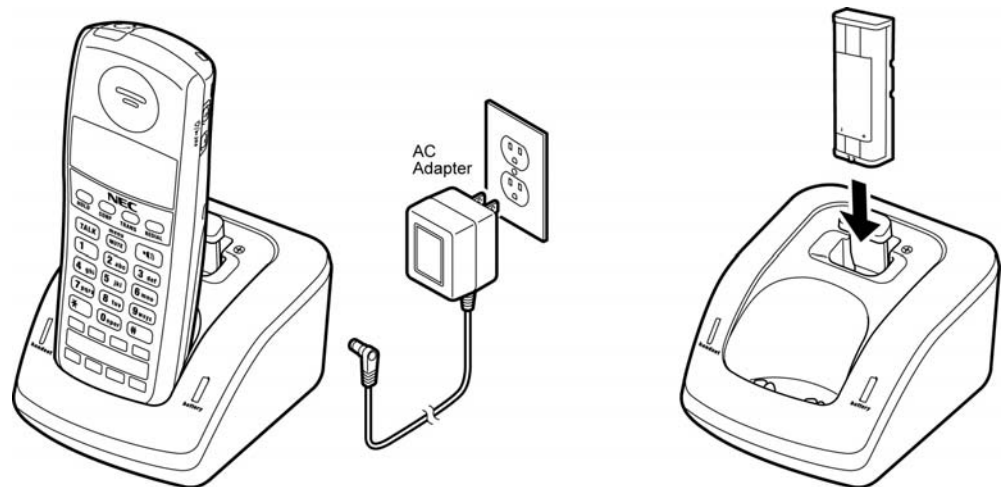


**Figure 5-166 Connecting the  $D^{term}$  Cordless DECT to the Multiline Terminal**



## 10.8 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 automatically be recharged either in or out of the handset.



**Figure 5-167 Applying Power to the Charging Unit**



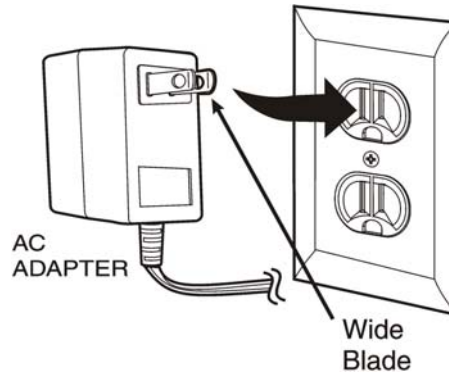
***Use only the supplied AC adapter for the charging unit.***

The AC adapter furnished with this telephone may be equipped with a polarized line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, try reversing the plug. Refer to [Figure 5-168 Polarized Plug](#).

If you cannot plug the AC adapter into the outlet, the outlet may need to be replaced.



***Route the power cord where it will not create a trip hazard, or where it could become chafed and create a fire or other electrical hazards.***

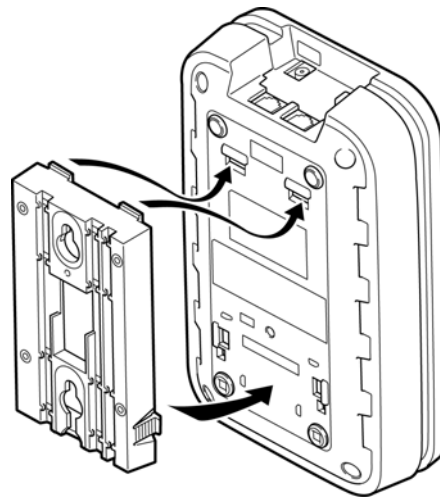


**Figure 5-168 Polarized Plug**

## 10.9 Mounting the Base to a Standard Wall Plate

The base unit is designed to be mounted on standard wall plate. To attach the wall mount stand to the base unit:

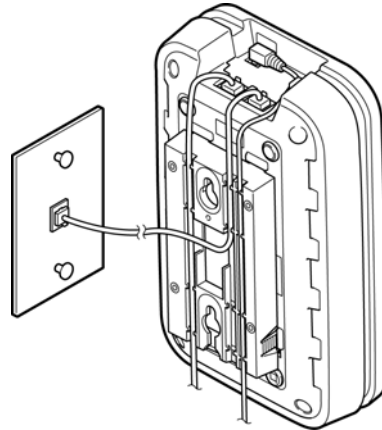
1. Slide the wall mount stand into the notches at the top of the base unit. Rotate the wall mount stand down and snap it into place.



**Figure 5-169 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

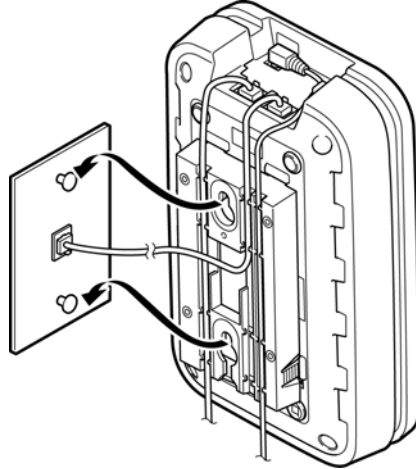
stand.



**Figure 5-170 Placing the AC Adapter Cord Inside the Wall Mount Stand**

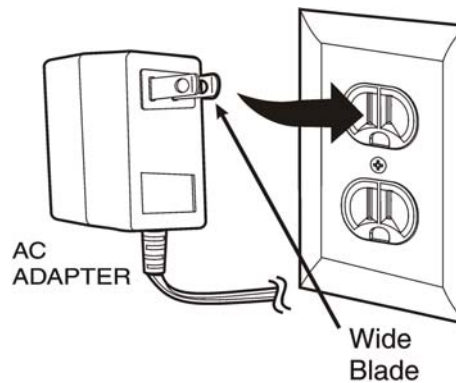
4. Plug one end of the short telephone cord (locally supplied) in the **LINE** jack on the base unit. Plug one end of the NEC digital multiline terminal into the **PHONE** jack. Place the telephone cords inside the molded channels on the bottom of the wall mount stand.

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 5-171 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 230 Vac wall outlet.
    - ⓘ *Do not use an outlet controlled by a wall switch.*



**Figure 5-172 Plugging the AC Adapter into the AC Wall Outlet**

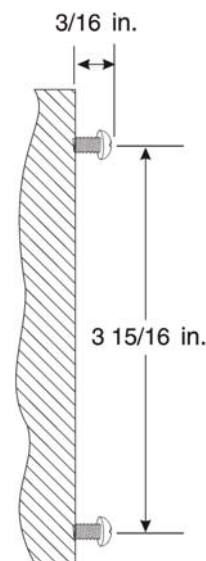
## 10.10 Mounting the Base Directly to the Wall

If a standard wall plate is not available, mount the telephone directly on the wall. Before mounting the telephone, consider the following:

- 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.
- Make sure the wall material can support the weight of the base unit.
- Use #10 screws with anchoring devices suitable for the wall material where the base unit will be placed.

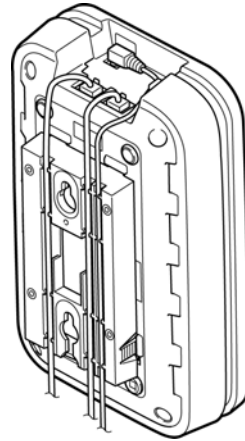
To mount the telephone:

1. Insert two mounting screws  $3\text{-}15/16$  inches apart. Allow about  $3/16$  of an inch between the wall and screw heads for mounting the telephone.



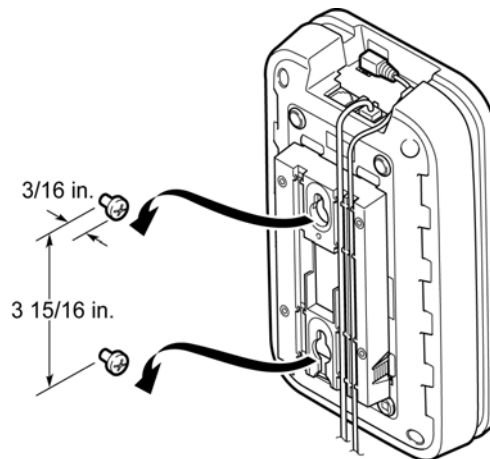
**Figure 5-173** Inserting Screws into the Wall for Wall Mounting the Telephone

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.



**Figure 5-174 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 5-175 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 230 Vac wall outlet. Refer to [Figure 5-172 Plugging the AC Adapter into the AC Wall Outlet](#) on page 5-148.
  - ⚠ Do not use an outlet controlled by a wall switch.

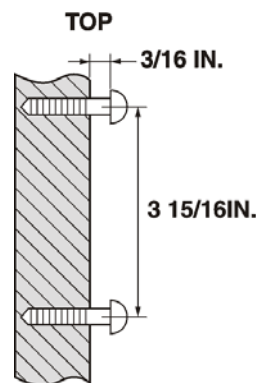
## 10.11 Wall Mounting the Charging Unit

The charging unit is also designed to be wall mounted. Before mounting the charging unit, consider the following:

- 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.
- Make sure the wall material can support the weight of the charging unit.
- Use #10 screws with anchoring devices suitable for the wall material where the charging unit will be placed.

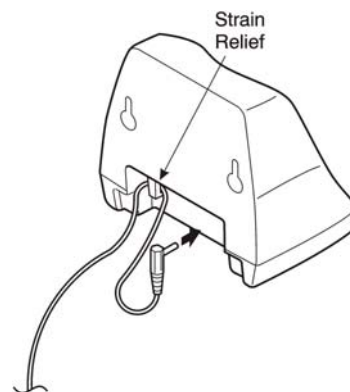
To mount the charging unit:

1. Insert two mounting screws one inch apart. Allow about  $\frac{3}{16}$  of an inch between the wall and screw heads for mounting the telephone.



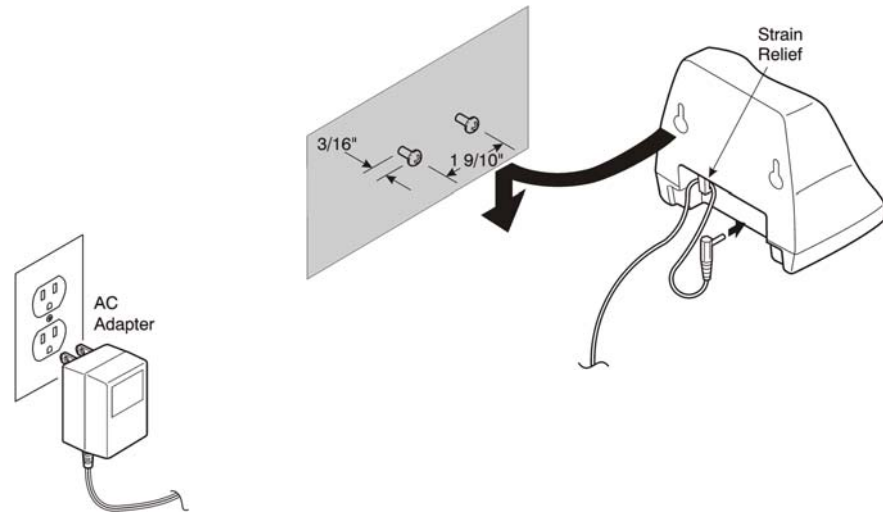
**Figure 5-176 Inserting Screws for Wall Mounting**

2. Plug the AC adapter into the charging unit. Wrap the AC adapter cord around the strain relief.



**Figure 5-177 Wrapping the AC Adapter Cord Around the Strain Relief**

- Place the charging unit on the posts of the wall screws and push down until it is firmly seated.



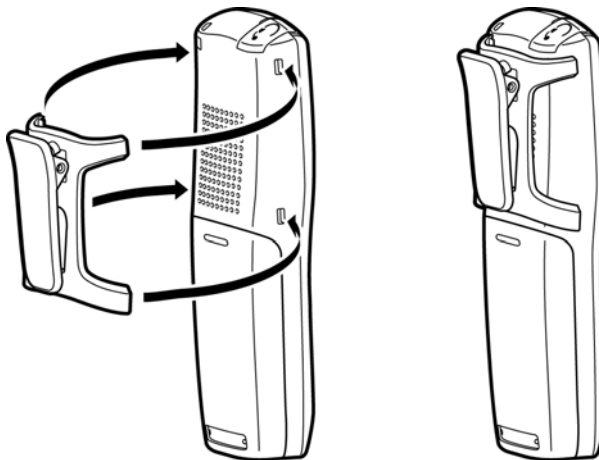
**Figure 5-178 Placing the Charging Unit on the Wall**

- Plug the AC adapter into a standard 230 Vac wall outlet. Refer to [Figure 5-178 Placing the Charging Unit on the Wall](#).

## 10.12 Attaching and Removing the Belt Clip

A belt clip can be used to attach the handset to a belt or pocket for convenient portability.

- Slide the clip into the tab slots. Press firmly until it snaps into place. The belt clip fits snugly onto the handset.



**Figure 5-179 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.

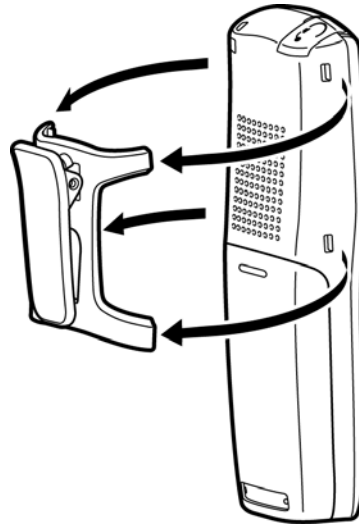


Figure 5-180 Removing the Belt Clip

### 10.13 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.

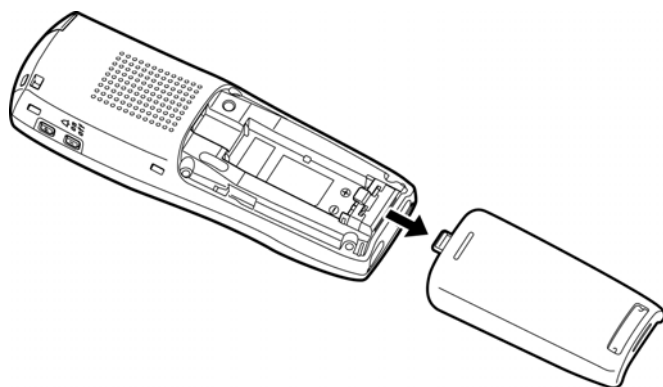
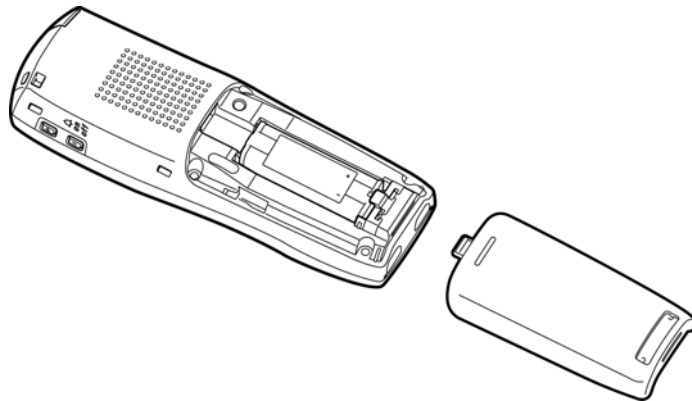


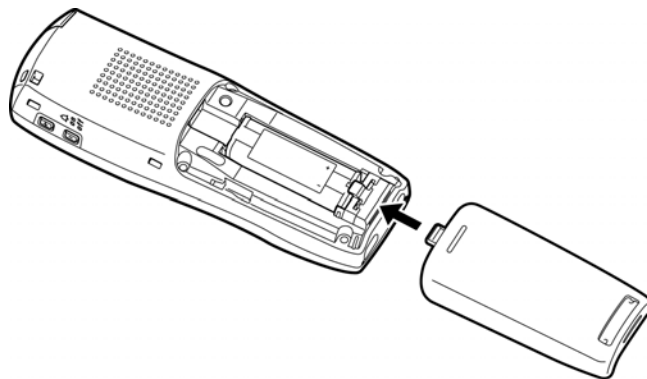
Figure 5-181 Removing the Battery Cover

2. Slide the battery pack down into the handset.
  - ☞ *It may be necessary to remove the old battery at this time.*



**Figure 5-182 Replacing the Battery Pack**

3. Replace the cover and slide it up until it latches onto the handset.



**Figure 5-183 Replacing the Battery Cover**

## 10.14 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.*

## 10.15 Charging Spare Battery Packs

The  $D^{term}$  Cordless DECT is equipped with a battery charger for charging the spare battery pack.

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## SECTION 11 G566/i766/AP400 CORDLESS HANDSET

The G566/i766/AP400 chapter outlines the steps for connecting and mounting the base station, charging the battery and powering on the handset.

### 11.1 Connecting the Base Station

- ✎ *If your network connection does not provide Power Over Ethernet, you will need to order a base station AC adapter and a standard Ethernet-to-PoE adapter. Contact Customer Service.*



**Figure 5-184 Views of AP400 Base Station mounted horizontally.**

#### 11.1.1 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.



**Figure 5-185 Install AP400 Base Station**

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 yellow and then turns off while it initializes and connects to the network. After the base station successfully initializes and connects to the network, the Yellow LED light remains steady on (refer to [Table 5-19 Base Station LED States and Meanings](#) on page 5-156).

**Table 5-19 Base Station LED States and Meanings**

LED Status	State	Meaning
Top LED, Yellow	Off	No Power
	0.5 seconds on - 0.5 seconds off	Loading software/firmware
	Short flash every 0.25 seconds	IP Network error (not connected, no DHCP/TFTP server, no DAP Controller)
	Fast Blink	DAP Operational but trying to synchronise to another DAP
	Continuous Fast Blink	Hardware Error
	Steady On	DAP Operational (and synchronised to other DAP or is the synchronisation master)

LED Status	State	Meaning
Lower LED, red/Green	RED Steady On	Power but FPGA starting up
	RED Flashing	Trying to connect to the network
	Green Flashing	Network status display and showing network activity.
	Off	AP400 operational

## 11.2 Base Station Wall Mounting Installation

 Ensure the wall can support the weight of the base station.

1. Hold the mounting plate in its final location and mark the screw locations on the plate as shown below.



**Figure 5-186 Base Station Dimensions**

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.
5. Place the base over the screw heads and slide it down into place.

## 11.3 Handset and Charger

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 colour 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 5-187 G566 Wireless Handset**

### 11.3.1 Charging the Battery

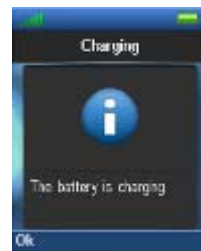
1. Place the handset face down on a flat surface.
2. Pull the lock at the bottom of the battery compartment cover upward and at the same time shift the cover downwards.
3. Remove the battery compartment cover.
4. Lift the battery pack and remove the battery protective tab.
5. Push the battery pack back into the casing.
6. Replace the battery cover.

### 11.3.2 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.

The charging screen is displayed.








**Figure 5-188 Battery Charging Display**

6. After a few seconds, the Charging display is replaced by the normal display. Refer to [Figure 5-190 Battery Charge Status Icons on page 5-160](#) for a description of the icons displayed during charging.



**Figure 5-189 G566 Display Screen and Functions Keys**

Icon	Description
	Empty
	Less than 10%
	10% to 20%
	20% to 90% (the bigger the green bar, the higher the charge percentage)
	Fully charged (more than 90%)

**Figure 5-190 Battery Charge Status Icons**

### 11.3.3 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 back.

1. Place the spare battery pack in the spare battery charging compartment. (Upside down and text on the battery pack to the front).
2. Slide the spare battery pack under the metal rim to keep it in place.

### 11.3.4 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 G566 handsets, refer to the NEC IP DECT G566 Handsets User Guide.

## 11.4 SIP DECT i766

The I766 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 I766 uses an intuitive colour display and icon based menus providing a variety of control features integrated with the PBX. The I766 also provides a dual charging capability allowing an additional battery to be charged.





**Figure 5-191 i766 Wireless Handset**

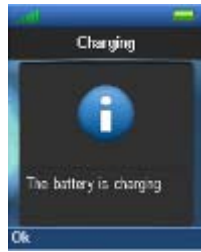
#### 11.4.1 Charging the Battery

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.

#### 11.4.2 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.
5. Set the handset on the charger.

The charging screen is displayed.








**Figure 5-192 Battery Charging Display**

6. After a few seconds, the Charging display is replaced by the normal display. Refer to [Figure 5-194 Battery Charge Status Icons on page 5-163](#) for a description of the icons displayed during charging.



**Figure 5-193 i766 Display Screen**

Icon	Description
	Empty
	Less than 10%
	10% to 20%
	20% to 90% (the bigger the green bar, the higher the charge percentage)
	Fully charged (more than 90%)

**Figure 5-194 Battery Charge Status Icons**

#### 11.4.3 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 back.

1. Place the spare battery pack in the spare battery charging compartment. (Upside down and text on the battery pack to the front).
2. Slide the spare battery pack under the metal rim to keep it in place.

#### 11.4.4 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 16 hours of talk time and 160 hours of standby time. For detailed instructions on the i766 handsets, refer to the NEC IP DECT i766 Handsets User Guide.



# Installing SV9100 Optional Equipment

## SECTION 1 GENERAL INFORMATION

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 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:

- Door Box (eight maximum per system)
- External Speaker (eight maximum with PGD(2)-U10 ADPs [with amplifier], one on the GCD-CP10 [no amplifier])
- External Music Source (external MOH) (96 maximum per system)
- External Recording System (96 maximum per system)
- External Ringing

The system allows a maximum of 56 PGD(2)-U10 ADPs 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 ADPs 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 for up eight general purpose relays with the PGD(2)-U10 ADPs (four relays on each PGD(2)-U10 ADP).

The PGD(2)-U10 ADP connects to any available digital extension port. The terminal connections made within the PGD(2)-U10 ADP and the jumper settings determine what features are used for each circuit.

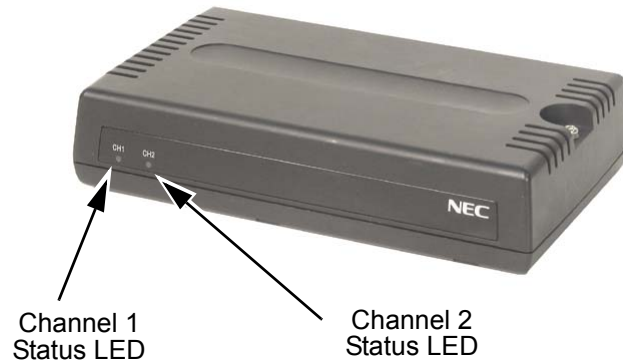


Figure 6-1 PGD(2)-U10 ADP

## 2.2 LED Indications

Table 6-1 PGD(2)-U10 ADP LED Indications

LED	Indication	Note
LED 1	Green LED when CH1 in use.	Flashing green LED indicates dipswitch setting and programming for CH1 is conflicting.
LED 2	Green LED when CH2 in use.	Flashing green LED indicates dipswitch setting and programming for CH2 is conflicting.

## 2.3 Setting up PGD(2)-U10 ADP Connections

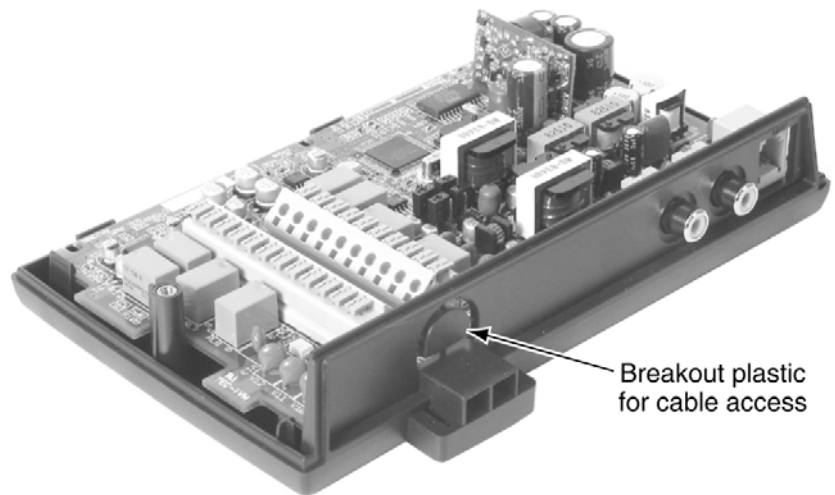
- If the PGD(2)-U10 ADP is to be wall mounted, all the cable connections should be made first.
- For the module to ID correctly after setting the jumpers, set the circuit type to 0 for the module port in Program 10-03-01 prior to connecting the line cord to the PGD(2)-U10 ADP.

1. Remove the screw from the front of the PGD(2)-U10 ADP.



**Figure 6-2 Remove Cover from PGD(2)-U10 ADP**

2. Using a screwdriver, break out the plastic piece covering the cable hole.

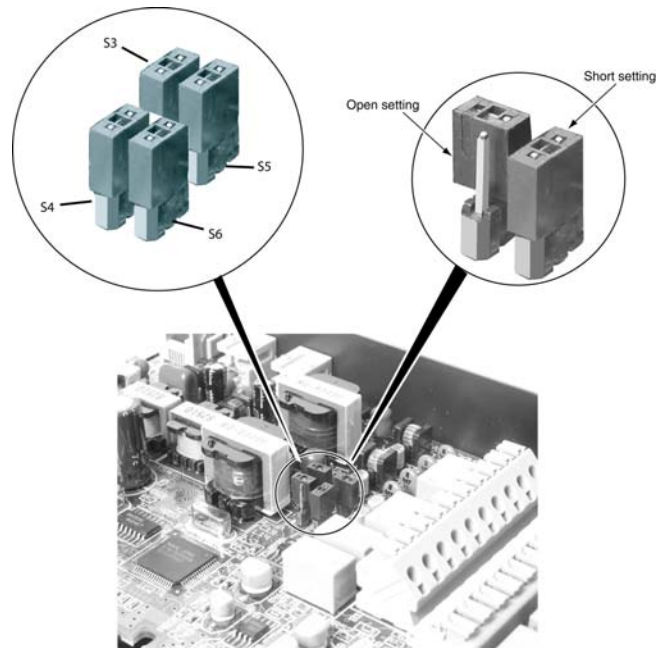


**Figure 6-3 Remove Plastic Cover from Cable Hole**

3. Set the S3 – S6 jumpers to the proper settings for the function to be used (refer to [Table 6-2 PGD\(2\)-U10 ADP S3 – S6 Jumper Settings on page 6-4](#)).

**Table 6-2 PGD(2)-U10 ADP S3 – S6 Jumper Settings**

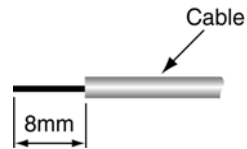
	<b>S3</b>	<b>S4</b>	<b>Function</b>	<b>LED Indication</b>
<b>Channel 1</b>	Open	Open	Door Box	On when in use.
	Open	Short	External Paging Speaker	On when in use.
	Short	Open	External Ringer	On when in use.
	Short	Short	External Music on Hold / Recording System	On steady.
	<b>S5</b>	<b>S6</b>	<b>Function</b>	<b>LED Indication</b>
<b>Channel 2</b>	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.



**Figure 6-4 PGD(2)-U10 ADP Jumper Settings**



- Strip one end of the cable to be connected to the control relay or door box so that approximately 1/4" (8 mm) of bare wire is exposed.



- 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.*

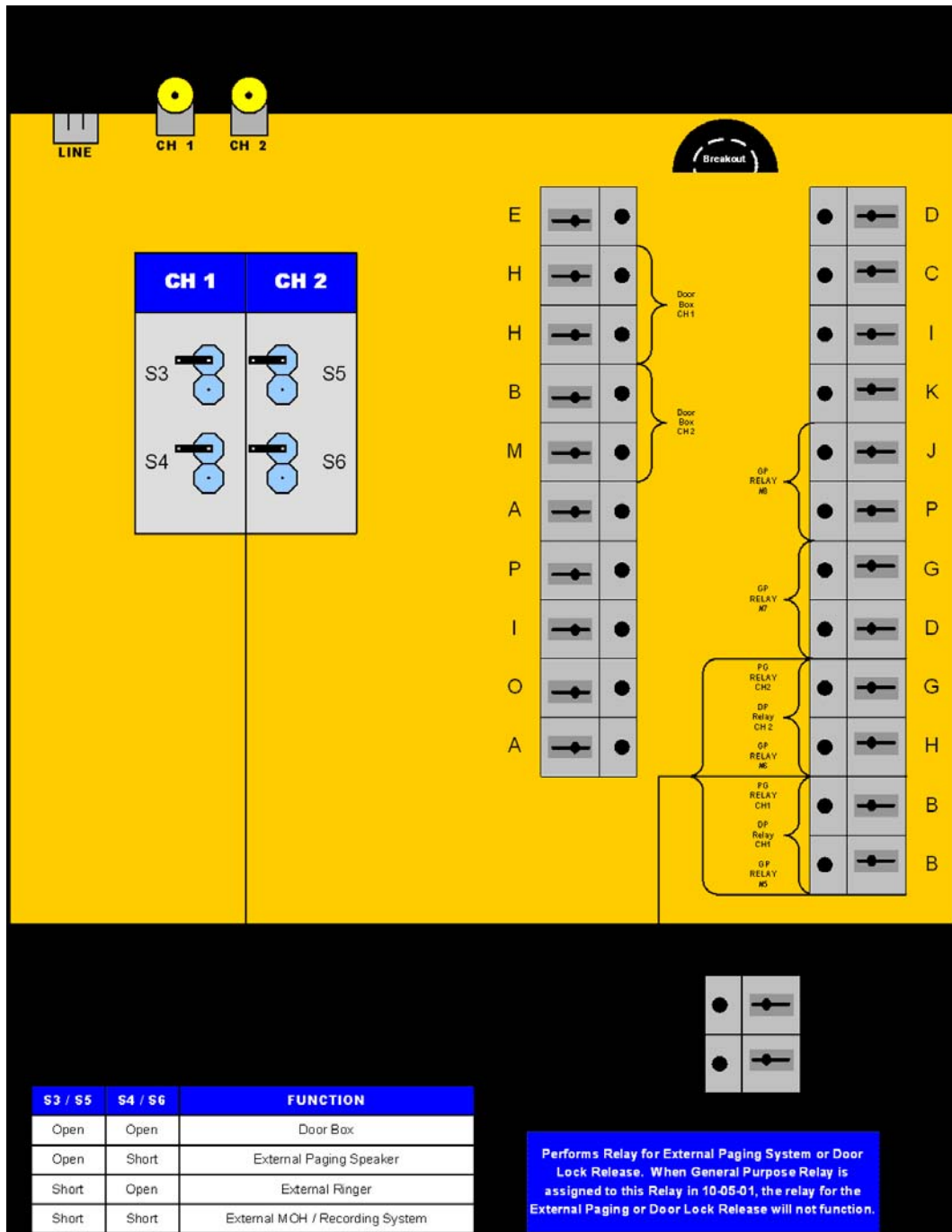
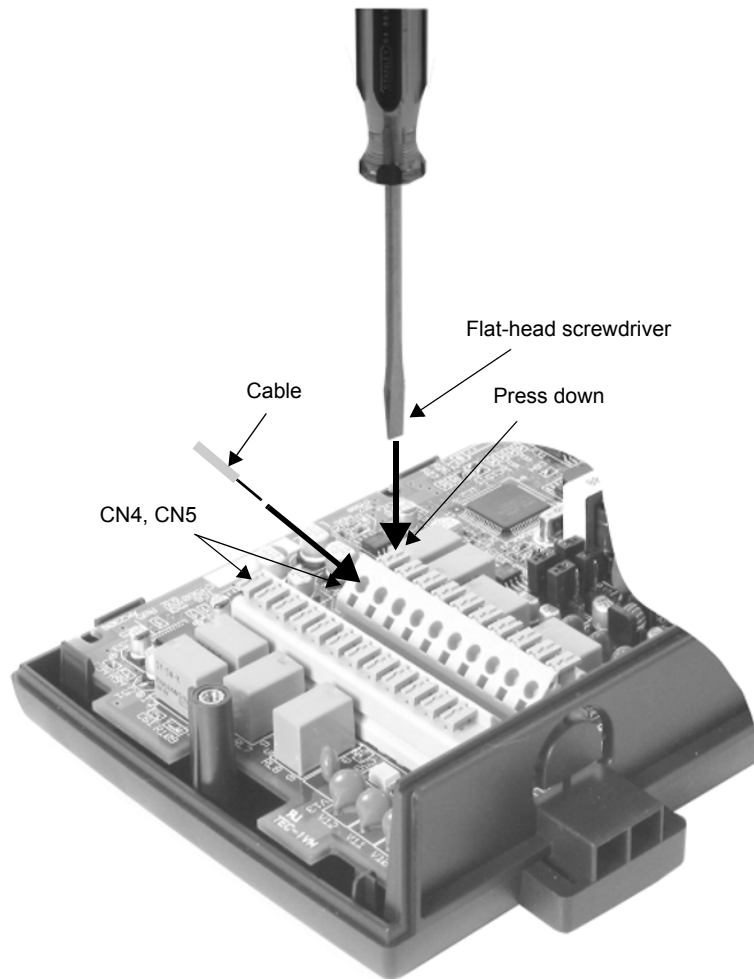
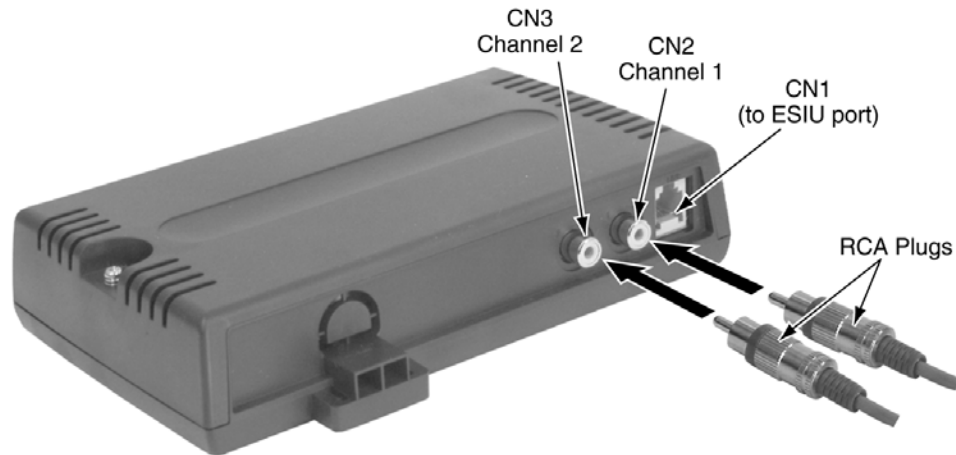


Figure 6-5 PGD(2)-U10 ADP Connection Diagram



**Figure 6-6 Connecting Cable to the PGD(2)-U10 ADP**

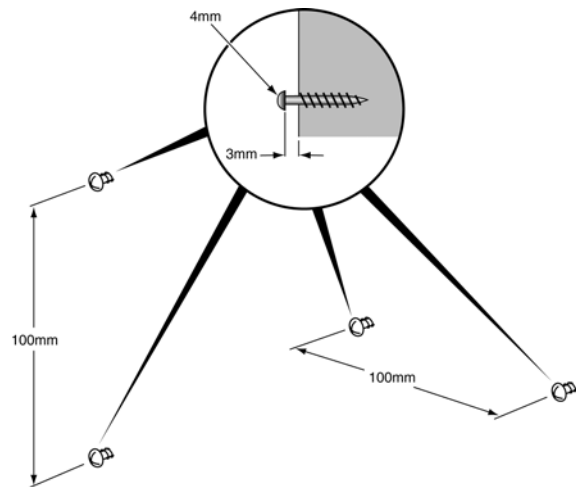
6. Repeat Steps 4 and 5 for any additional connections required.
7. Replace the cover and tighten the screw to hold the cover in place.
8. If required for the function being used, insert the RCA connectors into the CN2 (Channel 1) and CN3 (Channel 2) connectors on the back of the PGD(2)-U10 ADP.



**Figure 6-7 PGD(2)-U10 ADP Connections**

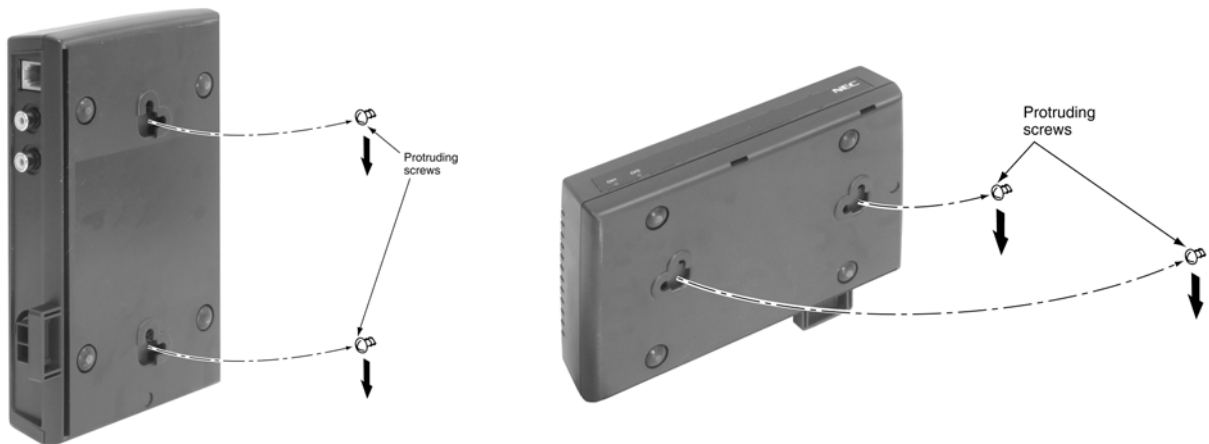
9. Install a modular jack for each PGD(2)-U10 ADP. For each module, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
10. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
11. Install bridging 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.
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.



**Figure 6-8 Installing the Screws**

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.



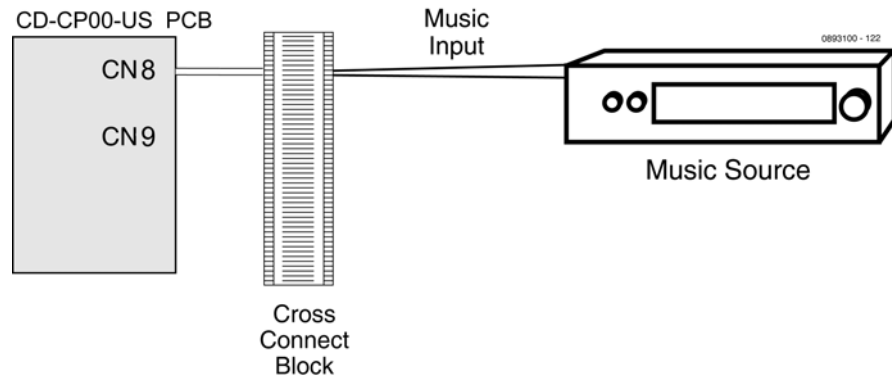
**Figure 6-9 Wall Mounting the PGD(2)-U10 ADP**

## SECTION 3 BACKGROUND MUSIC

### 3.1 Installing Background Music

Background Music (BGM) sends music from a customer-provided music source to speakers in keysets. If an extension user activates it, BGM plays whenever the user's extension is idle.

1. Connecting to the GCD-CP10:  
Connect an RCA line from the CN8 or CN9 connector on the GCD-CP10 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.



**Figure 6-10 CPRU Connections**

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## SECTION 4 DOOR BOX

### 4.1 Installing a Door Box

A PGD(2)-U10 ADP is required for this option.

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. When the relay on the PGD(2)-U10 ADP is used, there is no need to assign the relay to the Door Box – simply 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 0.5A for each contact.*



***A PGD(2)-U10 ADP circuit used for an analog Door Box cannot also be used for External Paging.***

1. Make sure the jumper in the PGD(2)-U10 ADP for the associated Door Box is set correctly. (Refer to Figure 6-4 **PGD(2)-U10 ADP Jumper Settings** on page 6-4).
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 within 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.*
  - ☞ *The maximum distance between the PGDAD and the DX4NA door box is approx. 70m for 0.4mm cable and approx. 110m for 0.5mm cable.*
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 External Page and Door Box/Page Relays on page 6-18 for additional information when using the GCD-CP10 relay.*



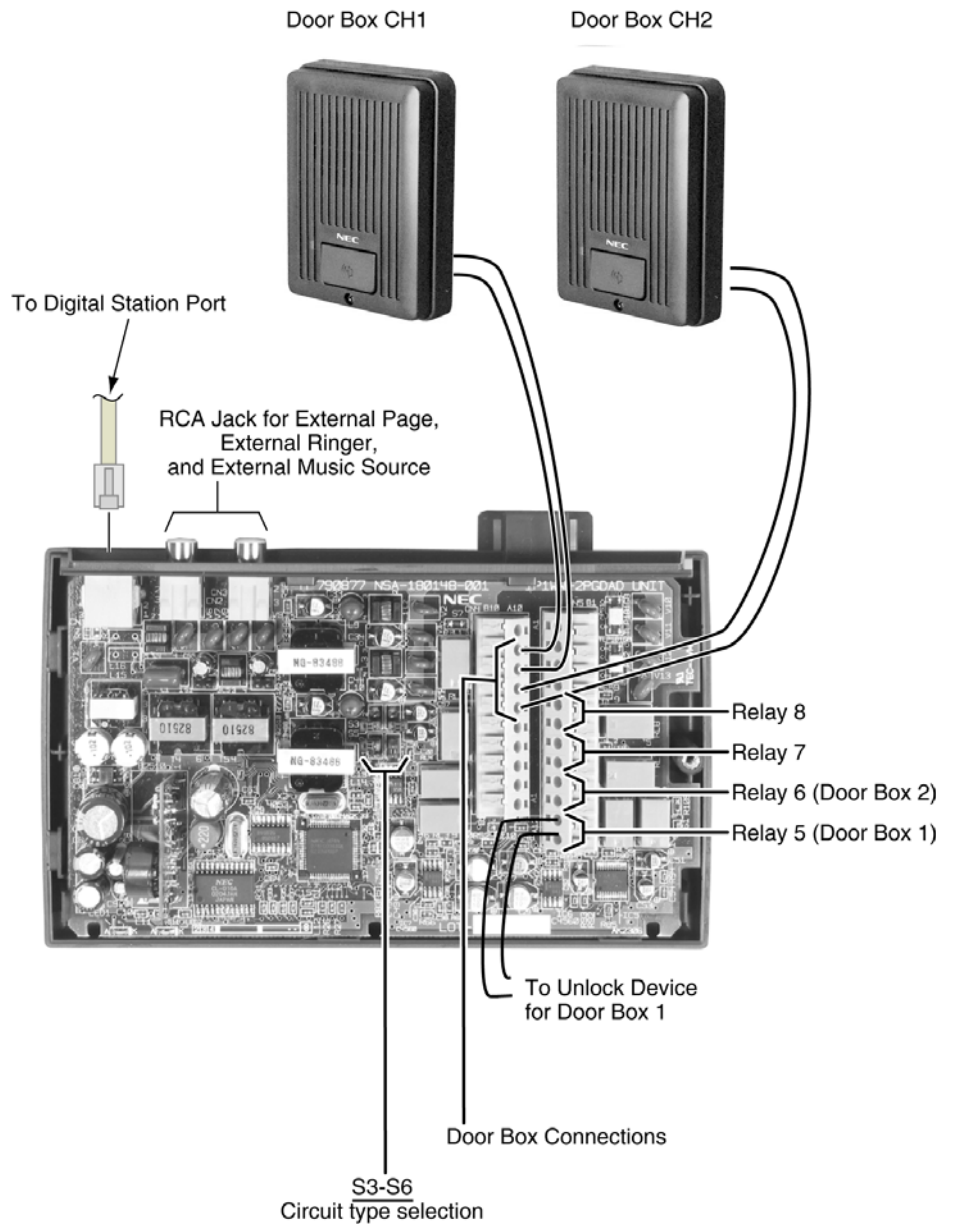


Figure 6-11 Setting the PGD(2)-U10 ADP for a Door Box

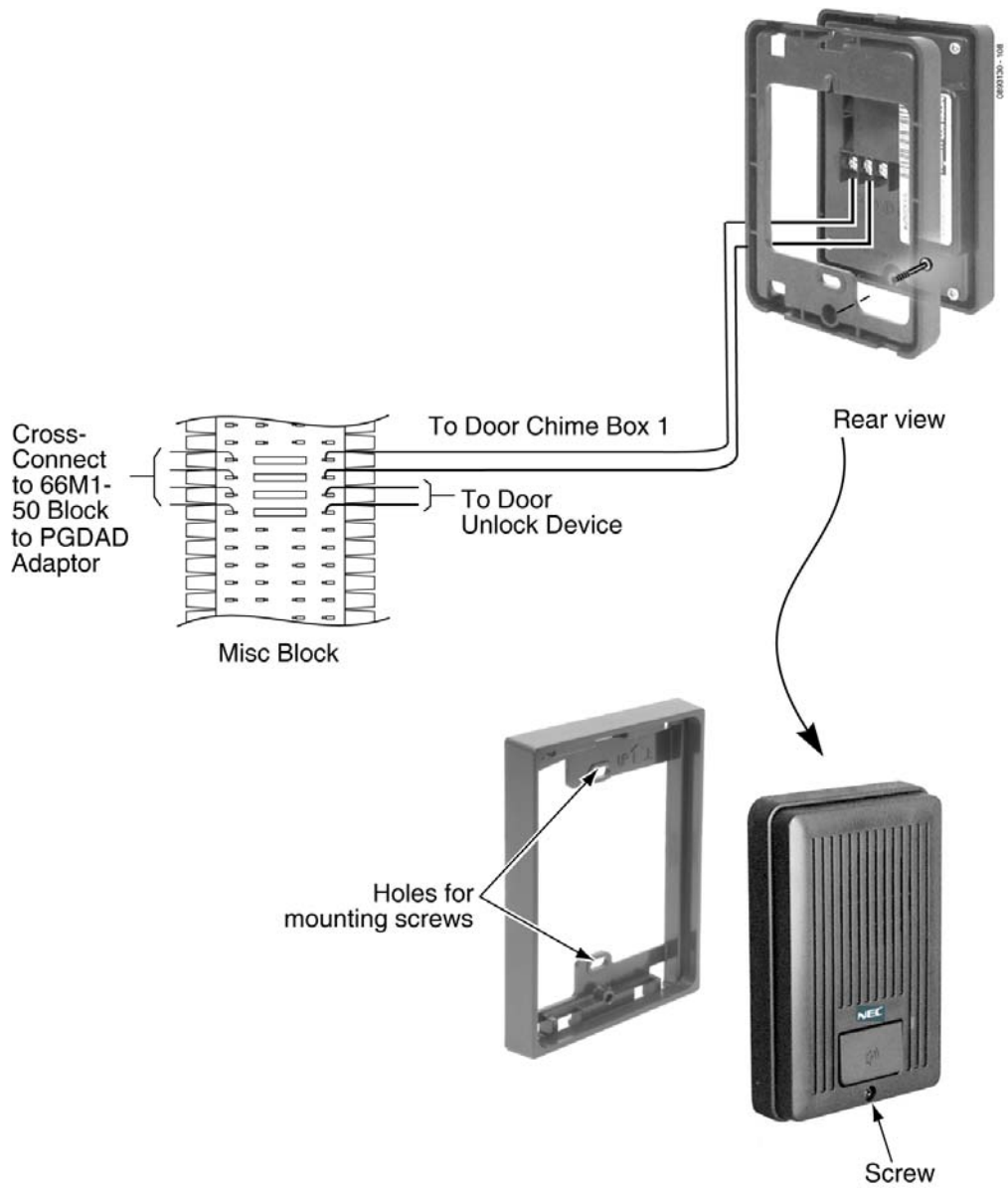


Figure 6-12 Installing a Door Box

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## 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 also provides a connection for external paging and a relay. The external page on the GCD-CP10 is speaker number 9 - the relay is number 0. The external page speakers provided by the PGD(2)-U10 ADPs are 1-8 – the relays on the PGD(2)-U10 ADPs are numbered 1~8.

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 cannot be used for talkback.



*A PGD(2)-U10 ADP circuit used for External Paging cannot also be used for an analog Door Box.*

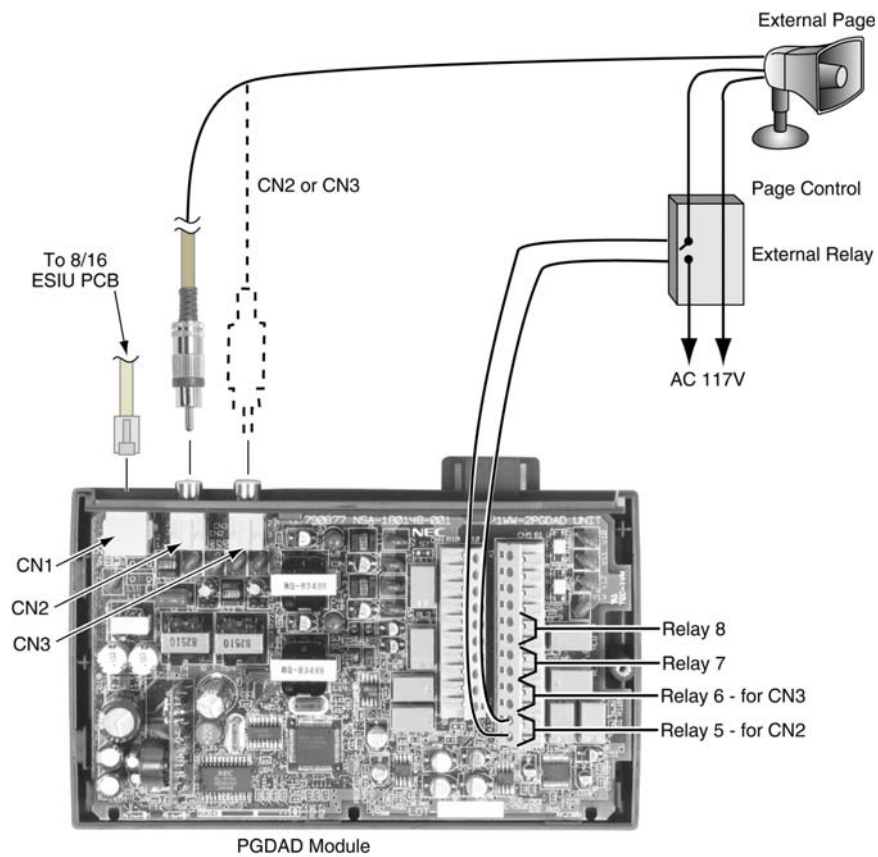
### 5.2      **Installing an External Page System**

1.      Connecting to the GCD-CP10:  
Connect an RCA line from the CN8 or CN9 connector on the GCD-CP10 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**

1.      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 6-4 **PGD(2)-U10 ADP Jumper Settings** on page 6-4).
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. Connect the two-conductor station cable from the CN5 connectors within the PGD(2)-U10 ADP to the external relay/external page.



**Figure 6-13 PGD(2)-U10 ADP Cable Connection**

*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 does not provide amplification (for a maximum output of -3 dBm, 600 ohms at 1KHz). If the paging volume is not satisfactory using the CN8 or CN9 connector on the GCD-CP10, 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 also provides one relay. The GCD-CP10 relay is defined as a general purpose relay in programming (Program 10-21-01 = 3). The GCD-CP10 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 – simply 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.

**Program Note:** Program 10-21-01 sets the relay switch on the GCD-CP10. If set to 2 (External Speaker), service code 703+1 pages and the relay closes. The relay reopens upon hang up. If set to 3 (General Purpose Relay), service code 880+0 toggles the relay open or closed.

- 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

To connect a dry contact relay device to a Door Box/External Page Relay:

To connect to the GCD-CP10:

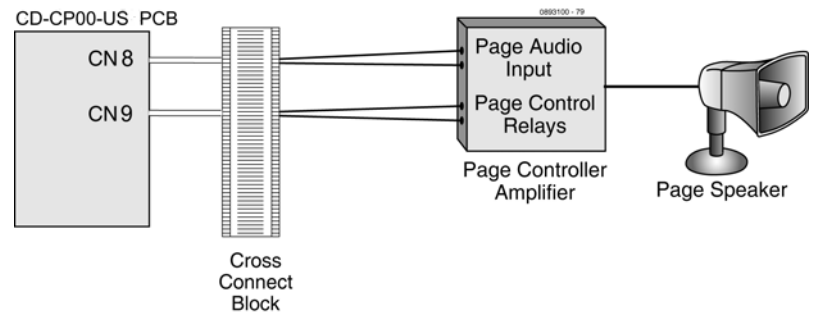
1. Connect an RCA line from the CN8 or CN9 connector on the GCD-CP10 to the appropriate location on the extension cross-connect block.
2. Connect the two-conductor station cable from the cross-connect block to the external relay.
3. Install bridging clips as required.

#### **OR**

1. 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 6-4 **PGD(2)-U10 ADP Jumper Settings** on page 6-4).
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. 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 6-14 GCD-CP10 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 capability 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:

1. Make sure the jumper in the PGD(2)-U10 ADP for the channel is set correctly. (Refer to Figure 6-4 **PGD(2)-U10 ADP Jumper Settings** on page 6-4).
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. Connect an RCA jack to the audio output(s) on the back of the .
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 6-15 PGD\(2\)-U10 ADP Cable Connection](#) on page 6-21.



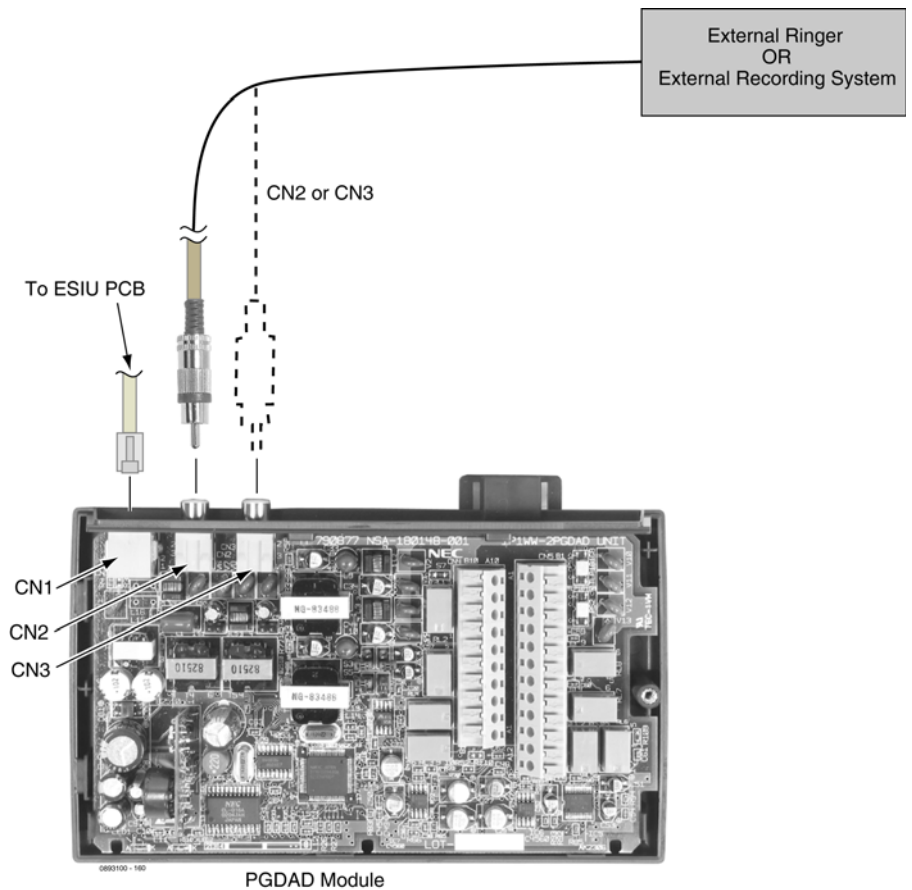


Figure 6-15 PGD(2)-U10 ADP Cable Connection

### 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 type as either type 7 for External Ringer or 9 for ACIs. (If the PGD(2)-U10 ADP circuit had previously been 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.  
 Aspire S: ACI Ports 1-8  
 Aspire: ACI Ports 1-96

- **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 within the group.  
Aspire S: ACI Groups 1-4  
Aspire: ACI Groups 1-16
- **11-12-50 : Service Code Setup (For Service Access)**  
Specify the service code to be used for toggling the relay open and closed (Default: 880).
- **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.  
Aspire S: ACI Ports 1-8  
Aspire: ACI Ports 1-96
- **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's pilot number (set in Program 11-08).  
Aspire S: ACI Ports 1-8, ACI Groups 1-4  
Aspire: ACI Ports 1-8, ACI Groups 1-16

### ACI Recording

- **10-07-01 : Conversation Record Circuits**  
Assign the number of conversation record circuits.
- **14-09-01 : ACI Conversation Recording Destination for Trunks – ACI Recording Destination Extension Number**  
Use this option to assign the ACI Call Recording destination on a per trunk basis. The destination can be an ACI port's 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 will be 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 incoming call is received (0=off, 1=on).
- **14-09-04 : ACI Conversation Recording Destination for Trunks – ACI Automatic Recording for Outgoing Call**  
Determine whether a trunk should be automatically recorded when an outgoing call is initiated (0=off, 1=on).
- **15-07-01 : Programmable Function Keys**  
If required, program an ACI Conversation Record Key (code 69 + 0). 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**  
Use this option to assign the ACI Call Recording destination on a per extension basis. The destination can be an ACI port's 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 will be 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).
- **15-12-04 : Conversation Recording Destination for Extensions - ACI Automatic Recording for Outgoing Call**  
Determine whether an extension should be automatically recorded when an outgoing 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 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, 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 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 0.5A (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

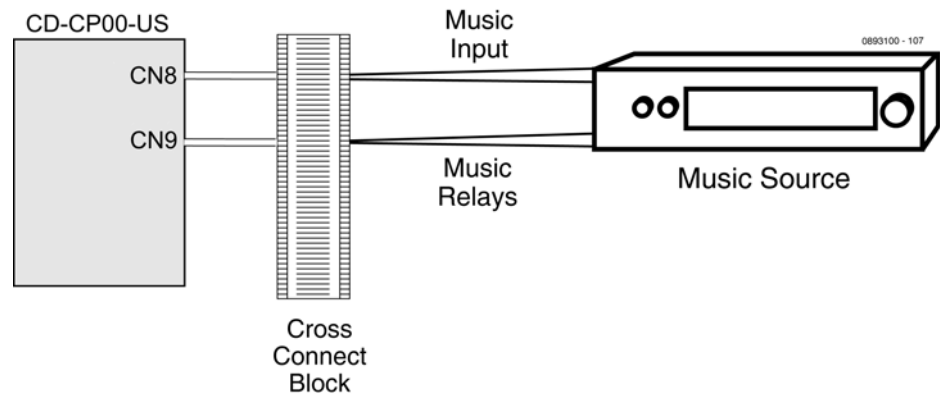
1. Connect an RCA line from the CN8 or CN9 connector on the GCD-CP10 to the appropriate location on the extension cross-connect block.
2. Connect the two-conductor station cable from the cross-connect block to the external music source.
3. Install bridging clips as required.

**OR**

Connecting to the PGD(2)-U10 ADP:

1. Make sure the jumper in the PGD(2)-U10 ADP for the channel is set correctly. (Refer to Figure 6-4 **PGD(2)-U10 ADP Jumper Settings** on page 6-4).
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. 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 music source either directly or by connecting to the cross-connect block where the music source is connected.



**Figure 6-16 CPRU Connections**

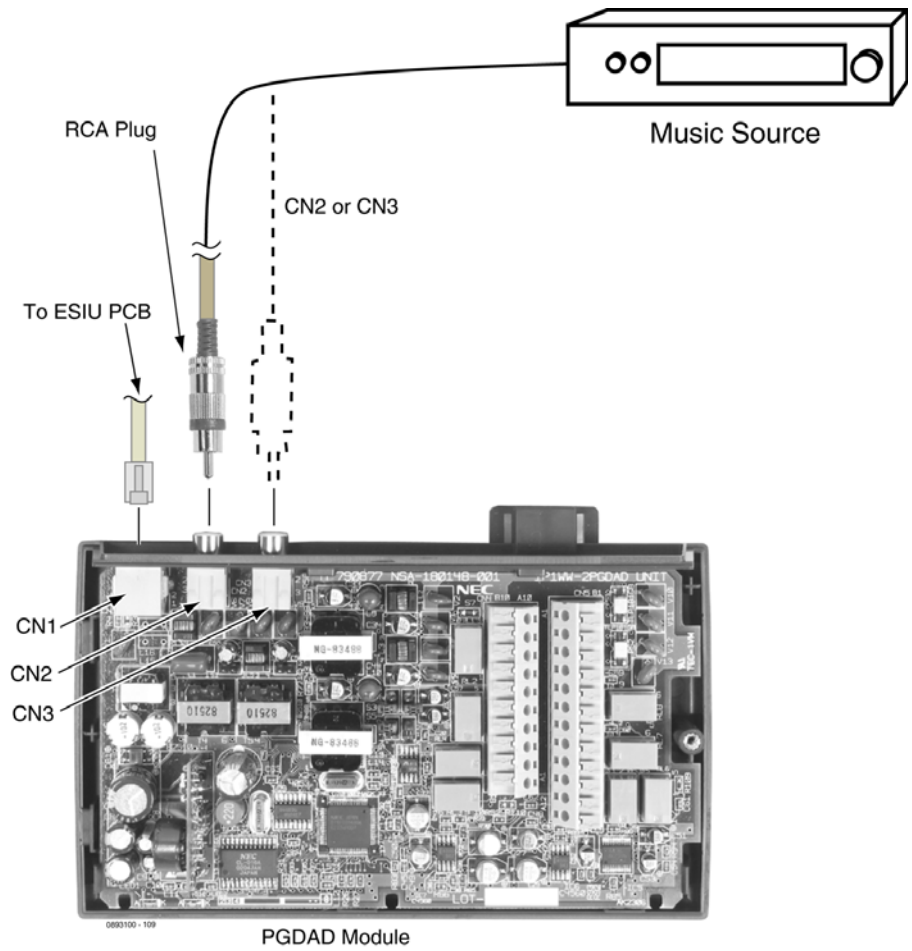


Figure 6-17 PGD(2)-U10 ADP Connections

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## 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 the night switch mechanism to the appropriate PGD circuit set as sensor detector in PRG10-41.
  - ☞ *10-41-01 = Slot number of DLCA card PGDAD is connected to*
  - ☞ *10-41-02 = port number of DLCA card PGDAD is connected to*
  - ☞ *10-41-03 = sensor circuit number*
2. Configure PRG12-01-03 to define the Night Mode the system will use when the switch is closed.
3. Configure PRG12-01-04 to define the Sensor Circuit to be used as the switching relay.

## SECTION 10 TELEPHONE LABELING

### 10.1 DESI Printer Sheets

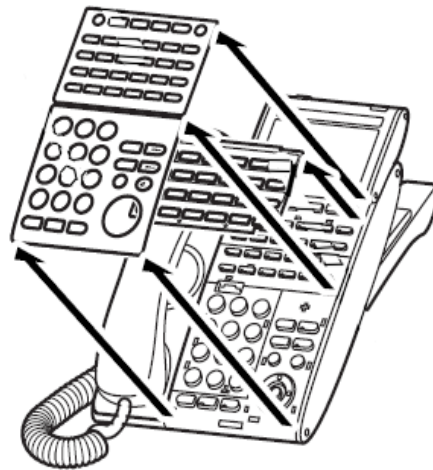
Telephones can be easily labeled by removing the plastic faceplate. These labels can be printed by hand, typewriter, or printing DESI labels. Labels for this are on 8 1/2 x 11" paper, which allows for easy printing by any printer – dot matrix, laser, etc.

DESI Printer Sheets are available for the following:

- Economy 2E – DESI ITL/DTL-2E (25 PKG)
- Economy 6DE – DESI ITL/DTL-6DE (25 PKG)
- All Value Telephones – DESI ITL/DTL-12D/24D (25 PKG)
- 8LK – DESI ITL/DTL 8LK (25 PKG)
- 60 DSS – DESI DCL-60 (25 PKG)
- Clear Side Panel – DESI ITL/DTL-SIDE (25 PKG)
- 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 6-18 Removing the Faceplate**

### 10.1.2 Replacing the Faceplate

1. Place the faceplate back on the telephone.
2. At each corner, press the locking pin back into place.



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## SECTION 11 TELEPHONE ADAPTERS

### 11.1 Using Adapters

The modular terminals can support the installation of one additional adapter underneath the terminal. These adapters provide the keyset different capabilities, depending on the adapter installed.



Figure 6-19 Installing Adapters

- These optional adapters are not installed on non-modular telephones.
- Only the ILPA, ADA and PSA Adapters can be used on the IP phones.
- ADA – Conversation Recording
- APR – Analog Port Adapter with Ringer
- PSA – Keypad/IP Phone Power Failure

When installing or removing the adapter, *the keyset should first be unplugged from the system*. External power is not required for the adapter.

Telephones with any adapters installed require an optional wall mount unit (WM-L) to be wall mounted. The bracket does not accommodate the adapter(s).

### 11.2 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:

- Local power connecting the IP terminal to a local AC wall outlet using the AC-R Adapter

- NEC power supply PoE-managed switch (BlueFire 200/24) (in-line and spare pair detection)
- Router Blade (spare pair detection)
- Cisco Data Switch – CDP supported (in-line and spare pair detection)
- In-Line Power Adapter



**Figure 6-20 In-Line Power Adapter**

#### 11.2.1 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** get 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 6-21 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

### 11.2.2 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 keyset or switch – it does not matter.
4. Connect a cross-over 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 6-22 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), 84-05-02 (VOIPU) or 85-01-03 (SHUBU).



**Figure 6-22 NEC Terminal Connection to an IEEE 802.3af PoE Switch**

### 11.3 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 (mono) 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 cassette recorder to the ADA-L UNIT (voice recording and the playback of a recorded sound from a cassette recorder cannot occur at the same time).

When installing or removing the adapters, ***the keyset 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.***

11.3.1 ADA-L UNIT Switch Settings

Figure 6-23 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 location, set switches prior to installation of ADA-L on DT Series multiline terminal.*

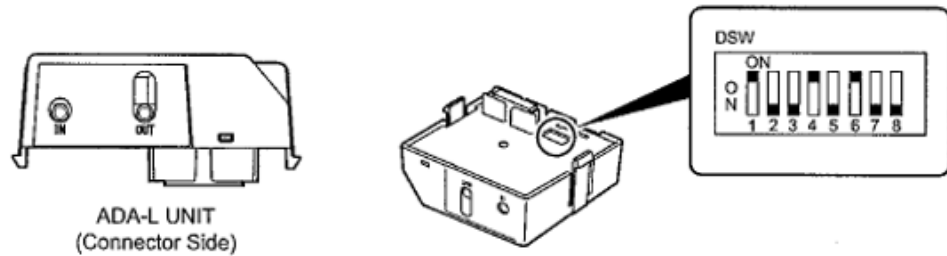


Figure 6-23 ADA-L UNIT

To provide control to the recorder or to enable/disable the record start warning tones, refer to [Table 6-3 ADA-L Unit Switch Settings](#).

Table 6-3 ADA-L Unit Switch Settings

Switch		Description/Settings
SW1	SW1-1	Connects to Multiline Terminal Connect = Default
	SW1-2	Not Used
SW2	SW2-1	Sets External Equipment Impedance to 600 Ω
	SW2-2	Used for Complex Impedance Devices (< 30 Ω Input Impedance)

**Table 6-3 ADA-L Unit Switch Settings (Continued)**

Switch		Description/Settings
Dip Switches (DSW)	DSW 1	Output Hook Signal to External Device On = Output Off = No Output (Default)
	DSW 2	Record Confirmation Tone On = Tone On Off = Tone Off (Default)
	DSW 3 and DSW 4	Use T1/T2 On = Disable (Default) Off = Enable

Do not connect T1 and T2 when DSW switches 3 and 4 are On.

### 11.3.2 Installing the ADA-L UNIT

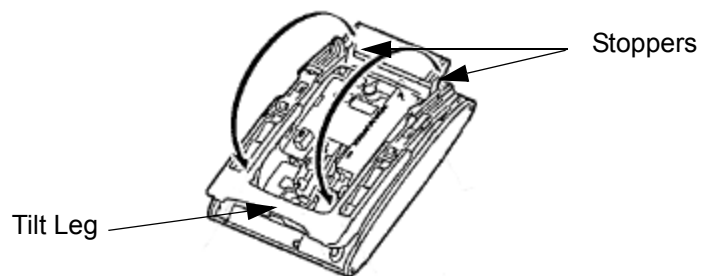
Perform the following steps to connect the ADA-L UNIT to the Bottom Option Interface located underneath the DTL/ITL multiline terminal.

Only one ADA-L UNIT can be installed at a time.



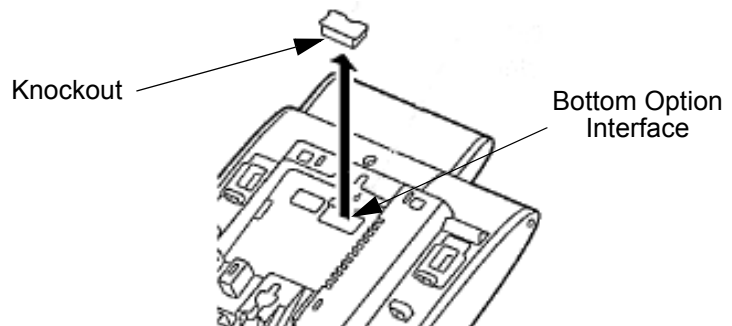
**To prevent possible damage to the ADA-L UNIT or the DTL/ITL multiline terminal during installation or removal, disconnect the line cord/LAN cable and the AC/DC adapter from the DTL/ITL multiline terminal.**

1. Unplug the line cord from the keyset.
2. Turn the DTL/ITL multiline terminal upside down.
3. Lower the tilt leg to the first position (refer to [Figure 6-24 Separate Tilt Leg from Leg Support](#)).



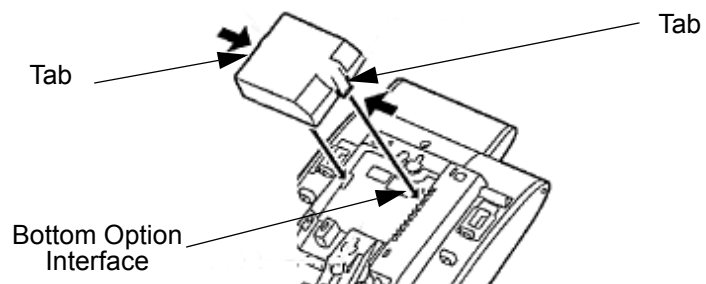
**Figure 6-24 Separate Tilt Leg from Leg Support**

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.
6. Carefully pry loose the knockout covering the bottom option interface (refer to [Figure 6-25 Bottom Option Interface Knockout](#)).



**Figure 6-25 Bottom Option Interface Knockout**

7. Using the exposed Bottom Option Interface as a guide, install the ADA-L UNIT in the bottom of the DTL/ITL multiline terminal. Push down until left and right tabs are seated (Refer to [Figure 6-26 Install ADA-L UNIT](#)).



**Figure 6-26 Install ADA-L UNIT**

8. Return tilt leg to original position.
9. Reconnect all cables previously disconnected.



## 11.3.3 ADA-L UNIT Connection



*The mini-plug connection cord should not use an attenuator and have a monaural (single ring) mini-plug connection for normal recording.*

## 11.3.3.1 ADA-L UNIT Connection for Recording Only

1. Set the ADA-L UNIT DSW switches (Refer to [Figure 6-23 ADA-L UNIT](#) on page 6-34).



- *Set DSW 6 to ON.*
- *When using the LINE IN jack on a cassette recorder for recording, set DSW switch 5 to OFF.*
- *When using the MIC jack on a cassette recorder, set DSW switch 5 to ON.*

2. Using the mini-plug connection cord, connect the the ADA-L Unit Out jack to the cassette recorder MIC jack (Refer to [Figure 6-27 ADA-L OUT Jack Connection](#)).



**Figure 6-27 ADA-L OUT Jack Connection**

### 11.3.3.2 ADA-L UNIT Connection for Sending Recorded Calls to the Telephone

1. Set the ADA-L UNIT DSW switches (see [Figure 6-23 ADA-L UNIT](#) on page 6-34).



- *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 the ADA-L Unit IN jack to the cassette recorder EAR PHONE jack (Refer to [Figure 6-28 ADA-L IN Jack Connection](#)).



**Figure 6-28 ADA-L IN Jack Connection**

## 11.4 APR-L UNIT

The APR-L UNIT (Analog Port Ringer) provides an analog interface for the DTL 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.

With the APR-L UNIT adapter installed, and the analog device attached to the adapter is in use, the telephone cannot be used as there is only one physical port number 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.***



***If it is the intention to use the APR-L UNIT to connect to a fax machine, it should be noted that the APR-L UNIT provides 24v and some fax machines require 48v to operate correctly.***

The APR-L UNIT supports reverse-polarity, message waiting lamping, or Caller ID.

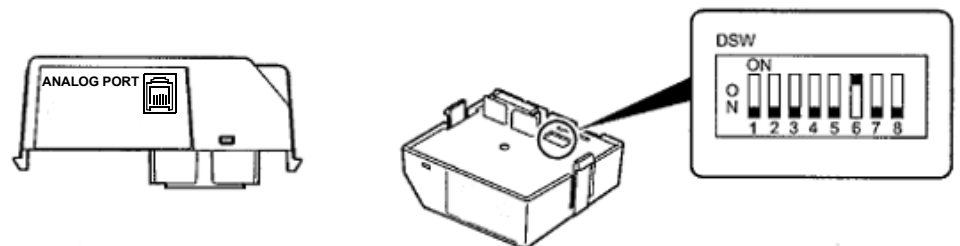
*Note: if the APR-L unit is configured with the same extension extension number as the DTL multiline terminal to which it is installed, timers relating to SLT interfaces, including Timed Break Recall, do not effect the APR-L Unit.*

#### 11.4.1 APR-L UNIT Switch Settings

Figure 6-29 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 location, set the switches prior to installation of APR-L on DTL multiline terminal.***



**Figure 6-29 APR-L UNIT**

Set the dip switches on the APR adapter to the required position.

1. Leave the SW1 switch at its factory setting of 1. This also applies to the dip switch settings (1 and 5 = on; 2-4, 6-8 = off).
2. Use the SW3 switch to set the terminating impedance. Position 1 is for a pure resistance of 600 ohms; position 2 is for complex

impedance (factory setting is 1).

#### 11.4.2 Installing the APR-L UNIT

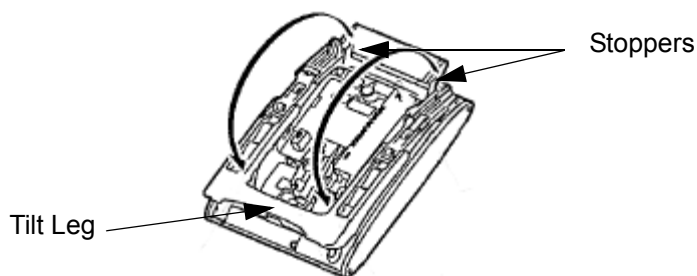
Perform the following to connect the APR-L UNIT to the Bottom Option Interface located underneath the DTL multiline terminal.

- *Only one APR-L UNIT can be installed.*



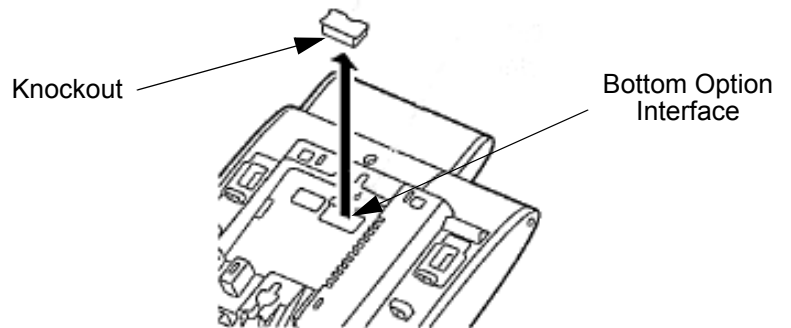
***To prevent possible damage to the APR-L UNIT or the DTL multiline terminal during installation or removal, disconnect the line cord and the AC/DC adapter from the DTL multiline terminal.***

1. Unplug the line cord from the keyset.
2. Turn the DTL multiline terminal upside down.
3. Lower the tilt leg to the first position (refer to [Figure 6-30 Separate Tilt Leg from Leg Support](#)).



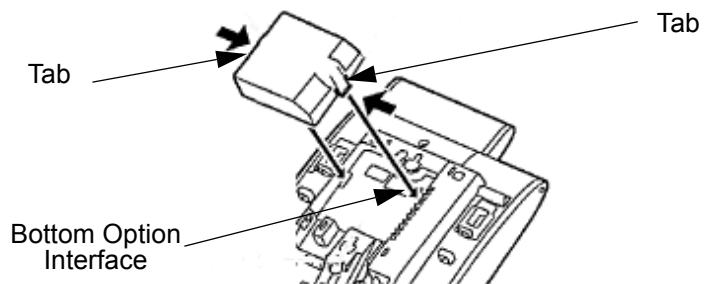
**Figure 6-30 Separate Tilt Leg from Leg Support**

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 APR-L UNIT compartment.
6. Carefully pry loose the knockout covering the bottom option interface (refer to [Figure 6-31 Bottom Option Interface Knockout on page 6-41](#)).



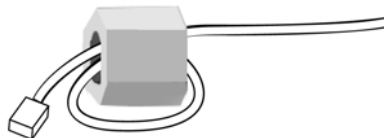
**Figure 6-31 Bottom Option Interface Knockout**

7. Using the exposed Bottom Option Interface as a guide, install the APR-L UNIT in the bottom of the DTL multiline terminal. Push down until left and right tabs are seated (Refer to [Figure 6-32 Install APR-L UNIT](#)).



**Figure 6-32 Install APR-L UNIT**

8. Return tilt leg to original position.
9. For the APR adapter to be recognized correctly, before plugging in the keyset, 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 keyset.
11. Using the ferrite bead that was included with the APR Adapter, wrap the line cord once through the ferrite bead and snap it shut (refer to [Figure 6-33 Ferrite Bead with APR Adapter on page 6-42](#)).



**Figure 6-33 Ferrite Bead with APR Adapter**

12. Plug the end of the line cord for the analog device which has the ferrite bead closest to it into the jack on the adapter. Connect the opposite end to the analog device.



*Before removing the adapter, to avoid any hardware problems, unplug the line cord, then any other adapter cables.*

13. **To determine the APR analog extension number. . .**  
**10-03-04 : Optional Installed Unit 1**  
Displays the type of terminal installed. This can be used to verify that the system recognizes the adapter.

**10-03-06 : Blade Setup**

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 : Blade Setup**

The port number of the APR Adapter is displayed for the extension (APR ports = 193-256 with all software through 3.07). The ports are assigned from the highest available port down.

Refer to **Section 5: Data and SMDR** for additional details.

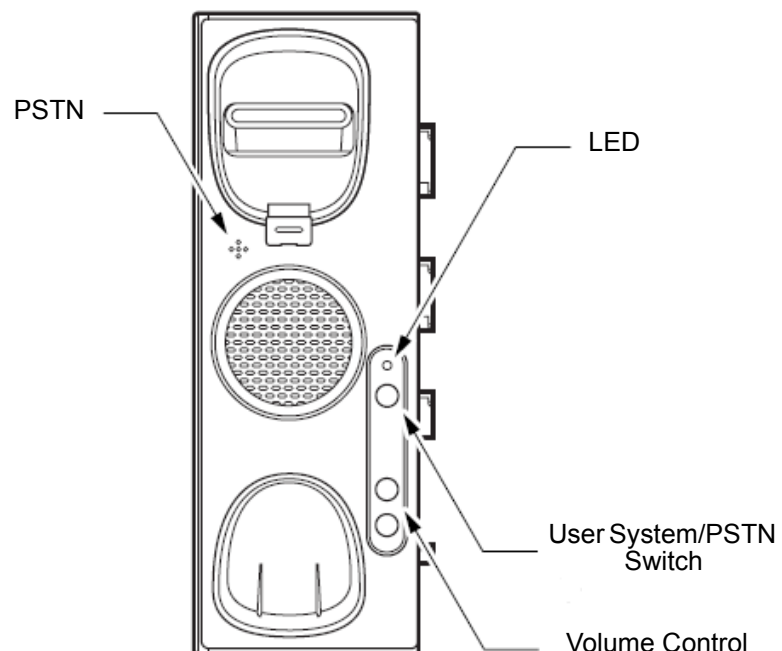
## 11.5 PSA-L (BK) UNIT / PSA-L (WH) UNIT

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:

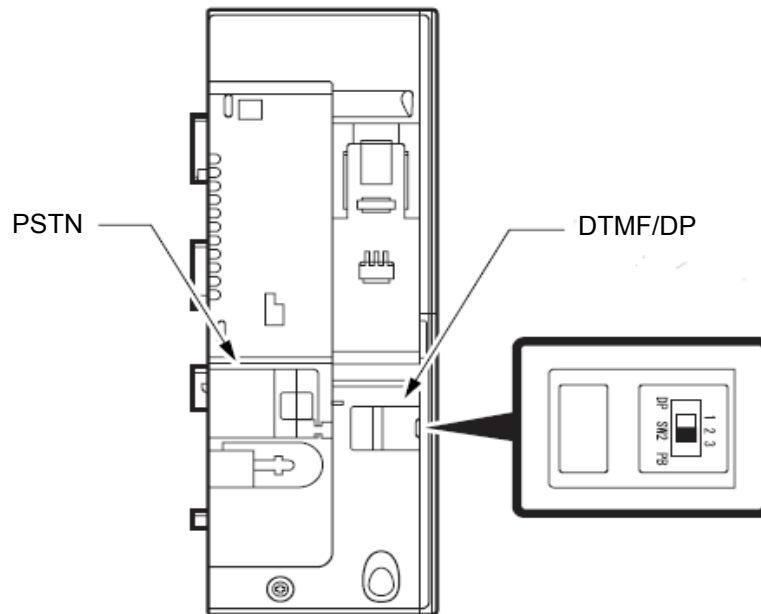
- Survivability in case of power failure or network congestion.
- Support on modular terminals (ITL/DTL)
- PSTN Type = analog PSTN
- Dial method – MF/DF (10pps)



*The PSA should not be relied upon as the sole means of providing contact with Emergency services in the event of a power failure or communication loss with the main SV9100 system*



**Figure 6-34 PSA-L UNIT**



**Figure 6-35 PSA-L UNIT Connections**

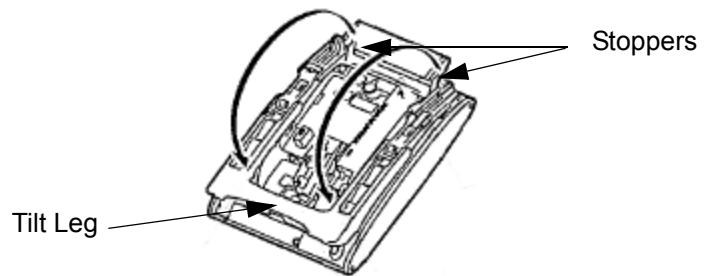
### 11.5.1 Installing the PSA-L Adapter



***Before installing or removing the PSA-L adapter, remove the line cord, LAN cable, and then AC adapter from the outlet.***

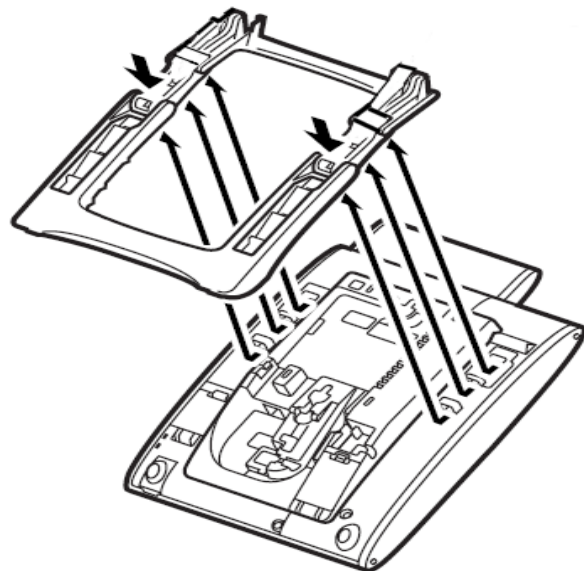
1. Turn multiline terminal upside down.
2. Unplug the line cord and handset cord from the keyset.
  - ✎ *Only one PSA-L UNIT can be attached to the DTL/ITL multiline terminal.*
3. Lower the tilt leg to the first position (refer to [Figure 6-36 Separate Tilt Leg from Leg Support](#) on page 6-45).





**Figure 6-36 Separate Tilt Leg from Leg Support**

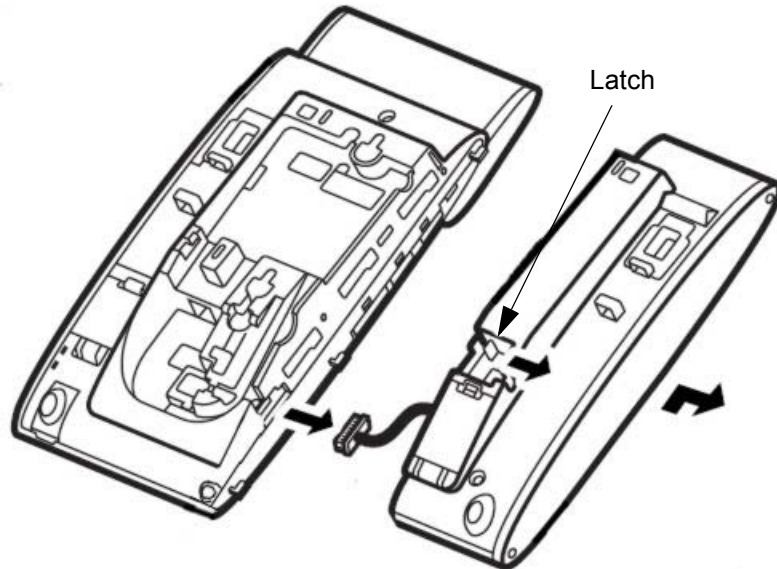
4. Push the two stopper tabs through the slots to separate the tilt leg from the leg support.
5. Lay the tilt leg and the leg support flat.
6. Press the two tabs locking the legs to the multiline terminal and pull the legs toward you, lifting to remove.



**Figure 6-37 Remove Legs From Multiline Terminal**

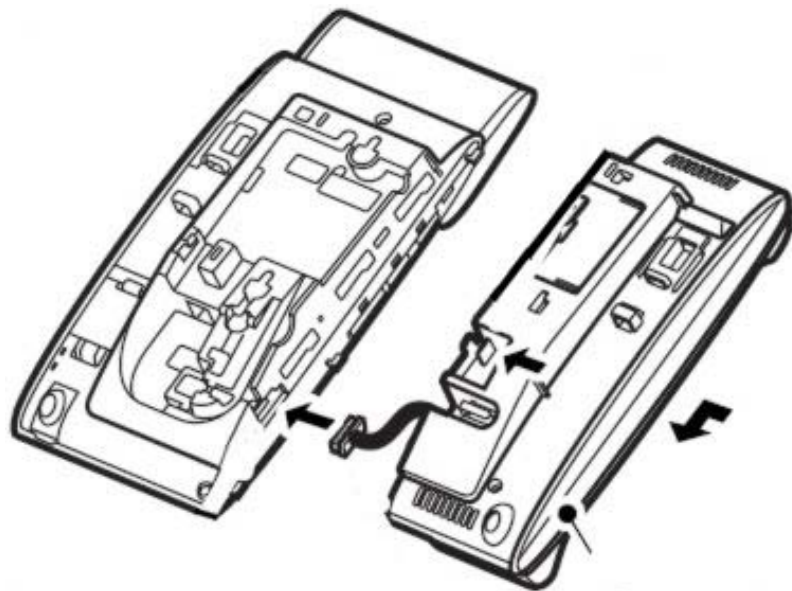
7. Disconnect serial connection cord from terminal body. Leave cord connected to the cradle unit.

8. Push latch to right to unlock the cradle unit. Then push the cradle unit forward to separate from the terminal body.



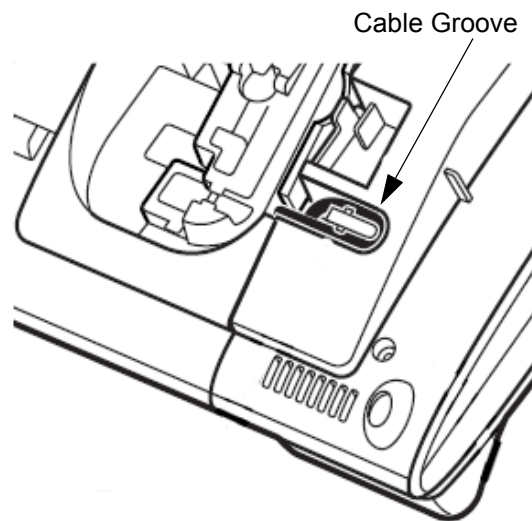
**Figure 6-38 Bottom of Multiline Terminal (Legs Removed)**

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.



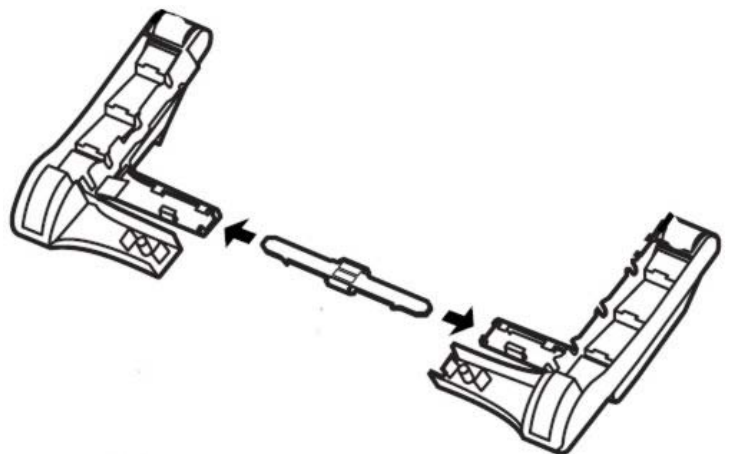
**Figure 6-39 Attach PSA-L Unit to the Multiline Terminal**

10. Gently press the serial cable into the grooved cutout for the cable.



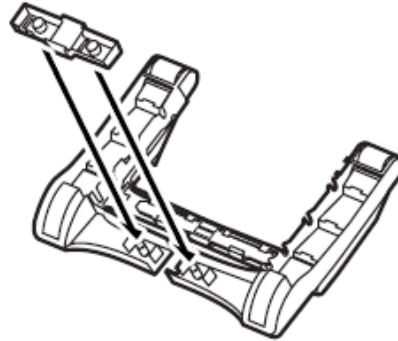
**Figure 6-40 Grooved Cutout for Serial Cable**

11. Connect the serial connection cord (refer to [Figure 6-39 Attach PSA-L Unit to the Multiline Terminal on page 6-46](#)) from the PSA-L UNIT to the terminal body.
12. Open the Dip Switch Cover (refer to [Figure 6-35 PSA-L UNIT Connections on page 6-44](#)). 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.



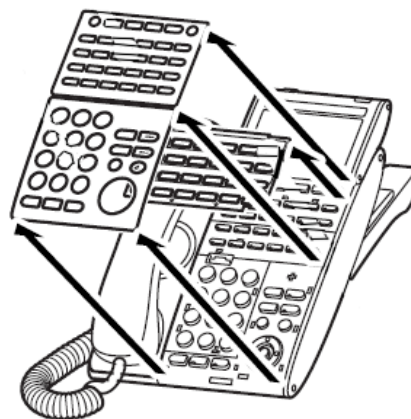
**Figure 6-41 Insert Stopper for Handset Use**

14. For the Handset, set the connector in place.



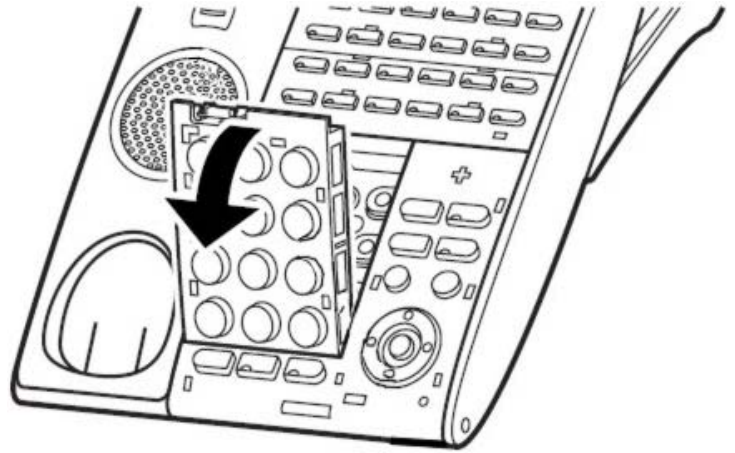
**Figure 6-42 Insert Connector for Handset Use**

15. Attach the analog trunk cable and the handset cable. Refer to [Figure 6-35 PSA-L UNIT Connections on page 6-44](#).
16. Reinstall the legs, pushing upwards until both locks snap into place.
17. Return tilt leg to desired position.
18. Return the multiline terminal to the numbered keypad in the up position.
19. Connect the Line cord, the PSTN cable and the Handset cord (if used).
20. Remove both plastic panels from the front of the multiline terminal.



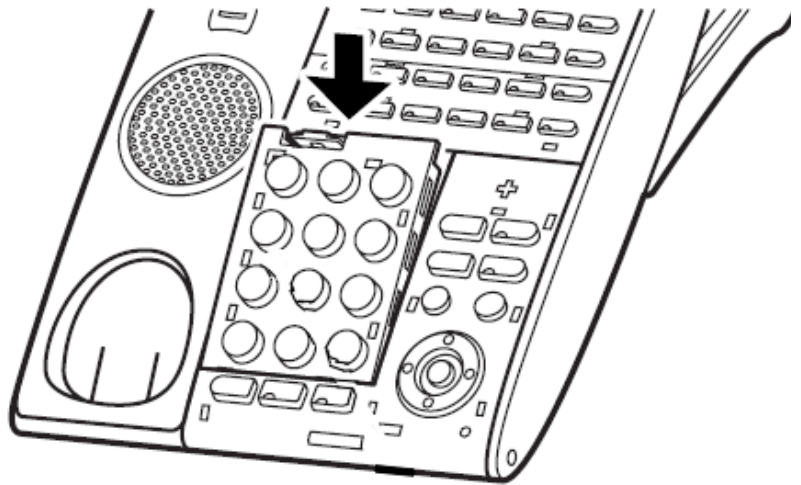
**Figure 6-43 Remove Plastic Panels**

21. Pull tab down and lift out the numbered keypad panel.



**Figure 6-44 Remove Numbered Keypad**

22. Install the new keypad panel supplied with the PSA-L UNIT.



**Figure 6-45 Install Numbered Keypad**

23. Reinstall both plastic panels to the front of the multiline terminal (refer to [Figure 6-46 Install Plastic Panels on page 6-50](#)).

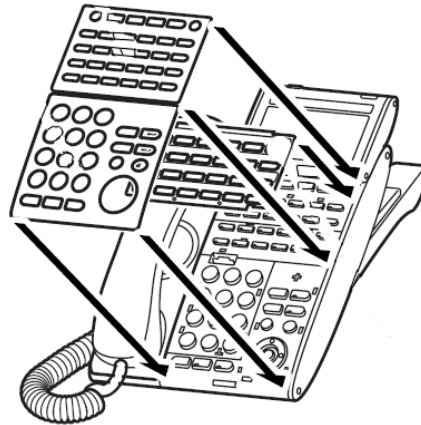


Figure 6-46 Install Plastic Panels

24. Connect the line cord to the adapter.
25. Connect the user system (KTS or PBX) cable.
26. If required, remove the side panel from the original cradle unit.

#### 11.5.2 Using the PSA-L Adapter



**CAUTION:** 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  $\uparrow$  or  $\downarrow$  to increase or decrease audio levels.

  - Other than receiving calls, no other keyset functions are available.

---

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## 2. **Answering Calls:**

- 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 functions are 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.

- Other than receiving calls, no other terminal functions are available.

## 4. **When Power is Restored**

The IP keyset 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.

- Other than receiving calls, no other terminal functions are available.

## 11.6 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 6-47 GBA-L UNIT

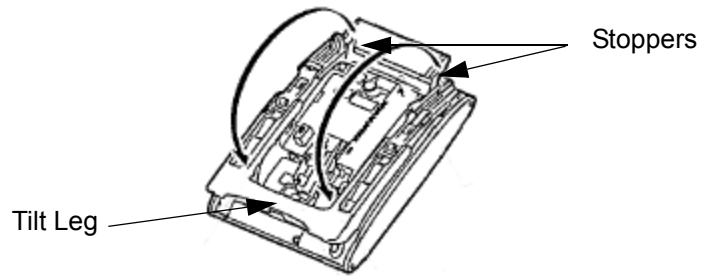
### 11.6.1 Installing the GBA-L UNIT



***Before installing or removing the GBA-L UNIT, remove the line cord, LAN cable, and then AC adapter from the outlet.***

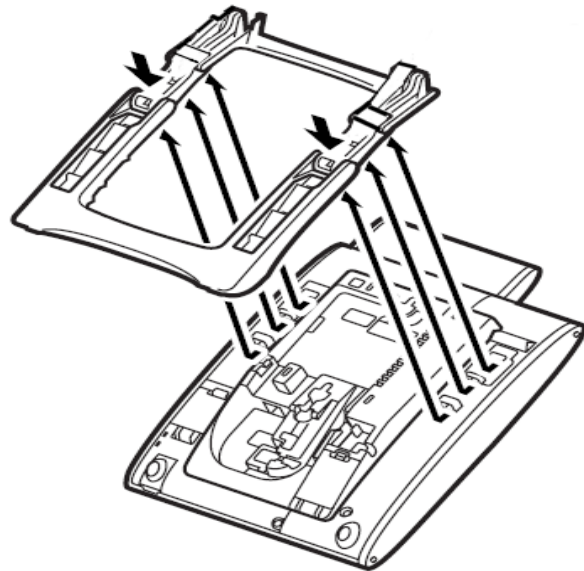
1. Turn multiline terminal upside down.
2. Unplug the line cord and handset cord from the multiline terminal.
  - ☞ *Only one GBA-L UNIT can be attached to the DTL/ITL multiline terminal.*
3. Lower the tilt leg to the first position (refer to [Figure 6-48 Separate Tilt Leg from Leg Support](#) on page 6-53).





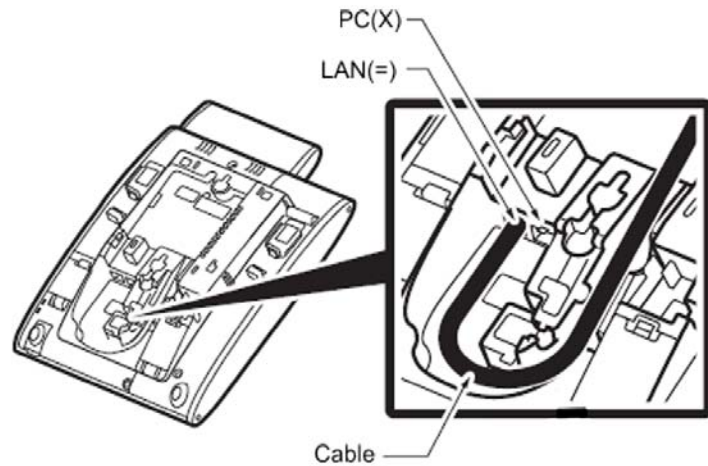
**Figure 6-48 Separate Tilt Leg from Leg Support**

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.



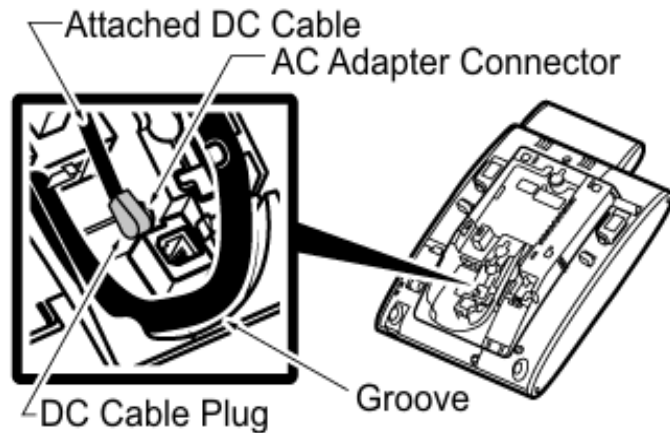
**Figure 6-49 Remove Legs From Multiline Terminal**

7. Plug in the LAN cable and gently press the cable into the grooved cutout (refer to [Figure 6-50 Attach the LAN Cable](#)).



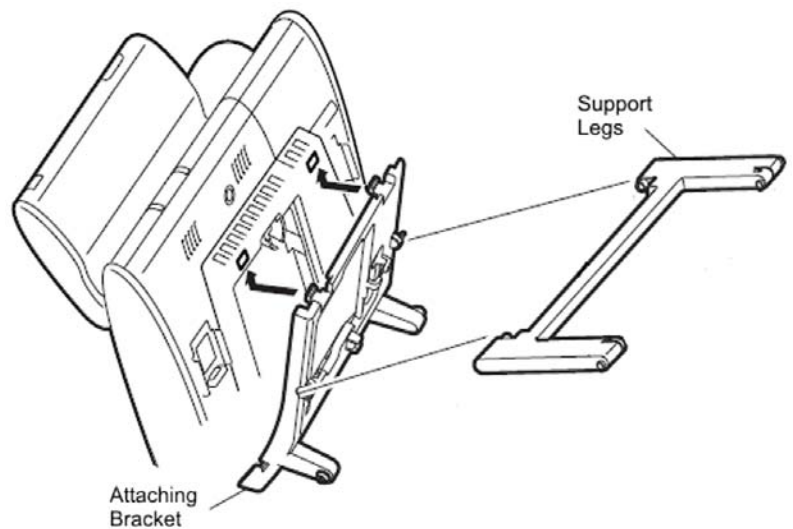
**Figure 6-50 Attach the LAN Cable**

8. Plug in the DC power cable and gently press the cable into the grooved cutout (refer to [Figure 6-51 Attach the DC Power Cable](#)).



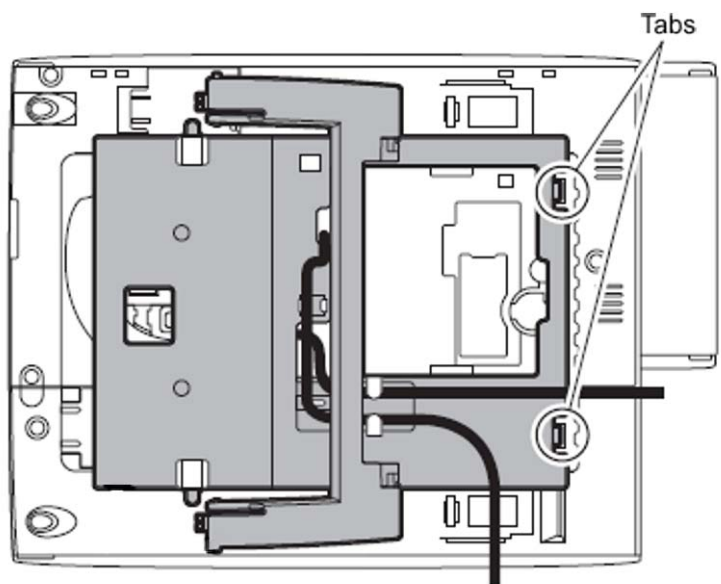
**Figure 6-51 Attach the DC Power Cable**

9. Assemble the legs and bracket then align with tab holes (refer to [Figure 6-52 Align Bracket with Terminal](#)).



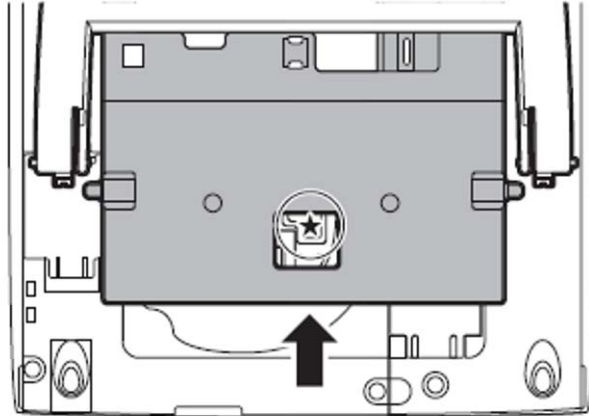
**Figure 6-52 Align Bracket with Terminal**

10. Pass the LAN and DC power cables through the bracket (refer to [Figure 6-53 Pass Cabling Through Bracket](#)).



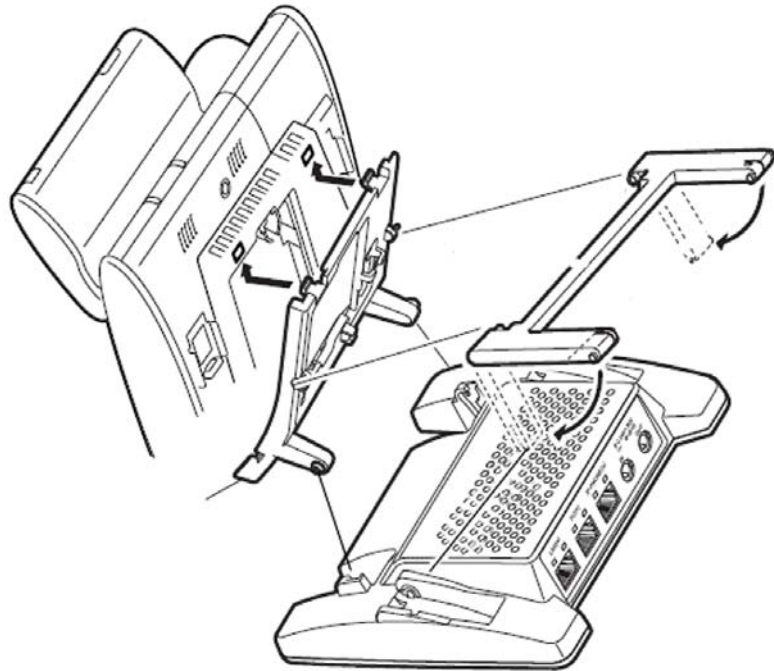
**Figure 6-53 Pass Cabling Through Bracket**

11. Slide the supporting bracket forward until a click is heard (refer to [Figure 6-54 Secure Bracket to Terminal](#)).



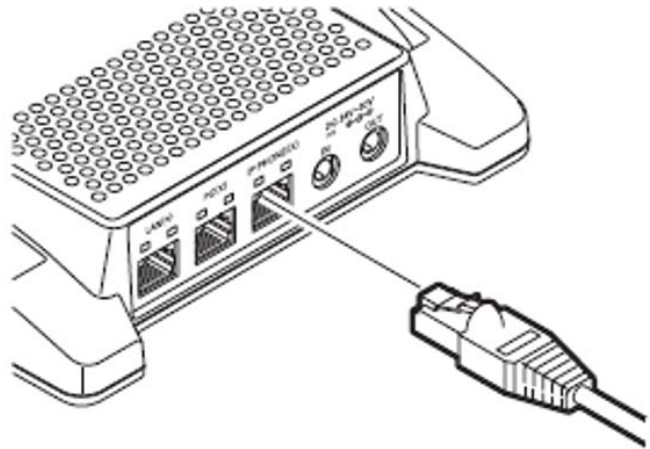
**Figure 6-54 Secure Bracket to Terminal**

12. Secure base of GBA-L UNIT to bracket assembly (refer to [Figure 6-55 Secure GBA-L UNIT Base to Bracket Assembly](#)).



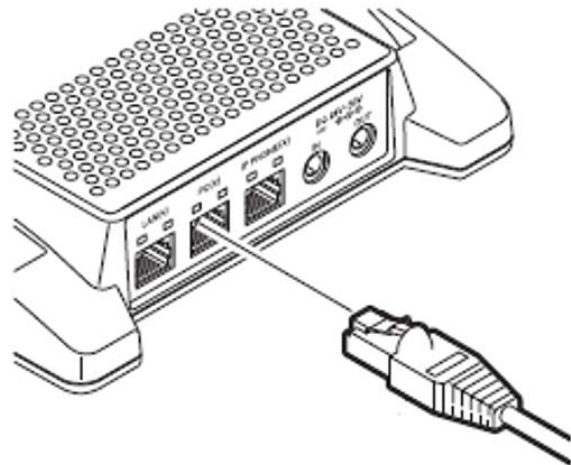
**Figure 6-55 Secure GBA-L UNIT Base to Bracket Assembly**

13. Install the NEC provided Cat 5 Ethernet cable (refer to [Figure 6-56 IP Phone\(X\) Connection](#)).



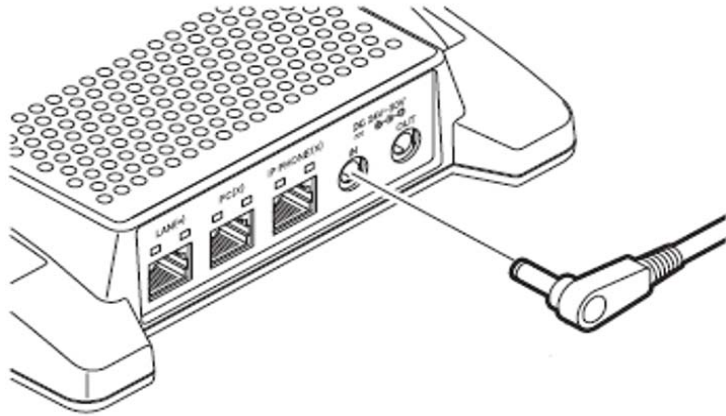
**Figure 6-56 IP Phone(X) Connection**

14. Install the NEC provided Cat 5 Ethernet cable (refer to [Figure 6-57 PC\(X\) Connection](#)).



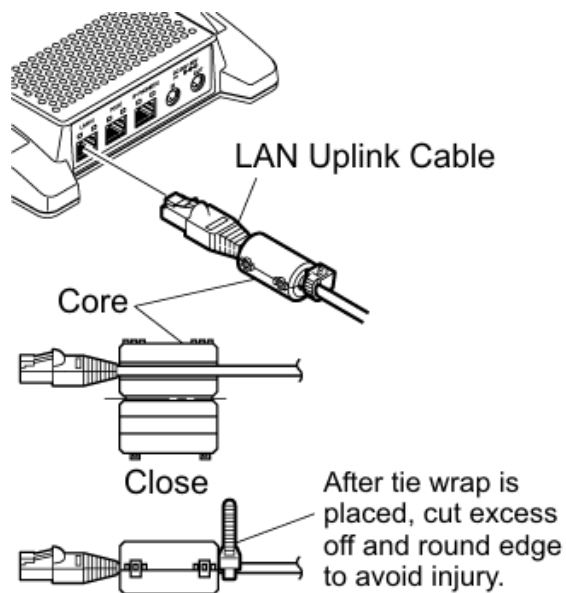
**Figure 6-57 PC(X) Connection**

15. Install the NEC provided power cable (refer to [Figure 6-58 DC Power Connection](#)).



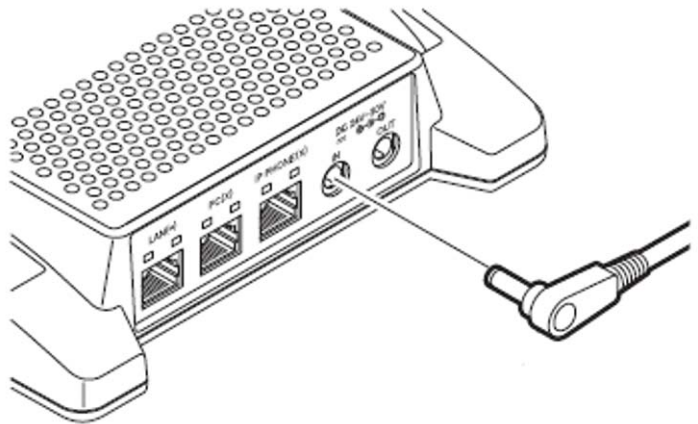
**Figure 6-58 DC Power Connection**

16. Connect the Core then plug in the Network connection cable (refer to [Figure 6-59 LAN\(=\) Connection](#)).



**Figure 6-59 LAN(=) Connection**

17. Install the cable from the optional external AC adapter (refer to [Figure 6-60 AC to DC In Connection](#)).



**Figure 6-60 AC to DC In Connection**

- *The AC Adapter (AC-L UNIT) must be ordered separately.*

18. Cable installation for the GBA-L UNIT complete (refer to [Figure 6-61 GBA-L UNIT Installed](#)).



**Figure 6-61 GBA-L UNIT Installed**



11.6.2 GBA-L UNIT Connection

The following chart outlines the connectivity available to the GBA-L UNIT:

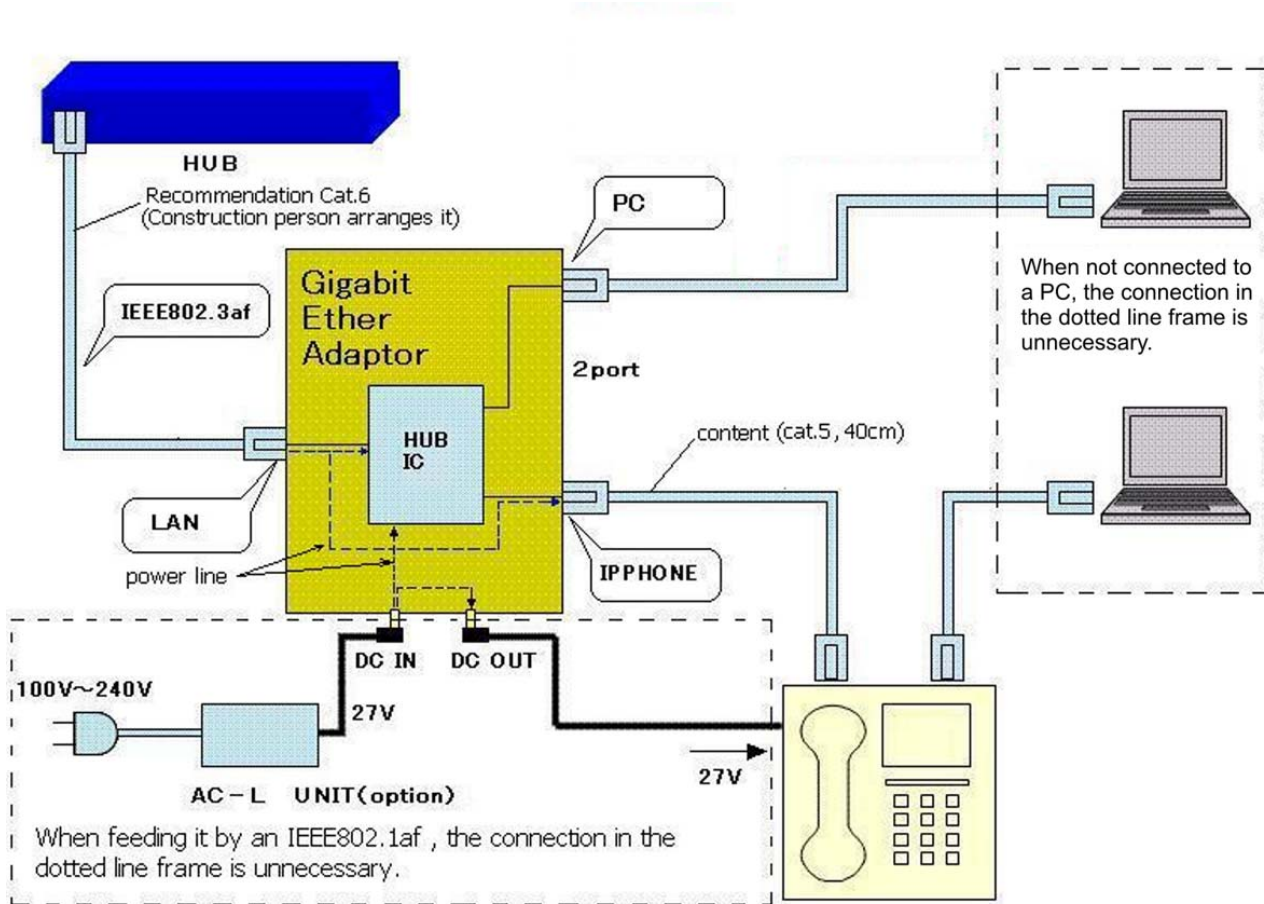


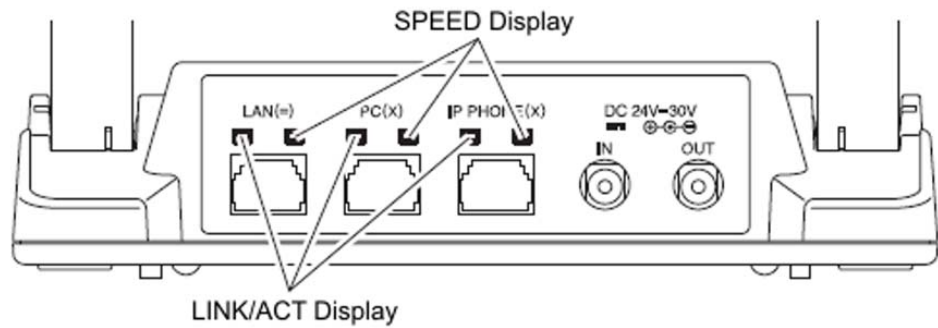
Figure 6-62 GBA-L UNIT Connectivity Chart

11.6.3 LED Display

The following provides a list of each LED and associated operation and status indications. Refer to [Figure 6-63 GBA-L UNIT LED Display on page 6-61](#) for the location of the LEDs on the GBA-L UNIT.



LED Name	When 1000Mbps is Connected	When 100Mbps is Connected	When 10Mbps is 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

Figure 6-63 GBA-L UNIT LED Display

## SECTION 12 POWER FAILURE TELEPHONES

### 12.1 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-4COTA blade.

The GCD-4COTA Blade provides 2 Power Failure Transfer circuits.

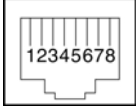
The CN3 and CN5 connectors each provide connection to four analog trunk ports, **which are polarity sensitive (tip to tip, ring to ring)**. The power failure circuits, however, are not polarity sensitive. A maximum of 15 GCD-4COTA blades per system is allowed.



*When connecting the RJ-61 cables to the COIU Blade, note the position of the Power Failure connector. Do not confuse connector CN3 as the CN2 trunk connector.*

## 12.2 Connector Pin-Outs on COIU Blade for Power Failure Circuits

Table 6-4 RJ-61 Cable Connector

RJ-61 Cable Connector - CN13, SLT Interface for Power Failure		
	Pin No.	Connection
	1	–
	2	–
	3	Circuit 2 - Tip
	4	Circuit 1 - Ring
	5	Circuit 1 - Tip
	6	Circuit 2 - Ring
	7	–
	8	–

## 12.3 Installing the Power Failure Telephones

1. Connect an RJ-61 connector to the COIU 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 6-64 Power Failure Connector \(CN3\) Shown on GCD-4COTA Blade on page 6-63](#).

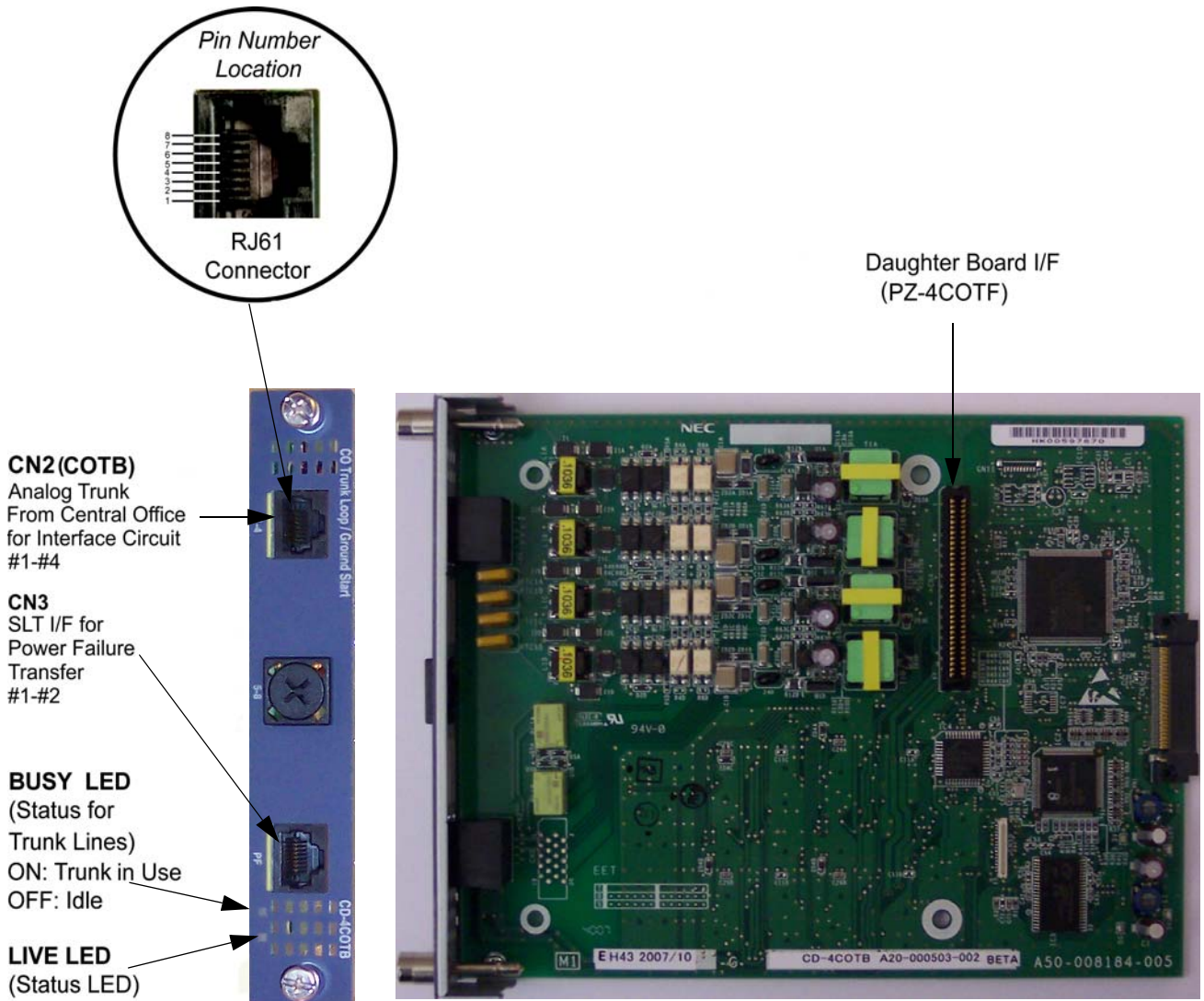


Figure 6-64 Power Failure Connector (CN3) Shown on GCD-4COTA Blade



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