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**NEC**

**1. Installing Chassis**

**2. Blade Installation  
and Startup**

**3. Installing Extensions  
and Trunks**

**4. Terminals and  
Optional Equipment**

**5. LAN Connection**

**6. Specifications and  
Parts**

***UX5000***

**Hardware Manual**

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This manual has been developed by NEC Unified Solutions, Inc. It is intended for the use of its customers and service personnel, and should be read in its entirety before attempting to install or program the system. Any comments or suggestions for improving this manual would be appreciated. Forward your remarks to:

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# Chapter 1 - Installing the Chassis

## SECTION 1-1

### GENERAL PRECAUTIONS

- Although it is recommended to installed the blades with the system power off, all blades can be installed hot (**except the CCPU, EXIFU, MEMDB, VOIPDB, and VMDB**).
- As some USB thumb drives may cause the system to reset, it is recommended to power down the system prior to connecting a USB thumb drive to the CCPU.
- To avoid shock or equipment damage, do not plug in or turn the system power on before completing the installation process.
- Avoid working with the equipment during electrical storms. Do not touch the chassis, AC power cord, AC adapters, or terminal cords as electrical shocks could occur during the electrical storms.
- Use only commercial AC power to prevent shock or fire.
- Use the power cord supplied for the chassis.
- Do not bundle AC power cords together to prevent the cords from overheating.
- Make sure the chassis has a proper earth ground.
- Install batteries with the correct polarity to prevent damaging equipment.
- The chassis should not be placed on unstable surfaces to avoid damage.
- Do not modify the hardware as it could damage other system components. Should modifications be made, NEC assumes no responsibilities for damage which may occur.
- Liquid from lead acid batteries can cause damage to the eyes. If contact is made, flush the eyes with water and contact a doctor immediately.
- Keep the communications server equipment away from heat sources to prevent equipment damage.
- Acoid touching the solder side of the blades as electrical shocks may occur.
- Keep liquid/watr sources away from equipment.
- Keep metal or foreign bodies out of the chassis.

### 1.1.1 Unpacking

Unpack the equipment and check it against your equipment lists. The chassis does not initially contain any blades. Inspect for physical damage. If you are not sure about a component's function, review the information for the component within this manual. Contact your Sales Representative if you have additional questions.

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

### 1.1.2 Before Installing

Make sure you have a building plan showing common equipment, extensions, the telco demarcation, and earth ground location. The installation site must meet NEC Unified Solutions specifications in the Standard Practices Manual (P/N N2710STD\*\*).

### 1.1.3 Site Requirements

The UX5000 system can be desk-mounted, floor-mounted, wall-mounted, or rack-mounted. When wall-mounting, it is recommended that plywood first be installed on the wall where the chassis will be positioned, allowing for secure anchoring. It is equipped with a bracket which can be used to secure each chassis in a desk mount or wall mount installation. Ensure that enough space is available to allow the installation of the additional chassis above and below the chassis.

The system requires a three-prong dedicated 110 VAC 60 Hz circuit (NEMA 5-15 receptacle) located within 6 feet (for the 9 1/2" Chassis-B) or 9 feet (for the 19" Chassis-A) of the AC receptacle. Telco should install the RJ21X to the right of the chassis. Extension blocks should be installed to the left of the chassis.

The chassis is shipped fully assembled. The following is enclosed with the chassis:

- 1 black three-prong power cord (packed outside the chassis)
- 1 19" mounting bracket for desktop placement or wall mounting packed outside the chassis

### 1.1.4 Environmental Requirements

Meeting and maintaining established environmental standards maximizes the life of the system. Be sure that the site selected for the chassis is not:

1. In direct sunlight or in hot, cold, or humid places.
2. In dusty areas or in areas where sulfuric gases/noxious fumes are produced.
3. In places where shocks or vibrations are frequent or strong.
4. In places where water or oil comes in contact with the unit.
5. In areas near high-frequency machines or electric welders.
6. Near computers, microwaves, air conditioners, etc.
7. Near radio antennas (including shortwave).
8. Do not block ventilation areas in the chassis to avoid system over heating.

## SECTION 1-2 Equipment Overview

### 1.2.1 System Chassis

There are three types of chassis:

- 9 1/2" base Chassis-B
- 9 1/2" expansion Chassis-E
- 19" Chassis-A

The first chassis (the Controlling Chassis-B with CCPU) provides 3 slots and a power supply. One slot in the first chassis (Controlling Chassis) is used for the CCPU. Each expansion chassis (Chassis-E) provides 3 slots. In a networked system using CygniLink and an IP connection, a second CCPU can be used for a CCPU Fail-Over feature (primary/secondary CPUs) as a backup in case of a hardware or power failure. (The CCPUs must be programmed for primary/secondary operation.)

To expand the system further, additional chassis can be added. Each Chassis-B can be combined with an expansion chassis (Chassis-E) - the Chassis-B providing the power to the expansion chassis. A Chassis-B or combined Chassis-B / Chassis-Es can be added. These chassis are then interconnected, for a maximum of 4 combined hard-wired Chassis-Bs and 4 Chassis-Es.

In place of combining a Chassis-B and Chassis-E to make a 19" chassis, you can use the 19" Chassis-A. This chassis provides 6 slots and a power supply. The first slot in the chassis is used for the CCPU. The remaining slots can be used for the various system blades required.

**Up to 4 combined Chassis-B/Chassis-E or 19" Chassis-A can be connected locally. However, in order to reach the system's maximum port capacity, additional chassis (either combined Chassis-B / Chassis-Es or the 19" Chassis-A) must be added - connected by a VoIP connection.**

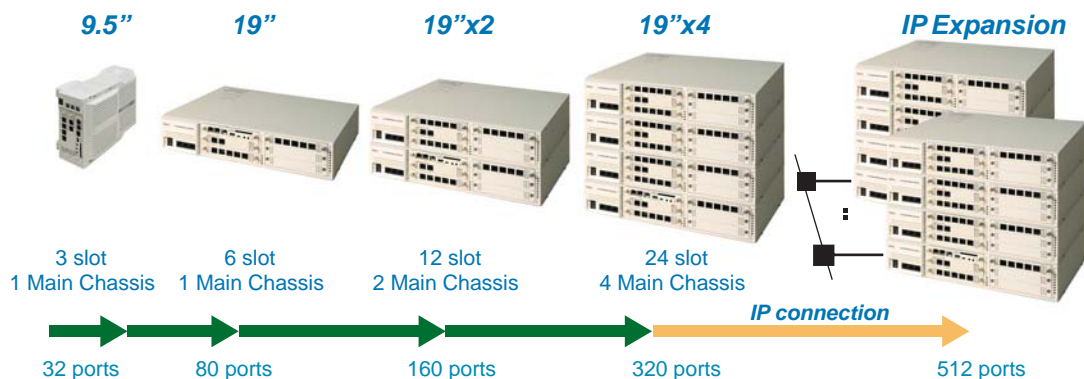


Figure 1-1: Expansion Options



**Chassis-B and Chassis-E are shown horizontal for illustration purposes only. Final positioning/mounting, must be vertical.**

**Controlling 3-Slot Chassis**



**Controlling and Expansion 3-Slot Chassis (Chassis-B/Chassis-E)**




**Fully Expanded System (without IP connection)  
- 4 6-Slot Chassis  
Note: When using combined 9.5" chassis, they cannot be stacked due to heat issues. They must be set vertically.**



**6-Slot Chassis (Chassis-A)**

**Figure 1-2: CHASSIS**

		9.5" Controlling Chassis (2 slots) *	19" Chassis (5 slots) *	19" Chassis x2 (11 slots) *	19" Chassis x4 (23 slots) * (hard wired connection)	19" Chassis x7 (41 slots) (IP connection required for 5+ 19" Chassis) *
Chassis		Number of B-Channels Available				
Trunk	Analog	16	40	88	184	200
	PRI (1.5M/2M)	46/60	92/90	184/180	200/200	200
Extension (digital keypad or SLT)		32	80	160	320	512
IP Trunk/Terminal		128/512 (Full license)				
TDM channels		48	104	208	416	712
VoIP channels w/s RTP		96 channels				
VM channels on CCPU		8 channels without MEMDB / 16 channels with MEMDB				32ch
V.34bis (33.6 kbps) Modem		1 channel				
 * Number of slots exclude CCPU slot in the <b>Controlling</b> Chassis.						





## SECTION 1-3

### Controlling/Base Chassis-B

#### 1.3.1 Controlling Chassis-B vs. Base Chassis-B vs. Expansion Chassis-E

In the UX5000 system, there are three different versions of chassis - the 9.5" Base Chassis-B, the 9.5" Expansion Chassis-E, and the 19" Chassis-A. This section will detail using the 9.5" chassis.

In this documentation, the first chassis in the system requires a CCPU and is called the Controlling Chassis. This is a Base Chassis-B with a CCPU installed. The system can then be expanded by attaching an Expansion Chassis-E to the right of the first chassis. When expanding a system past two chassis, the next chassis is a Base Chassis-B (without a CCPU), which can then also have an Expansion Chassis-E attached.

Each chassis measures 9.5 inches wide and 4.25" high. With an Expansion chassis connected, the maximum width is 19 inches.

The Chassis-B provides the power supply, connections on the power supply unit for an external backup battery, 3 universal slots for the CCPU and other optional blades (such as ESIU, SLIU, COIU, etc.) and an EXIFU (expansion) slot. All slots are connected to the backplane.



**Figure 1-3: CHASSIS-B - FRONT**

A Chassis-B can be combined with an Expansion Chassis-E. Additional pairs of Chassis-B/Chassis-E's can be connected to the system (up to 4 chassis sets maximum). Expansion Interface Units (EXIFU-B1 and EXIFU-E1) are installed in the EXIFU slot in the Chassis-Bs (base chassis). The connection to the Expansion Interface Unit is made using a CAT 5 cable.

The Controlling Chassis-B is used to install the system blades, including one slot for the CCPU. It can accommodate up to 16 trunk ports and 32 ports extension ports. An Expansion Chassis-E can be installed to the right of the Controlling or Base Chassis-B to accommodate an additional 48 ports (40 trunk/80 stations max.). With a maximum of 4 Chassis-Bs and 4 Expansion Chassis-Es or 4 19" Chassis-As, the system will provide up to 184 trunks and 320 extensions and, with IP connections, a maximum of 200 trunk ports (128 IP trunks max.) and 512 station ports is possible.

To reach these limits, a MEMDB would be required as well as a license for the expanded ports.



Figure 1-4: CHASSIS-B - FRONT

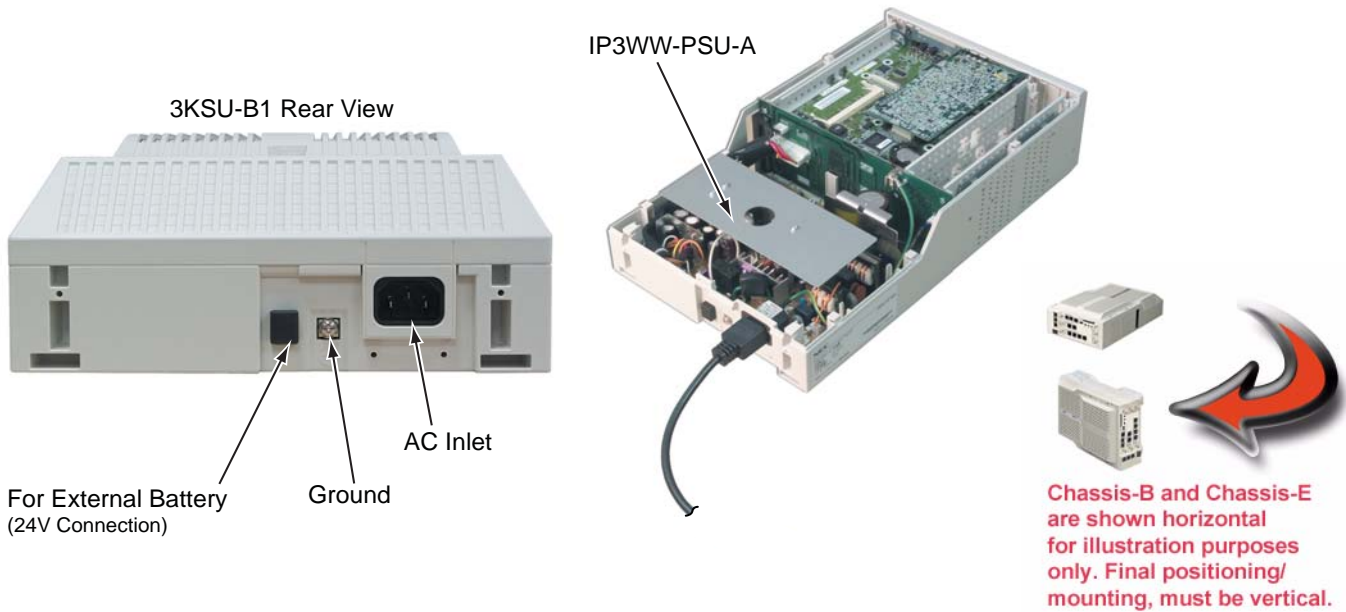


Figure 1-5: CHASSIS-B - BACK

## SECTION 1-4

### Expansion Chassis-E

#### 1.4.1 Expansion Chassis-E

The Expansion Chassis-E is used to install additional system blades and connects to the right of the Controlling/Base Chassis-B. Combined with the Controlling/Base Chassis-B, it can accommodate up to 96 ports (40 trunk/80 stations max.). With a maximum of 4 hard-wired Controlling/Base Chassis-Bs and 4 Expansion chassis, the system will provide up to 184 trunks and 320 extensions and, with IP connections, a maximum of 200 trunk ports (128 IP trunks max.) and 512 station ports is possible.

To reach these limits, a MEMDB would be required as well as a license for the expanded ports.

Each chassis measures 9.5 inches wide. A Controlling/Base chassis with an Expansion chassis connected is a total of 19 inches and 4.25 inches high.

The Expansion chassis provide 3 universal slots for the optional blades (such as ESIU, SLIU, COIU, etc.) and an EXIFU (expansion) slot. All slots are connected to the backplane. The Controlling/Base chassis provides the power through the backboard connector.

A Chassis-B can be combined with an Expansion Chassis-E. Additional pairs of Chassis-B/Chassis-E's can be connected to the system (up to 4 chassis sets maximum). Expansion Interface Units (EXIFU-B1 and EXIFU-E1) are installed in the EXIFU slot in the Chassis-Bs (base chassis). The connection to the Expansion Interface Unit is made using a CAT 5 cable.



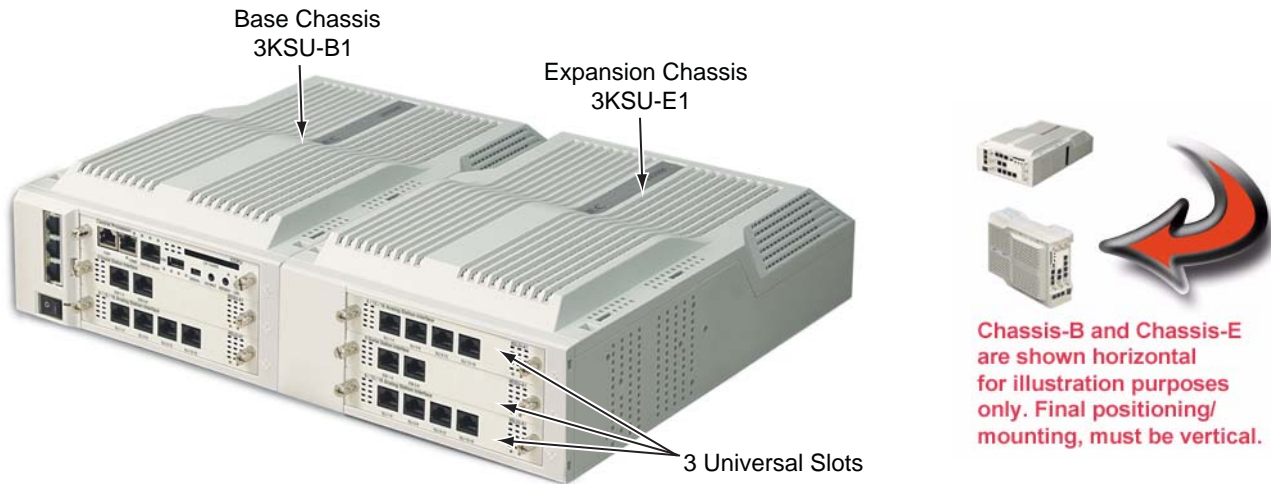
#### **! Important !**

- The Expansion chassis must only be installed with the system power OFF.



**Chassis-B and Chassis-E are shown horizontal for illustration purposes only. Final positioning/mounting, must be vertical.**

**Figure 1-6: CHASSIS-E**



**Figure 1-7: COMBINED CHASSIS-B AND CHASSIS-E**

The Expansion chassis uses an expansion bracket which attaches to the right side of the Controlling/Base chassis.

When multiple chassis (combined Chassis-B and Chassis-E or a Chassis-A) are to be connected, an Expansion chassis kit is required to connect the chassis together (using the EXIFU blade).

- **Note: When wall-mounting a UX5000 system, make sure the wall can support the weight of the chassis.** It is recommended that plywood first be installed on the wall where the chassis will be positioned, allowing for secure anchoring.

#### **1.4.2 Before Installing an Expansion Chassis**

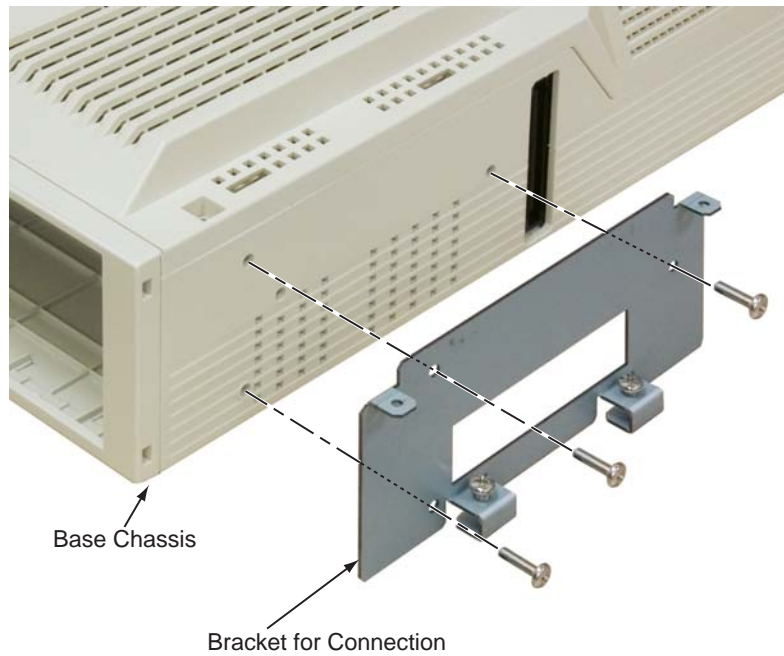
1. The system must be powered down (if previously turned on).
2. Remove the Controlling/Base chassis from the current mounting (if necessary).

#### **1.4.3 Connecting the Chassis-B and Chassis-E Together**

To secure the 9.5" Base and Expansion chassis together, follow the instructions below.

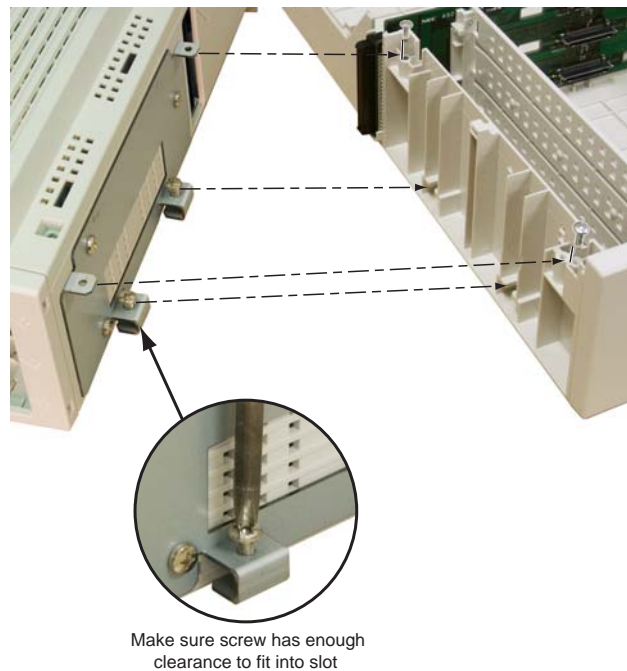
1. Remove the metal plate covering the expansion connector on the right side of the Chassis-B.

2. Secure the metal bracket to the Base chassis with the 3 screws provided.

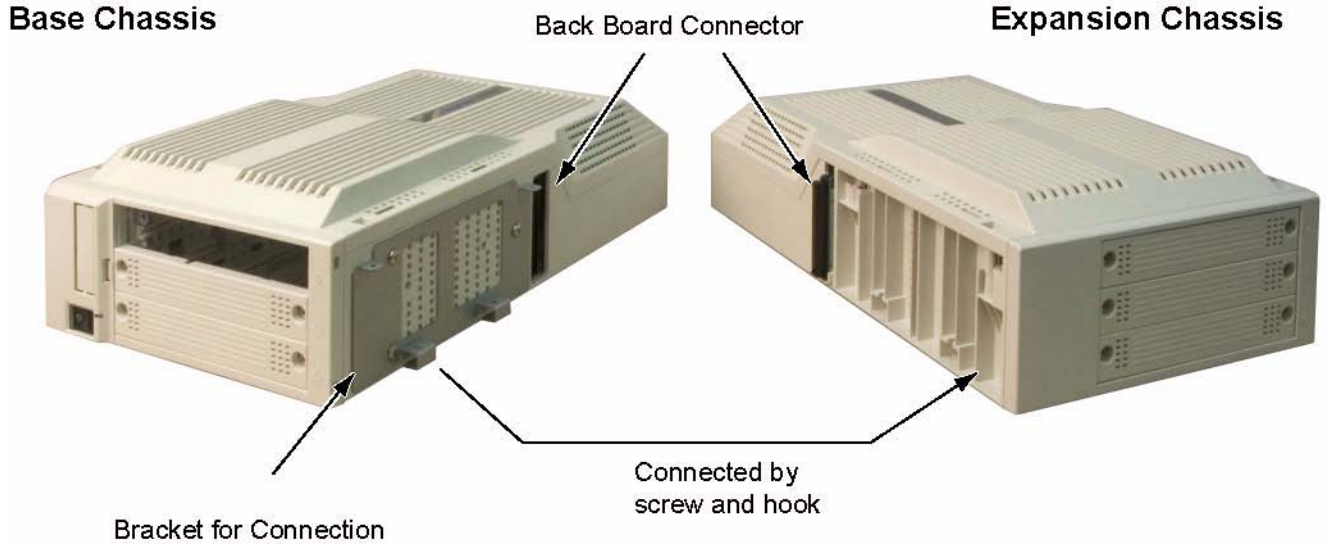


**Figure 1-8: ATTACH THE EXPANSION BRACKET**

3. Align the back board connector up for the Base and Expansion chassis and push the two chassis together. Make sure the two screws on the bracket are positioned high enough to allow chassis enough space to connect.

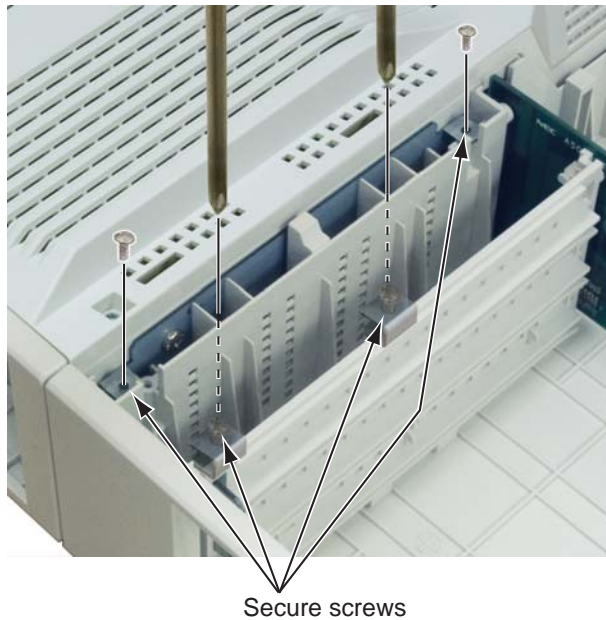


**Figure 1-9: POSITION FOR CONNECTING SCREW**



**Figure 1-10: ATTACHING THE CHASSIS TOGETHER**

4. Remove the top cover of the Chassis-E by removing the two screws located near the top front of the chassis and slightly pushing the cover backwards.
5. Tighten the four screws on the expansion bracket and replace the cover.

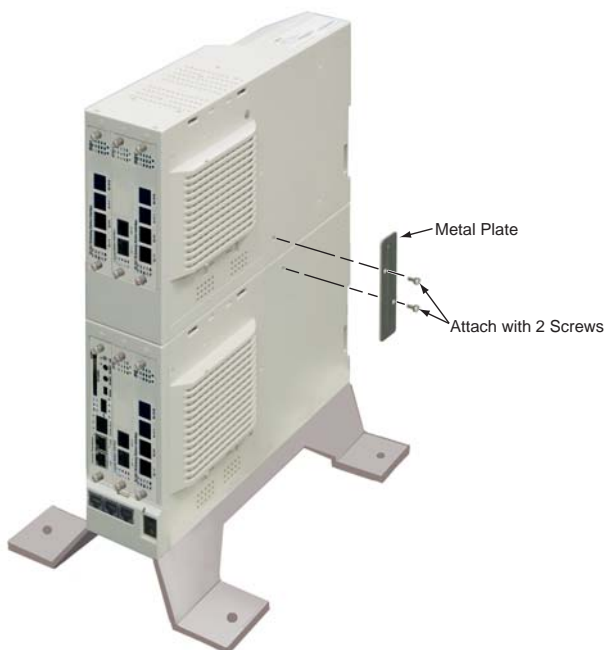


**Figure 1-11: SECURING THE SCREWS**



**Figure 1-12: REATTACH THE TOP COVER**

6. Using the metal reinforcement bracket included, secure the bracket as shown below using the 2 screws provided.



**Figure 1-13: ATTACH THE REINFORCEMENT BRACKET**





## SECTION 1-5 19" Chassis-A

### 1.5.1 19" Chassis-A

In this documentation, the first chassis in the system requires a CCPU and is called the Controlling chassis. The system can then be expanded by attaching a total of 4 chassis directly together. Additional chassis can be connected together using an IP connection to allow for a maximum of 200 trunks and 512 extensions.

The Chassis-A provides the power supply, connections on the power supply unit for an external backup battery, 6 universal slots for the CCPU and other optional blades (such as ESIU, SLIU, COIU, etc.) and an EXIFU (expansion) slot. All slots are connected to the backplane.

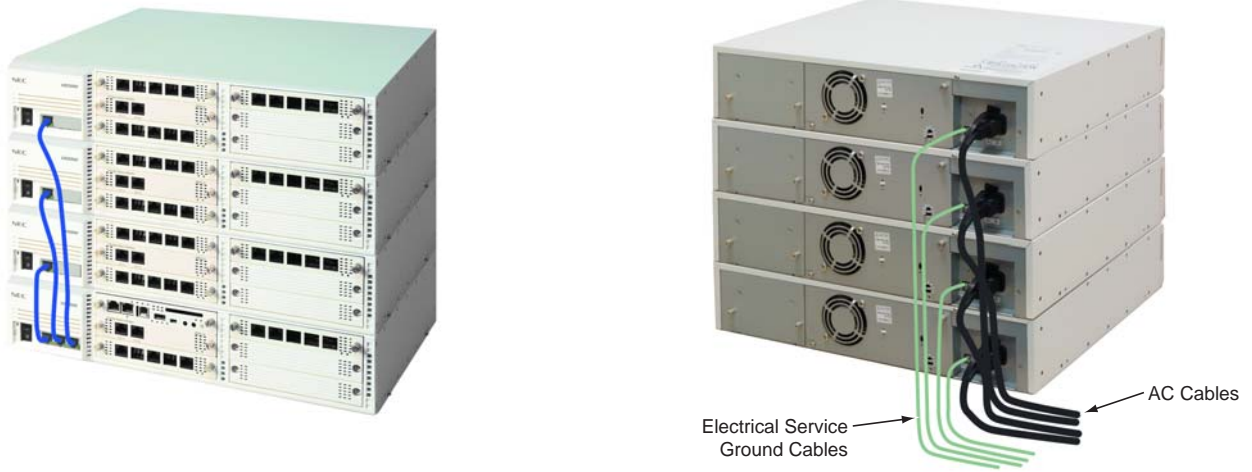


**Figure 1-14: CHASSIS-A - FRONT**

When the Chassis-A is combined with additional chassis, Expansion Interface Units (EXIFU-B1 and EXIFU-E1) are installed in the EXIFU slot in both chassis. The connection to the Expansion Interface Unit is made using a CAT 5 cable.

The Controlling Chassis-A is used to install the system blades, including one slot for the CCPU. It can accommodate up to 96 ports (40 trunk and 80 extension ports). Additional chassis can be connected together to accommodate additional ports. With a maximum of 4 Chassis-As, the system will provide up to 184 trunks and 320 extensions and, with IP connections, a maximum of 200 trunk ports and 512 station ports is possible.

To reach these limits, a MEMDB would be required as well as a license for the expanded ports.



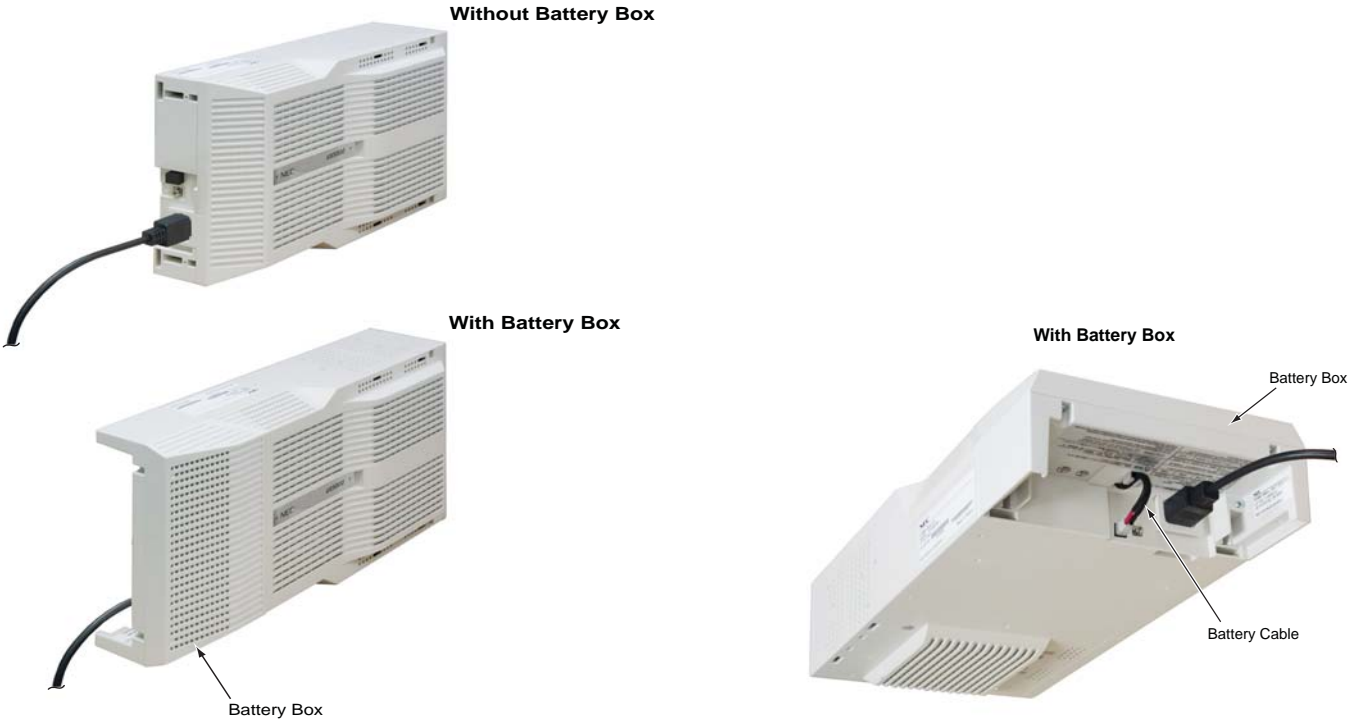
**Figure 1-15: CABLING THE CHASSIS**

**SECTION 1-6**  
**Battery Box**

**1.6.1 Chassis Battery Box**

If the power fails, connecting the power supply unit from the 9.5" Controlling chassis or from the 19" Chassis-A to a battery box will allow the system to continue to function.

Each chassis (Chassis-B and Chassis-A) has two versions of battery boxes which can be connected. An internal short-term battery box and an external long-term battery box. The short-term battery box will power the system for approximately 10 minutes. The long-term battery will power the system for approximately 3 hours.



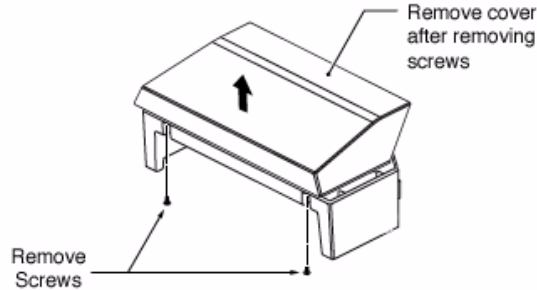
**Figure 1-16: 9.5" CONTROLLING CHASSIS-B SHORT-TERM BATTERY BOX**



**Figure 1-17: SHORT-TERM BATTERY BOX LOCATION ON 19" CHASSIS-A**

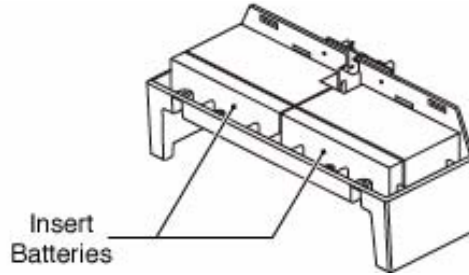
**1.6.1.1 Installing the Short-Term Battery Box in the 9.5" Chassis-B**

1. **Make sure the chassis is powered off and unplugged.**
2. On the battery box compartment, remove the 2 screws under the battery box then remove the top cover.



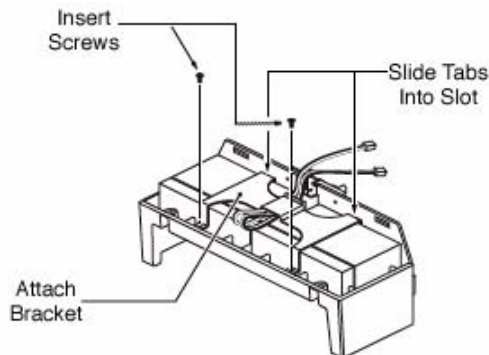
**Figure 1-18: REMOVE SCREWS AND TOP COVER**

3. Remove the metal support bracket.
4. Insert the 2 short-term batteries.



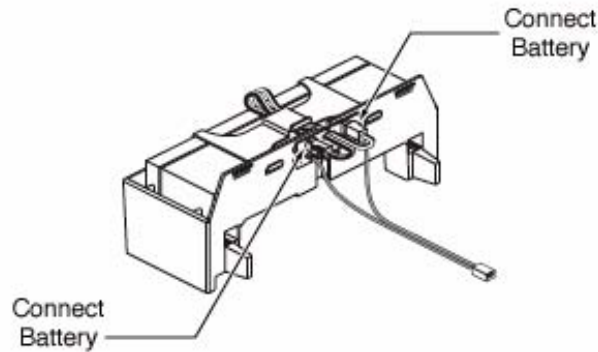
**Figure 1-19: REMOVE SCREWS AND TOP COVER**

5. Place the battery cable on top of the batteries and adjust it to take up the extra length. Allow enough length for the connections to be made to the equipment.
6. The metal bracket is placed on top of the batteries and able to hold them in place. Insert the metal tabs of the bracket into the slots on the side of the battery compartment and lower into place. Using the two screws provided, attach the bracket to the battery compartment.



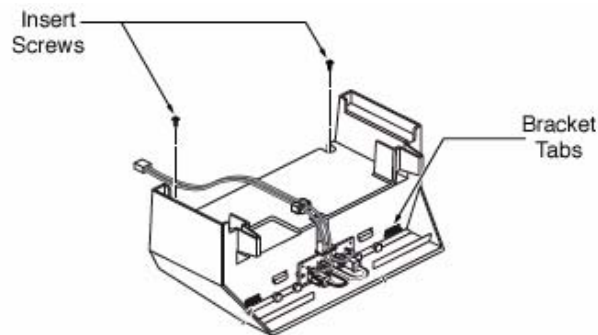
**Figure 1-20: ATTACH BRACKET WITH SCREWS**

7. Insert the battery cable through the slot on the battery compartment and connect the battery cable to the connection points on the battery compartment.



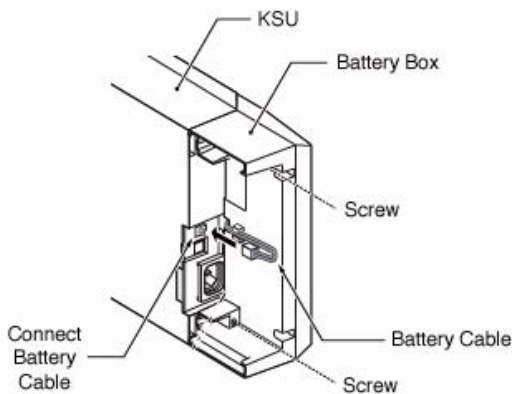
**Figure 1-21: ATTACH BATTERY CABLE TO CONNECTORS**

8. Reattach the cover by securing the two screws removed previously.



**Figure 1-22: REATTACH TOP COVER**

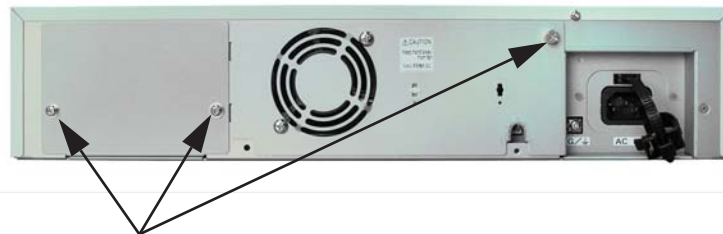
9. Secure the battery compartment to the chassis using the two screws provided. Then, attach the battery cable to the chassis.



**Figure 1-23: ATTACH TO CHASSIS AND CONNECT BATTERY CABLE**

### 1.6.1.2 Installing the Short-Term Battery Box in the 19" Chassis-A

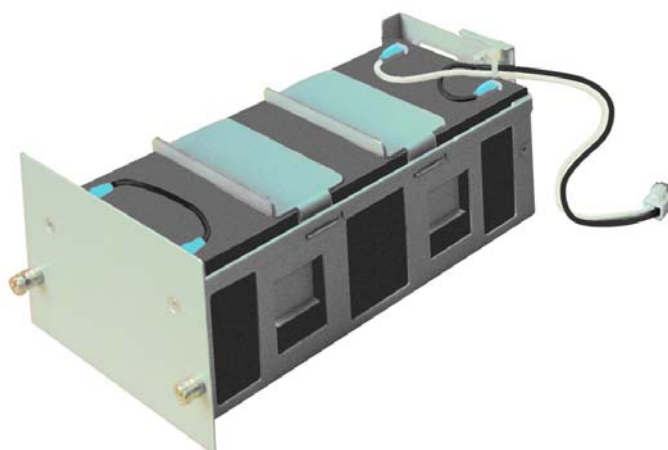
- Though the battery cage is provided standard as part of the Chassis-A, the batteries are optional equipment.
1. **Make sure the chassis is powered off and unplugged.**
  2. On the back of the 19" Chassis-A, remove the 2 screws holding in the metal plate on the left side of the chassis.



Remove screws to install

**Figure 1-24: REMOVE SCREWS ON 19" CHASSIS-A**

3. Remove the screw holding in the fan's metal plate. Remove the cover by lifting it on the left side and sliding it slightly to the right.
  - Use caution when removing the plate as the fan is attached to this plate but it is still plugged into the connection on the chassis.
4. On the battery box cage, remove the screws holding down the 2 brackets on the top of the box.
5. Install the 2 battery units (2.3AH-12V batteries) into the battery box cage. and reattach the 2 brackets to secure the batteries in place.
6. Provided with the battery box are 2 cables. Clip the short wire to the batteries at the front.



**Figure 1-25: BATTERY BOX WITH BATTERIES AND CABLES**

7. With the long 2-wire cable, clip each end to the batteries at the back.

8. Insert the cables into the chassis pull them to the right, towards the BATT connection.
9. Secure the cables to the metal wire guide/protector with tie wraps.
10. Install the metal wire guide/protector by inserting it to the left of the fan's position. Secure it to the chassis with the provided screw.
11. Plug the battery cable into the BATT connector.
12. Replace the metal plate containing the fan and resecure with the screw.
13. Push the battery box cage into the chassis and secure it with the 2 screws removed previously.

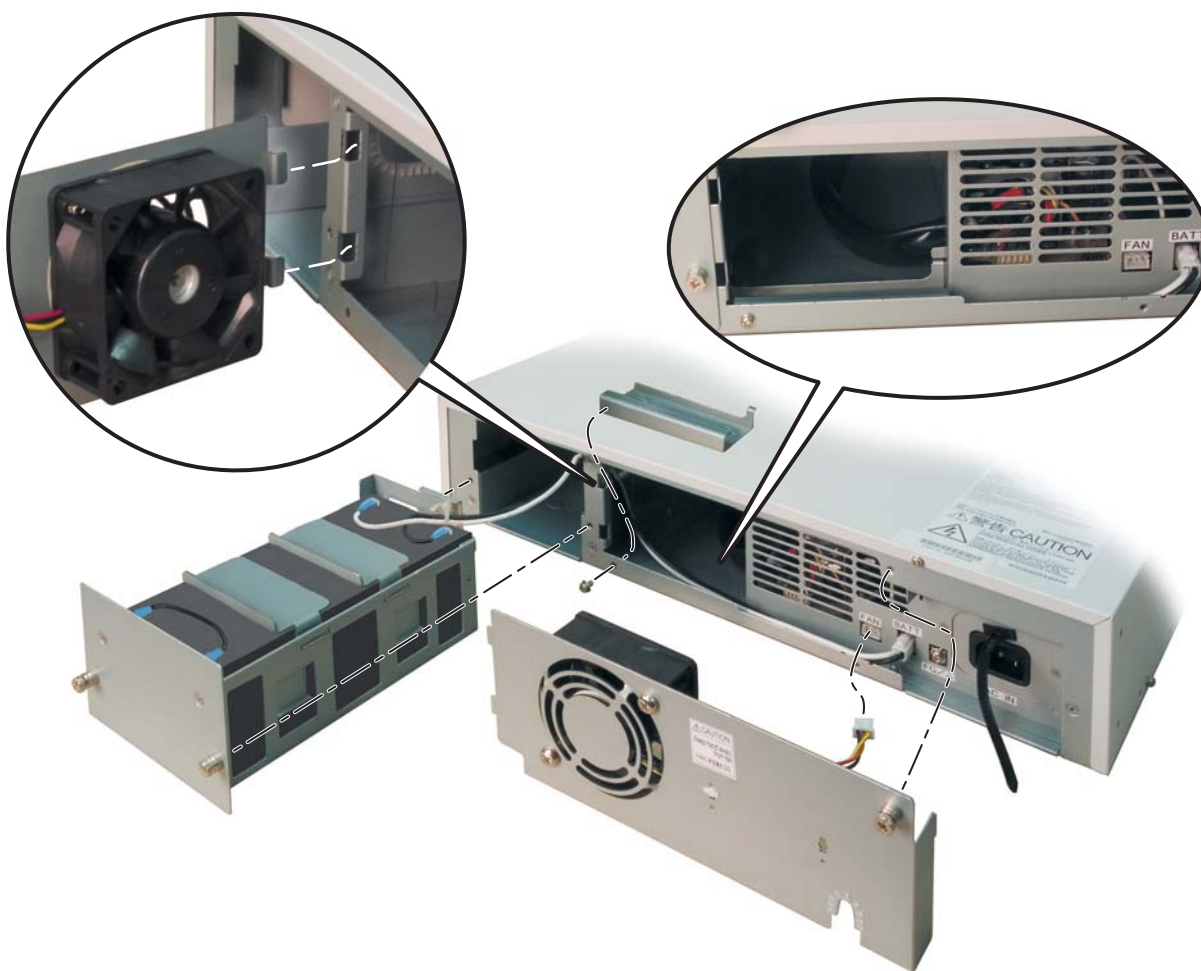


Figure 1-26: INSTALLING THE SMALL BATTERY BOX

## 1.6.2 Long-Term Battery Box

The long-term battery box can be used with the Chassis-A or Chassis-B/E. When using the long-term battery box, the unit can be floor mounted to provide a secure installation. It should, however, be mounted on top of the Floor-Mount box (P/N 0910008). The connection method chosen can provide for either 45 minutes of backup time (if all chassis are connected to one battery box, or up to 3 hours if each chassis is connected to its own battery box).



### **! Important !**

- It is not recommended to wall mount the long-term battery box.



Back View

Figure 1-27: EXTERNAL BATTERY BOX

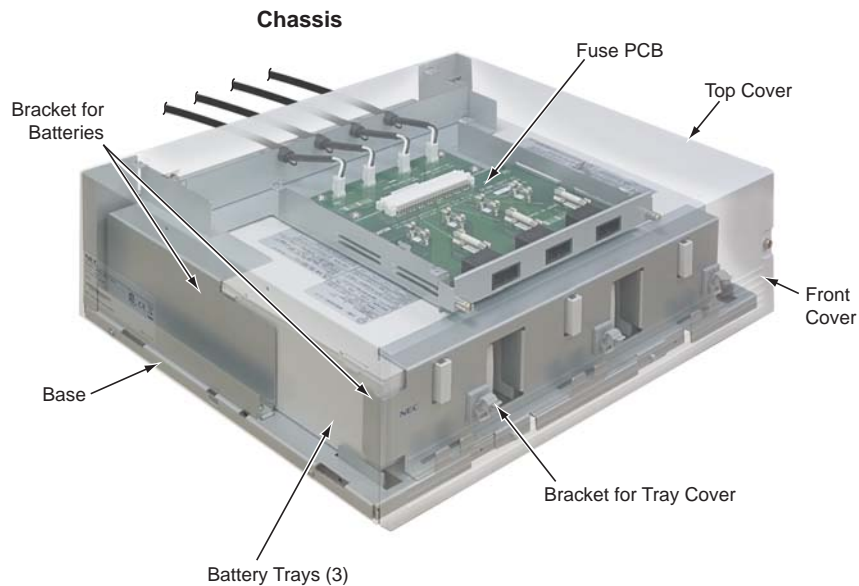
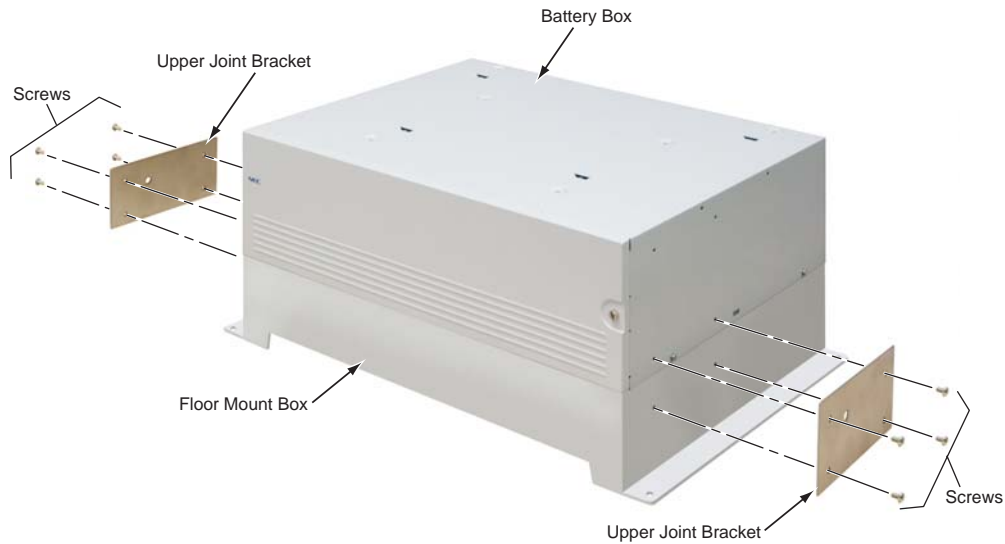


Figure 1-28: INSIDE VIEW OF THE EXTERNAL BATTERY BOX



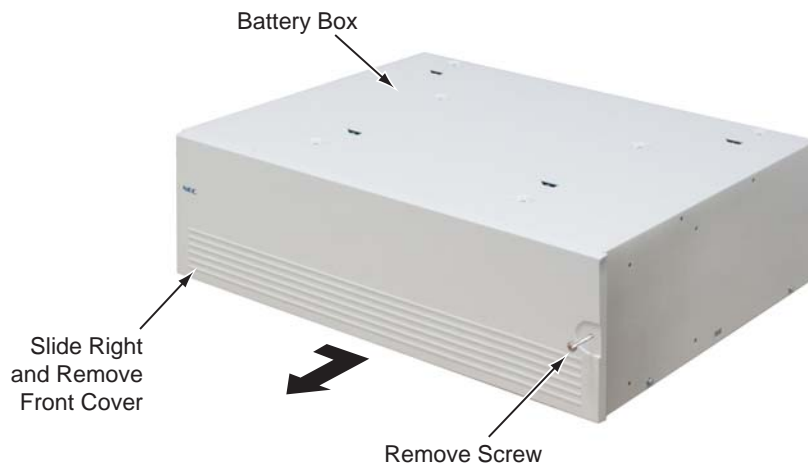
### 1.6.2.1 Installing the Long-Term Battery Box

1. Position the floor-mount box in a location which provides enough access around the unit to allow for access to the equipment. Secure the box with 4 10mm anchor bolts.
2. Place the long-term battery box on top of the floor-mount box. Secure the unit by attaching the upper joint brackets to either side of the battery box and floor-mount box. Four screws total on each bracket are used - two screw into the battery box and two screw into the floor-mount box.



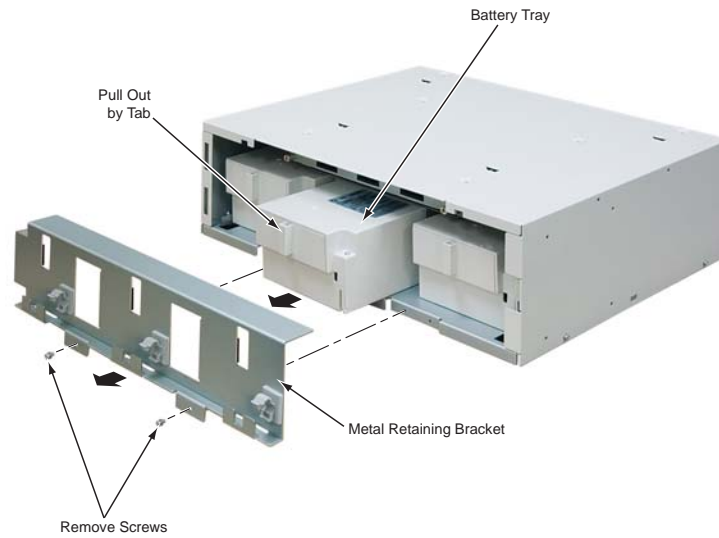
**Figure 1-29: MOUNTING BATTERY BOX TO FLOOR MOUNT BOX**

3. Remove the screw on the right side of the front cover of the battery box. Slide the cover to the right slightly and remove it.



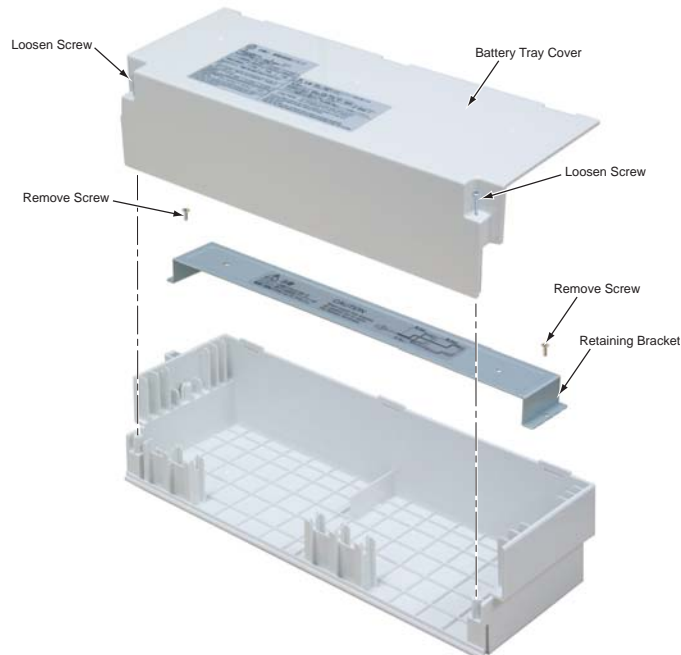
**Figure 1-30: REMOVE FRONT COVER OF BATTERY BOX**

4. Remove the two screws from the metal retaining bracket and remove the bracket.
  - This allows access to three battery compartments.



**Figure 1-31: REMOVE RETAINING BRACKET AND BATTERY TRAYS**

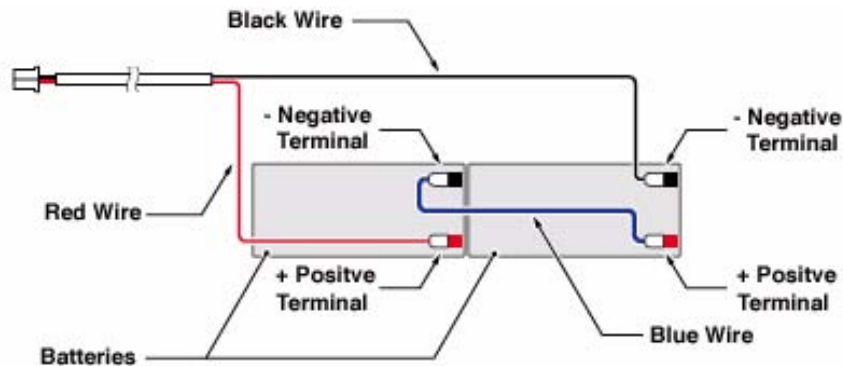
5. Pull out the first battery compartment using the tab on the front of the tray. Loosen the two screws on the top of the cover and remove.
6. Remove the two screws holding in the metal retaining bracket and remove the bracket.



**Figure 1-32: REMOVE BATTERY TRAY COVER AND RETAINING BRACKET**

7. Install two of the batteries into the compartment and reattach the metal retaining bracket.

8. Connect the battery cables as shown below. The black cable is attached to the negative connector on the right-side battery. The blue cable is attached from the positive connector on the right-side battery to the negative connector on the left-side battery. The red cable is attached from the positive connector of the left-side battery.



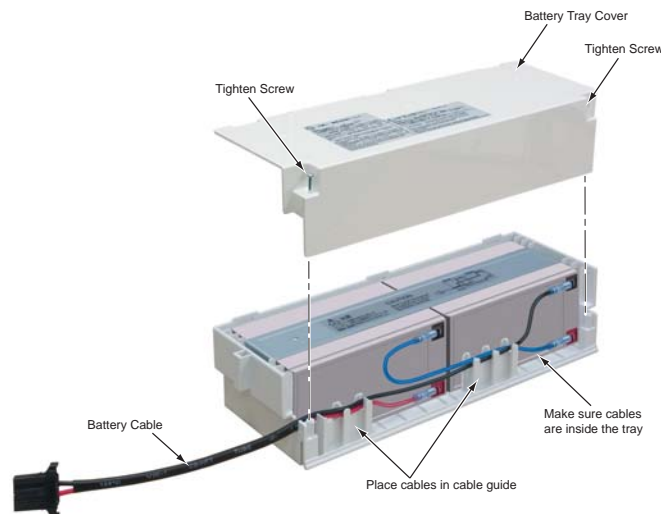
**Figure 1-33: CONNECT THE POLARITY-SENSITIVE BATTERY CABLES**



**! Important !**

- Be sure to connect the cables as shown. If the polarity connection of the cables is incorrect, it can cause the fuses in the battery box to blow, or it may also cause a fire.

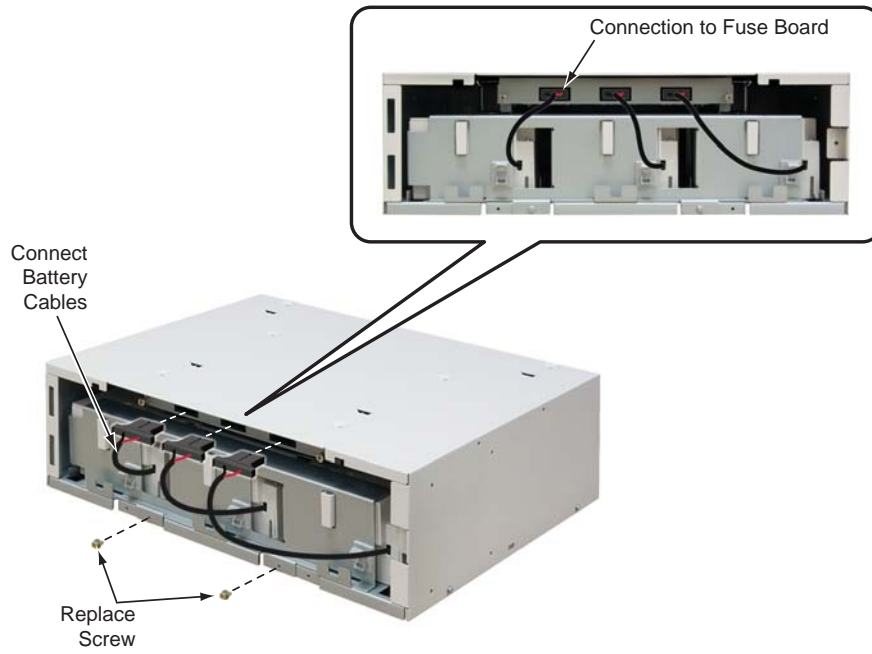
9. Route the cables out of the battery box, securing them into the grooves in the tray



**Figure 1-34: ROUTE BATTERY CABLES AND REPLACE COVER**

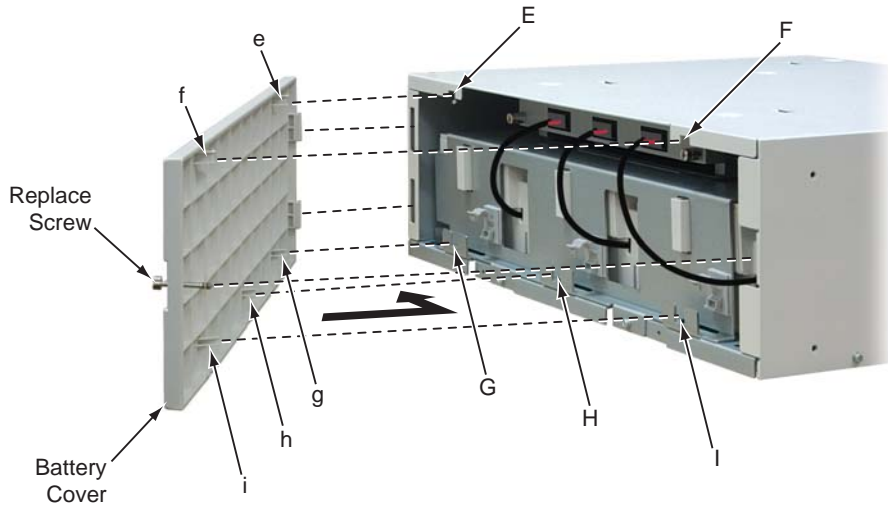
10. Replace the cover and reattach the two screws.
11. Repeat steps 5-10 for the remaining battery compartments.
12. Reinstall the metal retaining bracket removed in step 4 and secure with the 2 screws.

13. Connect the cables from the batteries to the fuse unit located just above the batteries.



**Figure 1-35: CONNECT CABLES TO FUSE BOARD**

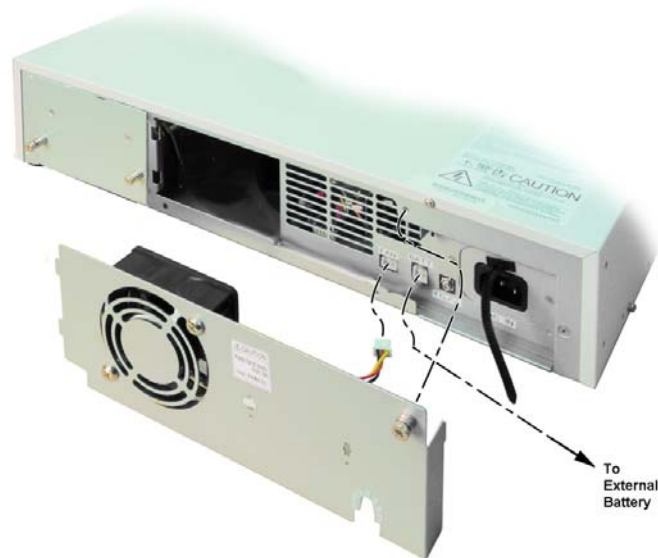
14. Reinstall the front cover by inserting the tabs on the cover into the slots on the battery box. Slide the cover to the left and secure with the screw previously removed.



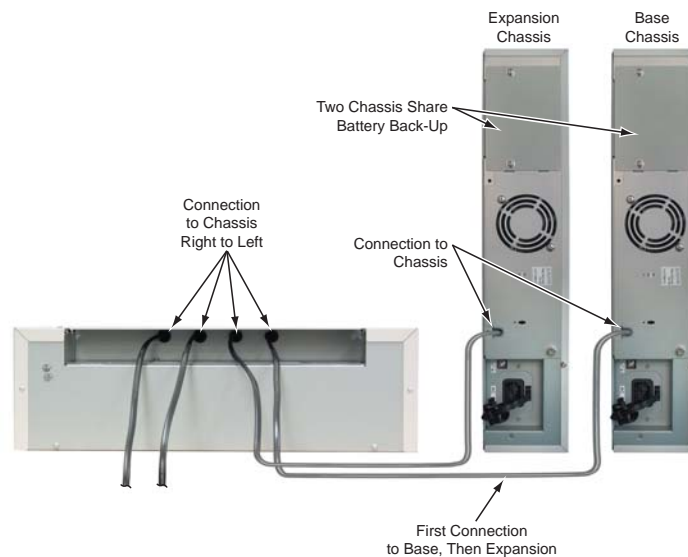
**Figure 1-36: REPLACE FRONT COVER TO BATTERY BOX**

15. Looking at the back of the battery box, the cables should be connected sequentially to the chassis going from right to left. Take the cable on the farthest right and connect it to the first system chassis. Continue for any remaining system chassis.

Connect to the system chassis by removing the screw for the fan panel on the back of the chassis. Plug the cable from the battery box into the connect labeled BATT. Replace the cover, feeding the battery cable out the key hole opening in the panel.



**Figure 1-37: CONNECT BATTERY BOX CABLE TO CHASSIS**



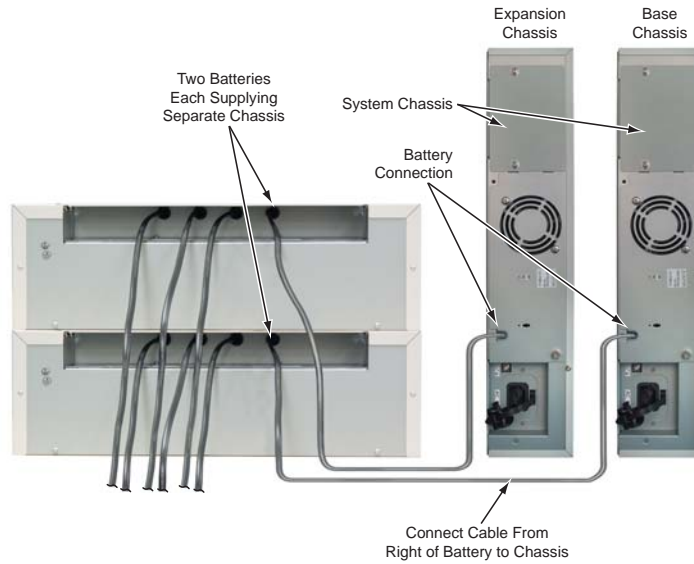
**Figure 1-38: CONNECTION FROM BATTERY BOX TO CHASSIS**

16. You can increase the battery back up time by connecting each system to its own battery box.

**! Important !**

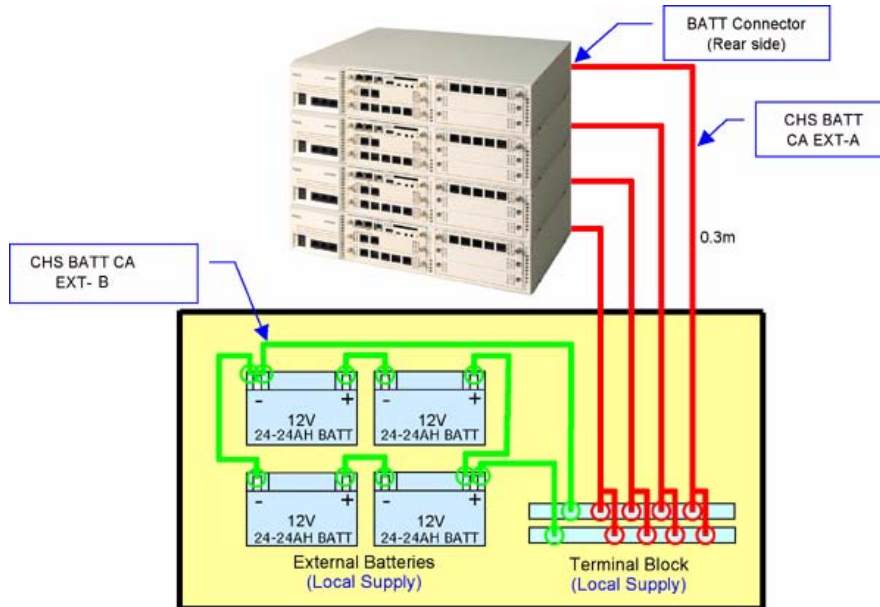


- Do not pull on or carry the batteries by the battery connector cables.
- When replacing the lid, be sure the cables are not pinched between the lid.
- After installing new batteries, write the replacement date on the lid.



**Figure 1-39: MULTIPLIE BATTERY BOX CONNECTIONS**

You can also connect the chassis to customer-provided batteries using the cabling below:



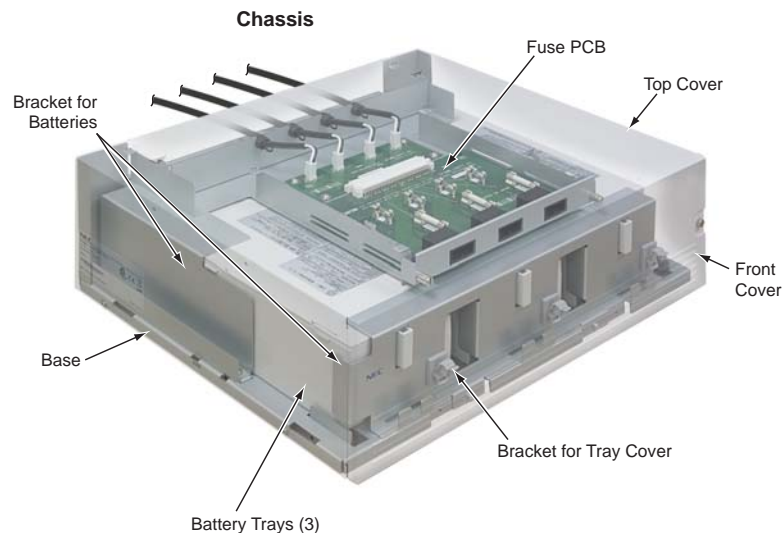
**Figure 1-40: CUSTOMER-PROVIDED BATTERY BOX CONNECTIONS**

## 1.6.2.1 Replacing External Battery Box Fuses in the Long Term Battery Box

**! Important !**

- Do not place metals objects (such as screws) on the fuse unit.
- Only replace with fuses of the same rating.
- Do not peel of the insulation sheet on the back of the fuse unit.
- Fuses may be hot. Use caution when replacing them.

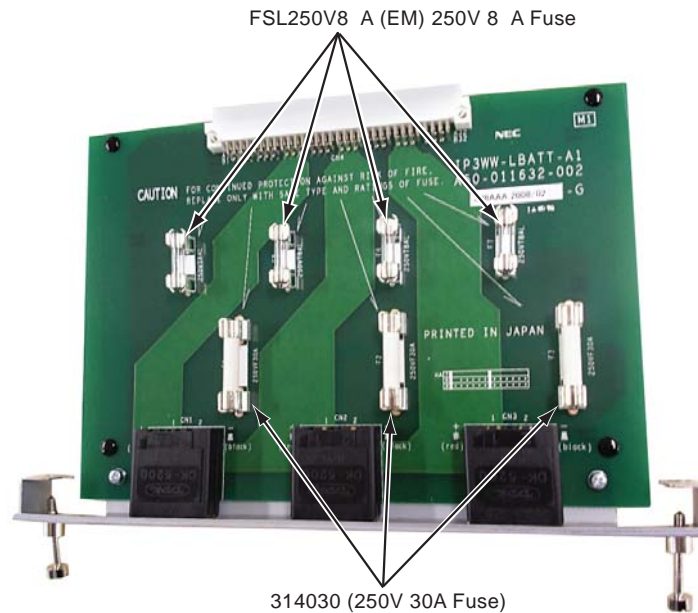
1. Correct the issue which caused the fuse problem.
  - Replacing fuses without first correcting the issue could cause a fire and/or electric shock hazzard.
2. Make sure to unplug the unit from the electrical outlet prior to removing the connection cables within the battery box unit.

**Figure 1-41: UNDER THE FRONT COVER OF THE EXTERNAL BATTERY BOX**

3. Remove the front cover of the battery box.
4. Unplug all the cable connectors from the fuse blade.
5. Loosen the two thumb screws on the fuse blade and remove the blade by pulling on the two thumb screws.

**Figure 1-42: REMOVE FUSE BOARD**

6. Replace the fuse(s) as needed.



**Figure 1-43: FUSES**

7. Replace the fuse blade and tighten the thumb screws on either side of the blade.
8. Replace the battery connection cables to the fuse unit and replace the front cover.



## SECTION 1-7

### Mounting the Chassis

#### 1.7.1 Mounting Options for the Chassis

The chassis can be set up or mounted in the following ways:

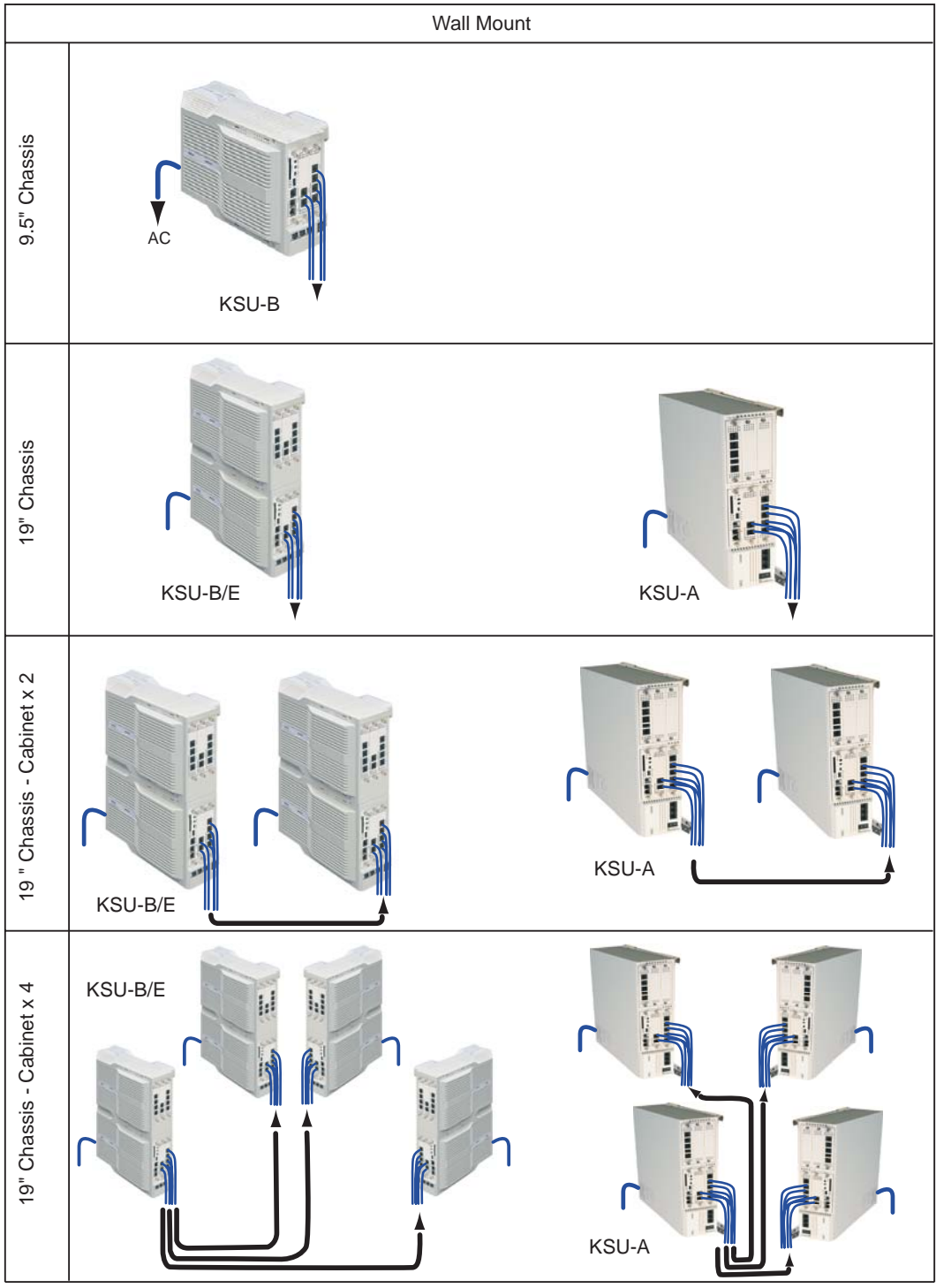
- Wall Mount (page 1-33 and page 1-42)
- Desktop (page 1-47)
- Floor Mount (page 1-50, page 1-53, page 1-55 and page 1-60)
- Rack-Mount (page 1-63)

#### 1.7.2 Securing the Chassis to the Wall (Figure 1-45 - Figure 1-56)

If you choose to wall-mount the system, make sure the wall can support the weight of the chassis. Ensure that enough space is available to allow the installation of the additional chassis above and below the chassis. Be sure to mount the chassis sideways (as shown below). For proper air circulation/cooling, the KSU-B/E chassis should never be mounted long ways.



Figure 1-44: WALL MOUNTING POSITION FOR CHASSIS-B/E

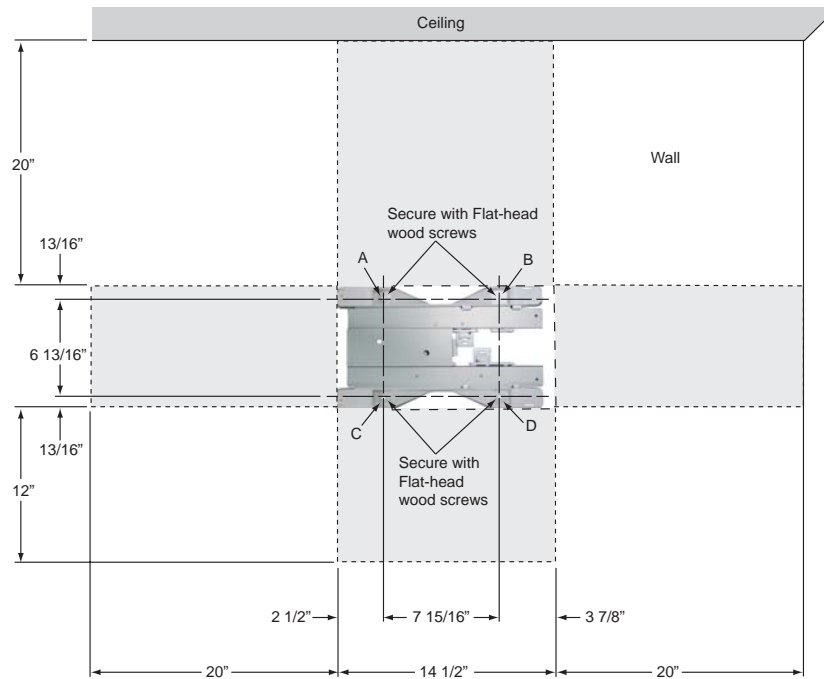


Actual chassis placement with multiple chassis must be positioned to allow connection for the EXIFU-E1 cable, which measures 3.93' (1.2 meters). This means a 3rd or 4th chassis must have the slots facing chassis 1 and 2.

**Figure 1-45: WALL MOUNTING CHASSIS**

### 1.7.3 Wall Mounting the Chassis-B/E (Figure 1-45 - Figure 1-56)

1. Determine the installation location for the wall bracket providing the appropriate spacing as shown below.
  - It is suggested that plywood first be installed on the wall where the chassis will be positioned. This allows for secure anchoring of the screws which will be supporting the weight of the chassis.



**Figure 1-46: WALL MOUNTING 1 CHASSIS-B/E BRACKET**

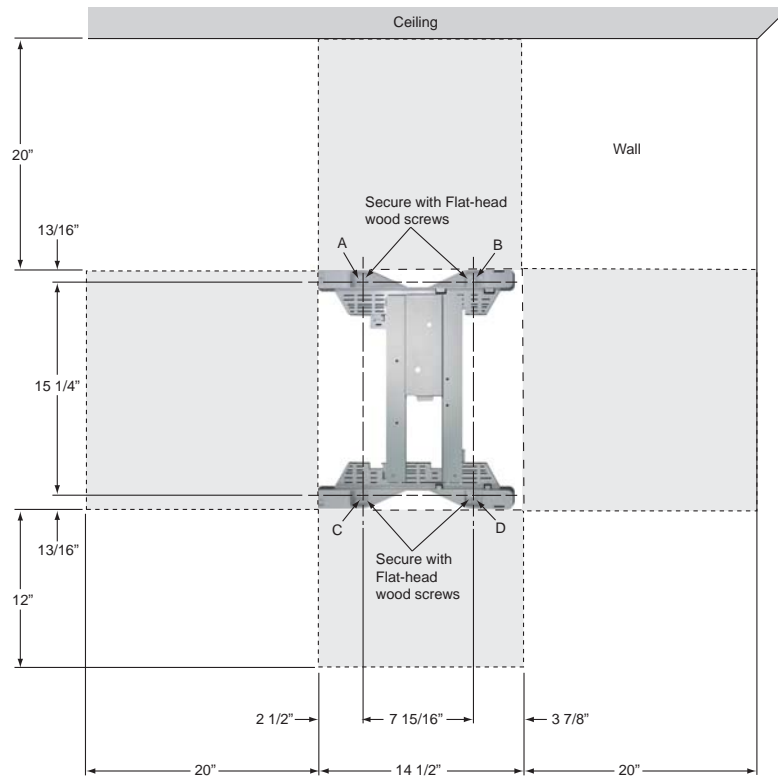


Figure 1-47: WALL MOUNTING 2 CHASSIS-B/E BRACKETS

2. .Remove the metal tabs (E-H) located on the bottom of the brackets.

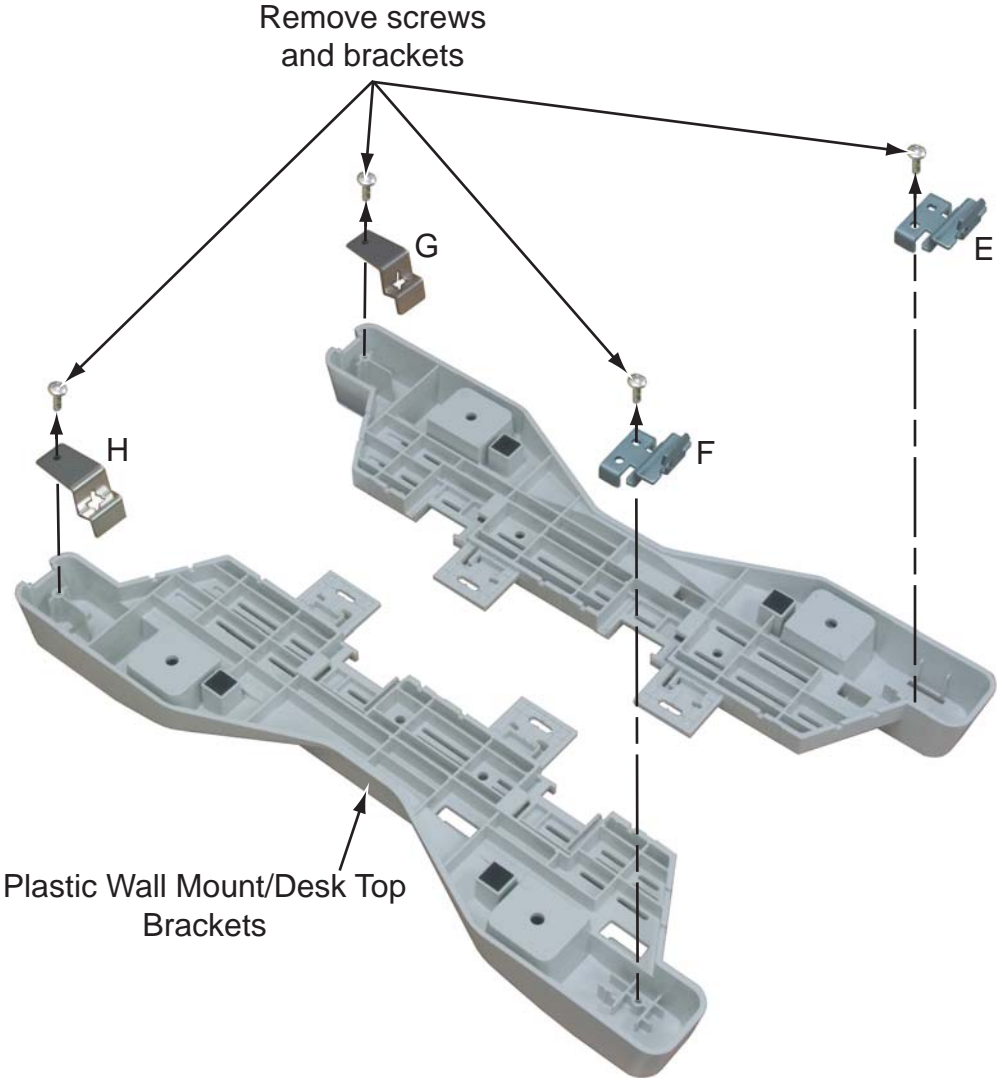
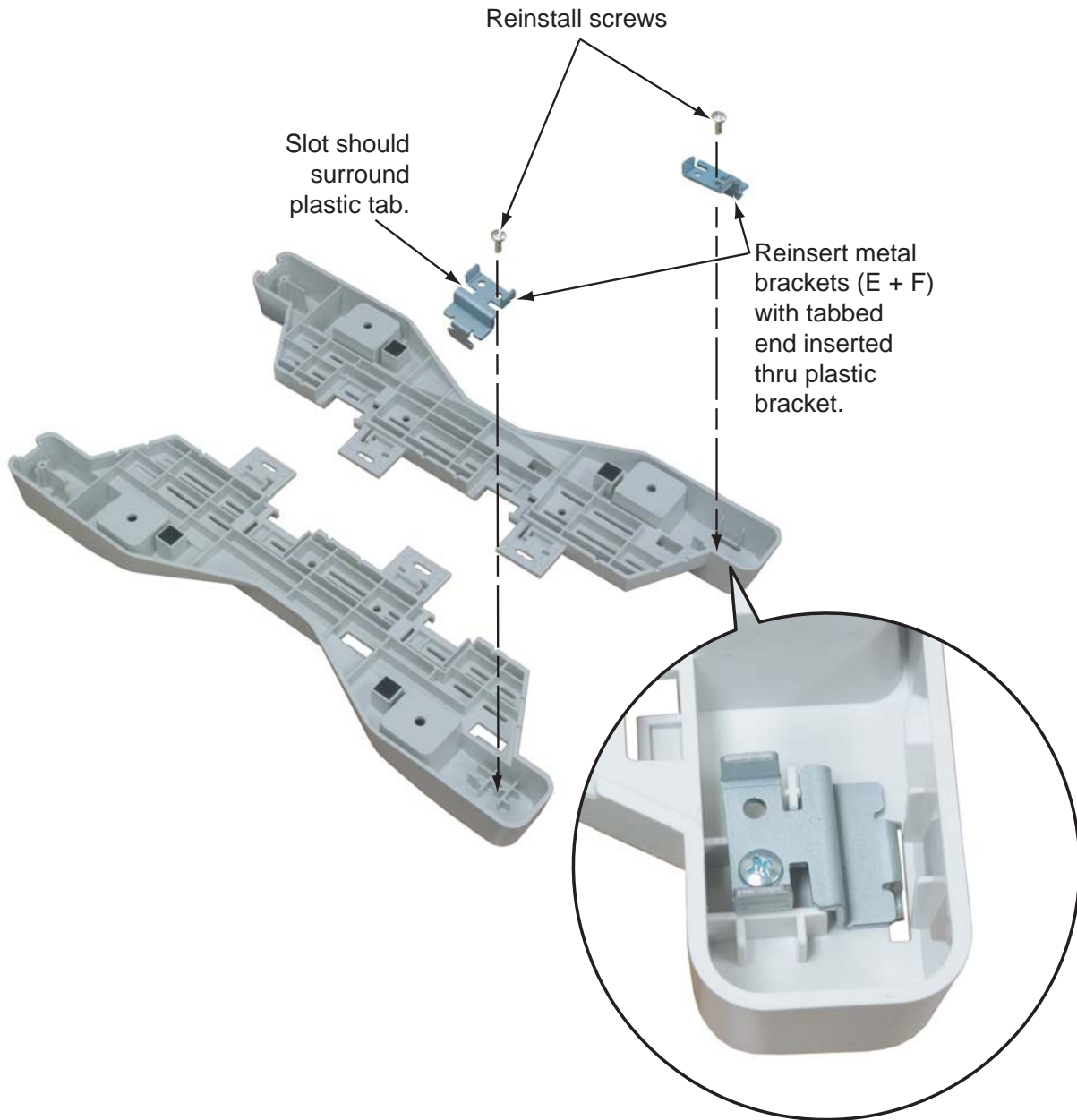


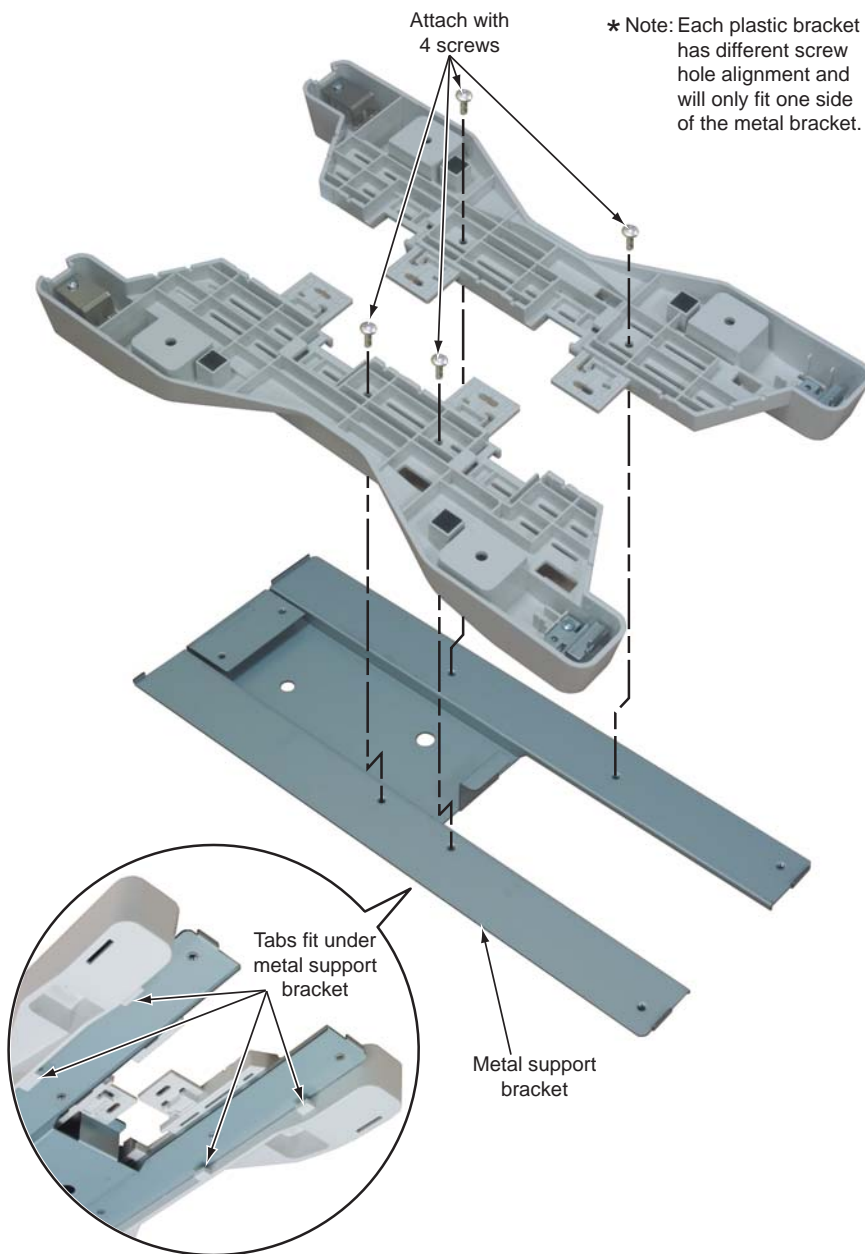
Figure 1-48: REMOVE METAL BRACKETS

3. At their original location, reposition the metal tabs as shown below and secure with the original screws.



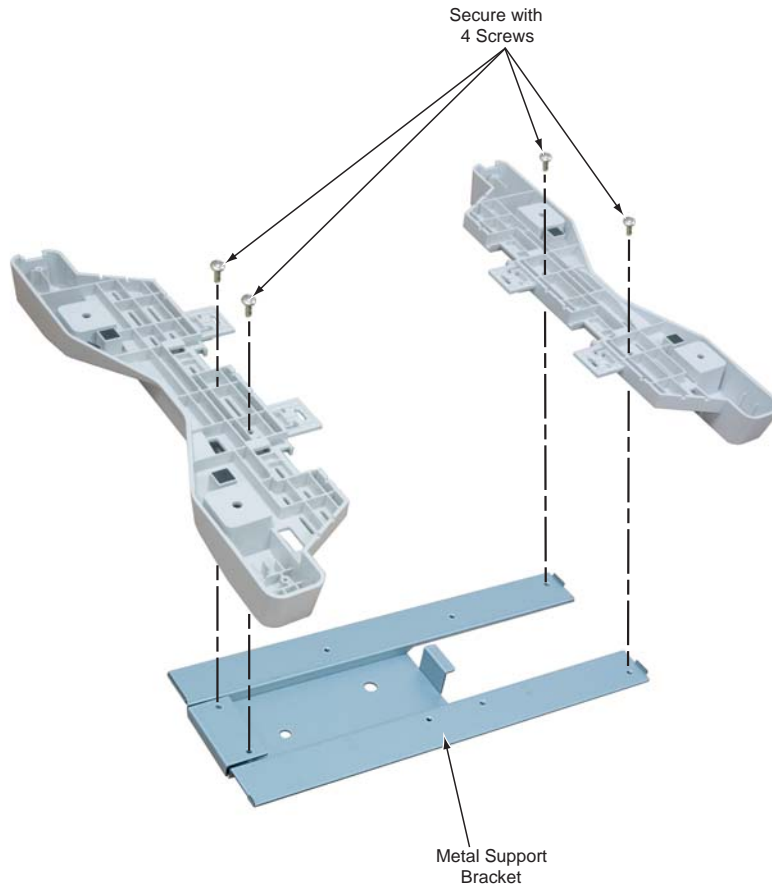
**Figure 1-49: POSITION AND SECURE THE METAL BRACKETS**

4. With a single chassis setup, attach the metal support bracket to the plastic brackets with the 4 screws provided.



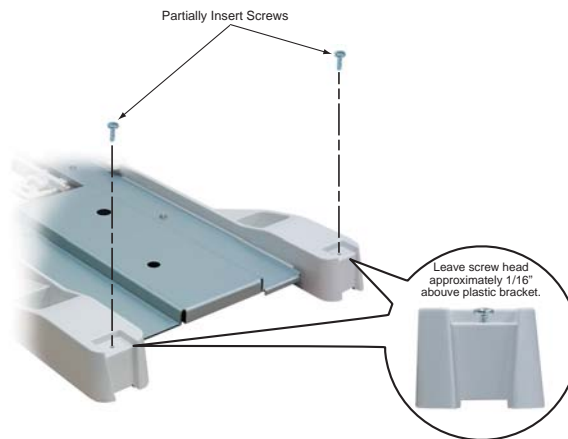
**Figure 1-50: ATTACHING 1 CHASSIS TO THE METAL SUPPORT BRACKET**

5. With a double chassis setup, position the metal support bracket as shown below and secure with the 4 screws provided.



**Figure 1-51: ATTACHING 2 CHASSIS TO THE METAL SUPPORT BRACKET**

6. At the ends of the brackets, reinstall the screws removed in Step 2 which held in the G and H metal tabs. The screw heads should be left approximately 1/16" above the bracket.



**Figure 1-52: REINSTALL SCREWS**



- 7. Attach the bracket to the wall using 4 anchor bolts.

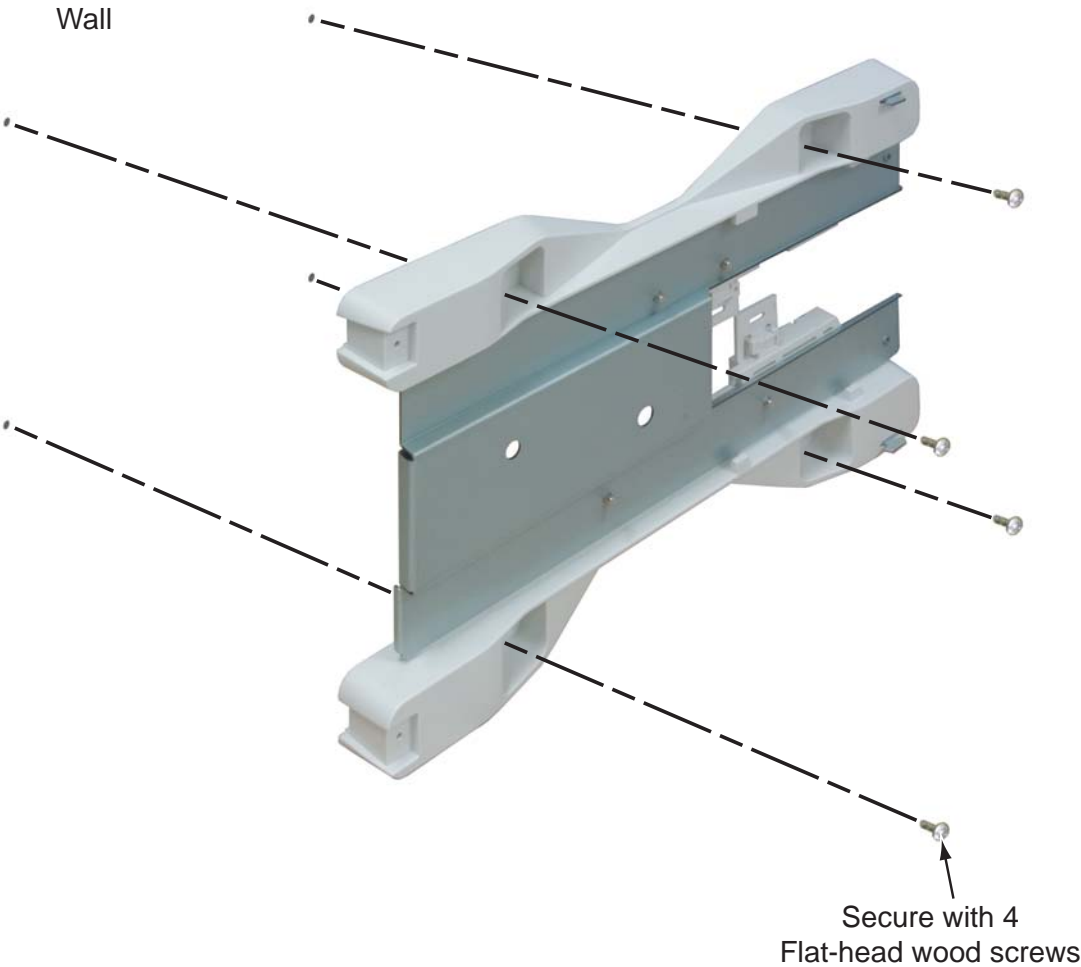
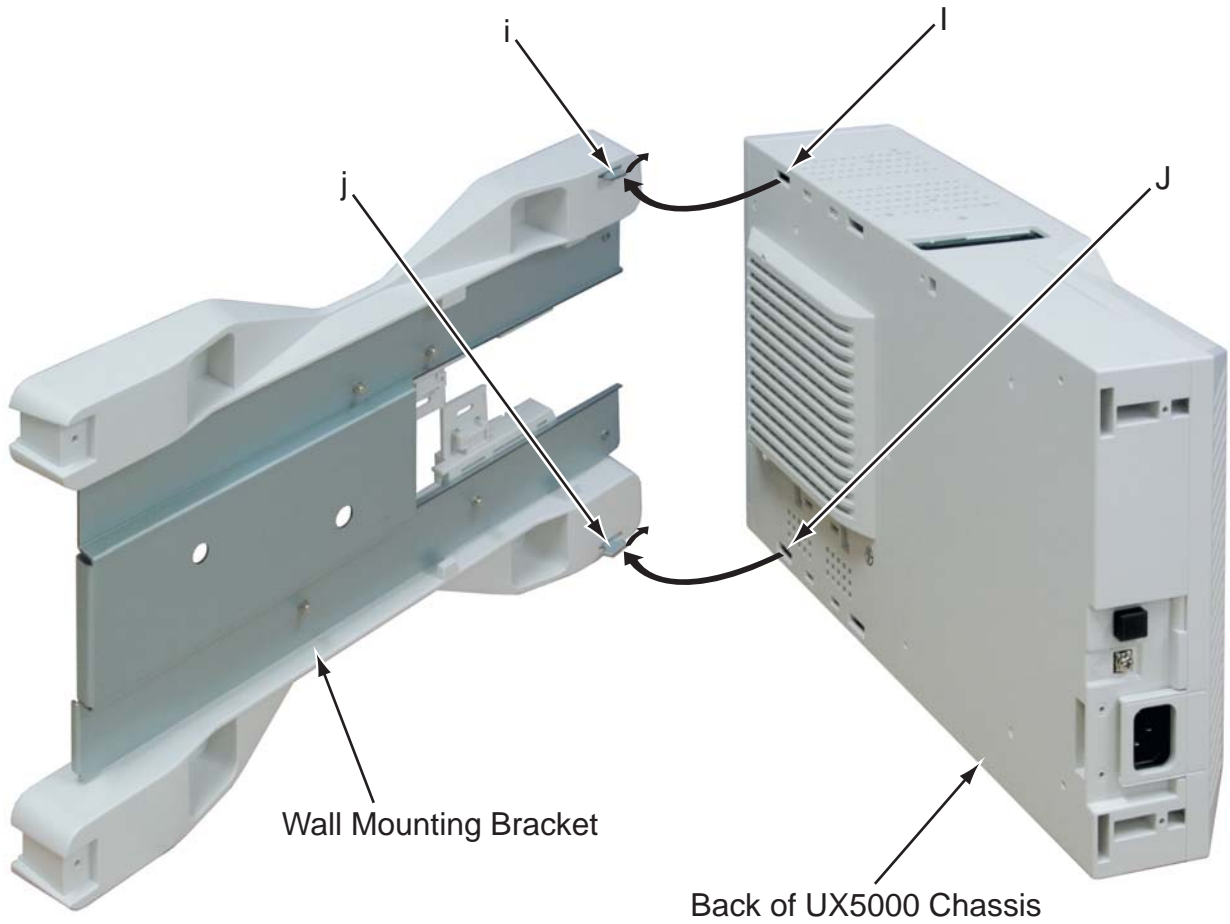


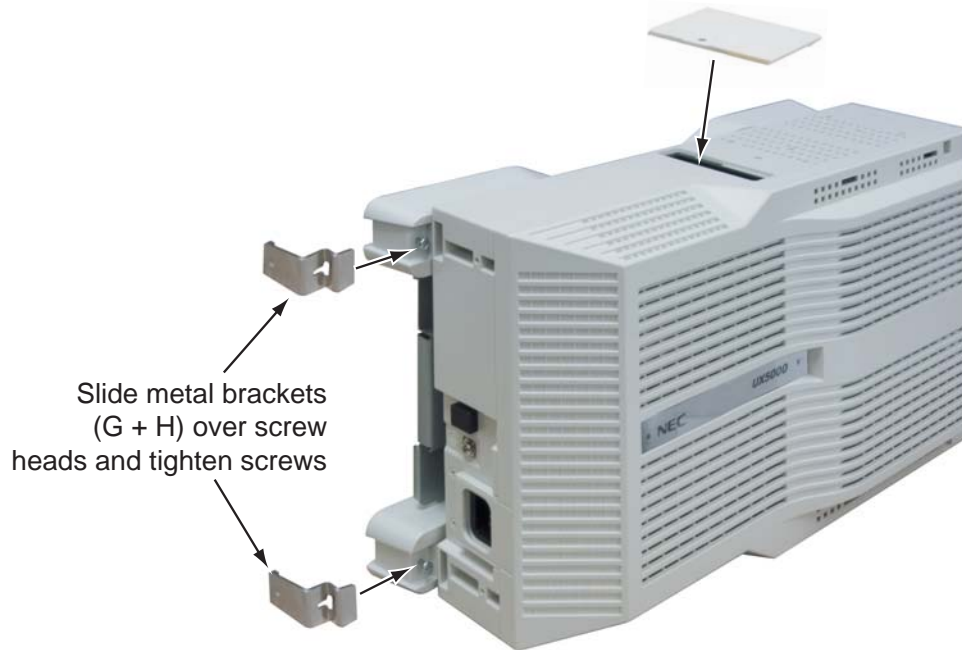
Figure 1-53: ATTACHING THE WALL MOUNT BRACKET TO THE WALL

8. Position the chassis so that hole I and J on the chassis match up with the metal tabs (i and j) on the bracket and slide sideways slightly.



**Figure 1-54: ATTACHING THE CHASSIS TO THE WALL**

- Reinstall the metal tabs (G and H) removed in Step 2. The slot in the brackets should slide over the screw heads. Tighten the screws to secure the chassis.



**Figure 1-55: ATTACHING THE METAL BRACKETS**

- If not attaching a Chassis-E, screw the plastic cover over the backboard connector to prevent dust/foreign objects from entering the chassis.
- If required, reposition the system label on the cover.



**Figure 1-56: REVERSE THE UX5000 LABEL**

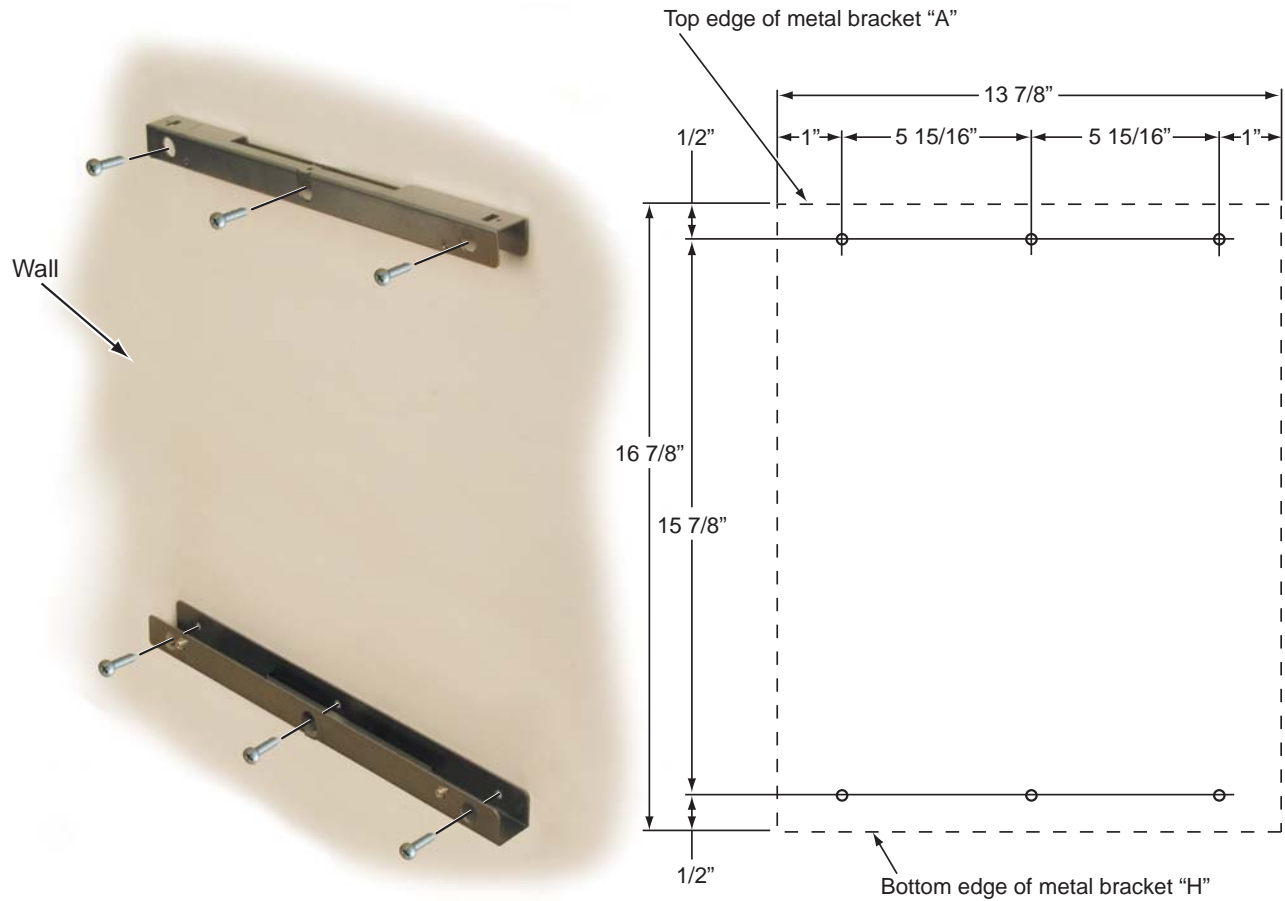
#### 1.7.4 Securing the Chassis-A to the Wall (Figure 1-45 - Figure 1-62)

If you choose to wall-mount the system, make sure the wall can support the weight of the chassis.. Ensure that enough space is available to allow the installation of the additional chassis above and below the chassis.



Figure 1-57: WALL MOUNTING POSITION FOR CHASSIS-A

1. Determine the installation location for the wall bracket providing the appropriate spacing as shown below.
  - It is suggested that plywood first be installed on the wall where the chassis will be positioned. This allows for secure anchoring of the screws which will be supporting the weight of the chassis.
2. Secure the two metal support U-brackets to the wall. Each bracket is attached to the wall using 3 screws each. The brackets should be spaced at the distance shown below.



**Figure 1-58: ATTACHING THE METAL BRACKETS**

3. On the side of the chassis which should be positioned on top when the install is completed, attach the small angle bracket to the middle of the chassis. On the opposite side of the chassis, attach the metal support L-bracket.



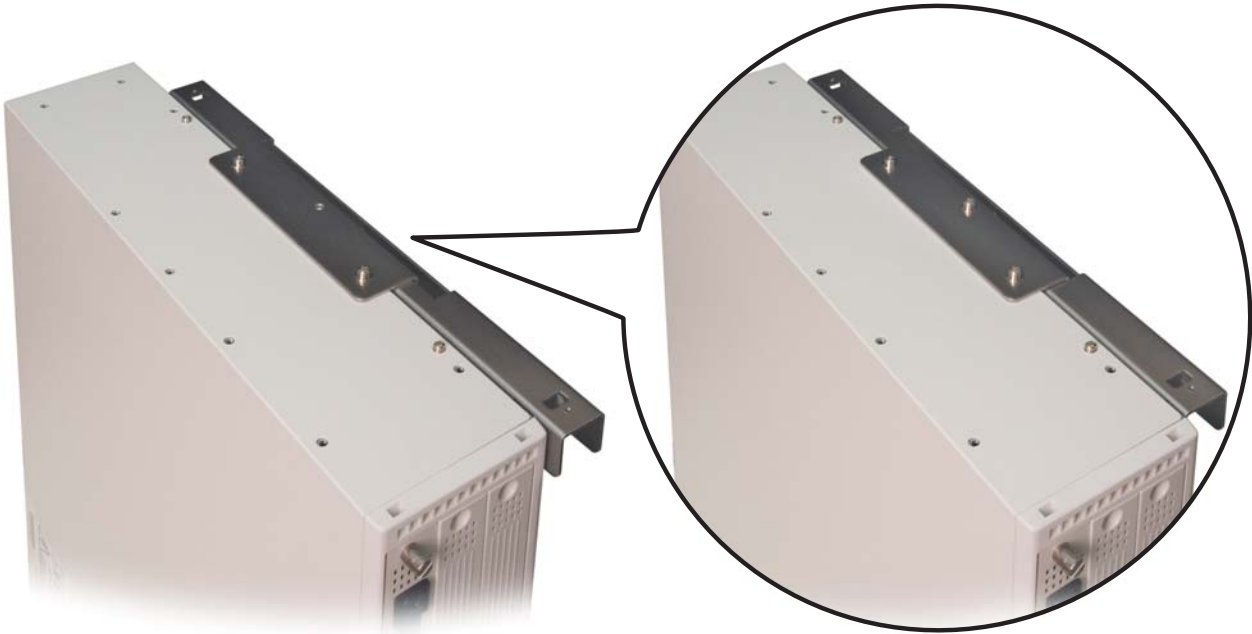
**Figure 1-59: CONNECT THE SUPPORT BRACKETS TO THE CHASSIS-A**

4. On the lower U-bracket support, attach two screws on either side of the bracket. Do not tighten the screws. There should be approximately 3/8" clearance on the screw head to allow for space when installing the chassis with the L-bracket installed.
5. Place the chassis onto the U-brackets attached to the wall. The top L-bracket hooks onto the top support bracket, while the bottom L-bracket slides under the screw heads on the U-brackets. Once hooked, the chassis should be moved slightly to the right. Tighten the screws on the lower U-bracket to secure the chassis into place.



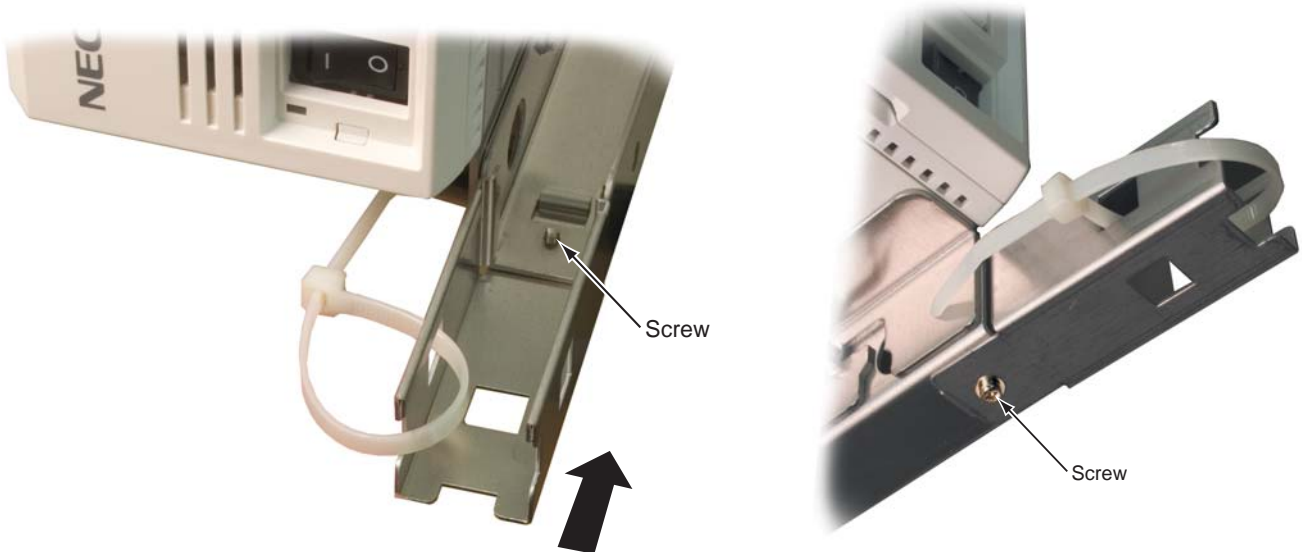
**Figure 1-60: HOOK THE CHASSIS-A ONTO THE WALL MOUNT BRACKETS**

6. Secure the top of the chassis into place by screwing in the top L-bracket into the U-bracket.



**Figure 1-61: ATTACH THE TOP OF THE CHASSIS-A WALL TO THE MOUNT BRACKET**

7. Place the cable support bracket onto the bottom edge of the U-bracket. Secure it to the bottom of the U-bracket with a screw.



**Figure 1-62: CONNECT THE CABLE SUPPORT**



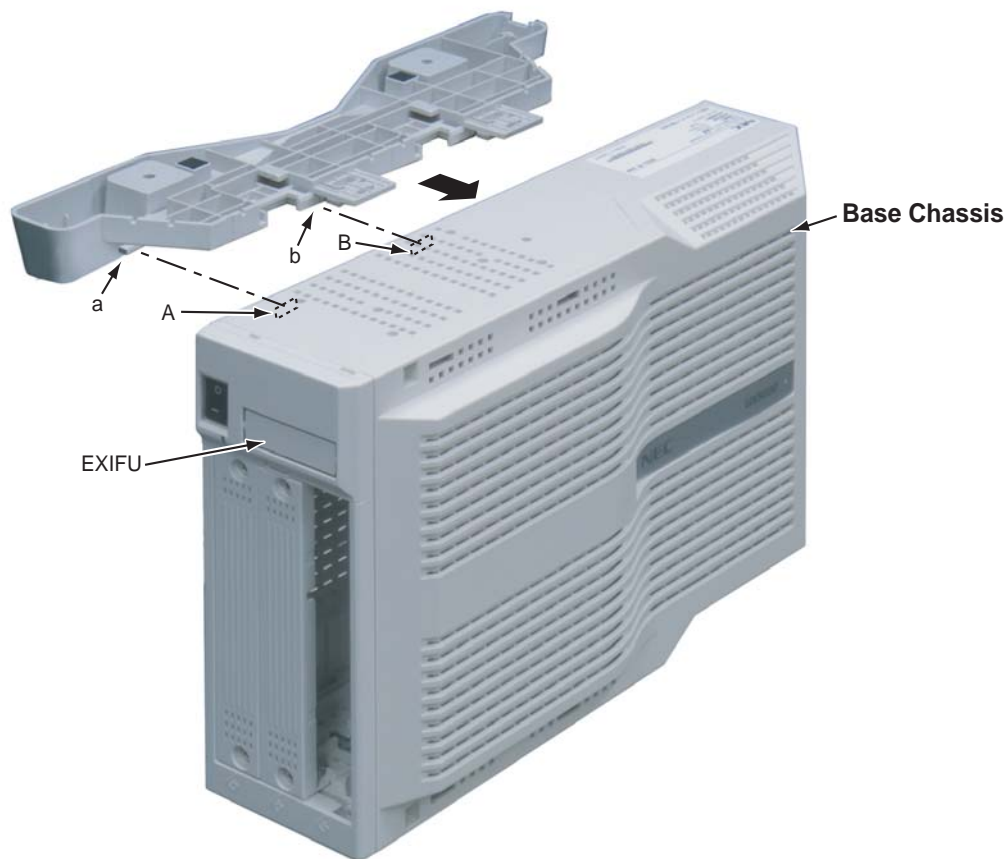
### 1.7.5 Bracket Installation for Desktop Position With Chassis-B (Figure 1-63 - Figure 1-66)



**Note that this bracket is not for use with a combined Chassis-B/E.  
(A combined Chassis-B/E should only be rack, wall, or floor mounted.)**

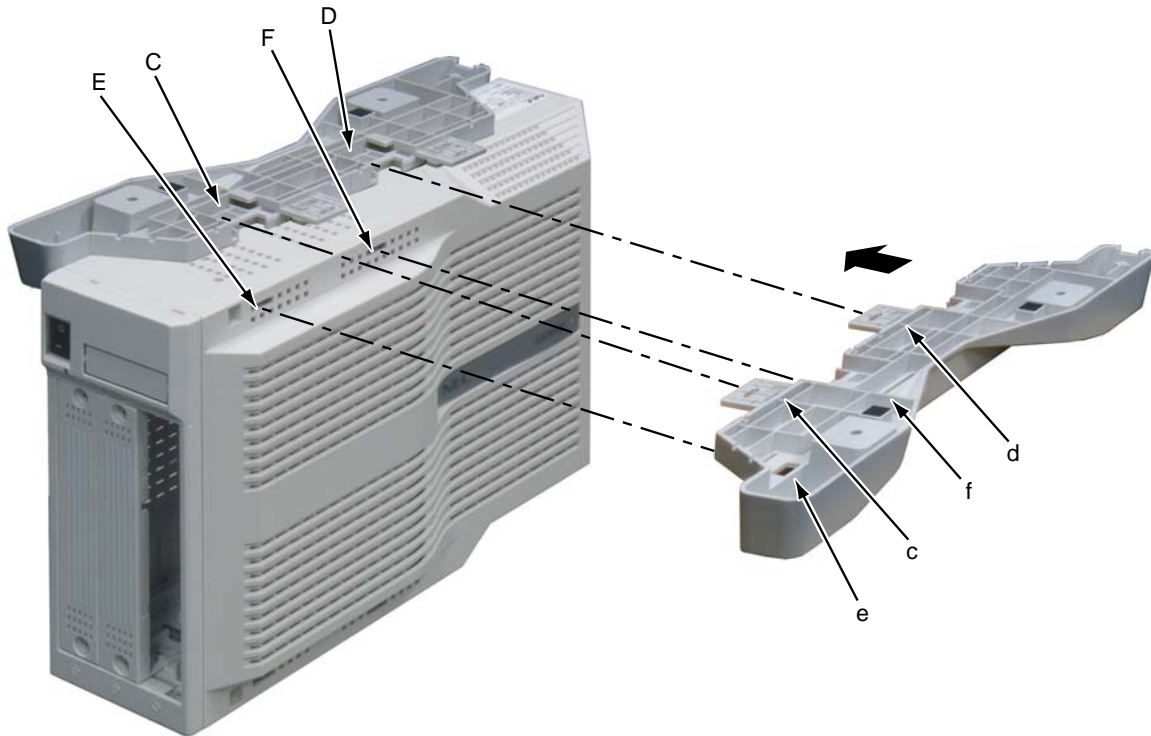
If you choose to place the Chassis-B on top of a desk or similar position, use the following steps to attach the brackets to allow for a stable system placement. If the area is unstable or if there could be vibrations on the desk, it is recommended to use the floor-mounting setup instead.

1. Position the chassis so that the EXIFU slot is to the top. Insert tabs a and b into the tab holes A and B on the chassis.



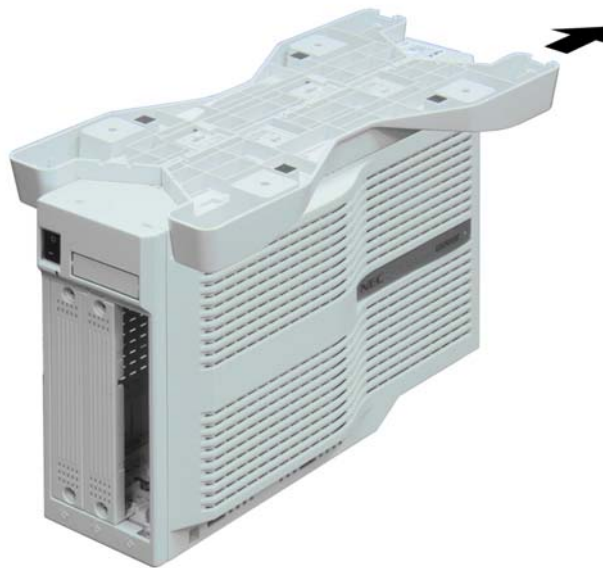
**Figure 1-63: POSITION THE FIRST MOUNTING BRACKET**

2. Insert the second bracket so that tabs e and f are inserted into the tab holes E and F on the chassis. The protruding tabs of c and D should slide over the C and D indents on the first bracket.



**Figure 1-64: POSITION THE SECOND BRACKET**

3. Slide both brackets backwards until they click into place.



**Figure 1-65: SLIDE BRACKET BACK**

4. When only using the Chassis-B, screw the plastic cover over the backboard connector to prevent dust/foreign objects from entering the chassis.



**Figure 1-66: ATTACH THE BACKBOARD CONNECTOR COVER**

5. Position the chassis on the desktop in its desired location.



**Figure 1-67: FINISHED CHASSIS WITH DESKTOP BRACKET**

1.7.6 Securing a Single Chassis-B/E to the Floor (Figure 1-69 - Figure 1-71)

1. Install the brackets on the floor allowing for enough space surrounding the chassis to work.

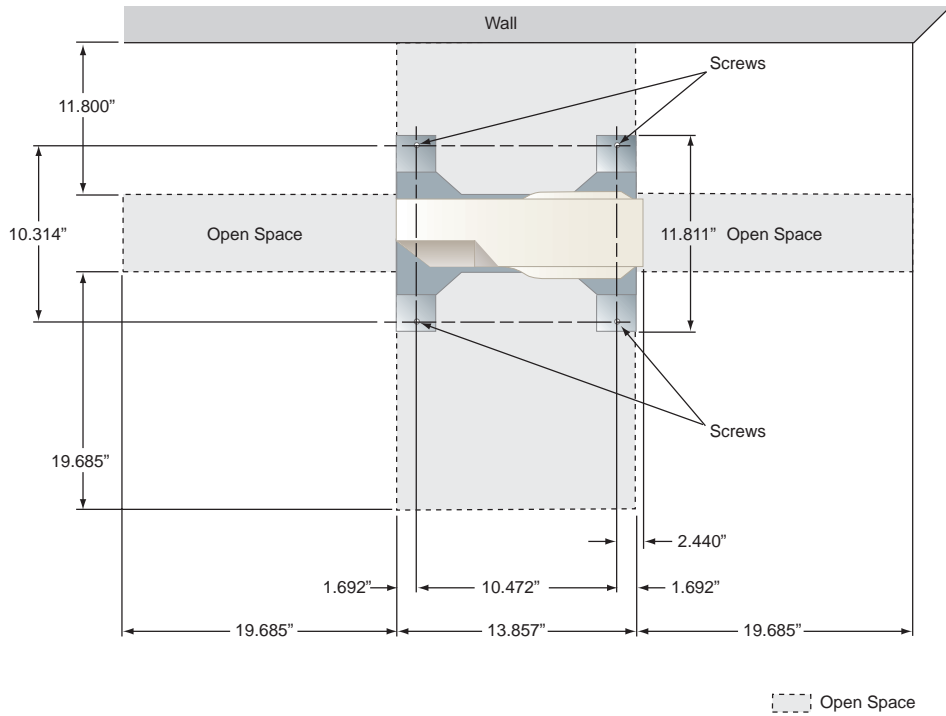


Figure 1-68: CHASSIS PLACEMENT

- Turn the chassis upside down, so that the EXIFU slot is towards the top.
- Insert Tab a of the right floor bracket into Tab Hole A of the left floor bracket and secure together with the one screw provided.

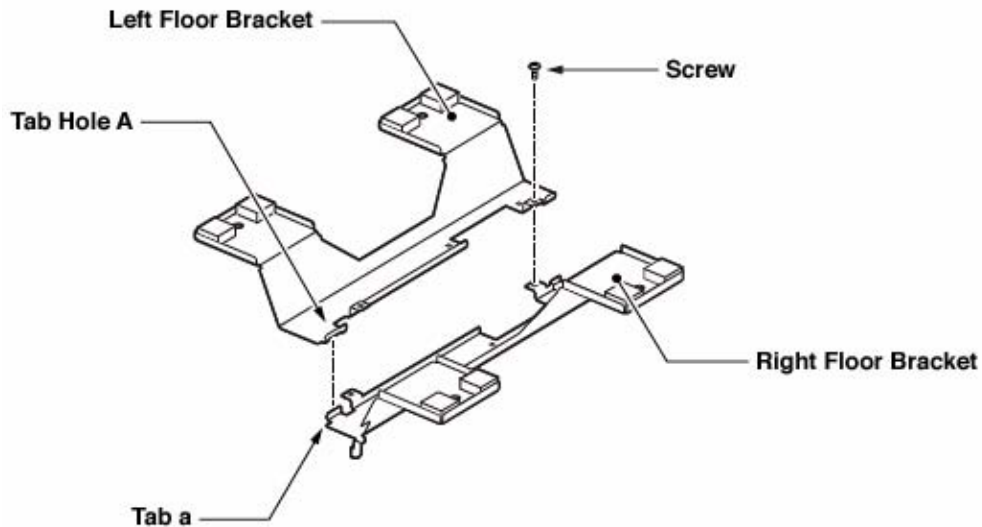


Figure 1-69: CONNECT THE MOUNTING BRACKETS WITH SCREW

- Insert Tab b of the right floor bracket into the Tab Hole B at the back of the chassis. Secure the bracket to the chassis with the 4 screws provided.

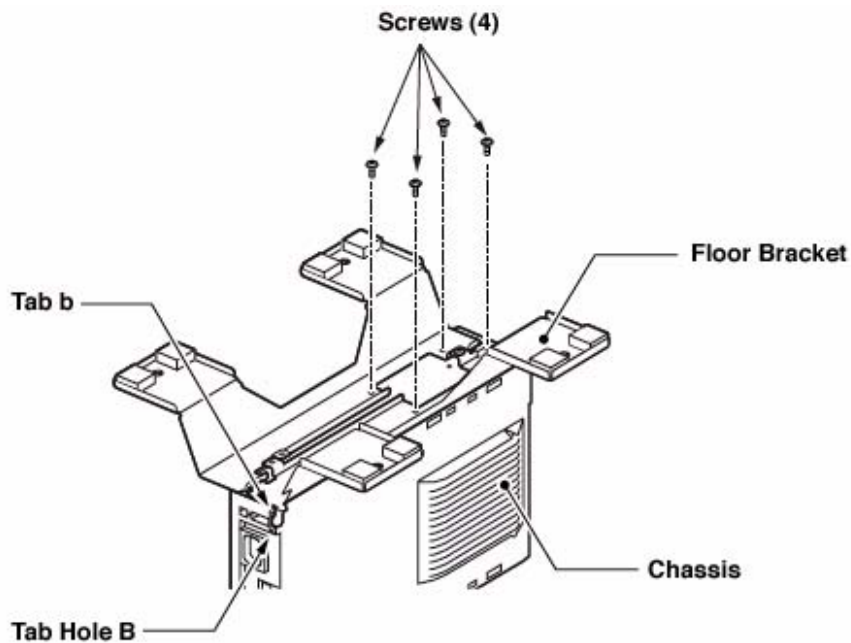
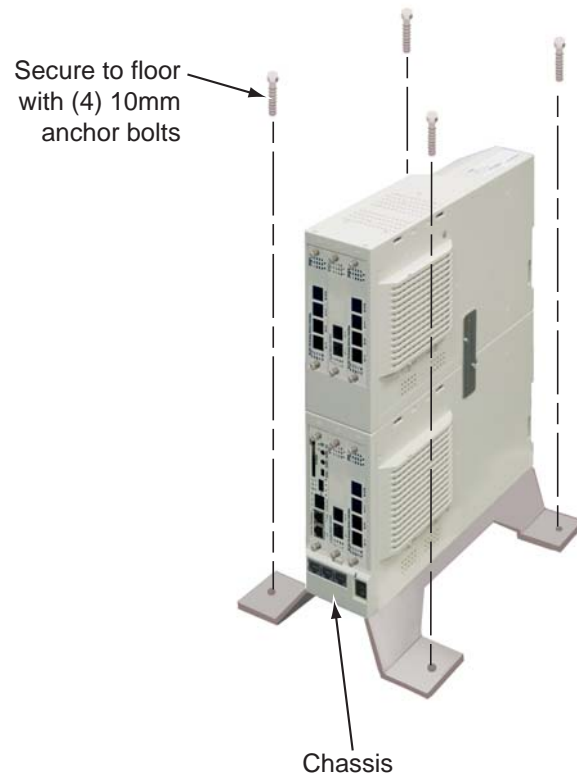


Figure 1-70: SECURE MOUNTING BRACKET TO CHASSIS WITH SCREWS

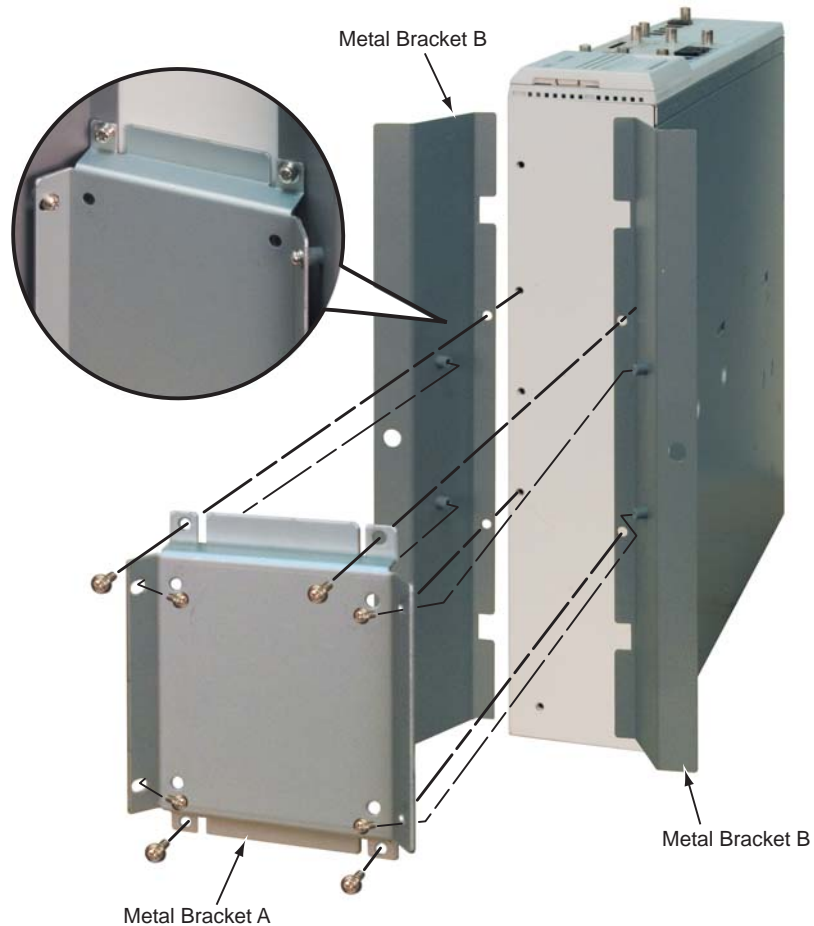
5. Turn the chassis upright and place the floor bracket in its position on the floor. Secure the mounting bracket to the floor using 4 anchor bolts.



**Figure 1-71: ATTACH THE CHASSIS TO THE FLOOR**

### 1.7.7 Securing a Single Chassis-A to the Floor (Figure 1-72)

1. Install the brackets on the floor allowing for enough space surrounding the chassis to work.
2. Position the Chassis-A with the blade slots facing up.
3. As pictured in the graphic below, attach the Metal Bracket A to one of the Metal Bracket Bs using 2 screws. Then, attach the second Metal Bracket B to Bracket A.



**Figure 1-72: CONNECTING THE BRACKET TO THE CHASSIS-A**

4. Attach the brackets to the side of the Chassis-A using 4 screws.
5. Reposition the chassis so the brackets are placed on the floor.

- Secure the floor mounting brackets to the floor using 2 anchor bolts.



**Figure 1-73: FLOOR MOUNTING 1 CHASSIS-A**



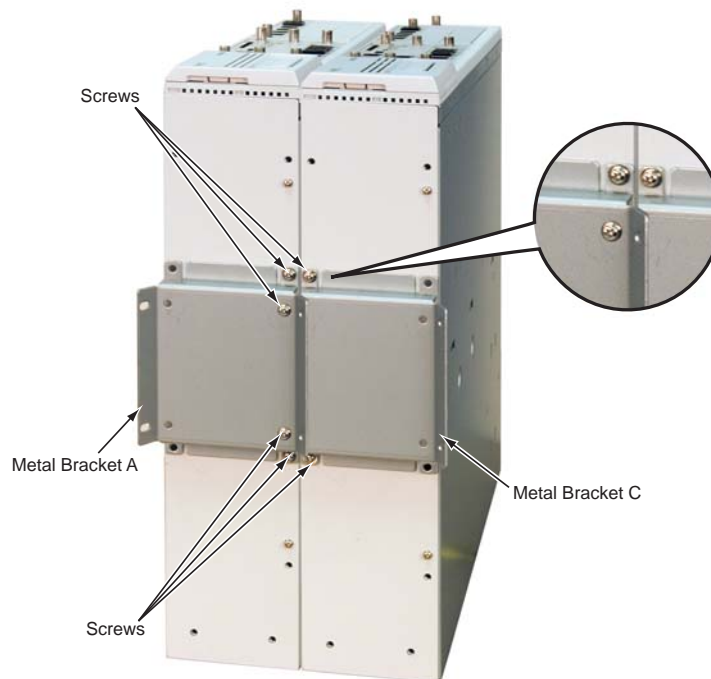
### 1.7.8 Securing Multiple Chassis-As to the Floor (Figure 1-74 - Figure 1-80)

1. Install the brackets on the floor allowing for enough space surrounding the chassis to work.
2. Secure the 5 rubber feet (included with the brackets) to the bottom of the chassis which will be against the second chassis. This will prevent rubbing/scratching the cover. Repeat this on the second chassis when installing 3 chassis together.



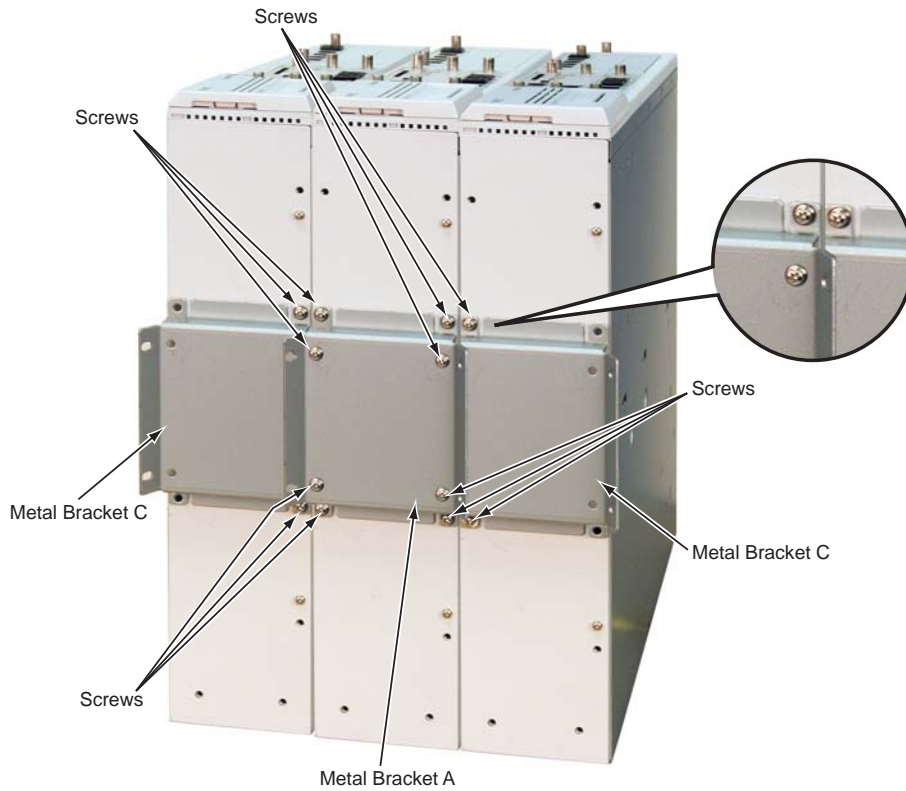
**Figure 1-74: ADD RUBBER FEET FOR MULTI-CHASSIS INSTALLATIONS**

3. Position the Chassis-As with the blade slots facing up.
4. ***For 2 Chassis:*** As pictured in the graphic below, attach each of the Metal Bracket As to the bottom of each of the chassis. Only secure each bracket on the inner edge of the brackets.



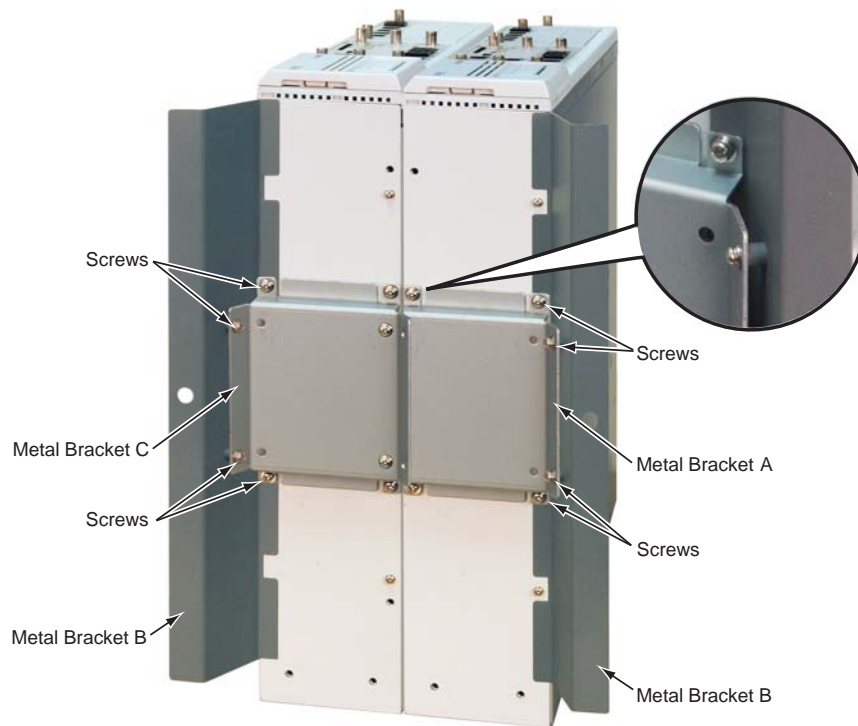
**Figure 1-75: ATTACH BRACKETS TO THE 2 CHASSIS-A**

***For 3 Chassis:*** As pictured in the graphic below, attach each of the Metal Bracket As to the bottom of each of the chassis. The outside brackets are only secured on the inner edge, while the middle bracket is completely secured.



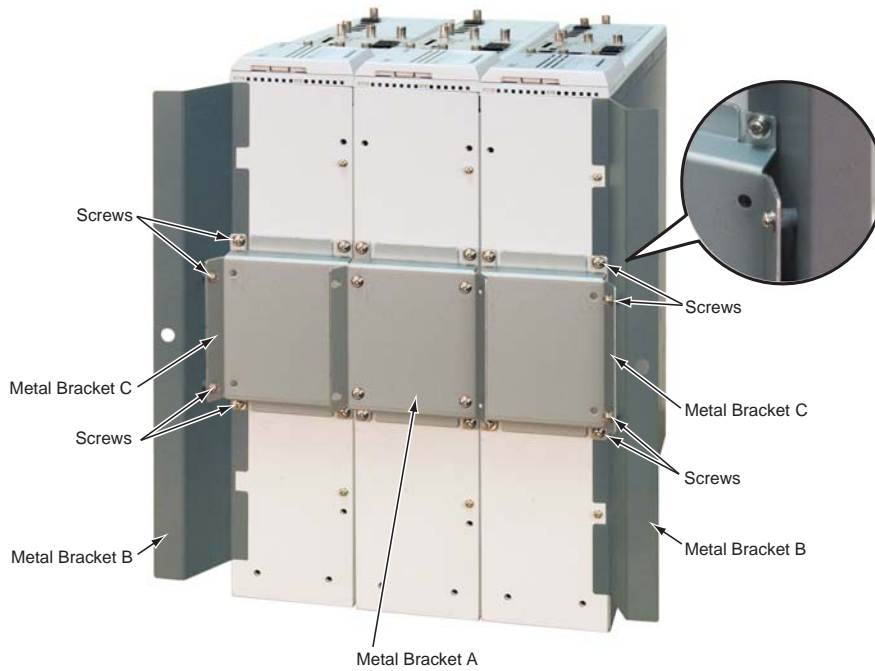
**Figure 1-76: ATTACH BRACKETS TO THE 3 CHASSIS-A**

5. ***For 2 Chassis:*** Slide Bracket B under Bracket C and attach the brackets to the side of the Chassis-A using 2 screws into the chassis and 2 into Bracket B. Repeat this process on the opposite side.



**Figure 1-77: SECURING BRACKETS FOR 2 CHASSIS**

***For 3 Chassis:*** Slide Bracket B under Bracket C and attach the brackets to the side of the Chassis-A using 2 screws into the chassis and 2 into Bracket B. Repeat this process on the opposite side.



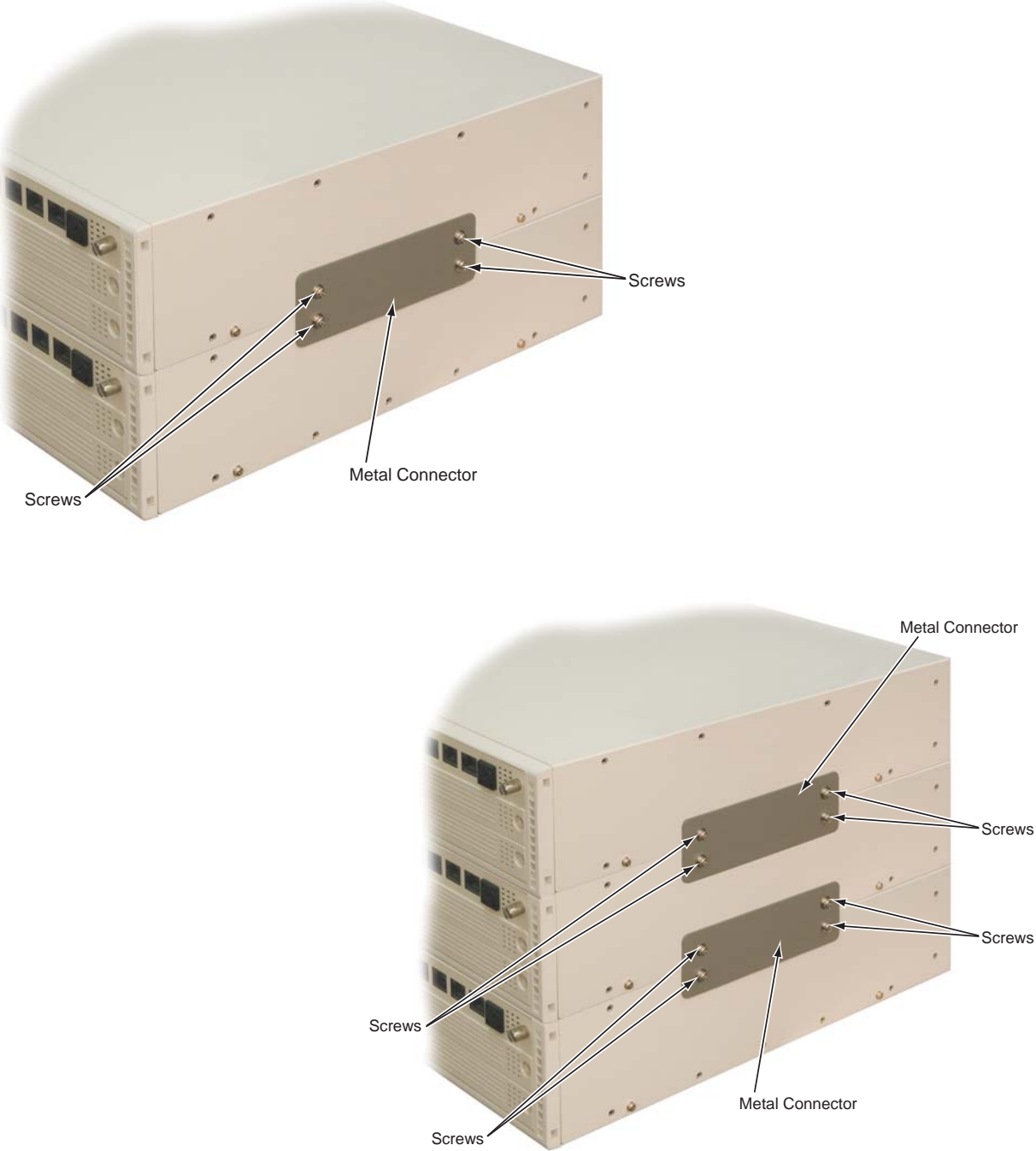
**Figure 1-78: SECURING BRACKETS FOR 3 CHASSIS**

6. Reposition the chassis so the brackets are placed on the floor.



**Figure 1-79: POSITION CHASSIS-A UPRIGHT**

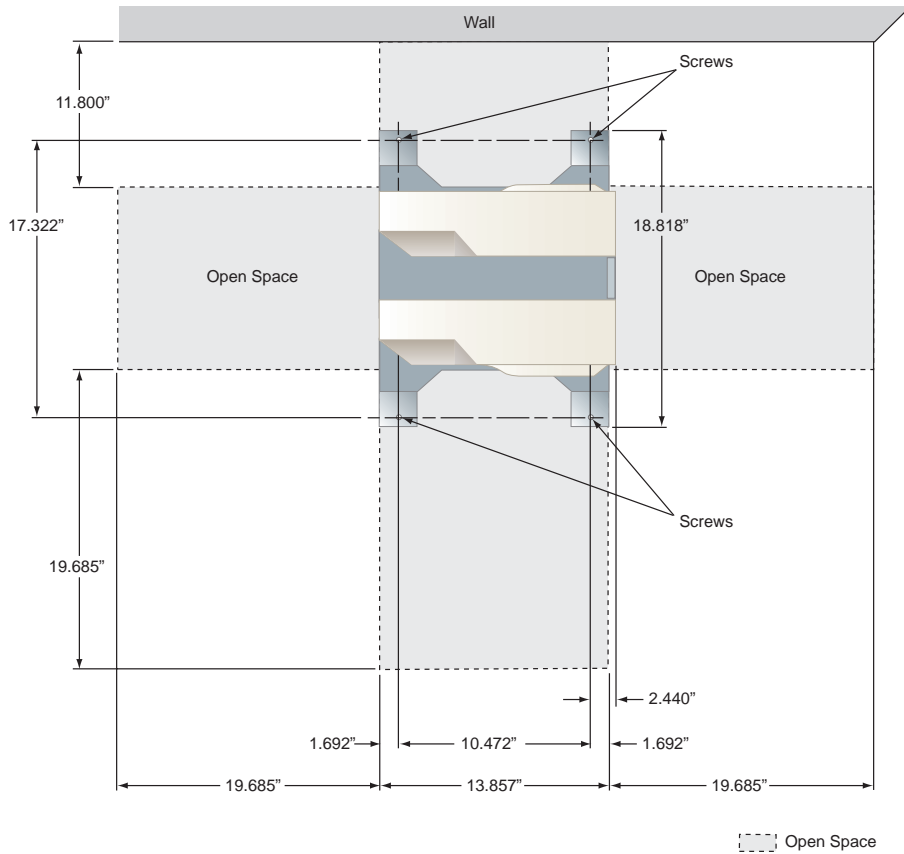
- 7. Secure the floor mounting brackets to the floor using 2 anchor bolts.
- 8. Secure the chassis together using the metal connector(s) provided.



**Figure 1-80: SECURING THE CHASSIS TOGETHER**

**1.7.9 Securing Two Chassis-B/Es to the Floor (Figure 1-81 - Figure 1-84)**

1. Install the brackets on the floor allowing for enough space surrounding the chassis to work.



**Figure 1-81: CHASSIS PLACEMENT**

2. Turn the chassis upside down, so that the EXIFU slots are towards the top.
3. Insert Tabs c and d of the left floor bracket into Tab Holes C and D of the expansion floor bracket and secure together with the one screw provided. Insert Tabs a and b of the right floor bracket into Tab Holes A and B of the expansion floor bracket and secure together with the one screw provided.

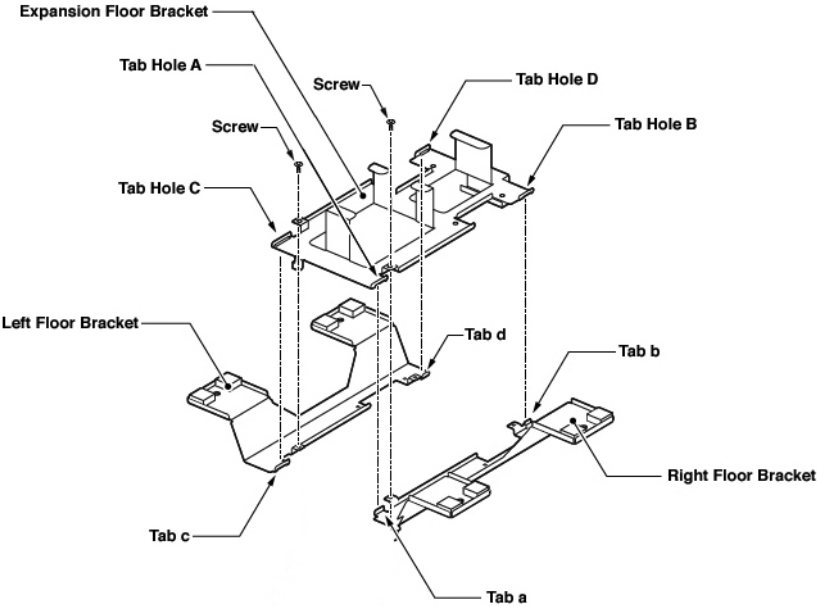


Figure 1-82: CONNECT THE MOUNTING BRACKETS TO EXPANSION FLOOR BRACKET

- 4. Insert Tabs e and f on the floor brackets into the Tab Holes E and F at the front of the chassis. Secure the brackets to both chassis with the 8 screws provided.

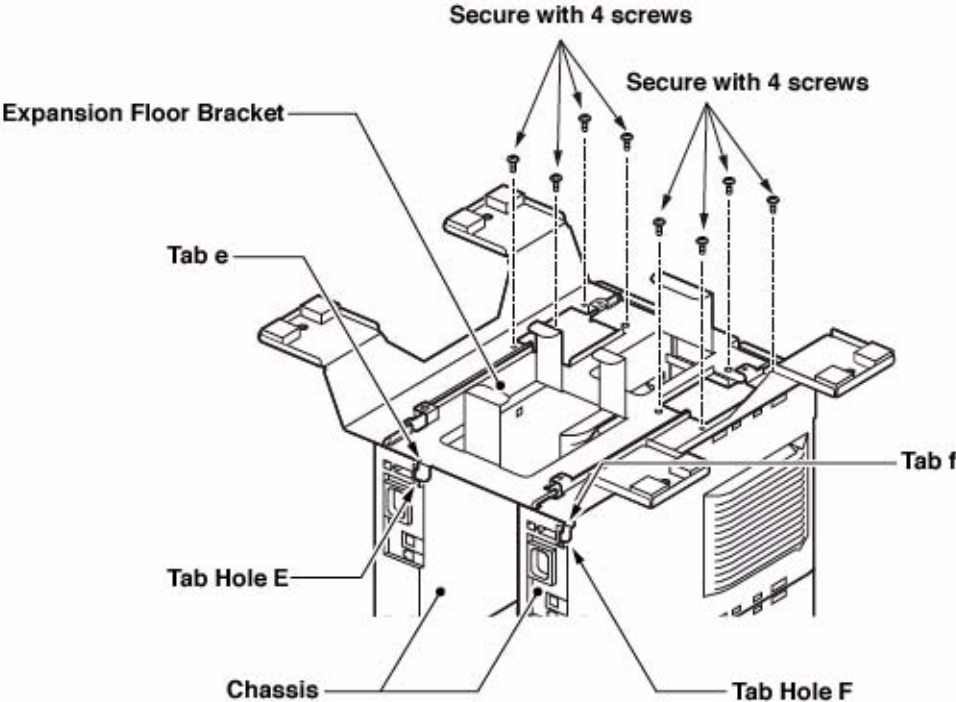
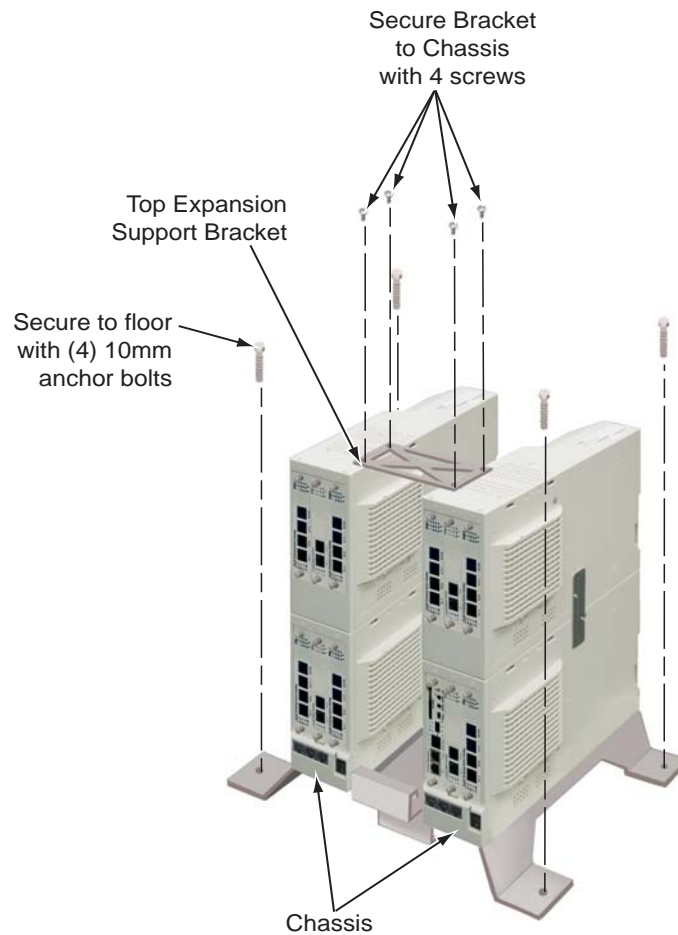


Figure 1-83: SECURE MOUNTING BRACKETS TO CHASSIS WITH SCREWS

5. Turn the chassis upright and place the floor bracket in its position on the floor. Secure the mounting brackets to the floor using 4 anchor bolts.
6. Secure the Top Expansion Bracket to the top of both chassis using 4 screws.



**Figure 1-84: ATTACH THE CHASSIS TO THE FLOOR**



1.7.10 Securing the Chassis to a Rack (Figure 1-85 - Figure 1-92)

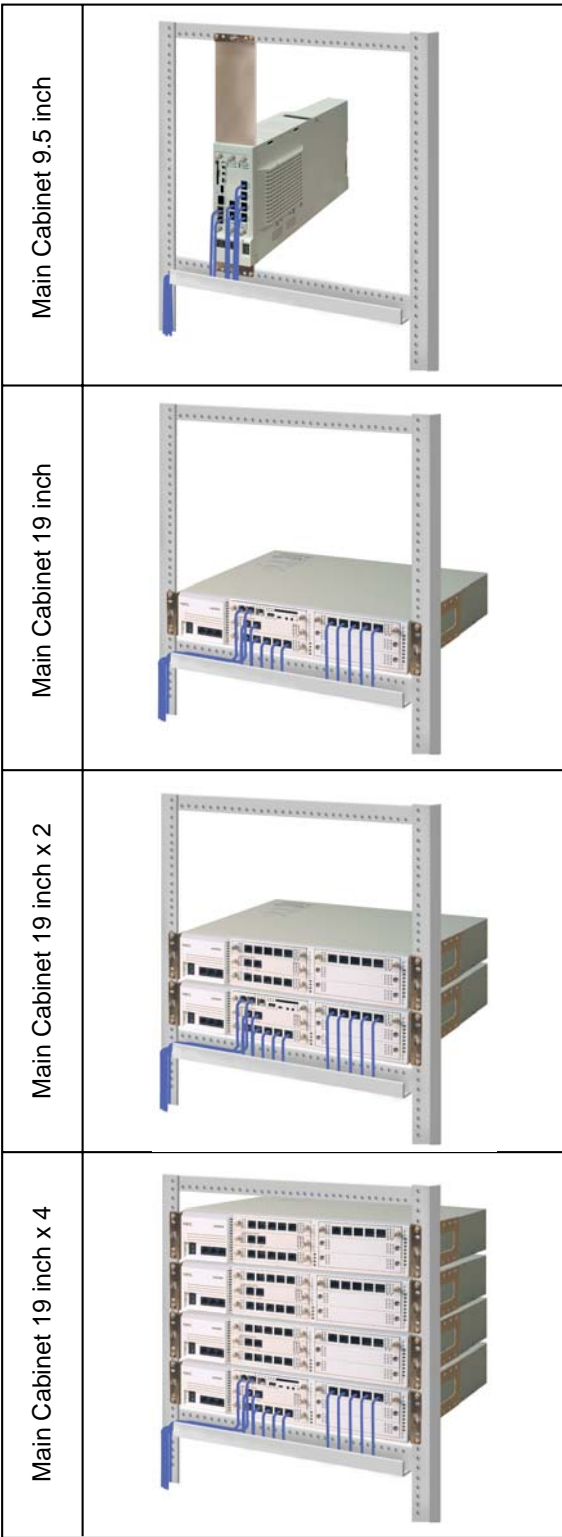
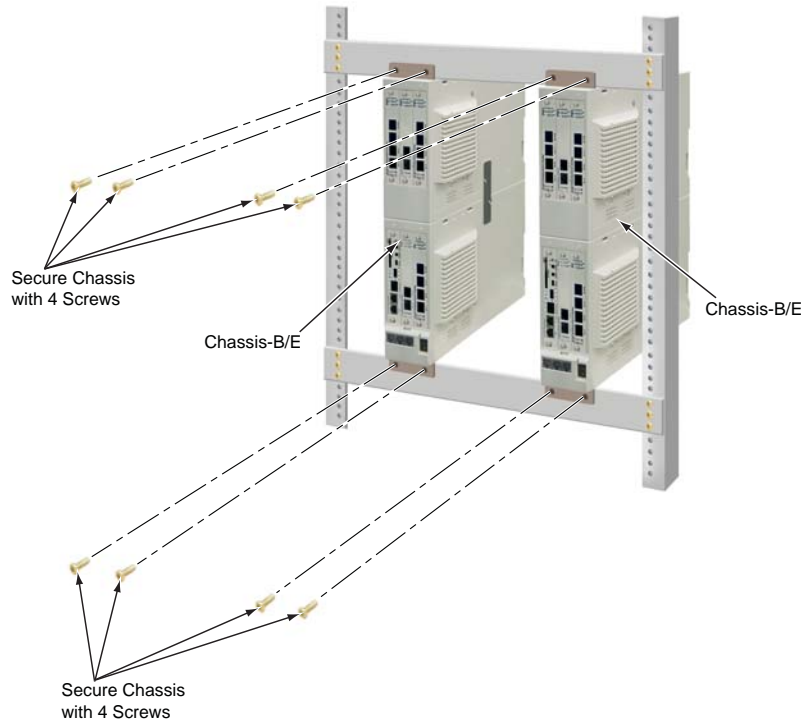


Figure 1-85: INSTALLING THE MOUNTING BRACKET ON THE RACK

1. Install the 19" rack mount bracket.
  - Each 19" metal Chassis-A will require approximately 3.5" of height within the rack (see Figure 1-87: 19" CHASSIS-A RACK MOUNT INSTALLATION in Chapter 1 - Installing the Chassis on page 1-65).
  - When rack mounting the Chassis-B/E plastic chassis, they must be installed vertically for proper air circulation.



**Figure 1-86: 19" CHASSIS-B/E RACK MOUNTING**



Figure 1-87: 19" CHASSIS-A RACK MOUNT INSTALLATION

2. Attach the metal rack mount brackets to each side of the chassis with the screws provided.
  - Note that the 19" Chassis-A brackets are secured with 4 screws on each side.

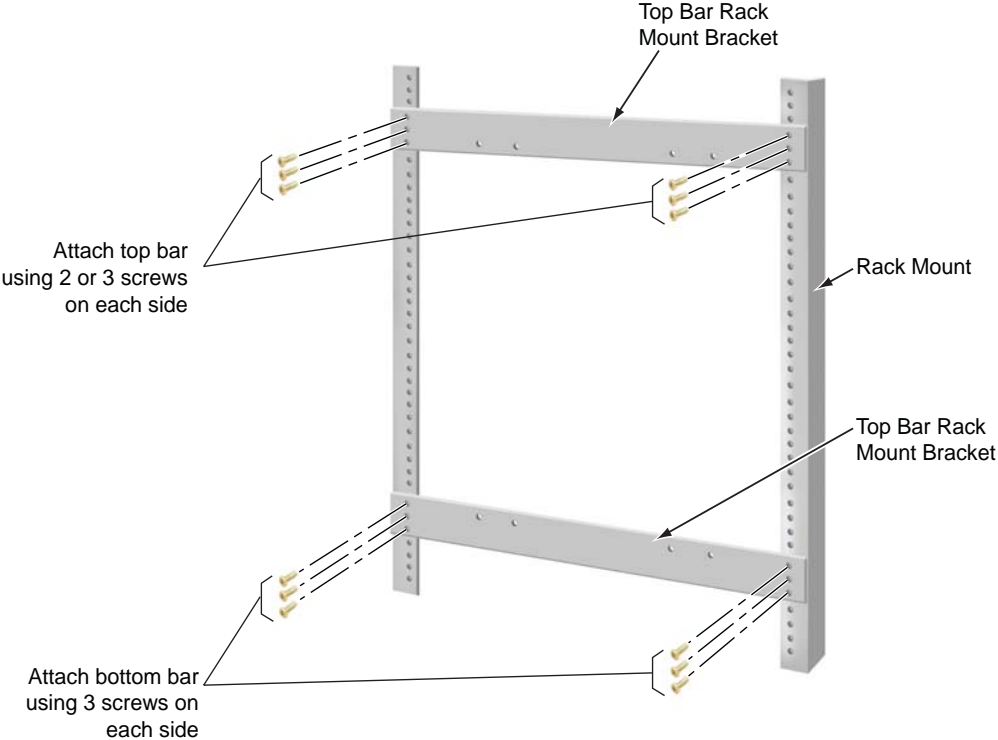


**Figure 1-88: ATTACH RACK MOUNT BRACKETS TO CHASSIS-B/E**



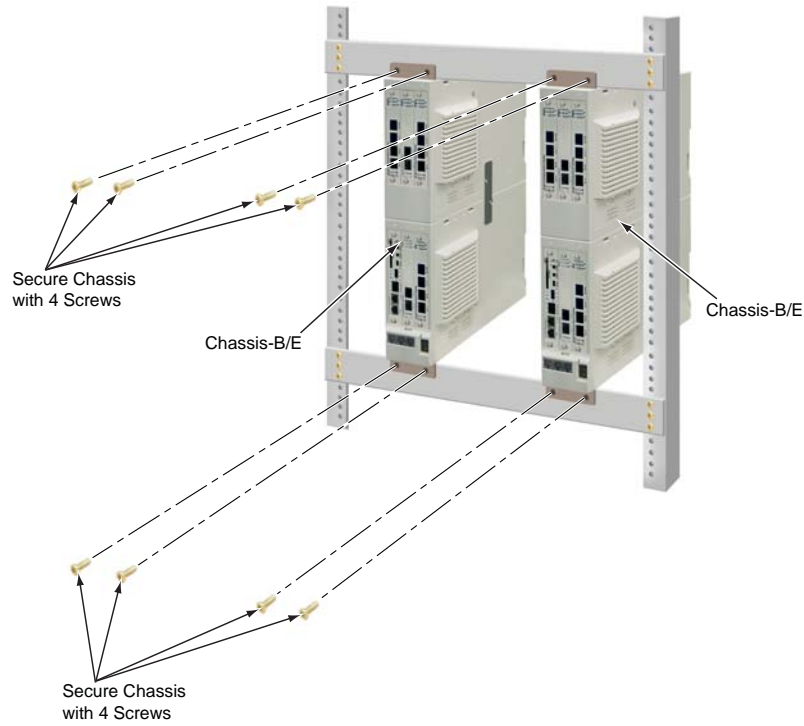
**Figure 1-89: ATTACH RACK MOUNT BRACKETS TO CHASSIS-A**

- 3. For the plastic Chassis-B/E units, attach the 2 bar brackets at the correct positions on the rack. These will be used to secure the chassis to the rack in their proper vertical position.



**Figure 1-90: ATTACH TOP AND BOTTOM BAR BRACKETS**

4. For the plastic Chassis-B/E units, attach the chassis to the bar brackets using 2 screws at each point.



**Figure 1-91: 19" CHASSIS-B/E RACK MOUNTING**

For the metal 19" Chassis-A unit, attach the chassis to the rack mount brackets using 2 screws at each point.



**Figure 1-92: 19" CHASSIS-A RACK MOUNT INSTALLATION**

## SECTION 1-8 GROUNDING THE CHASSIS

### 1.8.1 Connecting the System Ground (Figure 1-93 - Figure 1-95)

- 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-B.
  - Each 9.5" Chassis-B or 19" Chassis-A in the system must be grounded separately following the step below.
1. Ground each 9.5" Chassis-B or 19" Chassis-A 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).

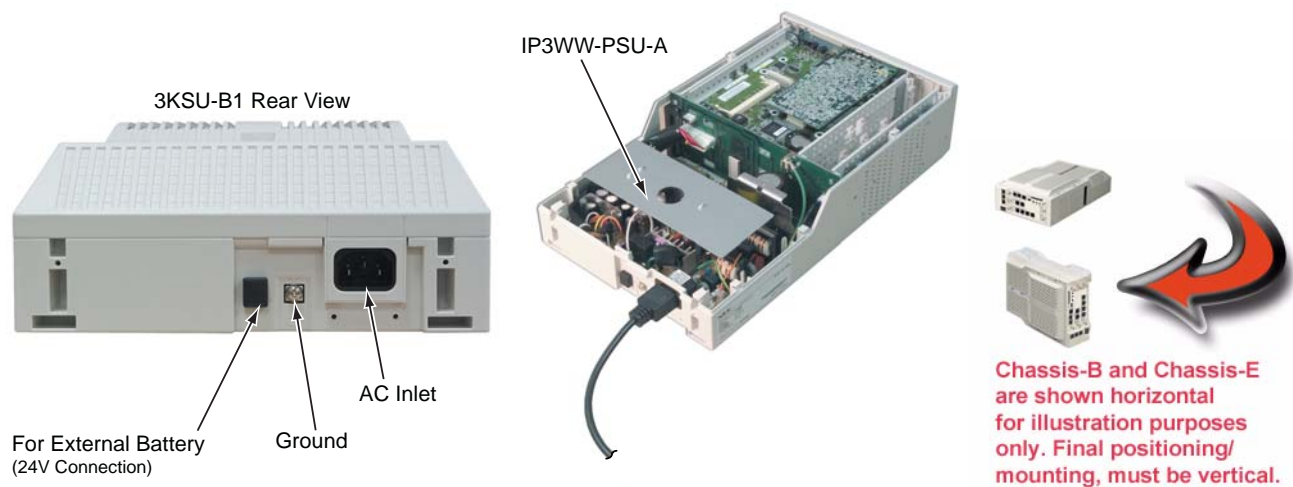
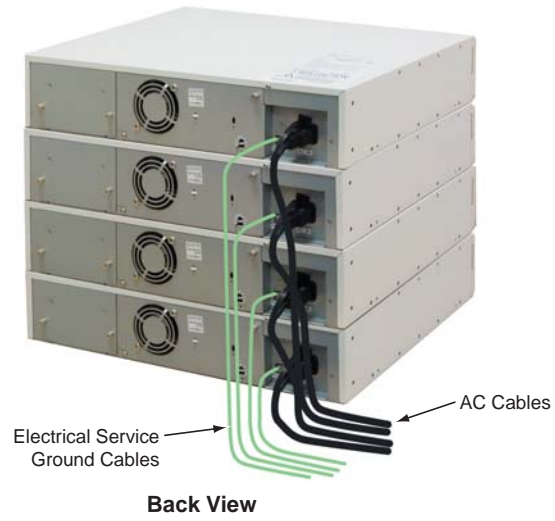


Figure 1-93: LOCATION OF GROUNDING LUG ON 9.5" CHASSIS-B



Figure 1-94: LOCATION OF GROUNDING LUG ON 19" CHASSIS-A



**Figure 1-95: GROUNDING THE CHASSIS**



# Chapter 2 - Blade Installation and Startup

## SECTION 2-1 BLADE LAYOUT

### 2.1.1 Blade Location

Determine the slot position for each blade. In the Controlling chassis:

- Slot 1 - dedicated for the CCPU
- EXIFU slot - dedicated for the Expansion blade

In the Expansion Chassis:

- EXIFU slot - dedicated for the Expansion blade

The Controlling/Base and Expansion Chassis:

- Slots 2-16 are universal (any type of blade can be installed)

Important Notes
<ul style="list-style-type: none"><li>• Make sure to follow the steps indicated in <b>Powering Up the System/Initial Blade Installation</b> (page 2-83) for an initial system install. This will ensure that you start the system with the default system settings.</li></ul>
<ul style="list-style-type: none"><li>• To delete a blade from the system, <i>the blade must first be removed from the system chassis</i>, then Program 90-05-01 can be used to delete the slot definition.</li></ul>

### 2.1.2 Order of Installing Extension Blades

The order that the station Blades (ESIU and SLIU) are physically inserted determines the numbering plan.

For example, with a digital station blade (16ESIU) in slot #1 (ext. 301-316), when 3 additional digital station blades are installed *in the following order*, the numbering plan below applies:

Order of Install	Blade Slot #	Ext Numbers
1	2	301-316
2	3	317-332
3	5	333-348
4	4	349-364

After the initial powering up of the system, subsequent powering up or resets will not change the slot identification. System programming (Program 90-05) must be performed to change the slot identification.

### 2.1.3 Order of Installing Trunk Blades

#### 2.1.3.1 Installing COIU, 4TLIU, DIOPU, or BRI Blades:

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

For example, if four blades are installed *in the following order*, the numbering plan below would apply:

Order of Install	Blade Slot #	Blade	Line Circuits
1	5	4COIU with 4COIDB	1-8
2	6	4COIU	9-12
3	8	4TLIU	13-16
4	7	4TLIU	17-20

#### 2.1.3.2 Installing T1/PRI Blades

The T1/PRI Interface blade uses the first block of 24 consecutive trunks.

For example, if you have an 4COIU blade with a 4COIDB installed for trunks 1-8, the T1/PRI blade will automatically use trunks 9-32. If you have 4COIU blade with a 4COIDB installed for trunks 1-8 and 17-24, the T1/PRI blade will use trunks 25-48. The T1/PRI blade cannot use trunks 9-16 (even if available) since they are not part of a consecutive block of 24 trunks.

## 2.1.4 Port/Option Availability

	Basic System (CCPU)	MEMDB	License (256)	License (unlimited)	CygniLink	IntraMail Ports - Over 8	082U	Remote Upgrade
<b>64 Ports</b>	Yes: 1 chassis (6 slot) only <b>OR</b> 2 3-slot Chassis without EXIFU				Not Supported	Not Supported	1 Maximum	USB Flash Memory Required
<b>64 Ports w/ MEMDB</b>	Yes	Yes			Yes with License	Yes with License	2 or More Supported	Yes
<b>256 Ports</b>	Yes	Yes	Yes		Yes with License	Yes with License	2 or More Supported	Yes
<b>Large</b>	Yes	Yes	Yes	Yes	Yes with License	Yes with License	2 or More Supported	Yes



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## SECTION 2-2 Blade INSTALLATION

### 2.2.1 Handling the Blades

The blades are sensitive to static discharge. To minimize static discharge, keep blades in static free bags when not installed. Observe the following when installing or removing a blade:

- Ground Controlling/Base Chassis and Expansion Chassis.
- Wear a grounded wrist strap to install/remove any blades.
- Do not touch blade components. Handle with the two thumb screws on either side of the blade.
- Although it is recommended to installed the blades with the system power off, all blades can be installed hot (**except the CCPU, EXIFU, MEMDB, VOIPDB, and VMDB**).
- The Expansion chassis must only be installed with the system power OFF.

### 2.2.2 "Busying Out" Extension/Line Blades

Program 90-05-01, Item 3 "busies out" idle circuits. Extensions/lines cannot make a call or be called. Calls in progress before the blade is "made-busy" are not affected. The blade can be pulled out without interrupting a call in progress.

An extension/line Blade Status LED:

- Normally flashes
- Lights steady when "made-busy" with an extension/line in use
- Goes out when the all extensions/lines are "made-busy" (idle)

### 2.2.3 Installing an Extension or Trunk Blade (Figure 2-1)

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

- Insert the blade within the guide rail and push the blade securely into position. After installing all the blade, tighten the two thumb screws on either side of the blade.
- The Status LED starts flashing when the blade starts processing (15 seconds).



Figure 2-1: INSERTING BLADES

## 2.2.4 Removing an Extension or Trunk Blade

Any blade, EXCEPT for the CCPU, VOIPDB, EXIFU, VMDB, or MEMDB can be removed while the system is powered up. In addition, the compact flash card in the CCPU should not be removed while powered up. To remove any of the excluded blades indicated above, the system must first be powered down.

**! IMPORTANT!**

When installing a MEMDB into a chassis which has been previously installed and programmed, the CCPU must be cold-started due to database compatibility issues.

### 2.2.4.1 To remove an extension/trunk Blade with the system running:

- Block the blade using system Program 90-05-01, Item 3.
- When the STATUS LED stops flashing, all extensions/trunks are idle.
- Loosen the thumb screws on either side of the blade. Pull the blade out.

## 2.2.5 Uninstalling a Blade Slot Through Software

The installer can turn off (busy out) and delete (remove from software) blade slots in the Controlling/Base and Expansion chassis in programming for port re-numbering purposes or to replace it with a different type of blade. Deleting a blade may affect blade slot programming capability. Refer to Program 90-05 in the Software Manual for further details.

### 2.2.6 Where to Install the Blades

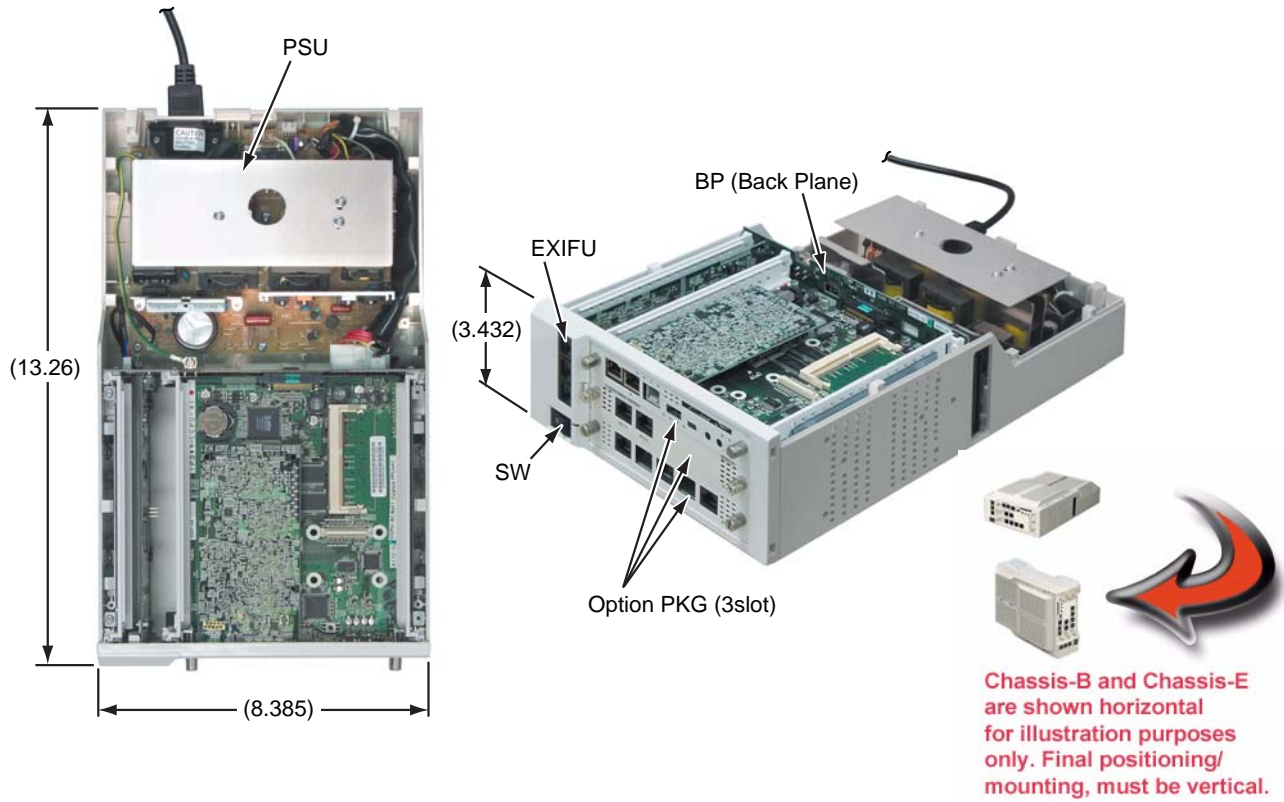


Figure 2-2: CHASSIS-B LAYOUT - FRONT VIEW

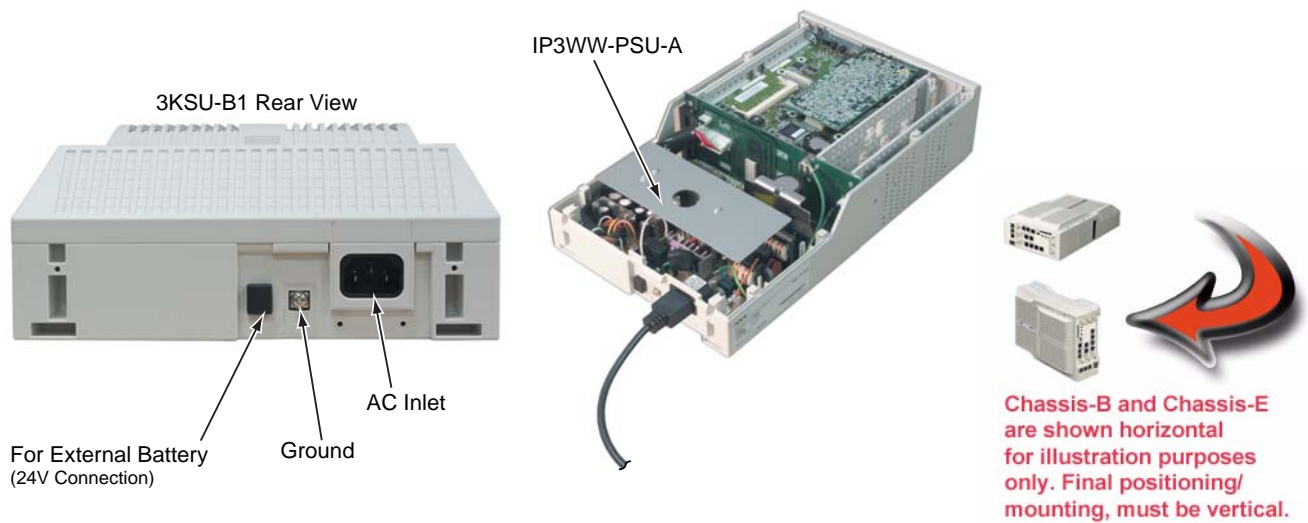


Figure 2-3: CHASSIS-B LAYOUT - BACK VIEW

**Maximum Configuration:**

**200 Trunks (128 IP trunks maximum)**

**512 \* Extensions Including Digital/Analog/IP and Wireless**

**\* Must have an IP connection in order to reach maximum capacity of digital and analog phones.**

**Note: 104 ports/timeslots (audio channels) max. per 19" chassis (444 max.)**

**7 ports/timeslots (data channels) max per 19" chassis**

**80 station ports maximum per 19" chassis**

**With u-law, 104 timeslots per chassis are assigned for the G.711 PCM communications (e.g., voice communications) and 7 timeslots per chassis are assigned for the data communications (e.g., HDLC over ISDN). Therefore, the simultaneous data communications are limited up to 7 per each chassis. With A-law, 111 timeslots per chassis can be used for both the G.711 PCM communications and data communications.**

The system's universal architecture gives you great flexibility when installing blades. You can install a blade in any slot, provided you follow the guidelines in the chart below.

UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
Chassis: 9.5" Chassis-B1 - Base Chassis with power supply (3 slots)	1	1	1	4	CygniLink: 64 AspireNet: 200 (4 per site)	-
9.5" Chassis-E1 - Expansion Chassis (3 slots)	0	1	1	4	CygniLink: 64 AspireNet: 200 (4 per site)	-
19" Chassis-A1 - Base or Expansion Chassis (6 slots)	0	1	1	4	CygniLink: 64 AspireNet: 200 (4 per site)	-
CCPU Central Processing Unit	1 (installed in CCPU slot)	1 (installed in CCPU slot)	0	1 (installed in CCPU slot)	16: CgygniLink 50: AspireNet (1 per site) (installed in CCPU slot)	-



UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
EXIFU Expansion Blade: EXIFU-B (for Base Chassis)	0	1	0	1	50 (1 per site)	-
EXIFU-E (for Expansion Chassis)	0	0	1	3	CygniLink: 48 AspireNet: 150 (3 per site)	-
External Battery Box	1	1	1	1	CygniLink: 16 AspireNet: 50 (1 per site)	-
VMDB-A1/B1 (installs on CCPU)	1	1	0	1	CygniLink: 16 AspireNet: 50 (1 per site)	Channels: 16
MEMDB-A1 (installs on CCPU)	1	1	0	1	CygniLink: 16 AspireNet: 50 (1 per site)	-
VOIPDB-A1 VoIP Media Gateway (installs on CCPU)	1	1	0	1	CygniLink: 16 AspireNet: 50 (1 per site)	-
8ESIU 8 Digital Stations <b>OR</b> 16ESIU 16 Digital Stations	2	5	5	20	32	Extensions: 512 (16x32)
4SLIU 4 Analog Stations <b>OR</b> 8SLIU 8 Analog Stations	2	5	5	20	32	Extensions: 256 (8x32)
4SLIDB 4 Analog Stations Daughter Board <b>OR</b> 8SLIDB 8 Analog Stations Daughter Board (installs on SLIU)	2	5	5	20	32	Extensions: 256 (8x32)

UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
4COIU-LG1 4 Analog/Loop Start Trunks (with ground start)	2	5	6	23	25	Trunks: 200 (8x25)
4COIDB-LG1 8 Analog/Loop Start Trunks (with ground start) (installs on 4COIU-LG1)	2	5	6	23	25	Trunks: 200 (8x25)
2BRIU-A1 2 Two-Channel BRI Circuits	2	5	6	23	T-Bus (TRK): 25 S-Bus (STA): 64	<u>T-Bus</u> Trunks: 50 (2x25) Channels: 100 (2Bx50) <u>S-Bus</u> Extensions: 128 (2x64) Channels: 256 (2Bx128)
2BRIDB-A1 2 Two-Channel BRI Circuits (installs on 2BRIU-A1)	2	5	6	23	T-Bus (TRK): 25 S-Bus (STA): 64	<u>T-Bus</u> Trunks: 50 (2x25) Channels: 100 (2Bx50) <u>S-Bus</u> Extensions: 128 (2x64) Channels: 256 (2Bx128)
1PRIU 24 T1/PRI Trunks / Channels	2	4	4	16	TRK: 8 STA: 21	192 (24Bx8)
4TLIU 4 E&M Tie Line Trunks	2	5	6	23	50	Trunks: 200 (4x50)
4DIOPU 4 DID/OPX Trunks	2	5	6	23	TRK: 50 STA: 128	Trunks: 200 (4x50) Extensions: 512 (4x128)

UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
082U-A1 Digital/SLT Combo Blade (8 Digital Plus 2 SLT Ports)	1	Without MEMDB: 1 With MEMDB: 1 Per Chassis	Without MEMDB: 1 With MEMDB: 1 Per Chassis	Without MEMDB: 1 With MEMDB: 1 Per Chassis	Without MEMDB: 1 With MEMDB: 1 Per Chassis	
APSU-A1	2	2	2	2	CygniLink: 32 AspireNet: 100 (2 per site)	-
6SHUBU 6 Switch Hub with PoE	2	2	3	12	240 (6x240 sites)	1440 (6x240 sites)
8CNF 8 Circuit Conference Blade	2	5	6	23	32	-
16CNF 16 Circuit Conference Blade	2	5	6	23	32	-
RTU-B1 Router	2	2	2	8	CygniLink: 32 AspireNet: 100 (2 per site)	-
PVAU	2	5	6	23		
GSWU	2	3	3	12		

\* **NOTE:** Maximum capacities above are determined by maximum blade per function. Additional factors may limit these quantities (such as load factor, available bandwidth, VIF and compression).



## SECTION 2-3

### Blade Load Factors

In addition to the blade capacities listed on the previous pages, you must take into consideration the power load factors for certain blades as well as station equipment (such as telephones, telephone adapters, and consoles).

The maximum load factor for blades per system chassis (either 9.5" Chassis-B/E or 19" Chassis-A) is 7. The maximum load factor for station equipment is either 64 (for 9.5" Chassis-B/E) or 80 (for 19" Chassis-A).

Refer to the following charts to determine the load factor for your equipment. Any blades or devices not listed in these charts do not require consideration when determining the load factor. Keep in mind that each 19" chassis (either 2 9.5" chassis combined or 1 19" chassis) has a maximum number of timeslots for audio of 104. This means that any blade combination within one system chassis cannot exceed 104 station or trunk ports.

 Make additional copies of these pages for each chassis to be configured.

Blade Load Factor Table			
Each Blade	Load Factor	Number Installed	Total
CCPU	1		
RTU	2		
APSU	2		
GSW	2		
PVA	1		
32VOIPDB	1		
64VOIPDB	2		
128VOIPDB	2		
The total number cannot exceed 7 for a 9.5" Chassis-B/E or 19" Chassis-A.			
<i>The Station Equipment Load Factor must also be considered.</i>			

Station Equipment Load Factor Table			
Item	Load Factor	Number Installed	Total
<b>UX5000 Equipment</b>			
DG-24e (24-button digital) telephone	1		
DG-32e (DESI-Less digital) telephone	1.5		
BHA	2		
ADA	2		
APR	2		
BCH	2		
PSA	1		
16-Button DLS	0		
60-Button DSS Console	2		
IP-CTS telephone PoE from GSW	6		
IP-24e (24-button IP) telephone PoE from GSW	4		
IP-6v (6-button IP) telephone PoE from GSW OR IP-2v (2 button IP) telephone PoE from GSW	4		
SLT	1		
PGDAD Module	2		
SLTAD	5		
<b>Aspire Equipment Used on UX5000</b>			
Keyset	1		
Super Display Keyset	2		
24-Button DLS	1		
110-Button DSS	1		
ADA	1		
APR	0		
APA	1		
CTA	3		
CTU	0		
<p>The total number cannot exceed <b>64 for a 9.5" Chassis-B/E</b>  or <b>80 for a 19" Chassis-A.</b></p> <p><i>The Blade Load Factor must also be considered.</i></p>			

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## SECTION 2-4 CCPU Components

### 2.4.1 UX5000 Central Processing Unit (CCPU) Blade (Figure 2-4 - Figure 2-5)

The CCPU controls all the functions and operations of the UX5000 system using the system software loaded into the CCPU memory. The system software can be upgraded as new software becomes available.

One CCPU blade must be installed in the CCPU slot in the Controlling chassis. In a networked system using CygniLink and an IP connection, a second CCPU can be used for a CCPU Fail Over feature (primary/secondary CPUs) as a backup in case of a hardware or power failure. (The CCPUs must be programmed for primary/secondary operation.)

The CCPU functions are:

- Music on Hold tone Circuit, External Source Control circuit
- Voice Mail Daughter Board Interface Circuit
- System Program and System Data Storing Memory Circuit
- USB Interface Circuit
- Ethernet Interface Circuit
- EXIFU-A1 Interface Circuit
- Main Processing 32-Bit CPU Circuit (MPC8248 @ 266 MHz)
- Time Switch, Optional Blade Control Circuit
- Backboard Interface Circuit

#### 2.4.1.1 The CCPU (P/N 0911001) provides:

- 200 trunk ports maximum (with MEMDB installed and licensed expansion)
- 512 extension ports maximum (with MEMDB installed and licensed expansion)
  - 512 ports digital/IP extensions maximum
  - 320 analog ports maximum
- 256 virtual extensions
- Connection for 32/64/128 VoIP Daughter Board
- Connection for Voice Mail Daughter Board
- Connection for Expanded Memory (MEMDB-A1)
- Supports TAPI 1.x
- 1 Green Status LED and 4 Red Status LEDs
  - During normal operation, the "RUN" LED will be flashing and the remaining LEDs will be off.
- Tone Generator
- Tone Processing DSP

- Connection for Memory Module
- DTMF Tone Sender
- DTMF Tone Receiver
- System Tone Sender
- MFC Tone Sender
- MF Signal Sender (Sends caller information to CO for E911)
- Call Progress Tone Detection
- C-Channel Control
- Conference: 64 Channels (32 channels x 2 circuits)
- Caller ID Receiver
- Caller ID Generator
- A load switch which is used for initial system startup, resetting the system, or when upgrading system software
- One USB Port - USB 1.1/2.0
- One Gbit Ethernet Port for VOIPDB
- One Fast Ethernet Port (10/100 Base-T), auto negotiation and VLAN
- One CompactFlash Blade Slot
- Background Music/EXSP Control Port
- Status LED
- One EXIFU Interface Connector
- Two Audio Input/Output Terminals (sub-mini jacks)
- One General Purpose Control Terminal
- Call Control Server (ex: Conference Bridge Server, Voice Mail Server, SIP Server, RTP Forwarding, VoCoder Conversion)
- One lithium battery (Sony CR2032 or equivalent) which provides battery back-up of system data

The CCPU 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



**! IMPORTANT!**

After removing a previously installed CCPU, 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 (ex: time, date, user-defined settings, etc.)

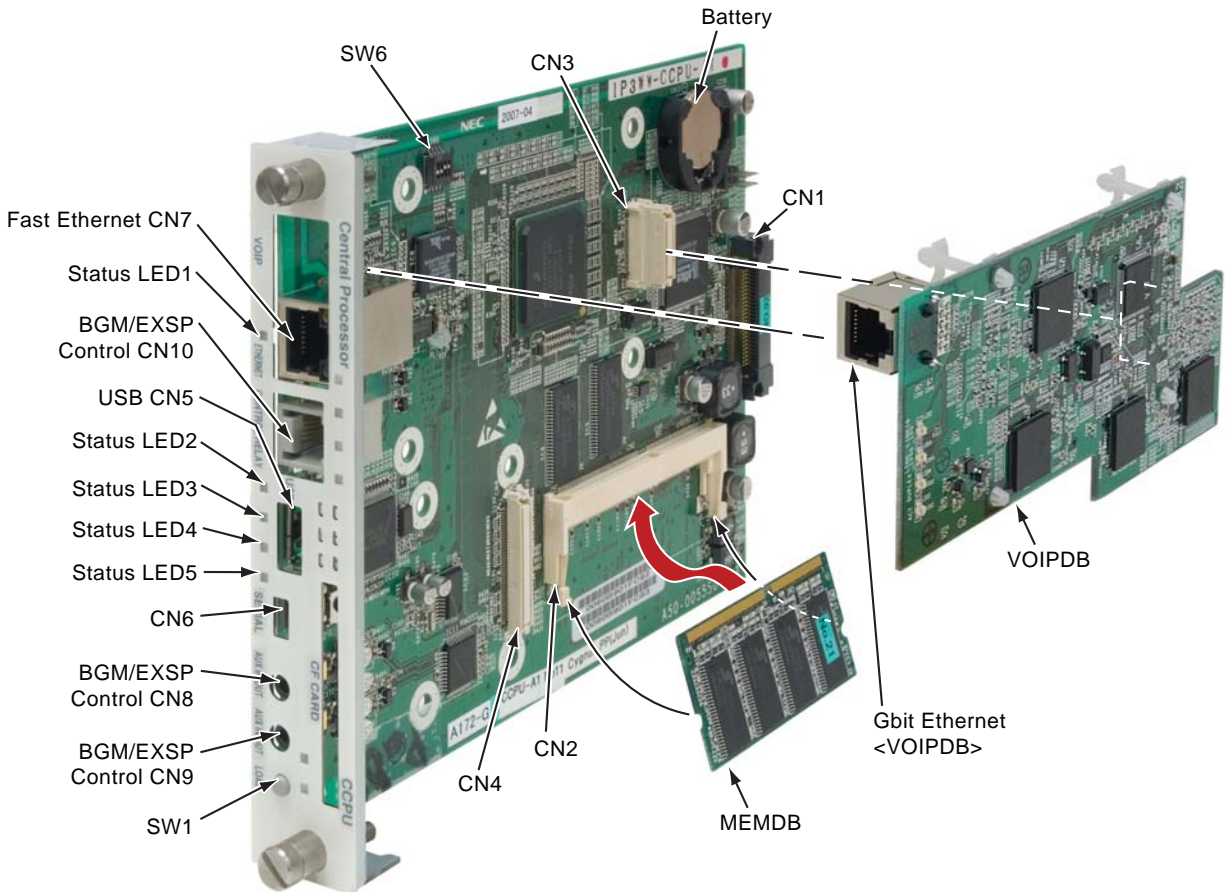


Figure 2-4: CCPU BLADE LAYOUT

Connector	Connector Description
CN1	Backboard Connection
CN2	MEMDB-A1 (Expanded Memory) Connection
CN3	VOIPDB Blade Connection
CN4	VMBU Blade Connection
CN5	USB Memory Connection (used for upgrading software or downloading system data)
CN6/SW2	Used for Debug Purposes
CN7	Ethernet Cable Connection (for PCPro or WebPro, CTI, ACD MIS, IP Phone)
CN8/CN9	Pin Sub-Mini Jack for External Source Connection (External MOH, External Speaker, etc.)
CN10	External Source Control Connection
SW1	Load Switch
BAT	Lithium Battery Socket (for backup of SRAM memory data)
SW6	CCPU Setup Dip Switches (normally left as is)

**The CCPU without a MEMDB attached supports:**

- 64 Ports for IP/Digital Trunks/ Extensions
- Expansion Chassis
- VOIPDB
- 8 IntraMail/VRS Ports
- BRI S-Bus/T-Bus
- PRI Trunks
- T1 Trunks
- Tie Line Trunks
- (1) 082U Blade
- ACD/inDepth
- Third-Party CTI/TAPI 2

**The CCPU with a MEMDB attached and limited port licensing supports:**

- 256 Ports for IP/Digital Trunks (200 max.) / Extensions (256 max.)
- Expansion Chassis
- VOIPDB
- 16 IntraMail/VRS Ports
- BRI S-Bus/T-Bus
- PRI Trunks
- T1 Trunks
- Tie Line Trunks
- Multiple 082U Blades (1 per chassis max.)
- ACD/inDepth
- Networking (CygniLink and AspireNet)
- Recovery Point
- Remote Maintenance
- Third-Party CTI/TAPI 2

**The CCPU with a MEMDB attached and full port licensing supports:**

- 712 Ports for IP/Digital Trunks (200 max.) / Extensions (512 max.)
- Expansion Chassis
- VOIPDB
- 16 IntraMail/VRS Ports
- BRI S-Bus/T-Bus
- PRI Trunks
- T1 Trunks
- Tie Line Trunks
- Multiple 082U Blades (1 per chassis max.)
- ACD/inDepth
- Networking (CygniLink and AspireNet)
- Recovery Point
- Remote Maintenance
- Third-Party CTI/TAPI 2

### 2.4.1.1.1 Switch Settings and LED Indications

Switch SW1 - Load Switch	With a system restart or a system reset while holding the Load/SW1 switch:	
	USB Memory Status	Operation
	When USB Memory is not installed:	<ul style="list-style-type: none"> <li>Cold Start occurs.</li> </ul>
	When USB Memory is installed:	<ul style="list-style-type: none"> <li>USB Memory contents loaded.</li> </ul>
	When an unauthorized USB is installed:	<ul style="list-style-type: none"> <li>System does not start and an “Illegal USB device is connected” alarm is recorded.</li> </ul>
Switch SW6 - CCPU Setup Switch (Normally, these switches should be left alone unless specified)	Switch Setting	Operation
	SW6-1: On = Unused Off = Normal	<ul style="list-style-type: none"> <li>VMDB Modification</li> </ul>
	SW6-2: On = Test Mode Off = Normal	<ul style="list-style-type: none"> <li>Test Mode</li> </ul>
	SW6-3: On = Used Off = Not Used	<ul style="list-style-type: none"> <li>RS-232C Select</li> </ul>
	SW6-4: On = Normal Off = ICE Mode	<ul style="list-style-type: none"> <li>Reset Configuration</li> </ul>

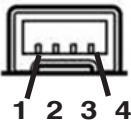
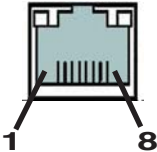

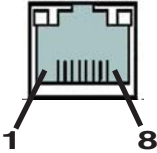
The LED indications on the CCPU represent the following:

- RUN LED 1 = Indicates the CCPU is operating (green)
- LED 2, 3 and 4 = Indicates alarms (red)
- LED 5 = Indicates the USB memory connection status (red)  
(LED off when no USB memory installed)

Refer to Program 90-10 : System Alarm Setup for details on assigning alarm LEDs.

LED Indication					Status
RUN (LED1)	LED2	LED3	LED4	LED5	
On	Off	Off	Off	On Steady When USB Memory is Connected	System operating normally
Off	Off	Off	Off	On Steady When USB Memory is Connected	System initializing
Off	On	Off	Access Blink	On Steady When USB Memory is Connected	Initializing the disk or formatting
Off	Off	On	On	On Steady When USB Memory is Connected	Boot program is initializing in the flash memory
Off	On	On	Access Blink	On Steady When USB Memory is Connected	Reading system software
On	Blinking	Blinking	Blinking	On Steady When USB Memory is Connected	Upgrading system software
On	Blinking	Off	Off	On Steady When USB Memory is Connected	Upgrading boot software
On	Blinking	Blinking	Off	On Steady When USB Memory is Connected	Finish formatting (SRAM, Flash)
Blinking	Off	Off	Off	On Steady When USB Memory is Connected	DRAM error
Blinking	Off	Off	On	On Steady When USB Memory is Connected	FPGA version error
Blinking	Off	On	Off	On Steady When USB Memory is Connected	SRAM error
Blinking	Off	On	On	On Steady When USB Memory is Connected	Flash memory booting error
Blinking	On	On	On	On Steady When USB Memory is Connected	Flash memory data error
Blinking	Blinking	Blinking	Blinking	On Steady When USB Memory is Connected	Reading error of system program
Blinking	Off	Off	Off	On Steady When USB Memory is Connected	System starting up

## 2.4.1.1.2 Connector Pin-Outs on CCPU

USB Cable Connector - CN5 (Type A, Female) (USB 1.1/2.0 Standard)		
	Pin No.	Signal
	1	Vcc
	2	-D
	3	+D
	4	GND
Ethernet Cable Connector - CN7 (RJ45) (10Base-T/100Base-TX Port)		
	Pin No.	Signal
	1	Tx+
	2	Tx-
	3	Rx+
	4	
	5	
	6	Rx-
	7	
	8	
Pin Jack - CN8/CN9 (No polarity)		
	Pin No.	Signal
	1	EXT1
	2	EXT2
RJ61 Cable Connector - CN10 (External Source Control) (No polarity)		
	Pin No.	Signal
	1	No Connection
	2	No Connection
	3	EXCNT2
	4	EXCNT1
	5	EXCNT1
	6	EXCNT2
	7	No Connection
	8	No Connection

### 2.4.1.2 CCPU Installation (Figure 2-5 - Figure 2-6)



- **The power to the chassis must be off when installing or removing this blade.**
- Do not remove/insert the optional CCPU daughter boards (VMDB, MEMDB, VOIPDB) or voice mail flash card while the system power is on.

1. Install the battery on the CCPU. The polarity “+” symbol must be on top.

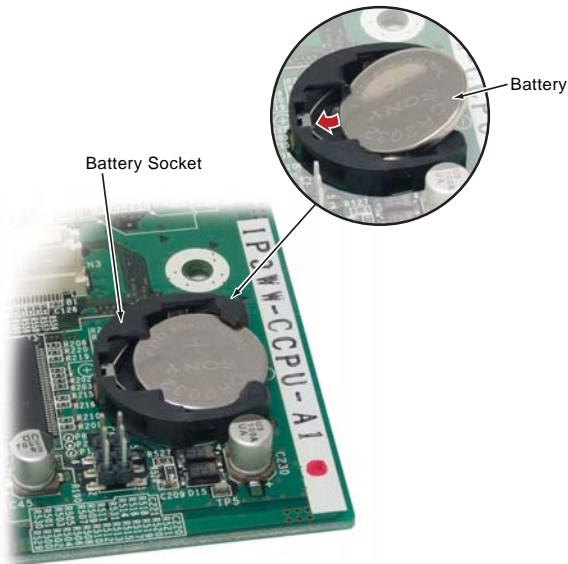


Figure 2-5: BATTERY INSTALLATION

2. Install the Voice Mail, Memory, and/or VoIP daughter boards if required.
3. After being certain that the power supply is shut off, slide the CCPU into the CCPU slot in the Controlling chassis.
  - Note that the blades must be inserted into the chassis with the top of the blade up, otherwise the connection to the backplane will not be made.



Figure 2-6: INSTALLING BLADES

4. Tighten the thumb screws (a screw driver can be used, if desired).



**Figure 2-7: TIGHTEN THUMB SCREWS**


5. If external BGM or MOH is being installed, plug the cable into the CN8 or CN9 sub-mini pin jack connector on the CCPU. The other end of the cable plugs into the music source.
  - Refer to the PGDAD Module in the Telephones and Optional Equipment section for details on connecting to a music source.
  - When the system software is upgraded, the flash memory is updated with the new software version. You can use the Hot or Cold start-up methods or upgrade your system software using the steps which follow.
  - Customer information is stored in the RAM memory and, in case of a power failure, will be restored. The lithium battery in the system saves the RAM memory when power is lost.

### 2.4.1.3 Resetting the System:

#### **! IMPORTANT !**

While the system is powered up, data may be written to the S-RAM or flash memory at any time. If the UX5000 requires a system reset, you must power off the system using the power switch on the front of the Base chassis.

This procedure will allow the system to wait until any data-writing process is completed, avoiding the possibility of corrupting the data. If the system unexpectedly loses power while flash memory data is being written, it could become corrupt and the system may not come up. If the S-RAM data is corrupted, the telephones may have erratic operation.

 To perform a cold start or hot start, or perform a software upgrade, refer to "Section 2-8 SYSTEM STARTUP" on page 2-83

## 2.4.2 Expansion (EXIFU) Blade (Figure 2-10)

The EXIFU blade provides a connection from the Controlling Chassis-B to the Base Chassis-B expansion unit. This connection is required with any multiple-chassis setup. This blade allows the CCPU to transmit/receive data as required to the additional chassis.

The EXIFU-**B1** blade is installed in the EXIFU slot of the Controlling Chassis-B which is equipped with a CCPU blade. The EXIFU-**E1** blade is installed in the EXIFU slot of the Base Chassis-B, which does not have a CCPU.

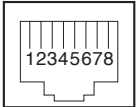
The EXIFU cable is used to connect the Controlling chassis and its EXIFU-**B1** interface to the second, third, and fourth Base chassis EXIFU-**E1** interface.

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

The EXIFU provides:

- Communication Processor Interface for data handling through Cch (18 slots max.)
- 64 Channels for Telephony Resource (ex: DTMF Tone Receiver, Call Progress Tone Detector, MFC Tone Receiver, Caller ID Receiver, Caller ID Signal Sender)
- DSP Resource Management

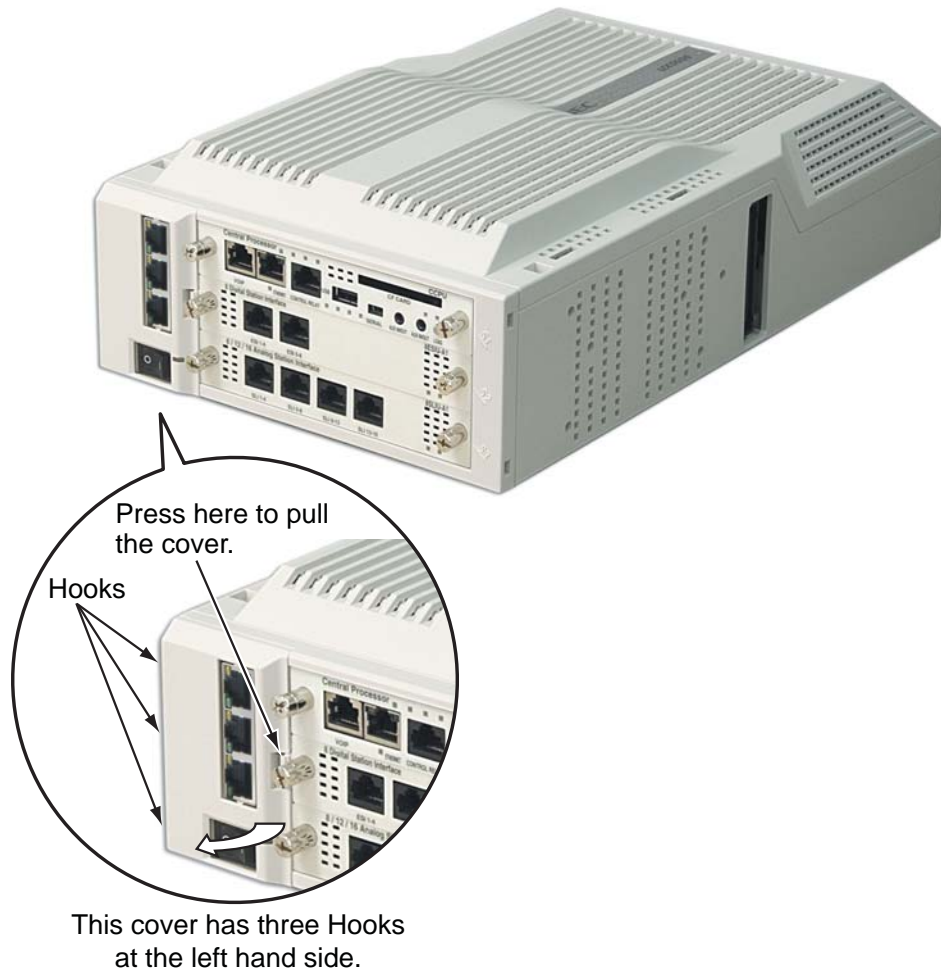
### 2.4.2.1 Connector Pin-Out on the EXIFU-B1 / E1

<b>RJ61 Cable Connector - EXIFU-B1 - CN2, CN3, CN 4 EXIFU-E1 - CN3</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	HW_UP (+)
	2	HW_UP (-)
	3	HW_DWN (+)
	4	FS (+)
	5	FS (-)
	6	HW_DWN (-)
	7	CK8M (+)
	8	CK8M (-)



### 2.4.2.2 Removing the EXIFU Cover (Figure 2-8)

1. Press on the right-hand side of the EXIFU cover and pull the cover open. Slide the cover slightly to the left to unhook the 3 hooks which hold on the cover.



**Figure 2-8: REMOVING THE EXIFU COVER**

### 2.4.2.3 To install an EXIFU blade:



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

1. Remove the EXIFU cover as described previously from each of the chassis.
2. Carefully remove the blank filler piece on the cover to allow for the EXIFU connectors.
3. For the Controlling Chassis-B1 (with the CCPU), install the EXIFU-B1 into the slot.
4. For the Base Chassis-B1(s), install the EXIFU-E1 into the slot in each of the additional chassis. Screw the blade to the chassis using the screw provided.

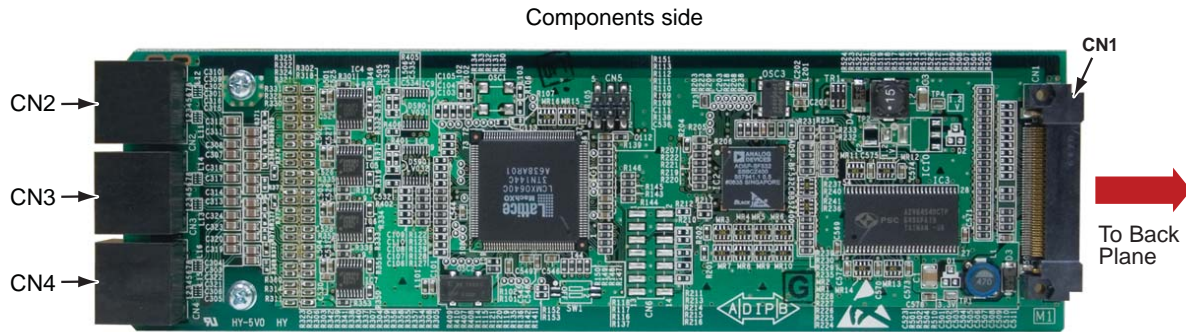


Figure 2-9: EXIFU-B1 BLADE COMPONENTS

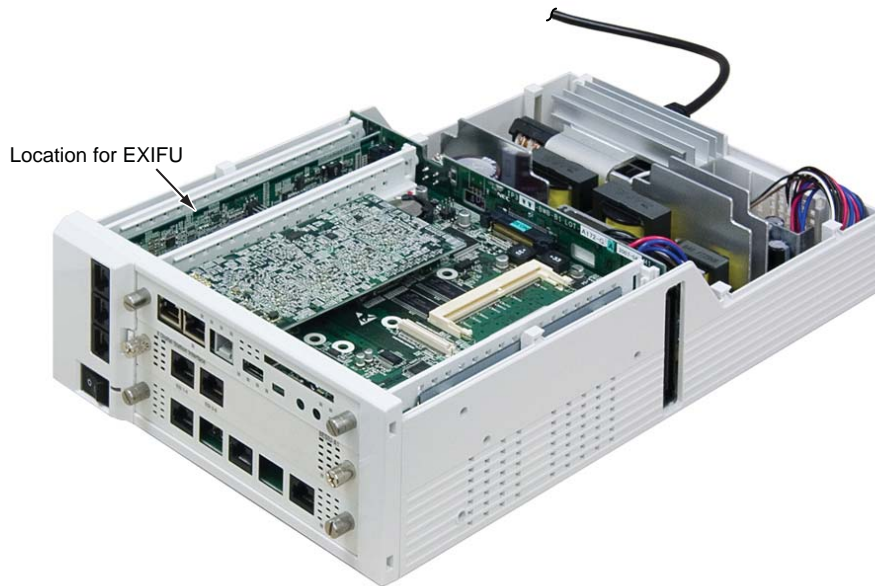


Figure 2-10: EXIFU BLADE INSTALLATION

5. Using only the NEC CAT5 straight-thru cables, attach one cable to each Base Chassis-B1's CN3 connector on the EXIFU-E1. Attach the opposite end to the CN2, CN3 or CN4 connector on the Controlling Chassis-B1's EXIFU-B1.

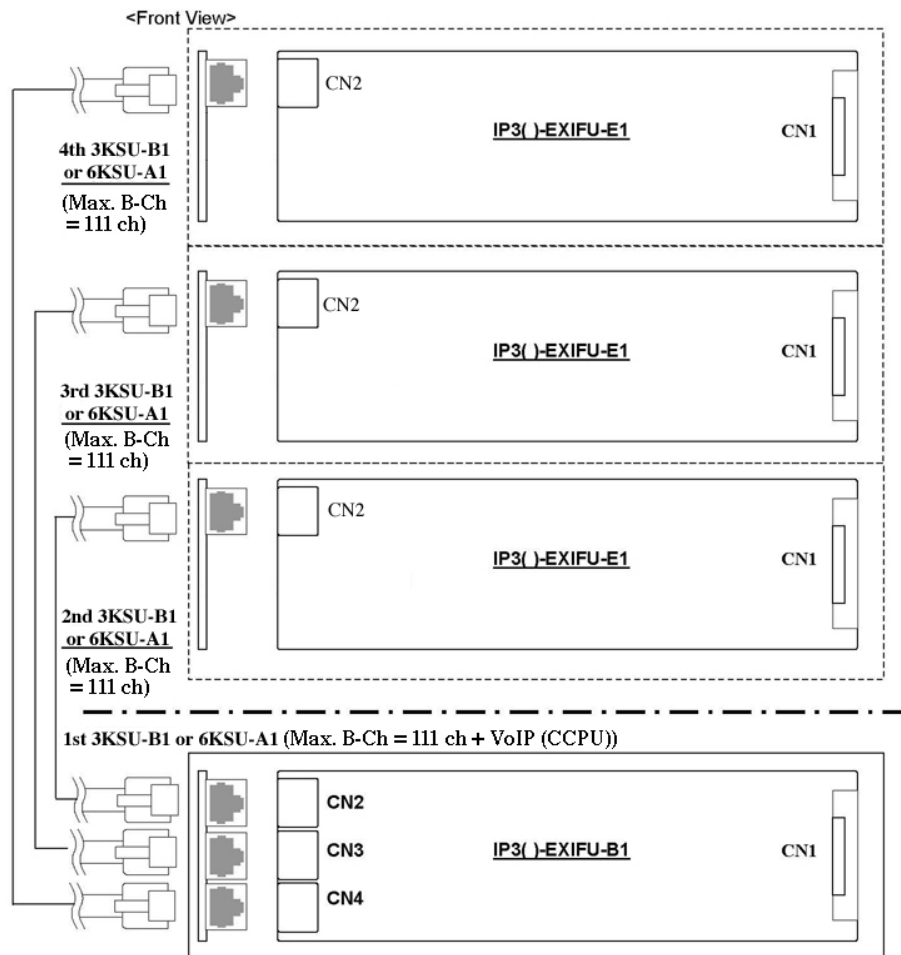


Figure 2-11: EXIFU CABLING

**2.4.3 Memory Expansion Daughter Board (Figure 2-12)**

The Memory Expansion daughter board (MEMDB) provides additional memory for use with increased ports when using an expanded license, expanded system networking, remote software updates. This daughter board is also required if you wish to install more than one 082U blade into the communications server. It also provides expanded port capacity for the system. This daughter board is mounted on the CCPU and provides:

Description	Memory Capacity	Equipped Memory
SDRAM	128 MB	256 MB / 16 bit x 4 pcs
Flash Memory	32 MB	256 MB / 16 bit x 1 pc
SRAM	1 MB	4 MB / 16 bit x 2 pcs

System	Maximum Ports
UX5000 - <b>No</b> MEMDB installed <ul style="list-style-type: none"> <li>• No recovery point created for database</li> <li>• No remote update from flash memory, but possible when USB flash drive is installed</li> <li>• 8 ports maximum for IntraMail/VRS</li> </ul>	64 (Trunks or Extensions)
UX5000 - MEMDB installed and limited port license <ul style="list-style-type: none"> <li>• Networking (CygniLink and AspireNet)</li> <li>• No remote update from flash memory, but possible when USB flash drive is installed</li> <li>• 16 ports maximum for IntraMail/VRS</li> <li>• Up to 3 recovery dates can be created</li> </ul>	256 (Trunks: 200 max. Extensions: 256 max.)
UX5000 - MEMDB installed and maximum port license) <ul style="list-style-type: none"> <li>• Networking (CygniLink and AspireNet)</li> <li>• No remote update from flash memory, but possible when USB flash drive is installed</li> <li>• 16 ports maximum for IntraMail/VRS</li> <li>• Up to 3 recovery dates can be created</li> </ul>	712 (Trunks: 200 max. Extensions: 512 max.)

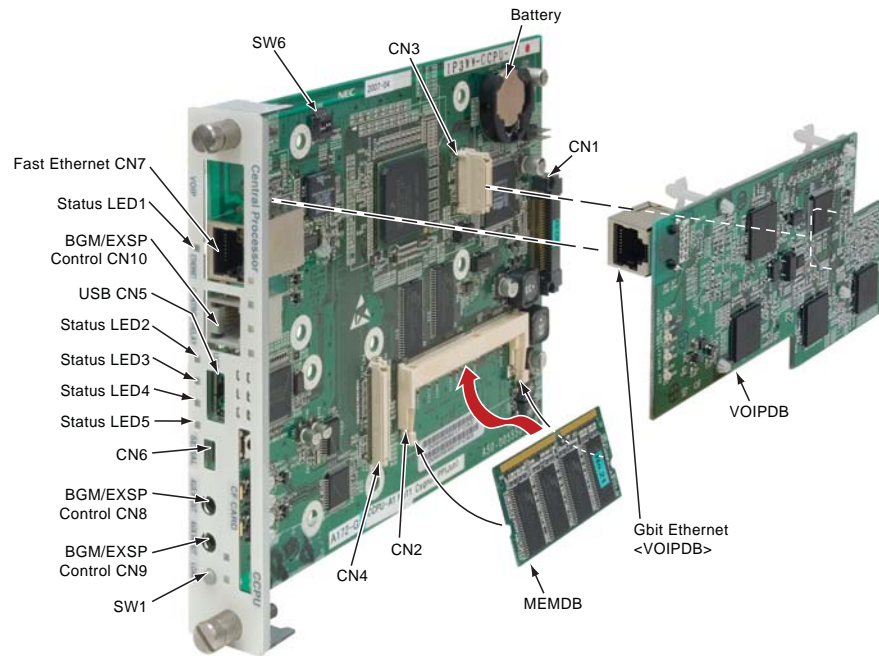
<b>! IMPORTANT!</b>
When installing a MEMDB into a chassis which has been previously installed and programmed, the CCPU must be cold-started due to database compatibility issues.

## To install an Memory Expansion Daughter Board:



- Do not remove or install this daughter board with the power on.

1. Insert the MEMDB into the CN2 connector on the CCPU.
  - This daughter board does not have any switches which need to be set and does not require any hardware setting.



**Figure 2-12: MEMORY EXPANSION DAUGHTER BOARD INSTALLATION**

2.4.4 Voice Mail Daughter Board (VMDB-A1/B1) (Figure 2-13 - Figure 2-14)



- The voice mail function requires the UX IntraMail compact flash card, which will provide both voice mail and VRS functions.

The UX IntraMail voice mail is a fully integrated, blade-based “in-skin” Voice Mail with Automated Attendant. In addition to the voice mail function, the daughter board provides Voice Recording Service (VRS) and an optional modem ability for remote maintenance functions. Its robust feature set rivals the capabilities of stand-alone products on a single, plug-in voice mail blade. This daughter board is installed on the CCPU.

The daughter boards available are:

- VMDB-A1 - providing channels for voice mail (a compact flash blade is required for voice mail)
- VMDB-B1 - providing channels for voice mail (a compact flash blade is required for voice mail) and a single channel V34 modem

Depending on the compact flash card used, the voice mail can provide either 16 or 32 hours. The number of ports available is determined by the port licensed used. Four ports are provided by default.

This daughter board does not have any switches which need to be set and does not require any hardware setting. You can install 1 maximum IntraMail per system providing a maximum of 16 ports. When used on a UX5000 with up to 256 ports, the voice mail will be assigned the ports out of the range of communication server ports. When used on a UX5000 with up to 512 ports, the voice mail will be assigned ports within the range of station/trunk ports. Use Program 47-01-17 to determine the start port for the IntraMail.

Refer to the IntraMail System Guide (P/N 0913240) for complete set-up information. Refer to the UXMail Manual (P/N 0913250) for installation and programming information on the UXMail (APSU) blade.

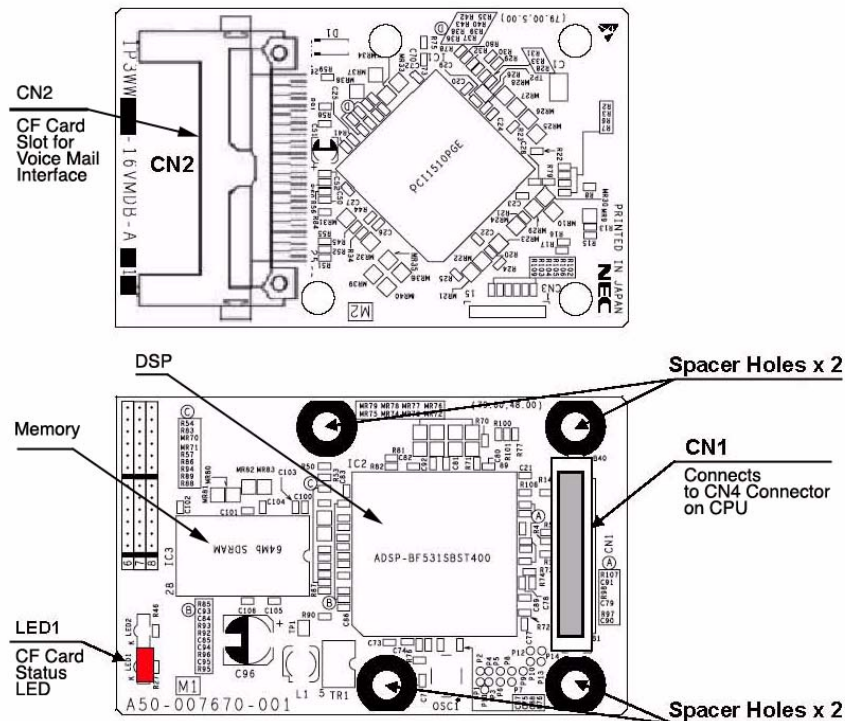


Figure 2-13: VMDB DAUGHTER BOARD

### 2.4.4.1 Installing the VMDB Daughter Board:



- **Do not remove or install this daughter board with the power on.** In addition, do not insert/remove the IntraMail compact flash with the system powered up as it could corrupt the system files.

1. Included with the VMDB are four plastic spacers. Install the plastic spacers onto the VMDB. 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 VMDB's CN1 connector over the CN4 connector on the CCPU blade. Press the boards together, ensuring the plastic spacers lock in place.

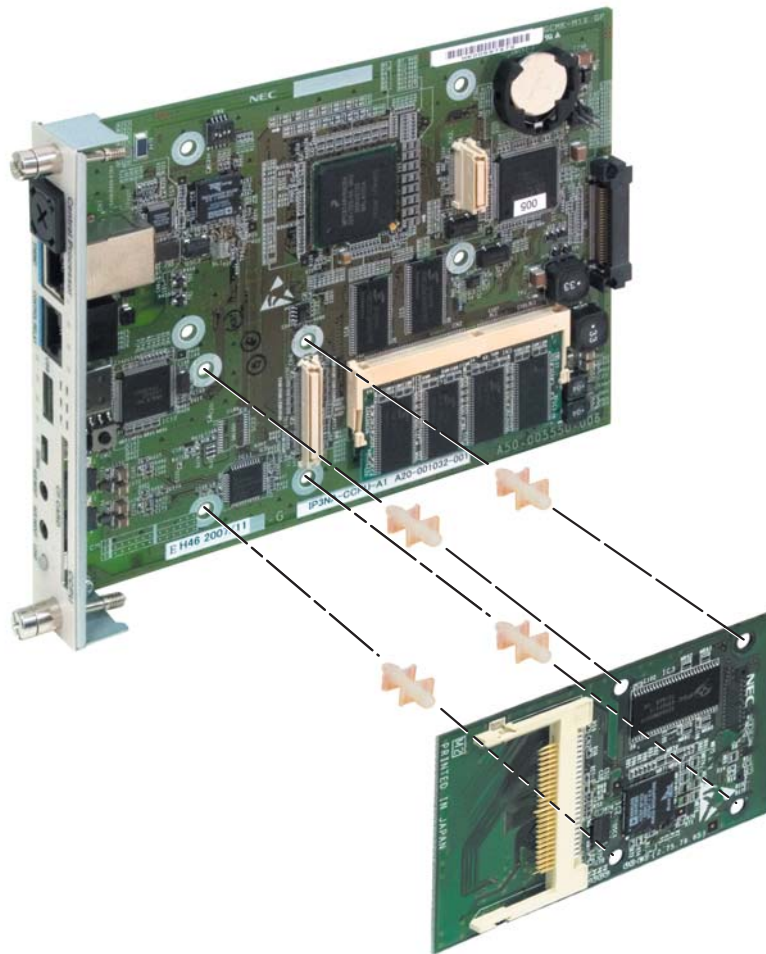


Figure 2-14: VMDB DAUGHTER BOARD INSTALLATION

3. Insert the compact flash card into the CN2 slot.
  - The LED1 status light will be on steady when a card is installed.



**Figure 2-15: INTRAMAIL COMPACT FLASH CARD**



### 2.4.5 VoIP (VOIPDB) Daughter Board (Figure 2-16 - Figure 2-16)

The 32VOIPDB, 64VOIPDB and 128VOIPDB 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 CCPU. The IP telephones are connected directly to the IP bus. When IP phones need to be connected to a conventional PCM-based digital circuit, this blade converts the IP packet signal into a PCM signal format and connects to the PCM time division switch.

The VOIPDB daughter board is required in order for IP telephones to communicate with non-VoIP UX5000 phones, as well as to place or receive outside calls.

The VoIP daughter board provides the voice (RTP/RTCP) processing function. The call control function is mounted on the CCPU. Only one version of the VOIPDB (32, 64, or 128) can be installed on the CCPU at a time.

The VOIPDB daughter board provides:

- 32 (32VOIPDB), 64 (64VOIPDB) or 128 (128VOIPDB) channels
- **64VOIPDB and 128VOIPDB Only:** Layer 2 Switch
- **64VOIPDB and 128VOIPDB Only:** 10/100/1000 Gigabit Ethernet Connection
- **64VOIPDB and 128VOIPDB Only:** RTP/RTCP Packet Transmitted/Received Directly  
**32VOIPDB:** RTP and RTCP Packeted Transmitted/Received by Fast Ethernet LAN Interface on CCPU
- **64VOIPDB and 128VOIPDB Only:** 4 Blade Status LEDs
- Support for CODECs: G722, G726, iLBC

When installing a VoIP blade, the system will not allocate trunk ports for the blade. This must be defined in Program 10-40-02. Ports are allocated in groups of 4. For IP extensions, the system will only allocate extension ports once an IP phone is connected. At that time, the system will reserve a group of 4 extension ports. Once the 4 ports are used, the system will then reserve another group of 4 when another IP extension is connected.

#### 2.4.5.1 LED Indications

LED	Function	LED Status	Operation Status
ACT (LED 1)	Link activity or data transmission and reception.	On Green	Link up completed
		Flashing	Data being transmitted/received.
LINK10_100 (LED2)	10Base-T/100Base-TX link speed indicator.	On Red	100Base-TX link up
		When: LED 1=On LED 2= Off LED 3=Off	Link up 10Base-T
LINK1000 (LED3)	1000Base-T link speed indicator	On Red	1000Base-T link up
DUPLEX (LED4)	Duplex Status	On Yellow	Full duplex operation

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


LED	Link Up									
	Auto Negotiation Mode					Force Mode				
	1000 M bps	100Mbps		10Mbps		1000 M bps	100Mbps		10Mbps	
		half	full	half	full		half	full	half	full
ACT (LED1)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
DUPLEX (LED4)	ON	OFF	ON	OFF	ON	ON	OFF	ON	OFF	ON
LINK1000 (LED3)	ON	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
LINK10_100 (LED2)	OFF	ON	ON	OFF	OFF	OFF	ON	ON	ON	ON

#### 2.4.5.1 Installing the VoIP Blade:



- **Do not remove or install this daughter board with the power on.**

1. With the system power off, install the VOIPDB onto the CCPU.
2. Insert the CCPU into the CCPU slot in the Controlling chassis.
  - Refer to UX5000 Central Processing Unit (CCPU) Blade (Figure 2-4 - Figure 2-5) (page 2-15) for more details.
3. Connect the VOIPDB to the 4RTU blade or to an external switching hub using an ethernet cable.
4. Refer to the **UX5000 Software Manual (P/N 09193200)** for required programming.

 To view the VOIPDB information (MAC address, number of ports, number of active/reserved), on a display terminal press CHECK + HOLD + 4.

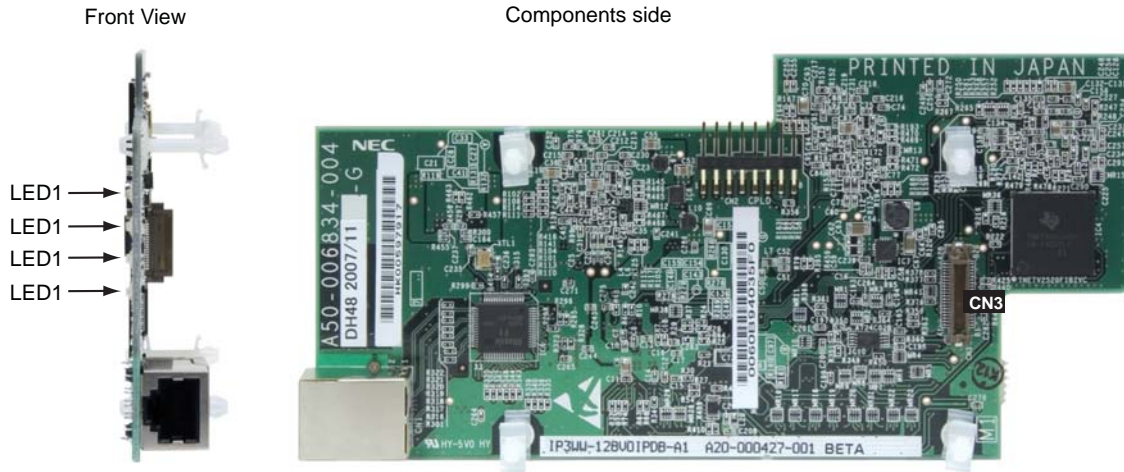


Figure 2-16: VOIPDB DAUGHTER BOARD

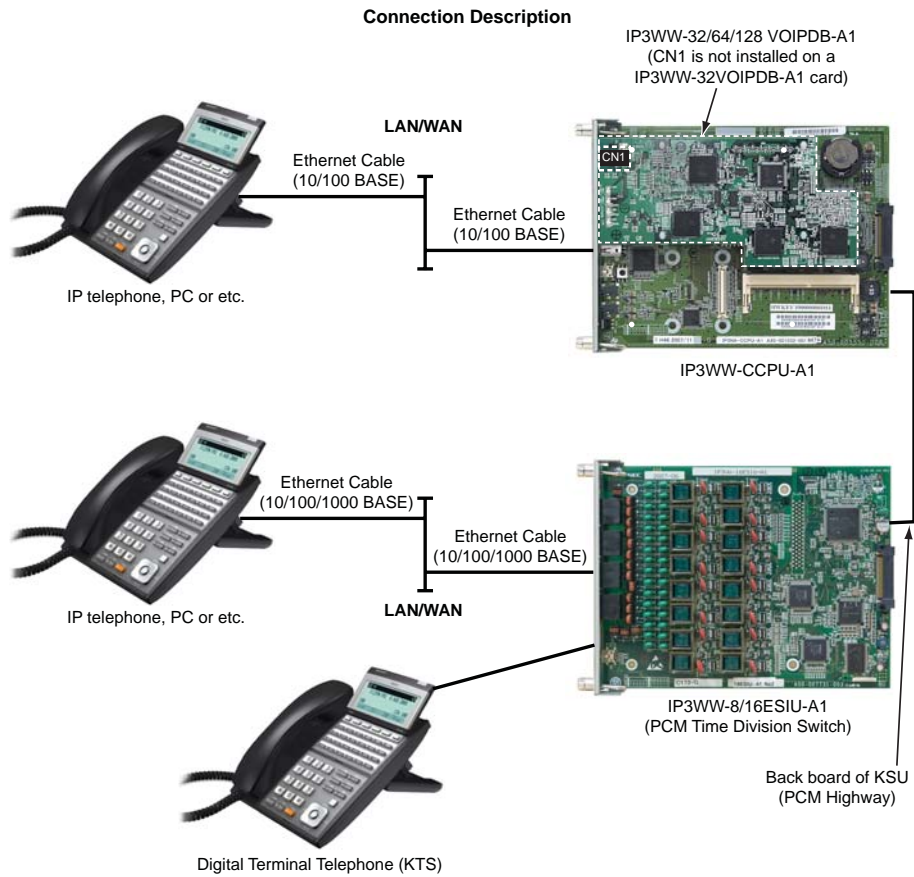
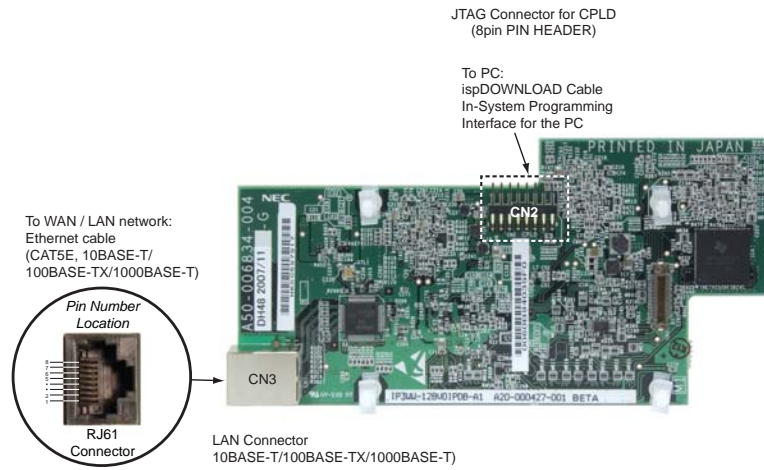


Figure 2-17: VOIP CONNECTION



**Figure 2-18: VOIPDB CONNECTION TO NETWORK/PC**

## SECTION 2-5 Station Blades

### 2.5.1 Digital Station (8/16ESIU) Blade (Figure 2-19)

The ESIU blade provides:

- 8 (8ESIU) OR 16 (16ESIU) digital extension circuits (used for digital telephones, DSS consoles, SLTAD adapters, 2PGDAD adapters)

*These ports provide -48V feeding.*

- 2 Blade status LEDs - 1 Live LED, 1 Busy/Idle LED

The ESIU can be installed in any universal slot in the system and up to a maximum of 20 ESIU blades installed per system, providing up to 320 digital ports. A maximum of 16 2B channels per chassis is possible.

Per 19" chassis, there is a maximum of 80 digital or analog station ports allowed.

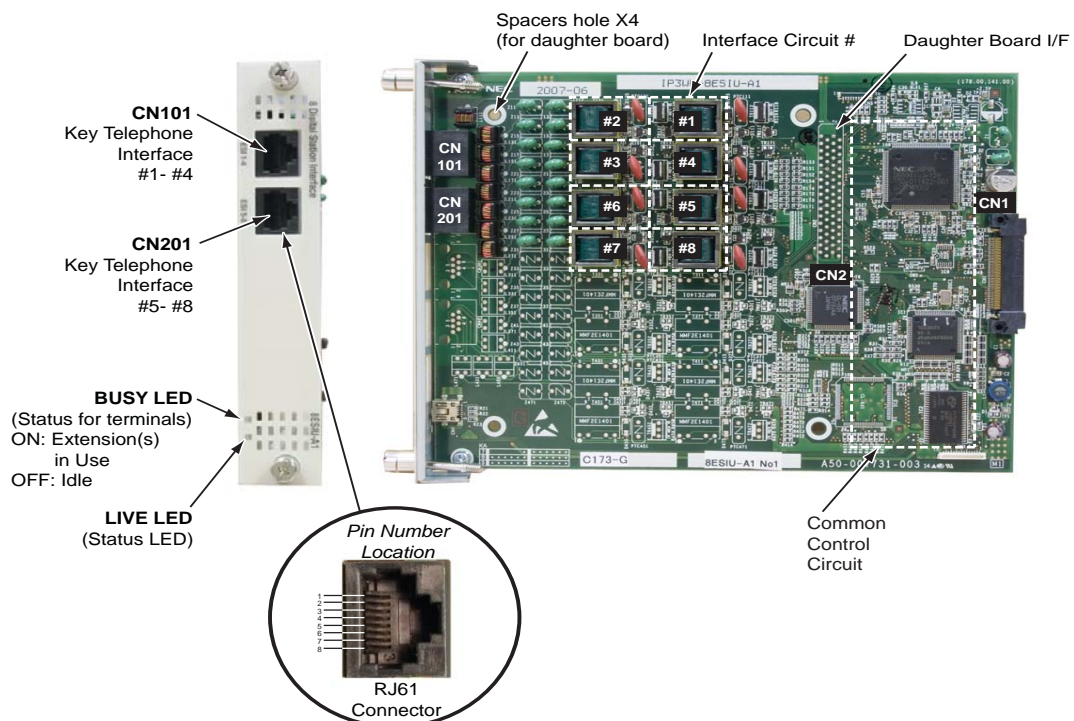
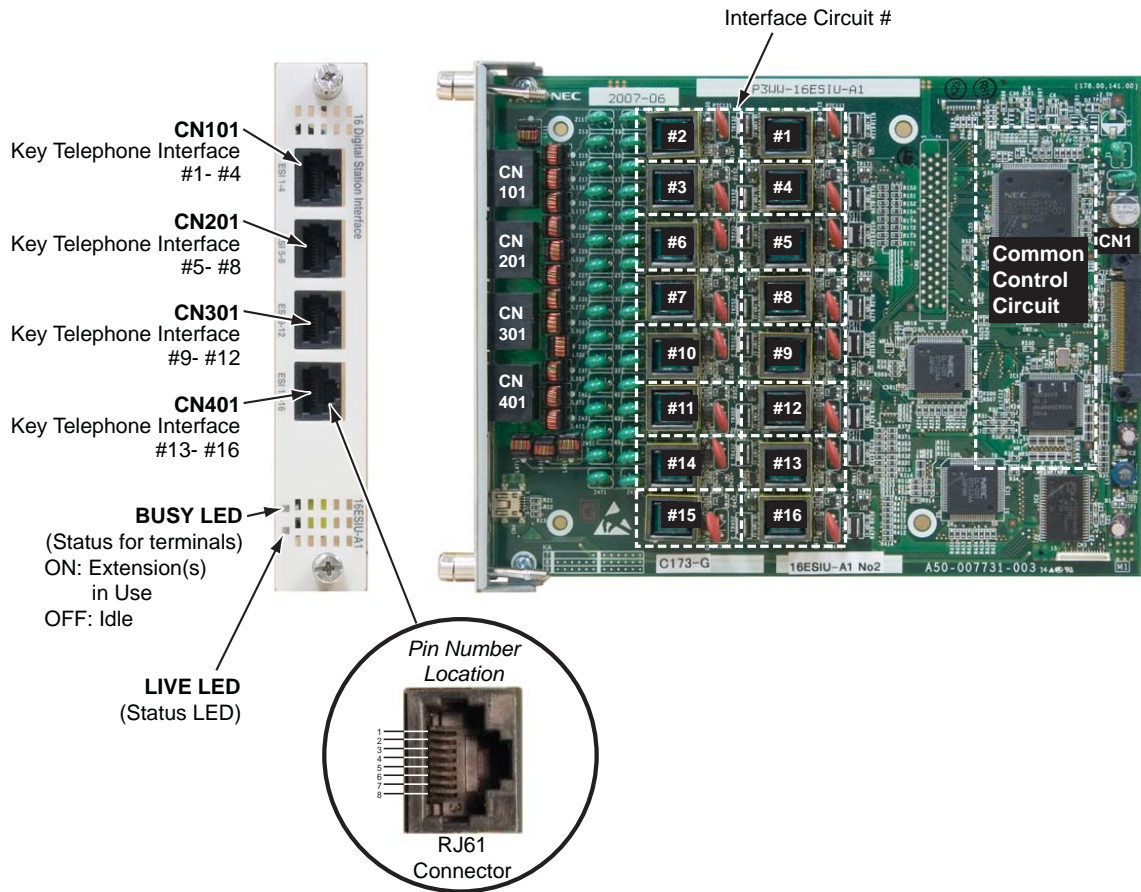


Figure 2-19: 8ESIU BLADE



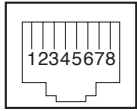
**Figure 2-20: 16ESIU BLADE**

The CNx01 connectors provide connection to 4 digital station ports. With the 16ESIU blade, the CN101, CN201, CN301, and CN401 connectors are available. With the 8ESIU blade the CN301 and CN401 connectors are removed from the blade.



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

## 2.5.1.1 Connector Pin-Outs on the ESIU

RJ61 Cable Connector - 8ESIU - CN101 (ports 1-4), CN201 (ports 5-8) 16ESIU - CN101 (ports 1-4), CN201 (ports 5-8), CN301 (ports 9-12), CN401 (ports 13-16)		
	Pin No.	Connection
	1	Tip for port 4
	2	Tip for port 3
	3	Tip for port 2
	4	Ring for port 1
	5	Tip for port 1
	6	Ring for port 2
	7	Ring for port 3
	8	Ring for port 4

## 2.5.1.2 LED Indications

LED Indication		Operation Status	Operation Status
Live LED (green)	Busy LED (red)		
On	On	Blade Initializing	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal Operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked Blade	At least 1 channel busy
	Off		All channels idle
	Flashing (80 ms on/off x 3/400 ms off)	Downloading firmware	

To install the ESIU blade:

1. Install the ESIU into a slot.

Each CNx01 connector (CN101, CN201, CN301, CN401) is used to connect up to four digital extensions.

### 2.5.2 Analog Station (4/8SLIU) Blade (Figure 2-21)

The 4/8SLIU blade provides 4 (4SLIU) analog extension ports OR 8 (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. It is recommended that a 4DIOPU blade be used instead (it supports the analog DID and single line telephone interface functions, such as Off-Premise Extensions).

- 1 Extension Status LED
- 1 Blade Status LED
- Constant Current Type Battery Feeding (25mA / -28Vdc)
- Feeding Polarity Reverse Ability
- Connector for 4/8SLIDB Daughter Boards
- Ring Generator (16Hz/20Hz/25Hz, 75Vrms -28Vdc)
- Caller ID Sending Ability
- Message Wait Lamping Ability (110Vdc)

Per 19" chassis, there is a maximum of 80 digital or analog station ports allowed.



- 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.**



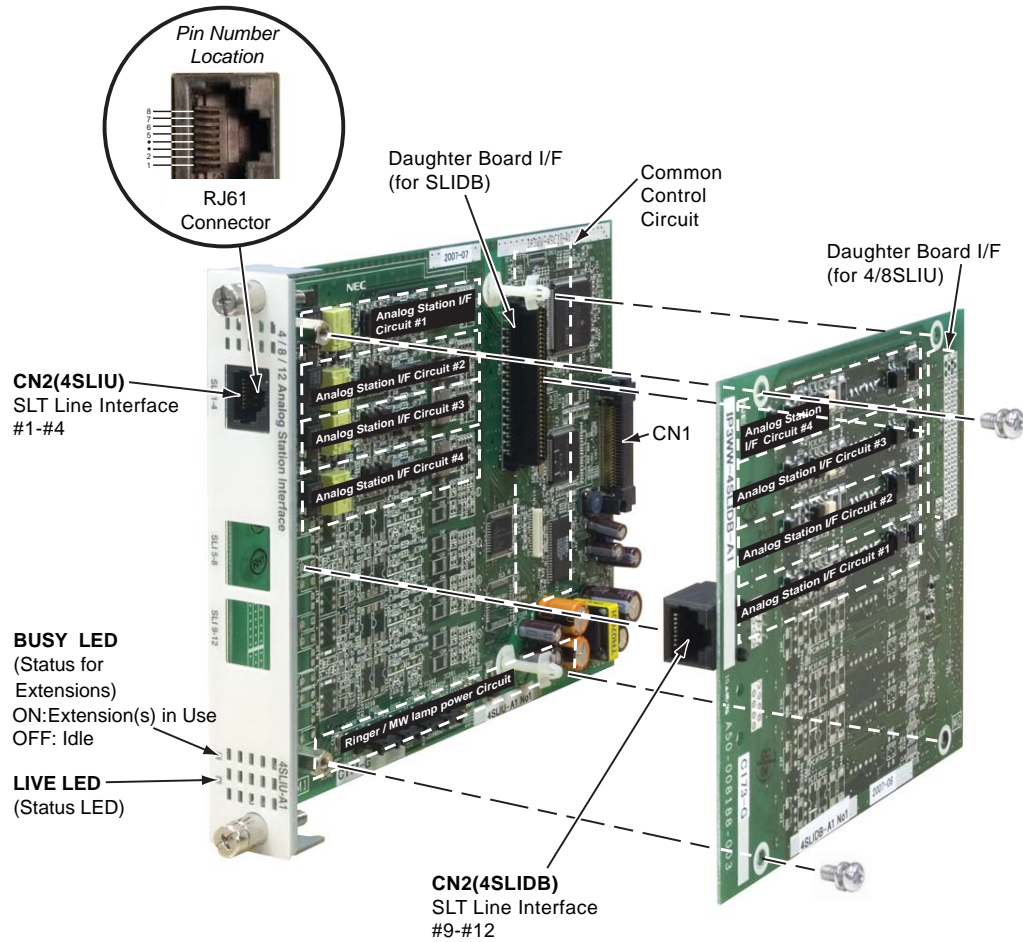


Figure 2-21: 4SLIU BLADE - COMPONENT SIDE VIEW

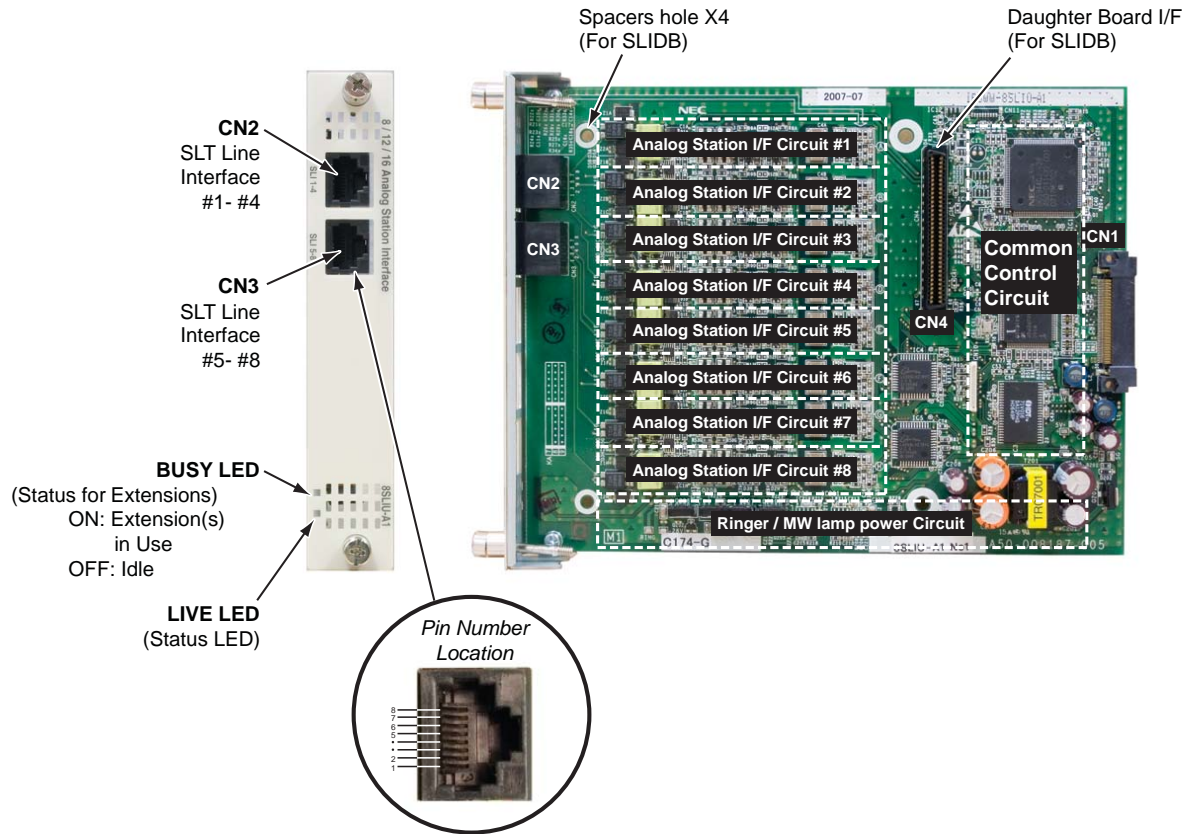


Figure 2-22: 8SLIU BLADE - COMPONENT SIDE VIEW

2.5.2.1 LED Indications

LED Indication		Operation Status	Operation Status
Live LED (green)	BusyLED (red)		
On	On	Blade initializing	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked blade	At least 1 channel busy
	Off		All channels idle
	Flashing (80 ms on/ off x 3/400 ms off)		Downloading firmware

The CNx connectors are not polarity sensitive.

### 2.5.2.2 Connector Pin-Outs on the SLIU

RJ61 Cable Connector - 8SLIU - CN2 (ports 1-4) 8SLIU - CN2 (ports 1-4), CN3 (ports 5-8)		
Pin No.	Connection	
1	Tip for port 4	
2	Tip for port 3	
3	Tip for port 2	
4	Ring for port 1	
5	Tip for port 1	
6	Ring for port 2	
7	Ring for port 3	
8	Ring for port 4	

### 2.5.2.3 Installing a 4SLIU or 8SLIU Blade:

- If the 4/8SLIDB is to be used, install this prior to inserting the 8SLIU blade into the chassis.
1. Install the SLU into any available universal slot.

### 2.5.3 Analog Station (4/8SLIDB) Daughter Board (Figure 2-23 - Figure 2-24)

The 4SLIDB and 8SLIDB daughter boards provide:

- 4 (SLIDB) or 8 (8SLIDB) analog extension ports (used for on-premise analog telephones, fax machines, and analog modems)
  - ✎ The 4/8SLIDB is not rated for OPX use. It is recommended that a 4/IOPU blade be used instead (it supports the analog DID and single line telephone interface functions, such as Off-Premise Extensions).
- Connector for 4/8SLIU blade
- Caller ID Sending Ability
- Message Wait Lamping Ability (110Vdc)
- Constant current type battery feeding (25mA / -28Vdc)
- Feeding Polarity Reverse Ability

These daughter boards can be installed on the 4SLIU or 8SLIU blades.



- 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 blade must be within the building - no outside cabling is permitted.

The CN2 (4/8SLIDB) and CN3 (8SLIDB only) connectors each provide connection to 4 analog station ports and are not polarity sensitive. The SLIDB consumes extension ports ranging between ports 001-256 .

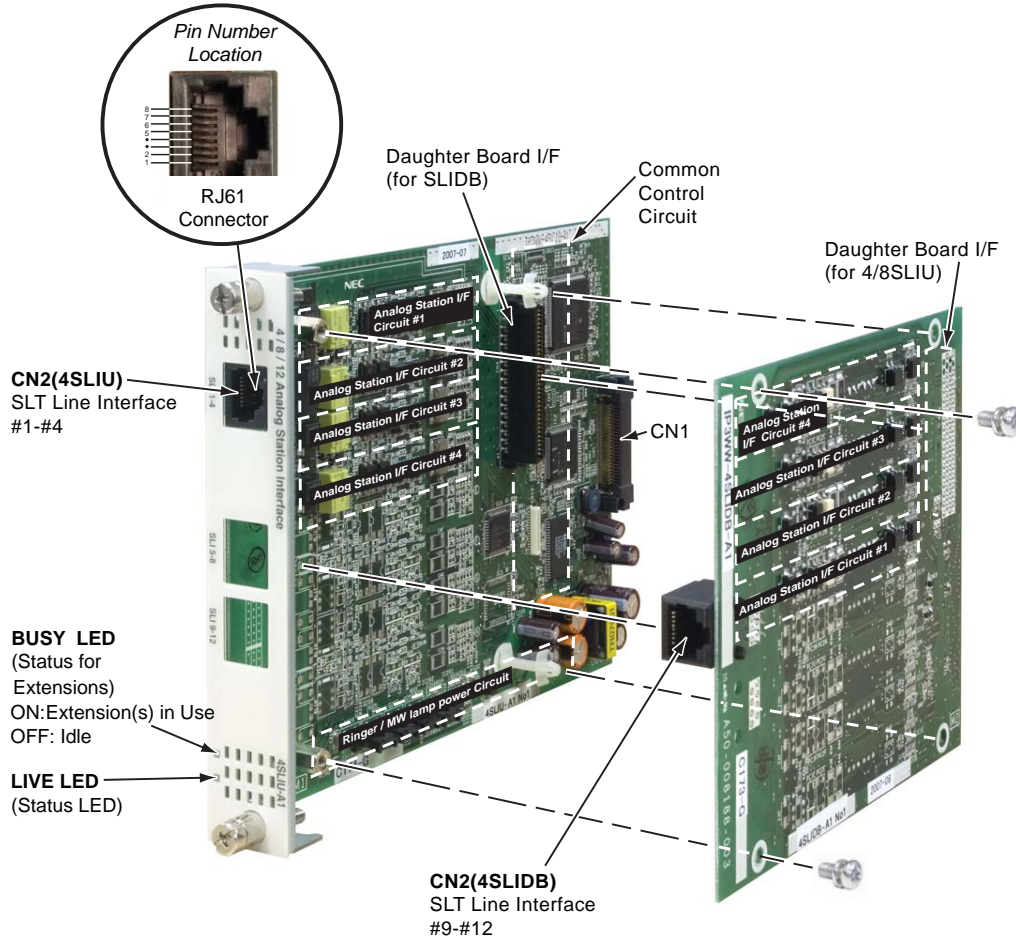


Figure 2-23: PLACING A 4SLIDB ONTO AN 4SLIU BLADE

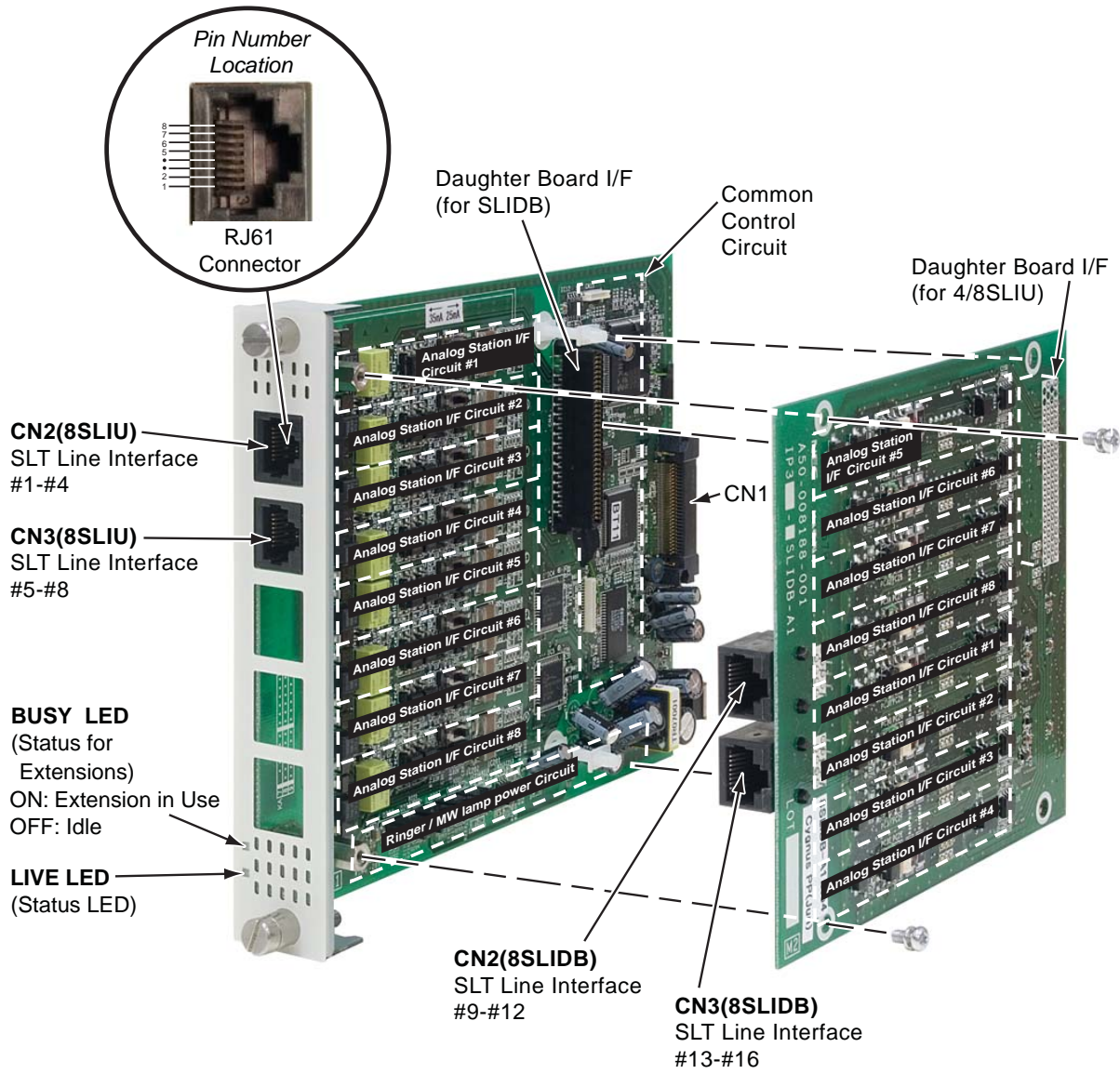


Figure 2-24: PLACING A 8SLIDB ONTO AN 8SLIUBLADE

### 2.5.3.1 Connector Pin-Outs on the SLIDB

RJ61 Cable Connector - 48SLIDB - CN2 (ports 9-12) 8SLIDB - CN2 (ports 9-12), CN3 (ports 13-16)	
Pin No.	Connection
1	Tip for port 4
2	Tip for port 3
3	Tip for port 2
4	Ring for port 1
5	Tip for port 1
6	Ring for port 2
7	Ring for port 3
8	Ring for port 4

### 2.5.3.2 Installing an SLIDB Daughter Board:

1. Included with the SLIDB are four plastic spacers. Install the plastic spacers onto either the 4SLIU or 8SLIU 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 SLIDB's CN1 connector over the CN4 connector on the SLIU blade. Press the boards together, ensuring the plastic spacers lock in place.
3. Install the SLIU blade into the slot.

**2.5.4 Digital/SLT Combination Blade (082U) (Figure 2-25)**

The Digital/SLT Combination blade provides 8 digital ports and 2 analog ports. This blade allows for either a 4COIU analog trunk daughter board or 2BRI daughter board to be installed.

The blade provides:

- 8 digital ports
- 2 analog ports
- 2 status LEDs

Without a MEMDB installed, only 1 082U blade can be installed in the system. With a MEMDB, multiple 082U blades can be installed in the communications server - however, only one 082U blade can be installed in a chassis (for a maximum of 8 082U blades when using 9.5" chassis or 4 when using a 19" chassis). When connecting this blade, the system uses 8 digital port and 2 analog ports.



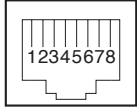
- Blades with "IP3NE" included as part of the blade name printed on the card cannot be combined with any "IP3WW" version blades. The "IP3NE" are U.S. versions, while the "IP3WW" are international versions of the blades.

**2.5.4.1 LED Indications**

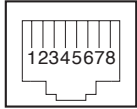
LED Indication		Operation Status	Operation Status
Live LED (green)	Busy LED (red)		
On	On	Blade initializing	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked blade	At least 1 channel busy
	Off		All channels idle
	Flashing (80 ms on/off x 3/400 ms off)	Downloading firmware	



## 2.5.4.2 Connector Pin-Outs on the 082U Blade

<b>RJ11 Cable Connector -</b> Digital: <b>CN101 (ports 1-4)</b> Digital: <b>CN102 (ports 5-8)</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	Tip for port 4 or 8
	2	Tip for port 3 or 7
	3	Tip for port 2 or 6
	4	Ring for port 1 or 5
	5	Tip for port 1 or 5
	6	Ring for port 2 or 6
	7	Ring for port 3 or 7
	8	Ring for port 4 or 8

<b>RJ11 Cable Connector -</b> Analog: <b>CN201 (ports 1-2)</b>		
	<b>Pin No.</b>	<b>Connection</b>
	1	-
	2	-
	3	Tip for port 2
	4	Ring for port 1
	5	Tip for port 1
	6	Ring for port 2
	7	-
	8	-

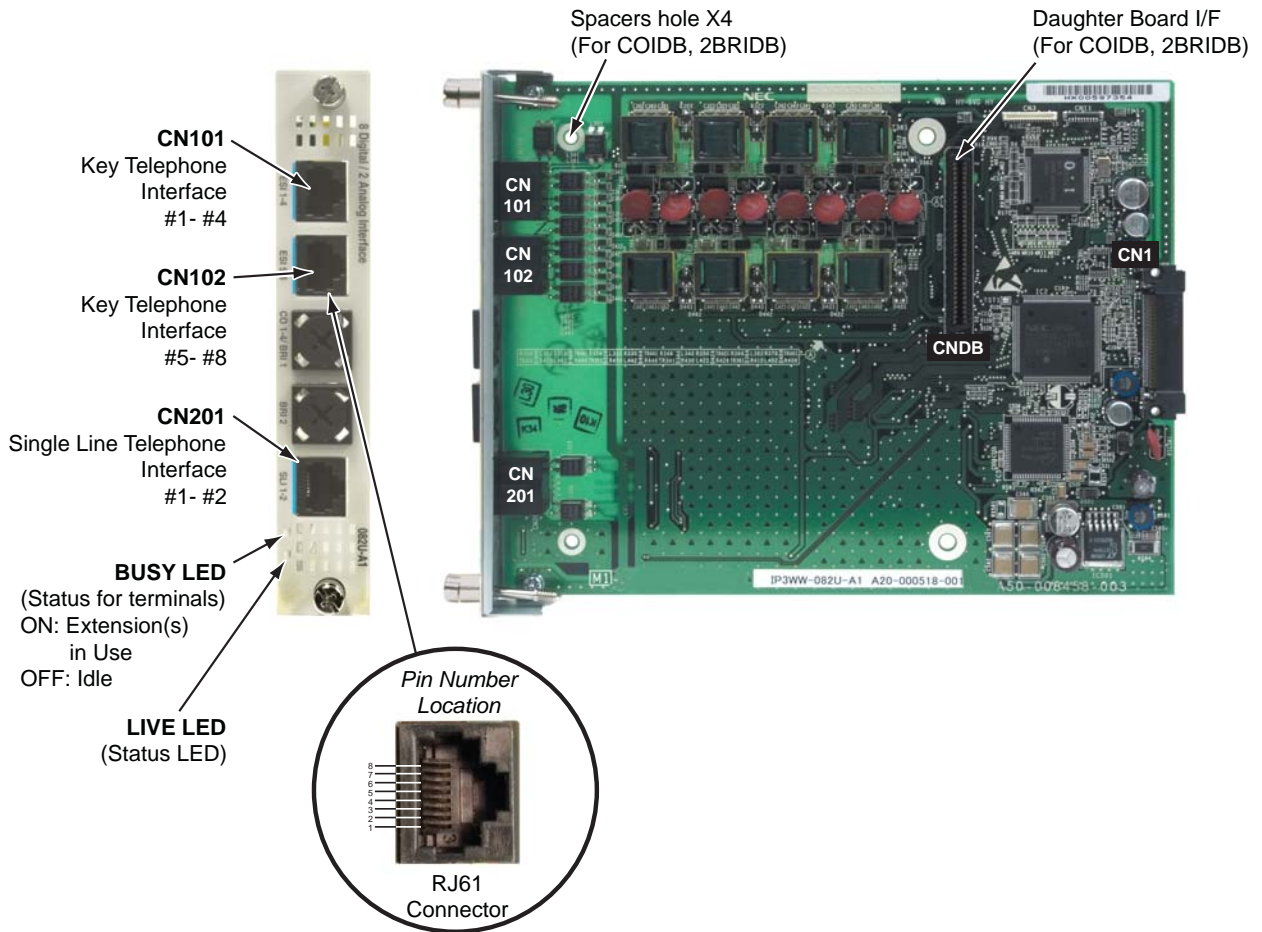
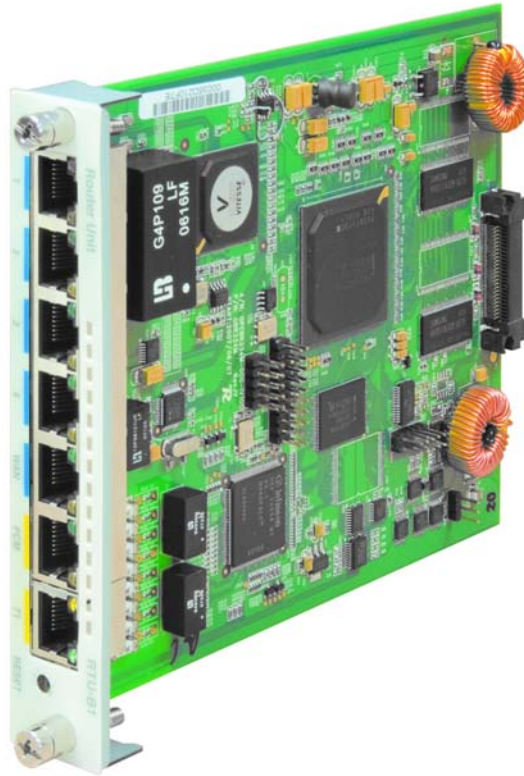


Figure 2-25: DIGITAL/SLT COMBINATION (082U) BLADE

## SECTION 2-6

### Miscellaneous Blades

#### 2.6.1 Router 4-Port (4RTU) Blade (Figure 2-26)



**Figure 2-26: ROUTER BLADE**

This blade is an in-skin router for the UX5000 system for up to 4 ports. Using an RJ45, a connection can be made directly to a PC. This blade combines multiple voice and data features into an in-skin converged networking route. The Router blade includes a single T11 WAN interface or a single ThernetWAN and an integrated 4-port managed Ethernet switch with VLAN support.

The Router blade provides:

- High Speed Forwarding (Routing). IPsec forwarding ability is about 100 Mbps.
- Supported Interface:
  - T1 or 10/100 Base-TX Ethernet WAN Connectivity
  - 10/100 Base-TX: 4 Port Mananaged Ethernet LAN Switch with VLAN and Port Mirroring Capabilities
- VPN/Firewall
- VoIP Application Layer Gateway (SIP, MGCP and H.323) Resolves NAT/Firewall Traversal Issues
- QoS: Priority Queuing, Traffic Shaping, Diffserv Marking/Policing
- VoIP Call Admission Control

- VoIP Survivability
- Passive Call Quality Monitoring (MOS, Jitter, Latency and More)
- DHCP Server
- NAT/PAT
- Management: HTTP, HTTPS, SSH, Telnet, SNMPv1 and V3
- Ethernet/LAN: Auto-Sensing, Full or Half Duplex

The VOIPDB daughter board, which is required in order for IP telephones to communicate with non-VoIP UX5000 phones, as well as to place or receive outside calls, must be connected to either a switching hub or to the Router blade.

<b>Blade Maximum's</b>			
<b>9.5" Chassis</b>	<b>19" Chassis with CCPU</b>	<b>19" Chassis without CCPU</b>	<b>4x19" System</b>
2	2	2	8

## 2.6.2 Gigabit Ethernet PoE Switch (GSWU) Figure 2-26

The GSWU blade is a managed 8-port gigabit ethernet PoE switch.

The GSWU 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

Ports 1 and 8 are the default “uplink” ports. All the user management and stacking is based on this setup.

Multiple-Unit Stacking allows the user the ability to manage multiple GSWU blades in a system as one switch, instead of individual units and IP addresses. For example, a set of 3 blades would appear to the user interface as a 24-port switch, instead of a 3 8-port switches. Stacking works by assigning a Main Management Blade, which will provide all the GUI information for all blades in the same stack. The CCPU assigns the Main blade by issuing an IP address to the Main blade via PAW/PRW during initialization sequence. All other GSWU blades detected in the system will not be assigned an IP address, thereby signifying them as “add-on” blades.

A single UX5000 system can have up to 12 GSWU blades per system. However, only 3 GSWU blades can be grouped together to form a single 20-port switch. When more than 3 GSWU blades are present within a system, the blades not grouped together will not have any of the software feature of the stacked blades. They will behave as an unmanaged gigabit ethernet switch (only eight 10/100/1000 ethernet ports and PoE Class 3 [lowest power class]). The 2 GSWU blades can be categorized into one “Main” blade, with 2 additional “Add-on” blades.

When a Main blade is initialized, it assigns the first blade ports 1-8. When subsequent add-on blades are recognized, the system assigns port numbers on a first-come-first-serve basis. If you wish to have sequential port numbers, insert each add-on blade, one at a time, into the system without adding any other type of blade. When a blade is removed, the port numbers are not automatically removed. They can be removed by accessing the Main blade GUI.

The IP address, subnet mask, and gateway address of the Main blade will be assigned in Program 10-55.

Stacking 3 GSWU blades to form a 20-port switch is restricted to a single system location. The grouping is not allowed across a network/CygnilLink.

The VOIPDB daughter board, which is required in order for IP telephones to communicate with non-VoIP UX5000 phones, as well as to place or receive outside calls, must be connected to either a switching hub or to the Router blade.

## SECTION 2-7

### Trunk Blades

#### 2.7.1 Analog Trunk (4COIU) Blade (Figure 2-27)

The 4COIU is used to provide 4 ports for loop/ground start trunks. The blade can accept a 4COIDB to provide an additional 4 ports (refer to 2.7.2 Analog Trunk (4COIDB) Daughter Board (Figure 2-28) on page 2-58).

The COIU blade provides:

- 4 analog loop start/ground start trunk circuits
- 1 trunk status LED
- 1 blade status LED
- 4 Caller ID Circuits
- 2 Power Failure Transfer Circuits
- Connection for COIDB Daughter Board

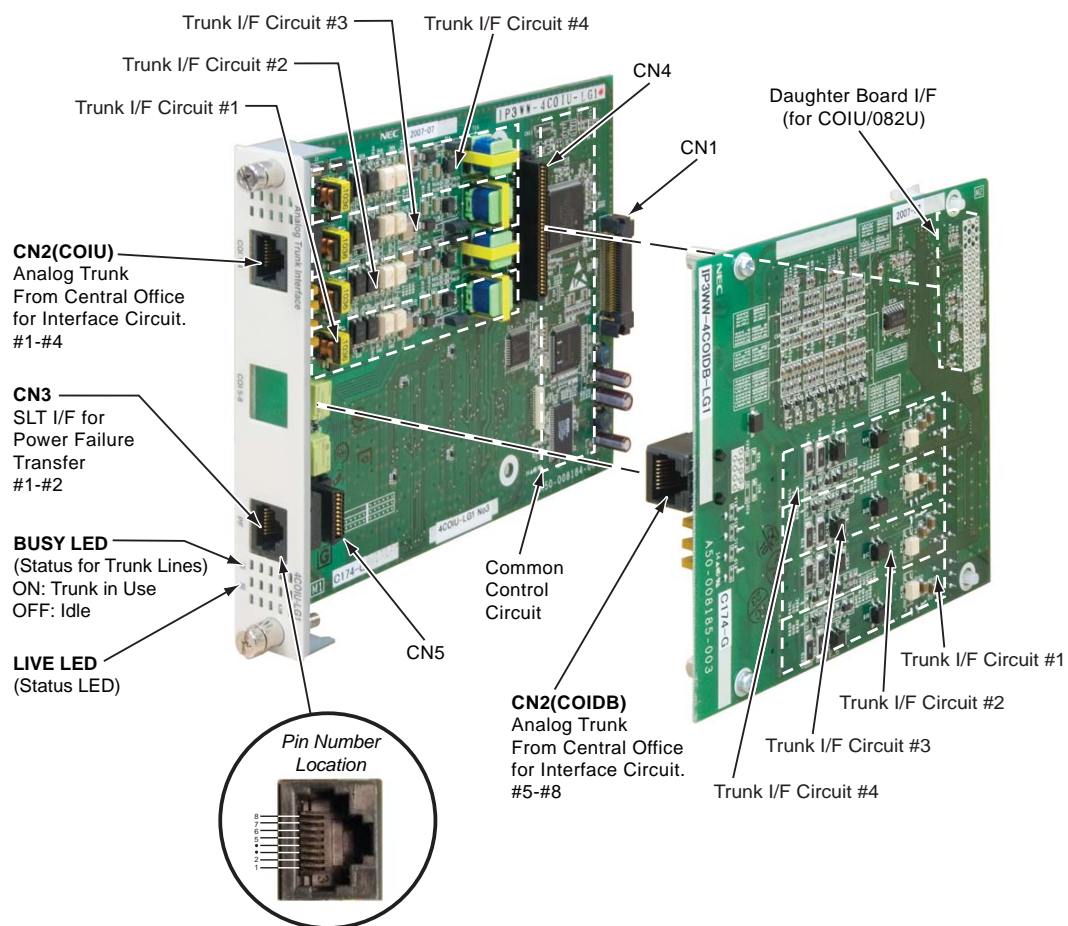


Figure 2-27: 4COIU BLADE

The 4COIU consumes 4 trunk ports ranging between ports 001-200. The CN2 connector provides connection to 4 analog trunk ports. The ground start ports ***are polarity sensitive (tip to tip, ring to ring)*** - the loop start trunks are not. The power failure circuits (CN3), however, are not polarity sensitive.



**! Important !**

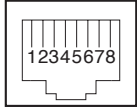
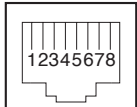
- When using the COIU-LG1 blade for ground start trunks, the PBX ground ***must*** be connected as described on page 1-69 or the trunks will not function correctly.
- The ground start trunk ports are polarity sensitive. Be careful when wiring the trunks.
- When connecting the RJ61 cables to the COIU blade, note the position of the Power Failure connector (CN3). Do not confuse this connector as the trunk connector (CN2).

**2.7.1.1 LED Indications**

LED Indication		Operation Status	Operation Status
Live LED (green)	Busy LED (red)		
On	On	Blade Initializing	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked blade	At least 1 channel busy
	Off		All channels idle
	Flashing (80 ms on/off x 3/400 ms off)	Downloading firmware	



## 2.7.1.2 Connector Pin-Outs on COIU Blade

<b>RJ61 Cable Connector - CN2, Trunks</b>		
The CN2 connector is <i>polarity sensitive (tip to tip, ring to ring) for ground start trunks.</i>		
	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	
<b>RJ61 Cable Connector - CN3, SLT Interface for Power Failure</b>		
	Pin No.	Connection
	1	-
	2	-
	3	Circuit 2 - Tip
	4	Circuit 1 - Ring
	5	Circuit 1 - Tip
	6	Circuit 2 - Ring
	7	-
8	-	

## 2.7.1.3 Installing the Analog Trunk Blade:



- If the 4/8SLIDB is to be used, install this prior to inserting the 8SLIU blade into the chassis.
1. Install the COIU into any available slot.
    - Use Program 14-02-14 to set the trunks as loop or ground start. Loop and ground starts can be combined on one blade.

For details on the connections for power failure trunks, refer to "Section 4-14 POWER FAILURE TERMINALS" on page 4-53.

### 2.7.2 Analog Trunk (4COIDB) Daughter Board (Figure 2-28)

The 4COIDB is used to provide 4 additional ports for loop/ground start trunks. The blade is connected to a 4COIU blade to provide a total of 8 ports for the combined blade (refer to 2.7.1 Analog Trunk (4COIU) Blade (Figure 2-27) on page 2-55).

This daughter board can also be installed on the Digital/SLT Combination blade (082U). This combined blade will provide 8 digital extension ports, 2 analog extension ports, and 4 trunk ports.

The analog trunk daughter board provides:

- 4 analog loop start/ground start trunk circuits
- 4 Caller ID circuits
- Connector for COIU or 082U blade

The 4COIDB consumes 4 trunk ports ranging between ports 001-200. The CN2 connector provides connection to 4 analog trunk ports. The ground start ports ***are polarity sensitive (tip to tip, ring to ring)*** - the loop start trunks are not. The power failure circuits (CN3), however, are not polarity sensitive.



#### **! Important !**

- When using the COIU/COIDB for ground start trunks, the PBX ground ***must*** be connected as described on page 1-69 or the trunks will not function correctly.
- The ground start trunk ports are polarity sensitive. Be careful when wiring the trunks.
- When connecting the RJ61 cables to the COIU/COIDB, note the position of the Power Failure connector (CN3). Do not confuse this connector as the trunk connector (CN2).
- Switching from Loop Start to Ground Start is set in system programming.

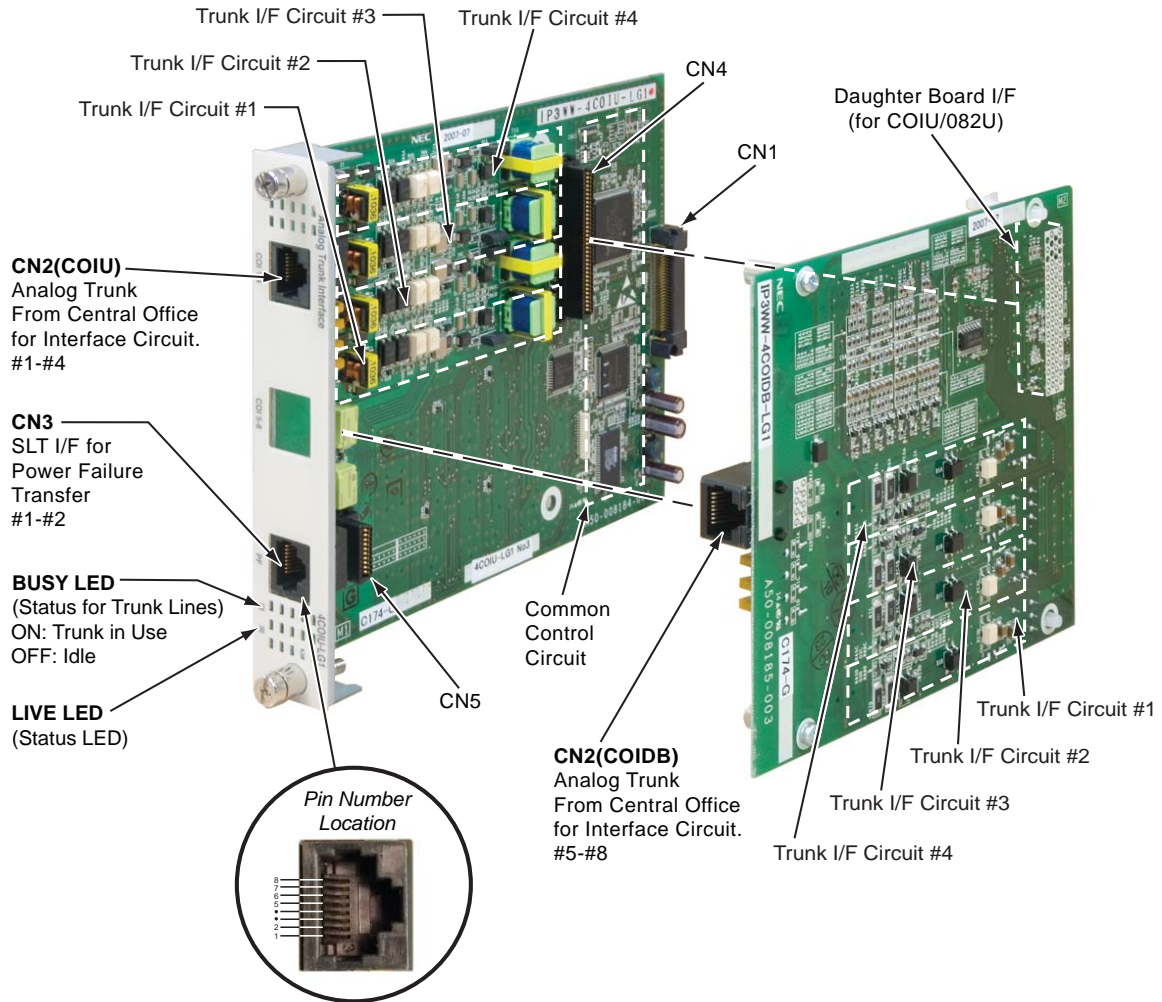
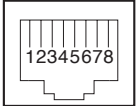
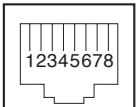


Figure 2-28: 4COIDB BLADE

2.7.2.1 Connector Pin-Outs on COIDB

<b>RJ61 Cable Connector - CN2, Trunks - Connecting to COIU Blade</b> The CN2 connector is <i>polarity sensitive (tip to tip, ring to ring) for ground start trunks.</i>		
	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	
<b>RJ61 Cable Connector - CN2, Trunks - Connecting to 082U Blade</b> The CN2 connector is <i>polarity sensitive (tip to tip, ring to ring) for ground start trunks.</i>		
	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	

2.7.2.2 Installing a COIDB Daughter Board:

1. Included with the COIDB are four plastic spacers. Install the plastic spacers onto the 4COIU-LG1 or 082U-A1 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 COIDB's CN1 connector over the CN4 connector on the COIU/082U blade. Press the boards together, ensuring the plastic spacers lock in place.
3. Install the COIU or 082U blade into the slot.

### 2.7.3 Direct Inward Dial (DID) (4DIOPU) Blade (Figure 2-29)

The 4DIOPU blade 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 3 DID circuits and 1 OPX circuit, they should be grouped as DID, DID, DID and OPX and not DID, DID, OPX and DID.

The DIOPU blade provides:

- 4 (4DIOPU) DID trunk circuits
- 4 (4DIOPU) DID trunk status LEDs
- 2 blade status LEDs

The DIOPU blade can be installed in any universal slot.



- Blades with “IP3NE” included as part of the blade name printed on the card cannot be combined with any “IP3WW” version blades. The “IP3NE” are U.S. versions, while the “IP3WW” are international versions of the blades.

#### 2.7.3.1 LED Indications

LED Indication		Operation Status	Operation Status
Live LED (green)	Busy LED (red)		
On	On	Blade initializing	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked blade	At least 1 channel busy
	Off		All channels idle
	Flashing (80 ms on/off x 3/400 ms off)	Downloading firmware	

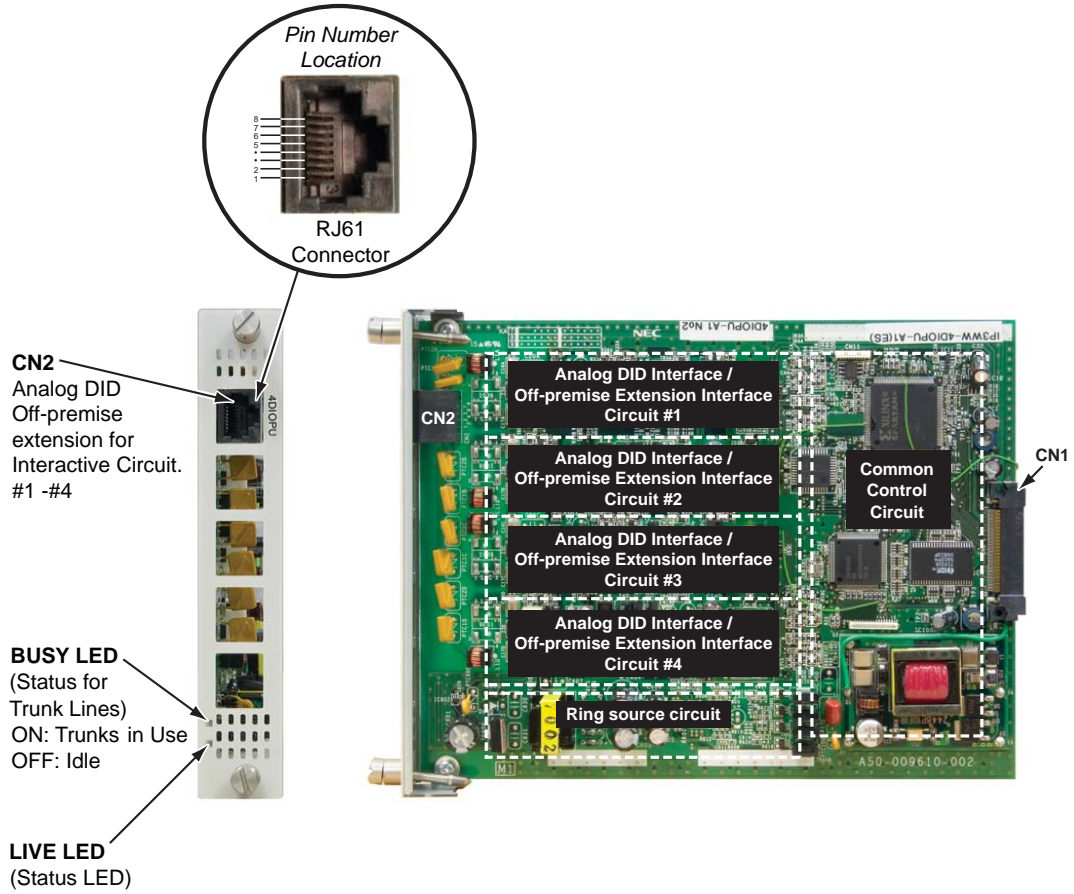


Figure 2-29: DIOPU BLADE INSTALLATION

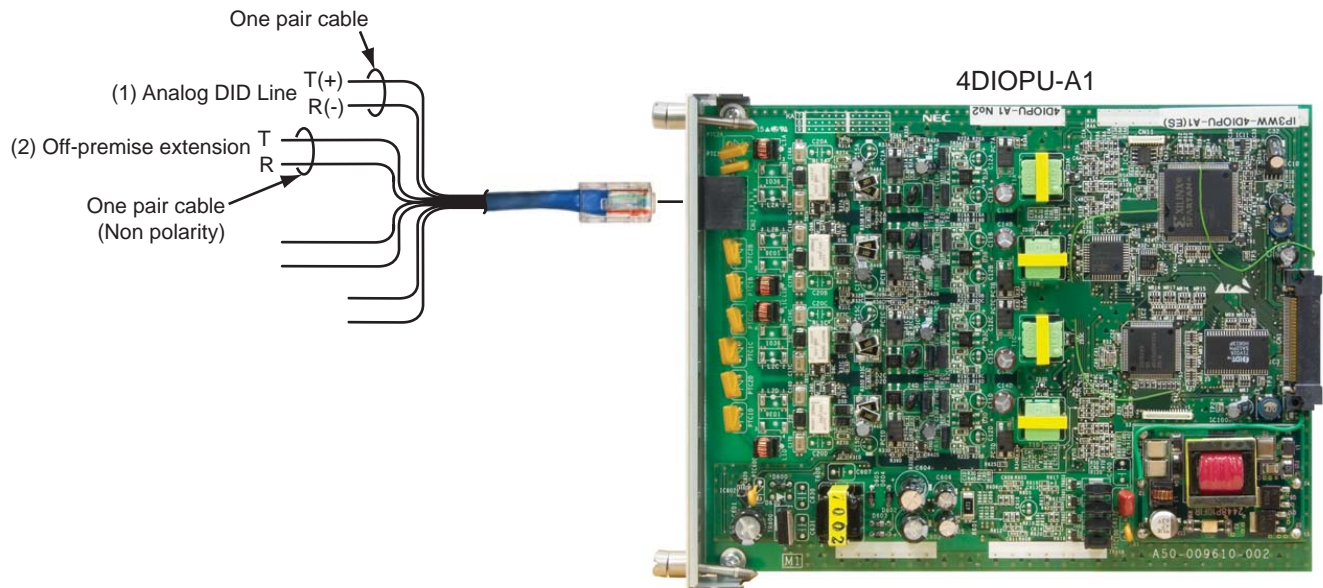


Figure 2-30: DID / OPX POLARITY

The CN2 connector each provides connection to 4 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.

**2.7.3.2 Connector Pin-Outs on DIOPU Blade**

RJ61 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	

**2.7.3.3 Installing the Direct Inward Dial Blade:**

1. Install the DIOPU blade into a slot.
  - With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slowly.



### 2.7.4 Tie Line (4TLIU) Blade (Figure 2-31)

The 4TLIU Tie Line blade is an out band dial type analog tie line interface blade. The 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 system programming). System programming is also used to select the connection types with Type 1 or Type V. Each blade requires one universal slot and provides:

- 4 analog 4-circuit tie line interfaces
- 2 blade status LEDs



- Blades with "IP3NE" included as part of the blade name printed on the card cannot be combined with any "IP3WW" version blades. The "IP3NE" are U.S. versions, while the "IP3WW" are international versions of the blades.
- Limitation depends on the connecting Router, Multiplexer or Exchange. If the UX5000 is connected directly to another UX5000 directly, there is up to 1,500 ohms loop resistance (including system).

#### 2.7.4.1 LED Indications

LED Indication		Operation Status	Operation Status
Live LED (green)	Busy LED (red)		
On	On	Blade initializing	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked blade	At least 1 channel busy
	Off		All channels idle
	Flashing (80 ms on/off x 3/400 ms off)	Downloading firmware	

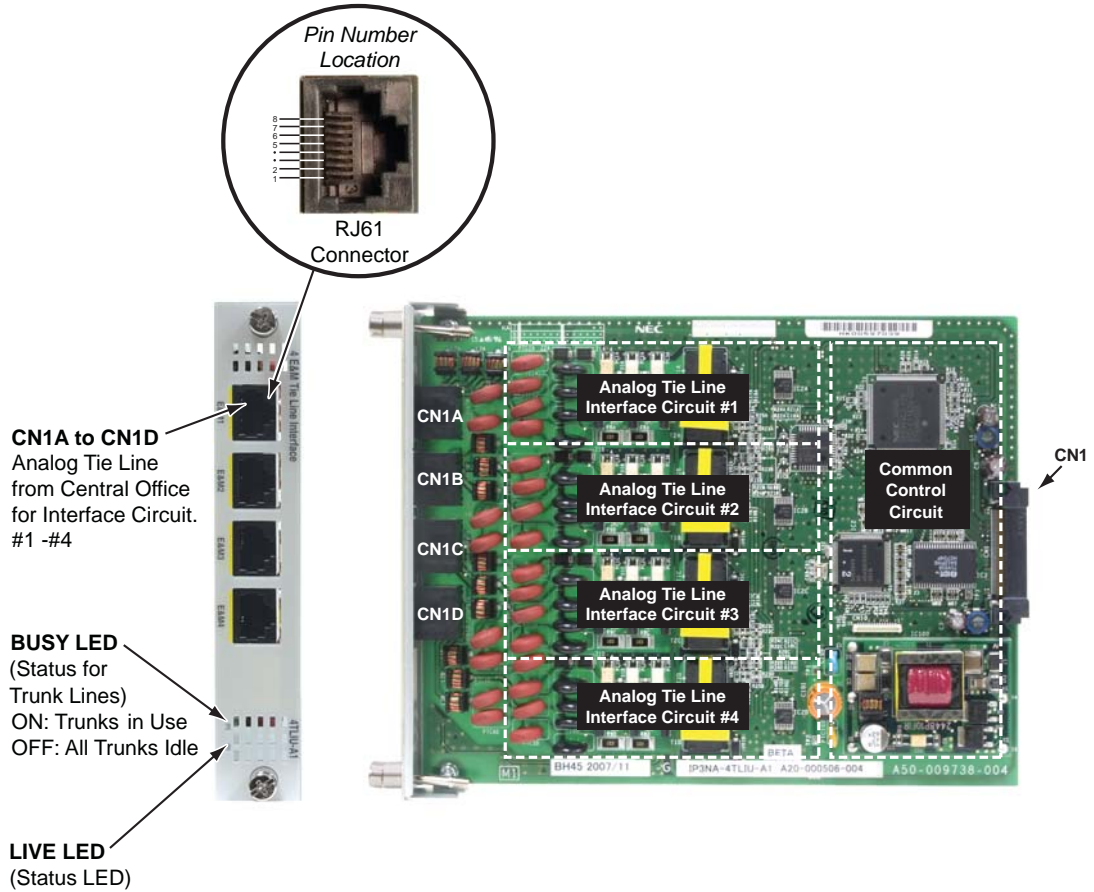
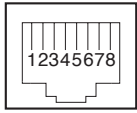


Figure 2-31: 4TLIU TIE LINE BLADE INSTALLATION

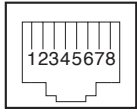


When a router or multiplexer is connected instead of a trunk, the SG terminal of the router or multiplexer must be connected to the FG grounding terminal on the UX5000 chassis. When a tie line trunk is connected, the FG terminal must be connected to the ground. If the FG terminal is not connected correctly, the signal may fail.

## 2.7.4.2 Connector Pin-Outs on 4TLIU Blade

<b>RJ61 Cable Connector - 2-Wire E&amp;M, CN1A - CN1D</b>			
	<b>Pin No.</b>	<b>Connection</b>	<b>Description</b>
	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>RJ61 Cable Connector - 4-Wire E&amp;M, CN100 - CN400</b>			
	<b>Pin No.</b>	<b>Connection</b>	<b>Description</b>
	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

2.7.4.3 Signaling Method for Circuit Types

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

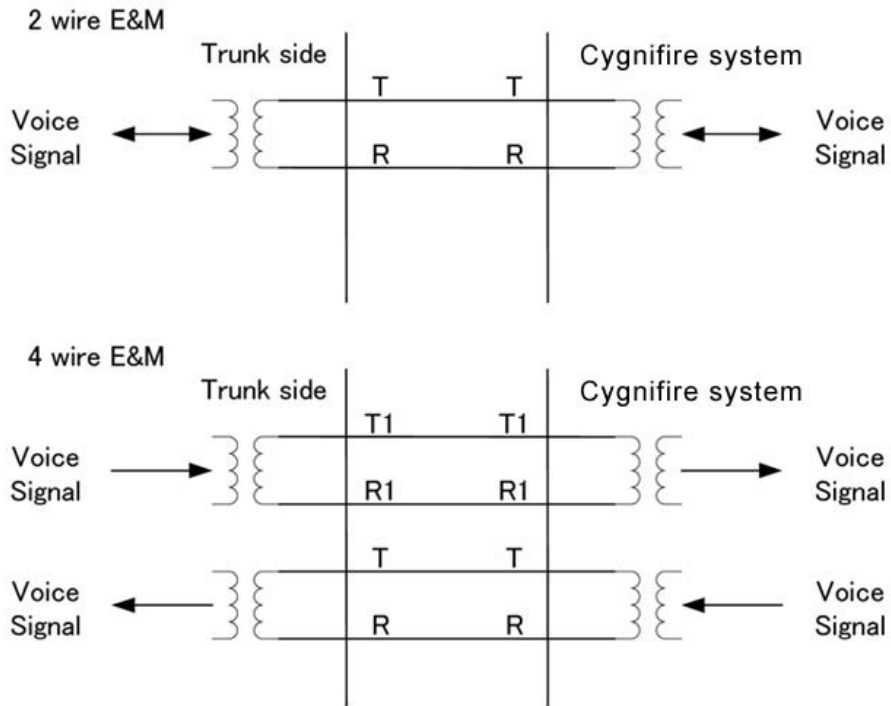
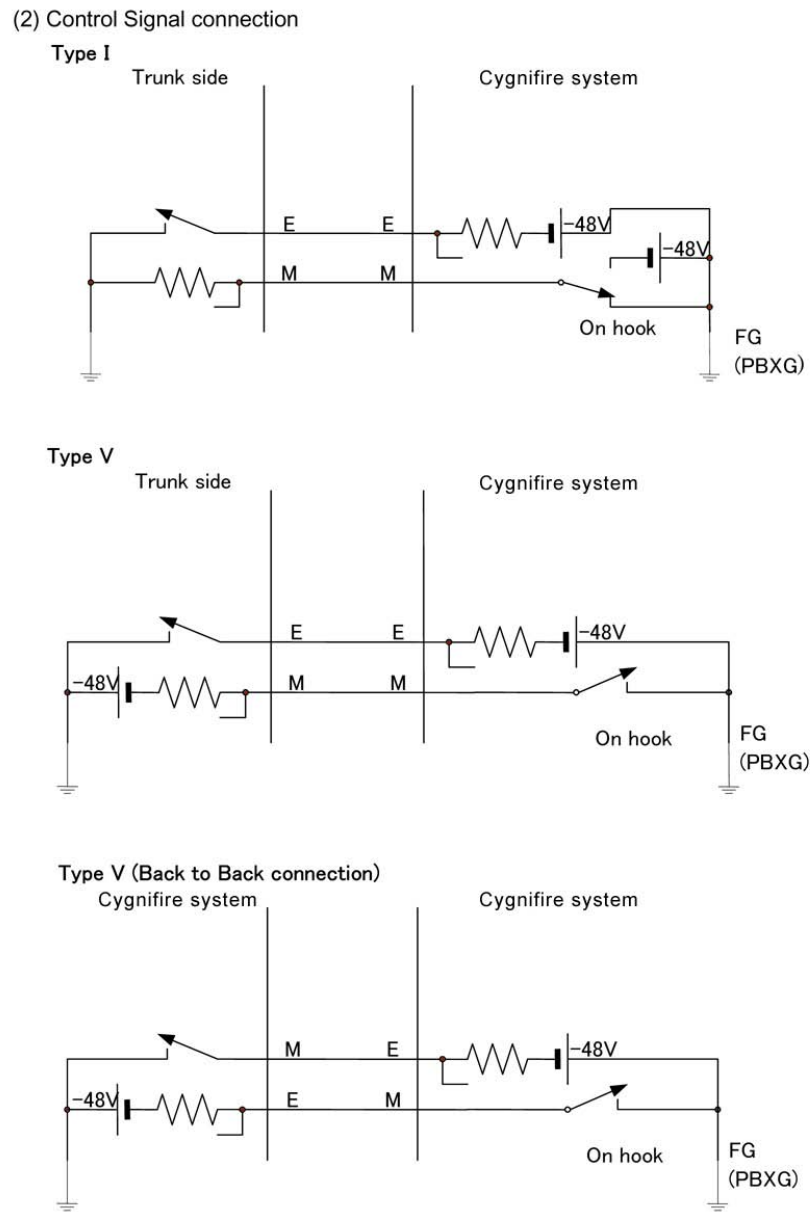


Figure 2-32: VOICE SIGNAL CONNECTION FOR TYPE I and V



**Figure 2-33: CONTROL SIGNAL CONNECTION**

#### 2.7.4.4 Installing the 4TLIU Blade:

- When tie lines are connected to the system, be careful of the Tip and Ring polarity.
1. Install the 4TLIU into a slot.
    - With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slow.
  2. Use Program 10-03-02 to set to 2- or 4-wire.
  3. Use Program 10-03-03 to select Type I or V.

### 2.7.5 BRI (2BRIU) Interface Blade (Figure 2-34)

The BRI blade provides:

- 2 (2BRIU) 2-Channel Circuits (2B + D) configured as T-Bus or S-Bus
- 64 Kb/s Clear B-Channel and 16 Kb/s D-Channel
- 2 blade status LEDs
- Connector for 2BRIDB

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 UX5000 system.

When used for S-Bus, a maximum of 8 ISDN terminals can be connected to each circuit.

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 (Program 90-05-01, Menu 3) must be used. This program will prevent new calls from being established on the blade, but it will not terminate any existing calls.

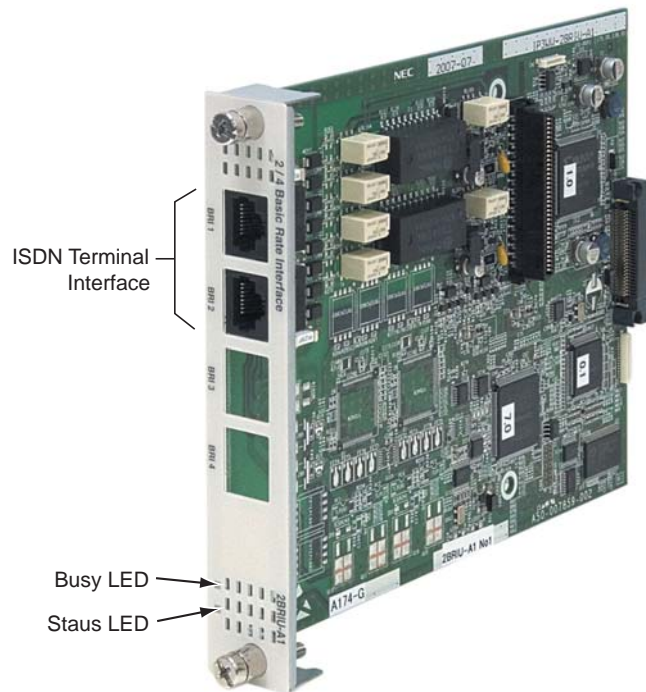


Figure 2-34: BRI BLADE - COMPONENT SIDE

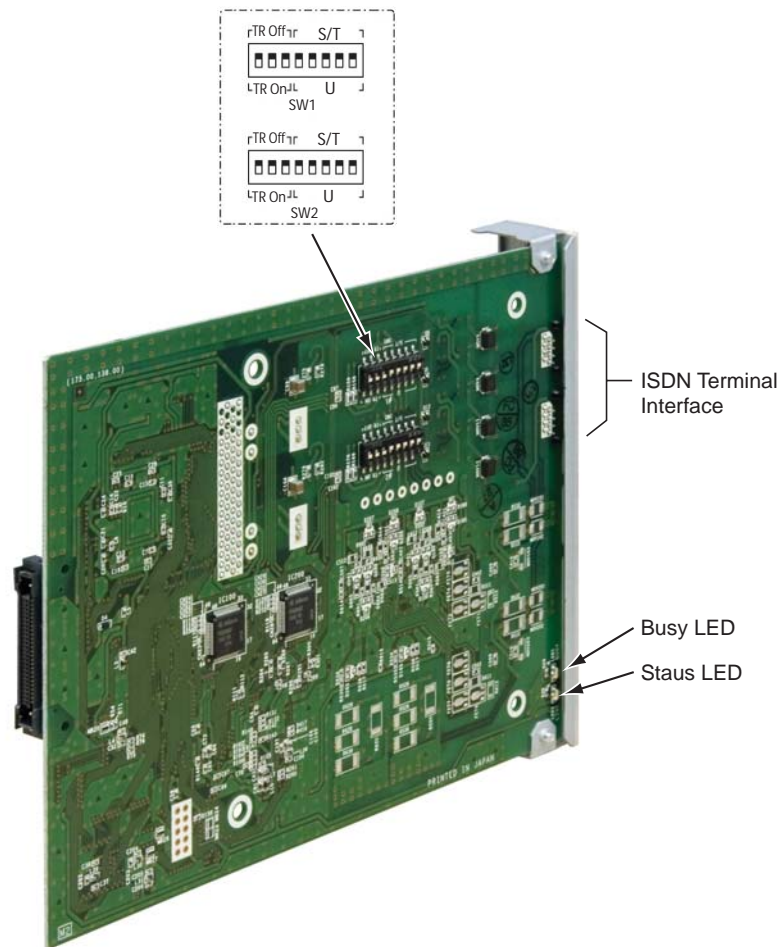


Figure 2-35: BRI BLADE - SOLDER SIDE

### 2.7.5.1 Setting the SW1-SW2 Switches

In the following cases, the SW1-SW2 switches (6-8 bits on both SW1 and SW2) should be set to the ON position (default):

- When the channel is assigned as a T-Bus Point-to-Point.
- With T-Bus Point-to-Multipoint and if the system is connected at the end of the multipoint.

Otherwise, the SW1-SW2 switches should be set to the OFF position. If the last port of the ISDN terminal is connected to a modular rosette with a termination resistor or when using an ISDN terminal which provides a termination resistor, refer to the ISDN terminal documentation for further details.

Switch Name		Switch Position	Result	Comments
SW1 (#1/3)	1-5	S/T	Normal - S/T point interface	
		U	Use DSU	This is not used in the U.S.
	6-8	TR ON	Termination Resistor Set	
		TR OFF	No Termination Resistor	
SW2 (#2/4)	1-5	S/T	Normal - S/T point interface	
		U	Use DSU	This is not used in the U.S.
	6-8	TR ON	Termination Resistor Set	
		TR OFF	No Termination Resistor	

**2.7.5.2 LED Indications**

LED Indication		Operation Status	Operation Status
Live LED (green)	Busy LED (red)		
On	On	Blade initializing	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked blade	At least 1 channel busy
	Off		All channels idle
	Flashing (80 ms on/off x 3/400 ms off)	Downloading firmware	



### 2.7.5.3 Connector Pin-Outs on BRIU Blade

RJ61 Cable Connector - CN7, CN8 S-Bus Connection		
Pin No.	Connection	
1	-	
2	-	
3	RA	
4	TA	
5	TB	
6	RB	
7	-	
8	-	

RJ61 Cable Connector - CN7, CN8 T-Bus Connection		
Pin No.	Connection	
1	-	
2	-	
3	TA	
4	RA	
5	RB	
6	TB	
7	-	
8	-	

#### 2.7.5.4 To install a BRI Interface Blade:

- Set the SW1 and SW2 jumpers on the BRI blade for either T-Bus or S-Bus.
- Set the SW1 and SW2 TR jumpers as either terminated or unterminated.
- If a BRI daughter board is to be used, set the switches on the daughter board and connect it to the BRI blade. (Refer to 2.7.6 BRI (2BRIDB) Daughter Board.)
- Plug the BRI blade into the system chassis.
- Before proceeding to Step 7, wait to verify that the STATUS LED starts to flash.
  - With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slow.
  - Once connected, the ISDN Layer Link Status LEDs will not indicate the status of the Layer 1 link.
- Connect the cable from the NT1 Network Termination cable to the CN7 or CN8 connector on the BRI blade and/or BRI daughter board.

### 2.7.6 BRI (2BRIDB) Daughter Board

The BRI daughter board provides 2 BRI circuits. This daughter board is installed on the 2BRIU blade and provides:

- 2 (2BRIU) 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 2BRIU

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 UX5000 system.

In order to block new calls on the blade, system programming (Program 90-05-01, Menu 3) must be used. This program will prevent new calls from being established on the blade, but it will not terminate any existing calls.

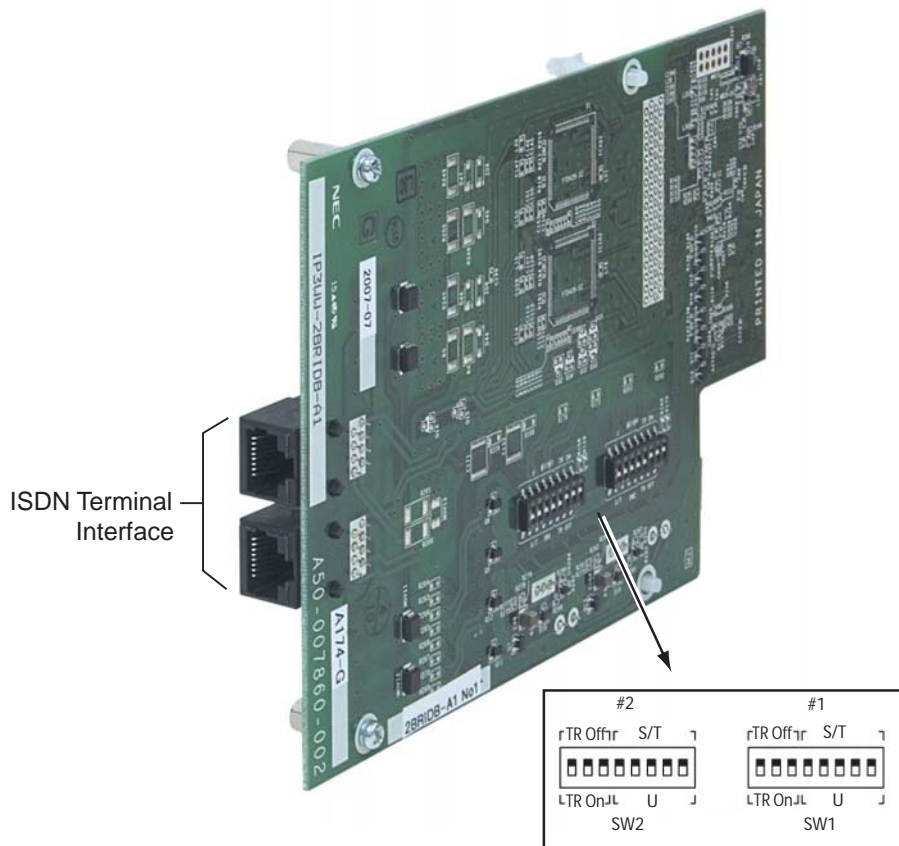
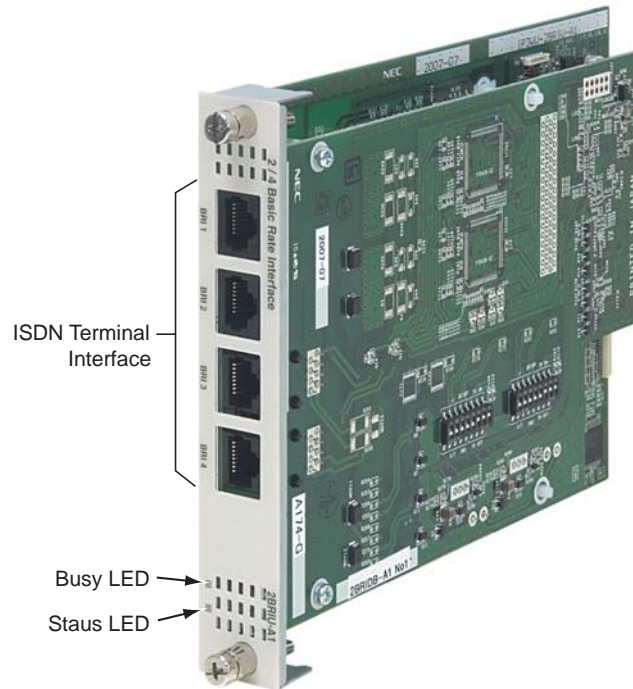


Figure 2-36: BRI DAUGHTER BOARD



**Figure 2-37: BRI BLADE AND DAUGHTER BOARD**

### 2.7.6.1 Setting the SW1-SW2 Switches

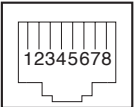
In the following cases, the SW1-SW2 switches (6-8 bits on both SW1 and SW2) should be set to the ON position (default):

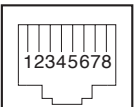
- When the channel is assigned as a T-Bus Point-to-Point.
- With T-Bus Point-to-Multipoint and if the system is connected at the end of the multipoint.

Otherwise, the SW1-SW2 switches should be set to the OFF position. If the last port of the ISDN terminal is connected to a modular rosette with a termination resistor or when using an ISDN terminal which provides a termination resistor, refer to the ISDN terminal documentation for further details.

Switch Name		Switch Position	Result	Comments
SW1 (#1/3)	1-5	S/T	Normal - S/T point interface	
		U	Use DSU	This is not used in the U.S.
	6-8	TR ON	Termination Resistor Set	
		TR OFF	No Termination Resistor	
SW2 (#2/4)	1-5	S/T	Normal - S/T point interface	
		U	Use DSU	This is not used in the U.S.
	6-8	TR ON	Termination Resistor Set	
		TR OFF	No Termination Resistor	

2.7.6.2 Connector Pin-Outs on BRIDB

RJ61 Cable Connector - CN7, CN8 S-Bus Connection		
	Pin No.	Connection
	1	-
	2	-
	3	RA
	4	TA
	5	TB
	6	RB
	7	-
	8	-

RJ61 Cable Connector - CN7, CN8 T-Bus Connection		
	Pin No.	Connection
	1	-
	2	-
	3	TA
	4	RA
	5	RB
	6	TB
	7	-
	8	-

**2.7.6.3 To install a BRI Interface Daughter Board:**

1. Set the SW1 and SW2 jumpers on the BRI blade for either T-Bus or S-Bus.
2. Set the SW1 and SW2 TR jumpers as either terminated or unterminated.
3. Attach the BRI daughter board to the BRI blade by lining up the CN5 connectors and pressing the boards together.
4. Plug the BRI blade into the system chassis.
5. Before proceeding to Step 7, wait to verify that the STATUS LED starts to flash.
  - With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slow.
  - Once connected, the ISDN Layer Link Status LEDs will not indicate the status of the Layer 1 link.
6. Connect the cable from the NT1 Network Termination cable to the CN7 or CN8 connector on the BRI blade and/or BRI daughter board.

### 2.7.7 T1/PRI (1PRIU) Interface Blade (Figure 2-38 - Figure 2-39)

The T1/PRI blade provides an interface for DS1, T1 and ISDN Primary Rate Interface (PRI) applications. This blade has a single 24-channel 64Kb/s digital signal circuit which can be configured for either T1 trunks or PRI. Each blade connects to the network via an NTI Network Termination.

If set for T1, the T1/PRI blade gives the system 24 trunks in a single universal slot. These trunks can be one of the following:

- Loop Start
- Ground Start
- DID
- E&M Trunks
- ANI/DNIS E&M Trunks

T1 gives the system the advantages of advanced digital trunking as well as conserving universal slots. For example, a system with 12 loop start trunks, two tie lines and six DID trunks would use up five universal slots. With T1 all these trunks would be available in a single universal slot, freeing up four additional universal slots for other uses.

If set for PRI, each T1/PRI blade provides 24 PRI (23 B& 1 D) channels running at 1.544Mbps with 64Kb/s clear channel. The blade supports the following PRI services:

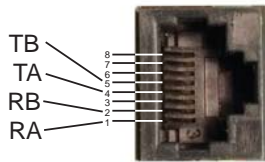
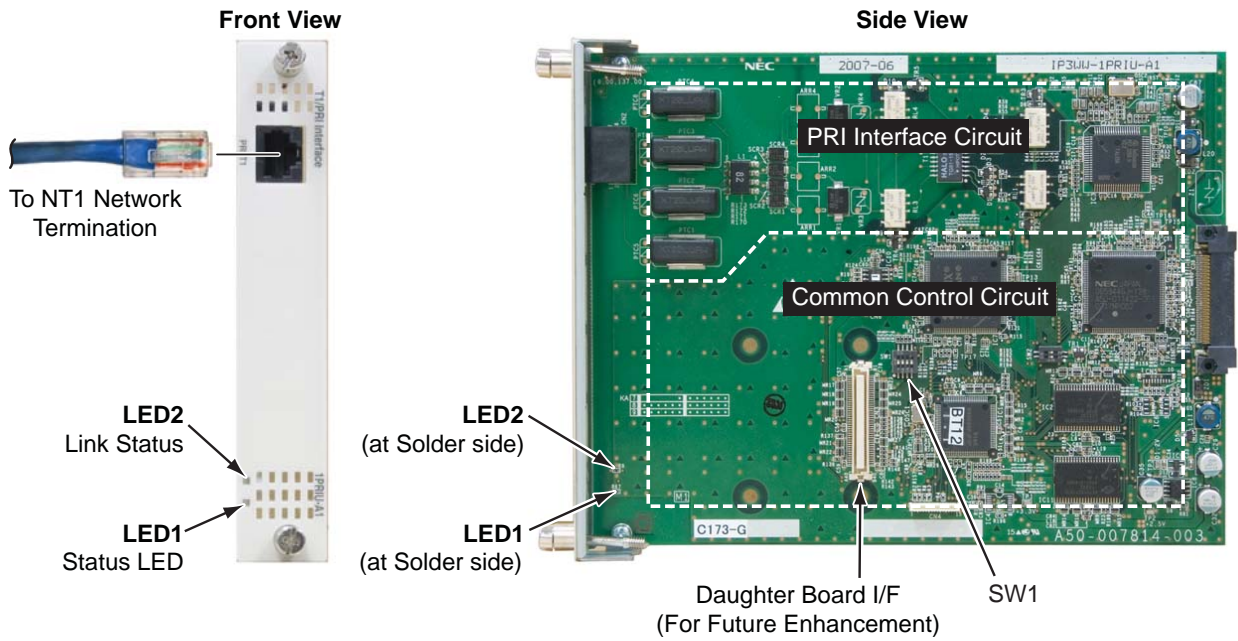
- Basic PRI Call Control (BCC)
- Display of incoming caller's name and number (when allowed by the telco)
- Speech and 3.1 KHz audio

By default, the system programming has an installed T1/PRI blade defined as a PRI blade in system programming. System programming is also used to define whether the connection is T-Point or S-Point.

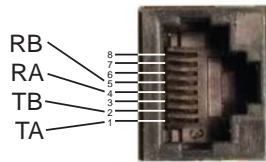
When installed, the T1/PRI Interface blade uses the first block of 24 consecutive trunk ports. For example, if you have an COIU blade installed for trunks 1-8, the T1/PRI Interface blade will automatically use trunks 9-32. If you have COIU blades installed for trunks 1-8 and 17-24, the T1/PRI blade will use trunks 25-48. The T1/PRI Interface blade cannot use trunks 9-16 (even if available) since they are not part of a consecutive block of 24 trunks. Each T1/PRI blade requires that 24 ports be available in the system, even if not all the ports will be used, otherwise the blade will not function.

A maximum of 2 PRIU blades can be installed in the main chassis with the CPU. A maximum of 5 PRIU blades (for T-Point or S-Point) can be installed in a 19" chassis with a CPU. The T1/PRI blade requires one universal slot and provides:

- 1.5M, 2M, or T1 Function



\*In case of T-point Connection



\*In case of S-point Connection

Figure 2-38: T1/PRI Interface (1PRIU) BLADE

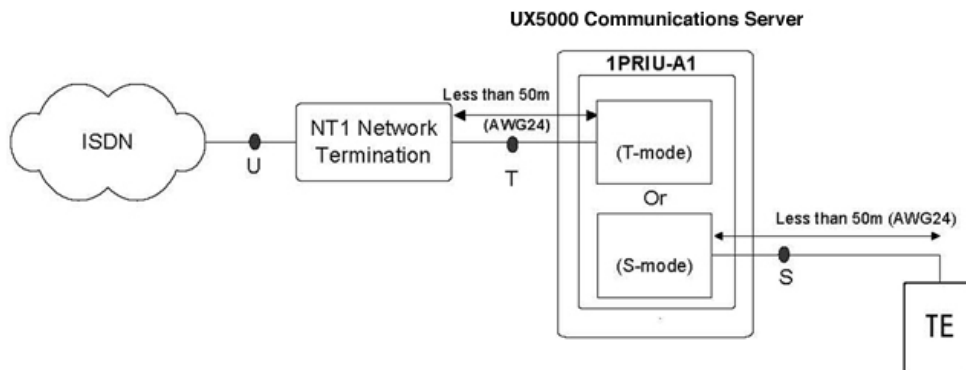


Figure 2-39: PRI Layout

2.7.7.1 LED Indications

LED Indication		Operation Status	Operation Status
Live LED (green)	Busy LED (red)		
On	On	Blade initializing	
	Flashing (100 ms)	Boot program starting	
Flashing (1 second)	On	Blade assignment refused (system capacity exceeded or software version incorrect)	
	Flashing (1 second)	Trouble found during self-diagnostics routine.	
Flashing (100 ms)	On	Normal operation	At least 1 channel busy
	Off		All channels idle
Off	On	Blocked blade	At least 1 channel busy
	Off		All channels idle
	Flashing (100 ms)	Downloading firmware	

In addition to the above LED indications, the LEDs will also indicate alarm information for Layer 1 issues. In normal operating mode, the UX5000 controls the LEDs on each blade. However, if an alarm indication occurs, the T1 blade will control the LEDs for the blade. When a Layer 1 alarm is detected, the T1 blade will flash red-green-red-green followed by another LED indication as described below. This 3.8 second LED cycle will continue to repeat until the issue is resolved.

Alarm	Alarm Details	LED Pattern
LOS	LOS = Loss of Signal (Red Alarm) No Signal (Analog Interface)	Alarm LED: red-green-red-green then LOS LED: long red
AIS	AIS = Alarm Indication Signal (Blue Alarm)	Alarm LED: red-green-red-green then AIS LED: red flashes on and off slowly twice
OOF	OOF = Out of Frame (Red Alarm)	Alarm LED: red-green-red-green then OOF LED: red and green LED flash on and off 3 times at the same time
RAI	RAI = Remote Alarm Indication (Yellow Alarm)	Alarm LED: red-green-red-green then RAI LED: green LED flashes on and off twice
Note: If there are multiple alarms, the highest priority alarm is indicated. The priority order is: LOS - AIS - OOF - RAI.		



### 2.7.7.2 Connector Pin-Outs on 1PRIU Blade

RJ61 Cable Connector - CN2 S-Point Connection		
Pin No.	Connection	
1	TA	
2	TB	
3	-	
4	RA	
5	RB	
6	-	
7	-	
8	-	

RJ61 Cable Connector - CN2 T-Point Connection		
Pin No.	Connection	
1	RA	
2	RB	
3	-	
4	TA	
5	TB	
6	-	
7	-	
8	-	

### 2.7.7.3 To install a T1/PRI Interface Blade:

1. In system programming (10-51) select either T1 or PRI.
  - If the blade has already been installed, you may need to remove the blade, undefine the slot in Program 90-05, redefine the blade in Program 10-51, then reinstall the blade.
2. Plug the T1/PRI Interface blade into any universal slot.
  - With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slowly.
  - Once connected, the ISDN Layer Link Status LEDs will be on steady when the Layer link is established. If there is no link, the LED will be off.
3. Connect the cable from the NT1 Network Termination cable to the CN2 connector on the T1/PRI blade.
  - The CSU connects to the network through an 8-pin RJ45/RJ48 connector. Use either the RJ48C plug-to-RJ48C plug which ships with the CSU or an RJ45/48C plug-to-RJ45/48C plug straight through or CAT5 cable to connect the T1 to the CSU. See the table which follows for the Network and Terminal interface pinouts.
4. In system programming (10-03) set the blade for PRI Mode or T1 Mode.



---

## SECTION 2-8 SYSTEM STARTUP

### 2.8.1 System Startup

You can now power up the system and briefly check its operation. Before proceeding, be sure that:

- The common equipment is installed correctly.
- All extensions are cabled correctly.
- All Chassis-B's are grounded and telco connections are installed correctly.
- Blades are configured, equipped, and strapped correctly.

### 2.8.2 Powering Up the System/Initial Blade Installation

1. Insert the CCPU blade into slot 1 (top slot in the chassis) in the Controlling Chassis-B.
2. The remaining blades can be installed prior to initial power up, or they can be inserted afterwards.  
Prior to Powering Up: Insert the remaining blades as needed into the chassis.
3. The power for each Chassis-B/Chassis-E pair is controlled by the power switch on the Chassis-B. **The power switch on the first Controlling Chassis-B/Expansion Chassis-E pair must be turned on LAST in order for the blades to be recognized in the proper order.**  
Turn on the power switch for all the other chassis, THEN turn on the power switch for the Controlling Chassis-B.
  - The system will recognize the chassis in order (Chassis 1, Chassis 2, Chassis 3, Chassis 4).
4. If installing the blades after initial power up plug the blades into each chassis slot in numerical order. **The order in which the blades are physically inserted determines the numbering plan.** *The installer must install extension blades in order (i.e.; slot 1 first, slot 2 next, slot 3 next, etc.) for a sequential numbering plan.*
5. **When starting the system for the first time,** hold the SW1 (load) button on the CCPU and turn the system power ON.
6. After approximately 10 seconds, release the SW1 (load) button.
  - This performs a cold start on the UX5000 system to make sure you're starting with a defaulted system.
  - **When powering up any other time,** simply turn the power button on. With a multiple chassis system, turn off the expansion chassis power supply, then the main chassis power supply.

Refer to 2.4.1.1.1 *Switch Settings and LED Indications* on page 2-19 for CCPU LED status.
7. Wait about three minutes for the system to boot. Any connected display telephones will show the Time/Date and extension number when the boot sequence completes.



## SECTION 2-9 BLADE STARTUP

### 2.9.1 Initial Extension Blade Installation

1. Plug the blades into each chassis slot in numerical order. **The order in which the station blades (SLIU, ESIU, 082U) are physically inserted determines the numbering plan.** The installer must install extension blades in order (i.e.; slot 2 first, slot 3 next, slot 4 next, etc.) for a sequential numbering plan.

For example, with a 16ESIU in slot #2 (ext. 301-316), when 3 more 16ESIU blades are installed in the following order, the numbering plan below would apply:

Order of Install	Blade Slot #	Blade	Extension Numbers
1	2	16ESIU	301-316
2	3	16ESIU	317-332
3	5	8SLIU (no daughter board)	333-340
4	4	8ESIU	341-348

Adding a daughter board to increase the available ports or going to a higher capacity blade (ex: 8ESIU to a 16ESIU) may require that you delete the slot and reinstall the blade. In the following example, to add a daughter board to slot 3, the blade must be removed, deleted in Program 90-05-01, then reinstalled with the daughter board attached otherwise the additional ports would not be recognized. This however, will use new ports for the combined blade - the initial ports (ports 17-24 using the example below) are not used.

Initial Setup		
Blade Slot #	Blade	Extension Numbers
2	16ESIU	301-316
3	8SLIU (no daughter board)	317-324
4	16ESIU	325-340

Updated Setup		
Blade Slot #	Blade	Extension Numbers
2	16ESIU	301-316
3	---	
4	16ESIU	325-340
5	8SLIU (with daughter board)	341-356

2. The system will automatically recognize each blade as it is 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 be 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 keyset 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.

For more information on Cold and Hot system starts, refer to UX5000 Central Processing Unit (CCPU) Blade (Figure 2-4 - Figure 2-5) (page 2-15).

### 2.9.2 Initial Installation of Trunk Blades

#### ***When first installing the system:***

1. Insert all blades in sequential order. *The installer must install trunk blades in order (i.e.; slot 5 first, slot 6 next, slot 7 next, etc.) for a sequential numbering plan.*

#### ***Installing COIU, 4TLIU, DIOPU, or BRI Blade's:***

The order in which trunk blades are physically inserted determines the numbering plan. For example, if four blades are installed *in the following order*, the numbering plan below would apply:

Order of Install	Blade Slot #	Blade	Line Circuits
1	5	4COIU with 4COIDB	1-8
2	6	4COIU	9-12
3	8	4TLIU	13-16
4	7	4TLIU	17-20

#### ***Installing T1/PRI Blades***

The T1/PRI Interface blade uses the first block of 24 consecutive trunks.

For example, if you have an 4COIU blade with a 4COIDB installed for trunks 1-8, the T1/PRI blade will automatically use trunks 9-32. If you have 4COIU blade with a 4COIDB installed for trunks 1-8 and 17-24, the T1/PRI blade will use trunks 25-48. The T1/PRI blade cannot use trunks 9-16 (even if available) since they are not part of a consecutive block of 24 trunks.

### 2.9.3 Initial Programming

The system can be programmed using three methods:

- Programming through a digital or IP keyset
- PC Programming
- Web Programming

Refer to the UX5000 Software Manual (P/N 0913200) for complete details on programming.

### 2.9.3.1 Entering the Programming Mode

Enter the system programming mode at extension 301:

1. Press CALL1. (You hear dial tone).
2. Dial # \* # \*.
3. Dial the system password.

Password	Level
12345678	2 (IN)
0000	3 (SA)
9999	4 (SB)

4. Press HOLD.

### 2.9.3.1 Port Defaults

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

Station Ports:	1-512 (extensions 301-499 and 5000-5312)
Virtual Station Ports:	1-256 (extensions not assigned)
Trunk Ports:	1-200

In the initial configuration:

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

### 2.9.4 Setting Up Extension Circuit Types

Use 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. Refer to the Software Manual for programming information.

1. Enter 10-03-01.
2. Select the slot, port or channel (with ESIU blades) to be programmed.
3. Set the terminal type or option as needed.
  - Refer to the Software Manual for this information.
  - 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 keyset 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.

### 2.9.5 Saving Your Configuration

When you are done programming, you must be out of a program's options to exit (pressing the MIC key will exit the program's option). Press the SPK key. Any changes made will be saved to the CCPU.

1. Press the MIC key to completely exit any program options, if needed.
2. Press SPK. You see, "Saving System Data" if changes were made to the system's programming.
3. The display shows "Complete Data Save" when completed and will exit the phone to an idle mode.

### 2.9.6 Backing Up/Restoring a Database

- Due to database differences, saved customer databases are not interchangeable between systems using a MEMDB daughter board and those without the MEMDB.
- It is recommended when using a USB flash drive to install it in the CCPU with the system power turned off. Certain flash drives may cause the system to reset if inserted with the power on.

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 a USB flash drive. Using PCPro, download the database and save the file on the PC's hard drive. To save the database using a USB flash drive, insert the USB flash drive into the CCPU's USB connector and, using Program 90-03, save the software (this could take several minutes). Due to the file's naming structure, note that a USB flash drive can only hold one customer database (each database is saved to a directory called DATA - this directory would be overwritten if a second database were saved to the same blade). Each database to be saved will require its own separate USB flash drive (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 flash drive, use Program 90-04, with the database to be restored installed in the CCPU's USB connector.

- When restoring a database file, as the slot definitions may be different, remove all blades from the system except the CCPU in slot 1. After the system has been reset, you can reinstall the blades. You can use Program 10-03 or Program 90-13-03 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 will be in effect. Wait a few minutes for the programming to take affect before accessing any lines or special system features. Otherwise some unusual LED indications may be experienced. To prevent the USB flash drive from possibly being over-written, remove the USB flash drive after reloading the database.



### 2.9.7 Copying the System Software Files to a USB Flash Drive

As the UX5000 system uses a USB flash drive/stick for software upgrades, it is possible to receive or download a compressed file from NEC containing the system software. The following information details the steps required to update the system software.

#### **Requirements**

- Customer Provided: USB Flash Drive/Stick (32MB minimum capacity - FAT format).  
*It is recommended when using a USB flash drive to install it in the CCPU with the system power turned off. Certain flash drives may cause the system to reset if inserted with the power on.*
  - UX5000 System Software Zip File. There are two separate files - one for systems with a MEMDB daughter board installed, one for systems without a MEMDB daughter board. Be sure to use the correct software for your system. In the future, the zip file will include the files for both types, but you should only copy to the USB flash drive the files for your system type (MEMDB or No MEMDB).
  - Any .zip-compatible program for decompressing the file (for example: WinZip)
1. After receiving the compressed system software file, it must be unzipped using the .zip decompression application. The following steps detail the WinZip process.
    - If the file was received by EMail, detach the zip file to your computer.
  2. Locate the zip file on your computer and double-click on the file.
    - The file opens the WinZip application and displays a list of the compressed files.
  3. Click ACTIONS - EXTRACT or click the EXTRACT button on the tool bar.
  4. In the Extract window that appears, make sure the USE FOLDER NAMES options is checked. This is required to keep the proper paths for the files as they are extracted.
  5. Select the location to which the files should be extracted and click the EXTRACT button.
    - Suggestion: You may want to create a directory in which all UX5000 software can be kept (with a sub-directory for the version type - example: UX5000\_Software/1\_01). This allows you to keep the original source files for future use, if required.
  6. Place the USB flash drive to be used for the update into an available USB port in the PC.
  7. Double-click on MY COMPUTER and then double-click on the USB flash drive.
    - The contents of the USB flash drive should be displayed.

8. If there are any existing files on the USB flash drive, you must delete or move any files off the blade before proceeding.
9. Open the directory containing the system software files to be used for the system update.
10. Select all the files within the folder and copy them to the USB flash drive.  
This can be done as follows:
  - From the software directory window, click: Edit - Select All - Edit - Copy
  - From the USB flash drive window, click Edit - Paste
  - The files are then copied from the PC to the USB flash drive.

### 2.9.8 Upgrading Your Software



**As a precaution, it is recommended that the customer database be saved prior to updating the system software. Refer to Backing Up/ Restoring a Database (page 2-88).**

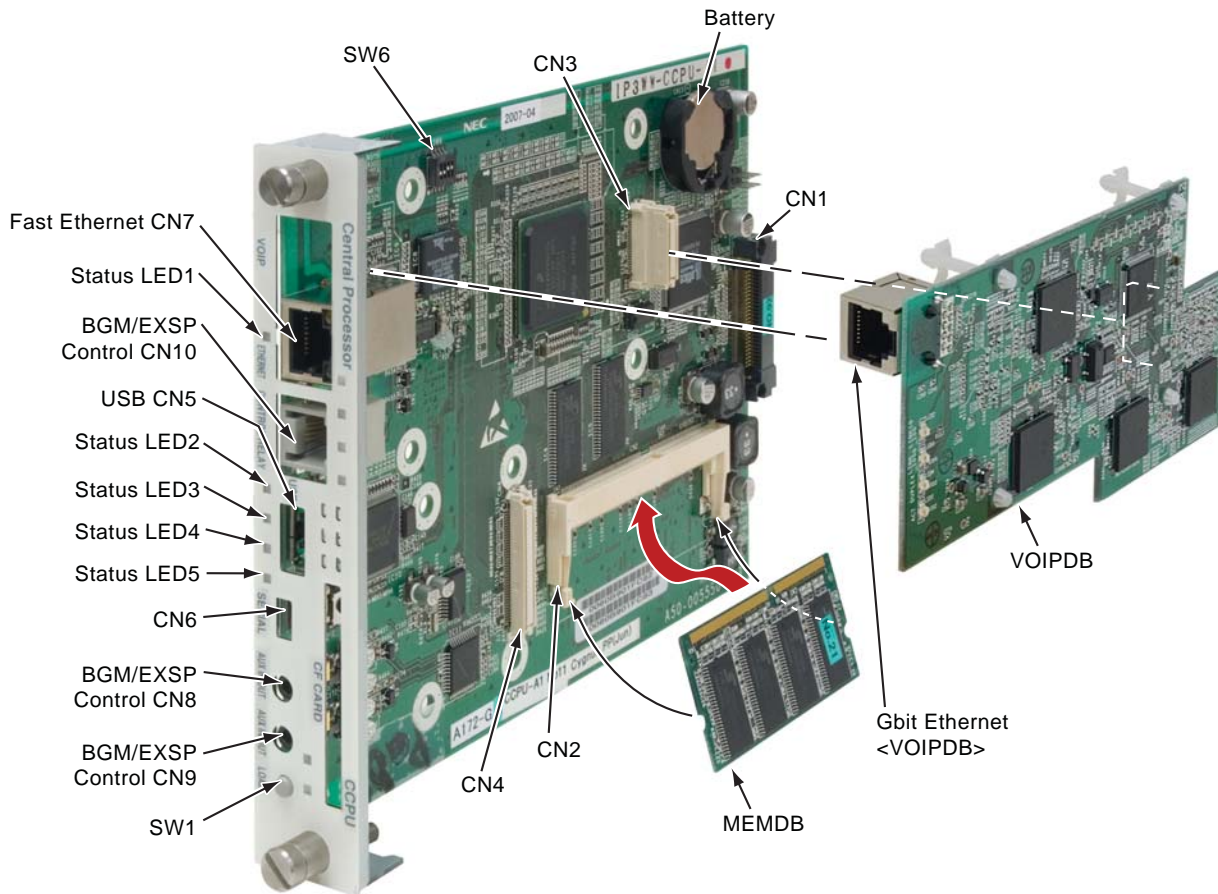


Figure 2-40: CCPU BLADE

1. Turn the system power off by first powering down any expansion chassis, then power down the Controlling Chassis-B.
2. Once the system has completed its powering down cycle (all LEDs are off), insert the USB flash drive containing the software upgrade into the USB connector on the CCPU.
  - It is recommended when using a USB flash drive to install it in the CCPU with the system power turned off. Certain flash drives may cause the system to reset if inserted with the power on.
  - Secured USB flash drives or any other type of USB flash drive that would prompt for information (such as a password) or a partitioned drive cannot be used. The system will not be able to access the system files.
3. Push in and hold the Load/SW1 button.
4. Turn the system power on by first powering up any expansion chassis, then power up the Controlling Chassis-B.
5. Continue holding the Load/SW1 button for approximately 10 seconds.
6. Release the Load/SW1 button.
7. Wait until LEDs 2-4 are flashing on the CCPU. This could take several minutes.
8. Turn the system power off by first powering down any expansion chassis, then power down the Controlling Chassis-B.
9. Once the system has completed its powering down cycle (all LEDs are off), remove the USB flash drive.
10. Turn the system power on by first powering up any expansion chassis, then power up the Controlling Chassis-B.
  - Note: If you hold in the Load/SW1 button at this point, **the system will be cold started, losing all user-defined programming and resetting all the programs back to default.** If you **do not** hold the Load/SW1 button down while powering up, the system is hot-started and retains all the previous program settings.
11. When the system has completed reloading the software, the Status LED will begin flashing on the CCPU. The remaining LEDs will now be off.
  - To confirm the new software version has been installed, the system version number can be viewed by pressing CHECK and then the HOLD key on any display keyset. This can also be confirmed in Program 90-16-01.
  - The existing system software in the flash memory is replaced, but the customer data (stored in the RAM) is saved.

### 2.9.9 Resetting the System:

#### **! IMPORTANT !**

While the system is powered up, data may be written to the S-RAM or flash memory at any time. If the UX5000 requires a system reset, you must power off the system using the power switch on the front of the Base chassis.

This procedure will allow the system to wait until any data-writing process is completed, avoiding the possibility of corrupting the data. If the system unexpectedly loses power while flash memory data is being written, it could become corrupt and the system may not come up. If the S-RAM data is corrupted, the telephones may have erratic operation.

### 2.9.10 To Perform a Cold Start:

- 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, set the Blade Block option using Program 90-05-01, Menu 3 for each of the blades until the system has reset. Then, unblock the blades using Program 90-05-01, Menu 4 in the correct order to retain the proper system numbering (Use Programs 10-03 or 90-13-03 prior to performing a cold start to record the current slot definitions.).
1. Without a USB Flash drive installed in the CCPU, turn the system power off by first powering down any expansion chassis, then powering down the Controlling Chassis-B.
  2. Once the system has powered down, push in and hold the Load/SW1 button.
  3. Press the power button to power the system back up.
    - With a multi-chassis system, turn on the expansion chassis power supply, then the controlling chassis (Chassis-B or Chassis-A) power supply.
  4. Continue holding the Load/SW1 button for approximately 10 seconds.
  5. Release the Load/SW1 button.
  6. When the system has completed reloading the software (approximately 2 minutes), the Status LED will be flashing on the CCPU.

### 2.9.11 To Perform a Hot Start:

- System software loaded from flash memory and the customer data is loaded from RAM memory.
1. Turn the system power off by first powering down any expansion chassis, then powering down the Controlling Chassis-B.  
Once it has powered down, press the button again (first on the expansion chassis then on the controlling chassis) to power the system back up. Wait approximately 2 minutes.
  2. When the system has completed reloading the software, the Status LED will be flashing on the CCPU.

# Chapter 3 - Installing Extensions and Trunks and Trunks

## SECTION 3-1 Connectors

The UX5000 system uses a combination of RJ-61 and RJ-45 connectors for interfacing with the blades. The RJ-61 connectors are used for the telecommunications devices (telephones, trunks, etc.) and the RJ-45 connectors are used for LAN interfacing. Refer to the sections below for pin-out details.

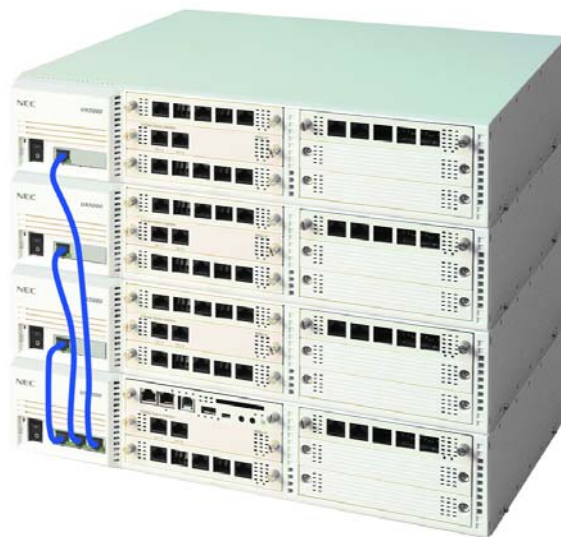
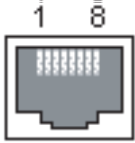
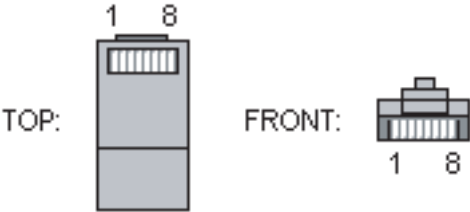


Figure 3-1: CABLE LAYOUT

**SECTION 3-2**  
**RJ-45 CONNECTIONS**

**3.2.1 Making RJ-45 Cables**

For network devices, such as IP phones, RJ-45 cables are used to connect the system to the LAN. Use the following pin information when creating your own RJ-45 cables.

Female		Male	
			
Pin	Name	Description	Cable Color
1	TX 3+	Tranceive Data	white/green
2	TX 3-	Tranceive Data	green
3	RX 2+	Receive Data	white/orange
4	BI 1-	Bi-Directional Data	blue
5	BI 1+	Bi-Directional Data	white/blue
6	RX 2-	Receive Data	orange
7	BI 4+	Bi-Directional Data	white/brown
8	BI 4-	Bi-Directional Data	brown

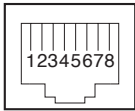
**Figure 3-2: RJ-45 CABLE PIN-OUT**

## SECTION 3-3

### RJ-61 TO 66 BLOCK CONNECTIONS

#### 3.3.1 Wiring RJ-61 Cables to 66 Blocks

When not using a 25-pair amphenol cable to connect extensions or trunks, use the following pin information for the RJ-61 connector to connect your cables to the 66 blocks.

66 Block	RJ-61 Connector	
Block Termination 1: WHT-BLU	Pin 5	
Block Termination 2: BLU-WHT	Pin 4	
Block Termination 3: WHT-ORN	Pin 3	
Block Termination 4: ORN-WHT	Pin 6	
Block Termination 5: WHT-GRN	Pin 2	
Block Termination 6: GRN-WHT	Pin 7	
Block Termination 7: WHT-BRN	Pin 1	
Block Termination 8: BRN-WHT	Pin 8	

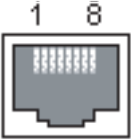
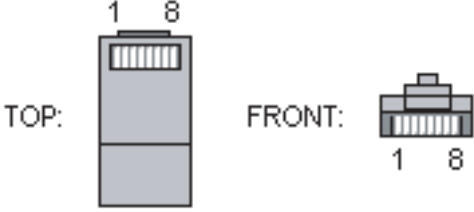
Female	Male
	
<p><b>Pin</b></p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>	<p><b>Name</b></p> <p>Pair 4 - White/Brown (Tip)</p> <p>Pair 3 - White/Green (Tip)</p> <p>Pair 2 - White/Orange (Tip)</p> <p>Pair 1 - Blue/White (Ring)</p> <p>Pair 1 - White/Blue (Tip)</p> <p>Pair 2 - Orange/White (Ring)</p> <p>Pair 3 - Green/White (Tip)</p> <p>Pair 4 - Brown/White (Tip)</p>

Figure 3-3: RJ-61 CABLE PIN-OUT



## SECTION 3-4 INSTALLING CABLES

### 3.4.1 Installing Extension Cross-Connect Blocks

It is recommended to install cross-connect blocks for each of the system's major extension port device groups. Cross-connect blocks provide an easy way to troubleshoot, determine port identification numerically, and determine port utilization.

Install cross-connect blocks for the following interfaces:

- All digital extension circuits
- CCPU functions (i.e.; BGM, MOH, relay 1)
- External page
- External alarms
- Data devices

### 3.4.2 Installing Trunk Cross-Connect Blocks

It is also recommended to install cross-connect blocks for each of the system's major trunk device groups. Cross-connect blocks provide an easy way to troubleshoot, determine port identification numerically, and determine trunk port utilization.

Install cross-connect from telco's RJ21X to the trunk cross-connect blocks for the following:

- analog loop start lines
- analog ground start trunks
- DID trunks
- Tie lines

## SECTION 3-5 INSTALLING EXTENSIONS

### 3.5.1 Extension Cabling

Each digital extension requires one-pair twisted station cable from the MDF to the modular jack. A maximum of 24 2-wire extensions can be installed per 50-pin block.

1. Punch down one pair 24 AWG station cable for each key telephone to a cross-connect block.
2. Run one-pair cross-connect from the cross-connect block to the extension (B) block for each extension.
3. Connect the extension (B) block's 25-pair cable to the corresponding RJ-61 connector on the blade.
4. Install bridging clips on the extension (B) block.

### 3.5.2 Installing a Digital Terminal

1. Install a modular jack for each extension. The modular jack should be within six feet of the terminal.
2. For each extension, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
3. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.
4. Secure the line cord to the terminal as shown below.

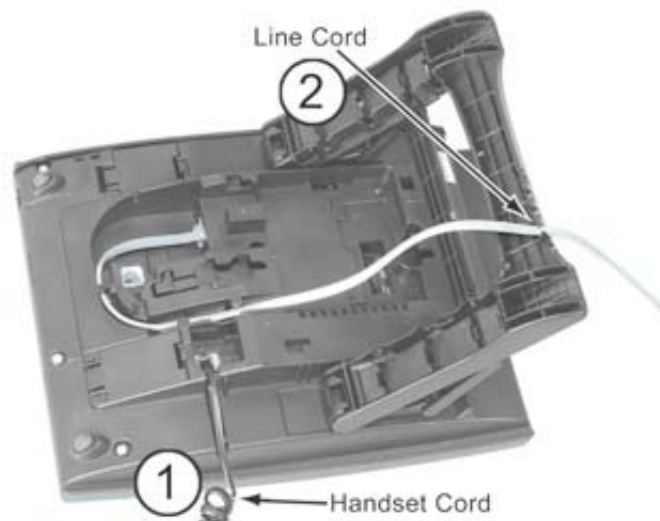


Figure 3-4: LINE CORD CONNECTION

## SECTION 3-6 INSTALLING SINGLE LINE TELEPHONES

### 3.6.1 Single Line Extension Cabling (Figure 3-5)

Each single line extension requires one-pair twisted station cable from the MDF to the modular jack. A maximum of 24 2-wire extensions can be installed per 50-pin 66 block.

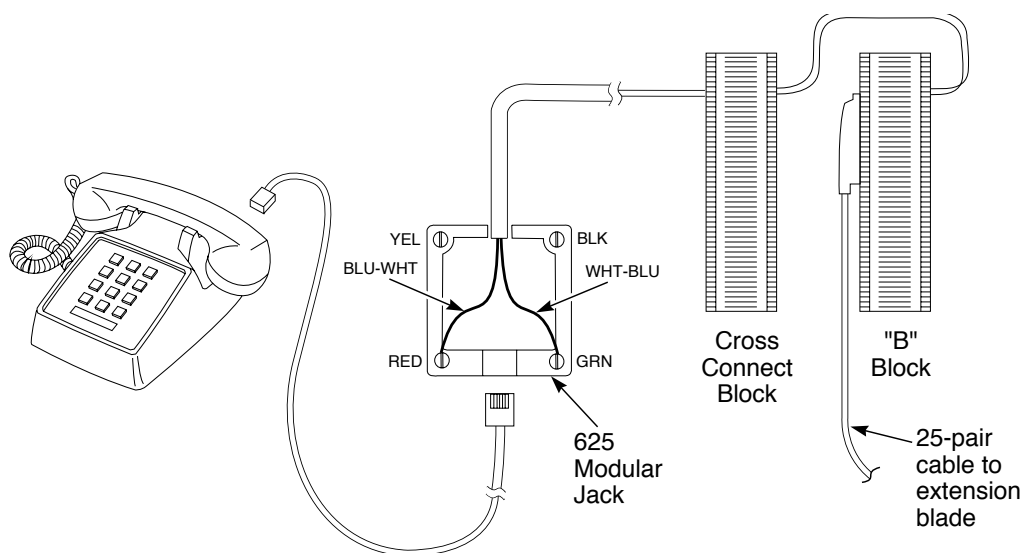
#### **To connect station cabling:**

1. Punch down one pair 24 AWG station cable for each single line telephone to a cross-connect block.
2. Punch down cross-connect from the clips on the cross-connect block to their corresponding clips on the extension (B) block.
3. Connect the extension (B) block's 25-pair cable to the corresponding RJ-61 connector on the blade.
4. Install bridging clips on the extension (B) block.

### 3.6.2 Installing a Single Line Telephone (Figure 3-5)

#### **To install a single line telephone:**

1. Install a modular jack for each single line telephone. The modular jack should be within six feet of the phone.
2. For each extension, run one-pair 24 AWG station cable from the cross-connect block to a modular jack.
3. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.



**Figure 3-5: INSTALLING A SINGLE LINE TELEPHONE**

## SECTION 3-7 EXTENSION CUTDOWN

### 3.7.1 Extension Cutdown Sheet Configuration

Due to the inherent flexibility of the universal blade slot configuration, standard cutdown sheets for extension cabling do not apply.



The order in which the extension blades (8/16ESIU, 4/8SLIU, 4/8SLIDB) are installed determines the assigned extension number.

For example, given that a 16ESIU is installed in slot #2 and uses extension numbers 301-316, if three 16ESIU blades or 8SLIU with the 8SLIDB blades were installed in the system in the order below, the numbering plan would correspond as follows:

Order of Install	Blade Slot #	Ext Numbers
1	1	301-316
2	2	317-332
3	4	333-348
4	3	349-364

To determine extension assignments for the system cutdown, the installer must identify the following in order:

- Order of installation
- Chassis (Controlling/Base, Expansion)
- Slot used
- Blade type (8ESIU, 16ESIU, 4SLIU, 8SLIU, 8SLIDB, etc.)
- Connector used on blade

To determine where any group of eight extensions is installed, note the order of install, chassis, slot, blade connector and blade type.

## SECTION 3-8 INSTALLING CO/PBX LINES

### 3.8.1 Ground Start/Loop Start Line Cabling

Ground start trunks/loop start lines must be bridged from the telco RJ21X to a line cross-connect block (A). Each ground/loop start CO/PBX line requires one-pair cross-connect cable from the RJ21X to the line (A) block.

The A block connects to the trunk blade with a 24 pair cable. The line (A) block(s) should be arranged in groups of 4 (8 pins) or 8 lines (16 pins) to correspond to the blade slots.

4COIU-LS1	4 loop start lines
4COIDB-LS1	4 loop start lines
4COIU-LG1	4 ground start trunks
4COIDB-LG1	4 ground start trunks

The CN2 connectors each provide connection to 4 analog trunk ports, ***which are polarity sensitive (tip to tip, ring to ring)***. The power failure circuits, however, are not polarity sensitive.



When using the COIU-LG1 blade for ground start trunks, the PBX and Earth grounds ***must*** be connected as described on page 1-69 or the trunks will not function correctly.

When connecting the RJ61 cables to the COIU blade, note the position of the Power Failure connector. Do not confuse this connector as the trunk connector.

### 3.8.2 Installing Ground Start Trunks/Loop Start Lines (Figure 3-6)

#### ***To install a ground start trunk/loop start line:***

1. Punch down one pair cross-connect to the tip and ring leads for each line on the telco RJ21X CPE (customer) side of the block (Figure 3-6).
  - The CN2 connectors ***are polarity sensitive (tip to tip, ring to ring)***.
2. Punch down the other end of the cross-connect to the line (A) block (in groups of 4 or 8 lines of the same line type).
3. Punch down a 25-pair cable to the opposite side of the line (A) block.
4. Plug in the corresponding RJ-61 connector to the COIU/COIDB blade connector.
5. Install bridging clips on the A block.



Repeat steps 1-5 for each ground start trunk/loop start line. Label cross-connect blocks A2, A3, etc.

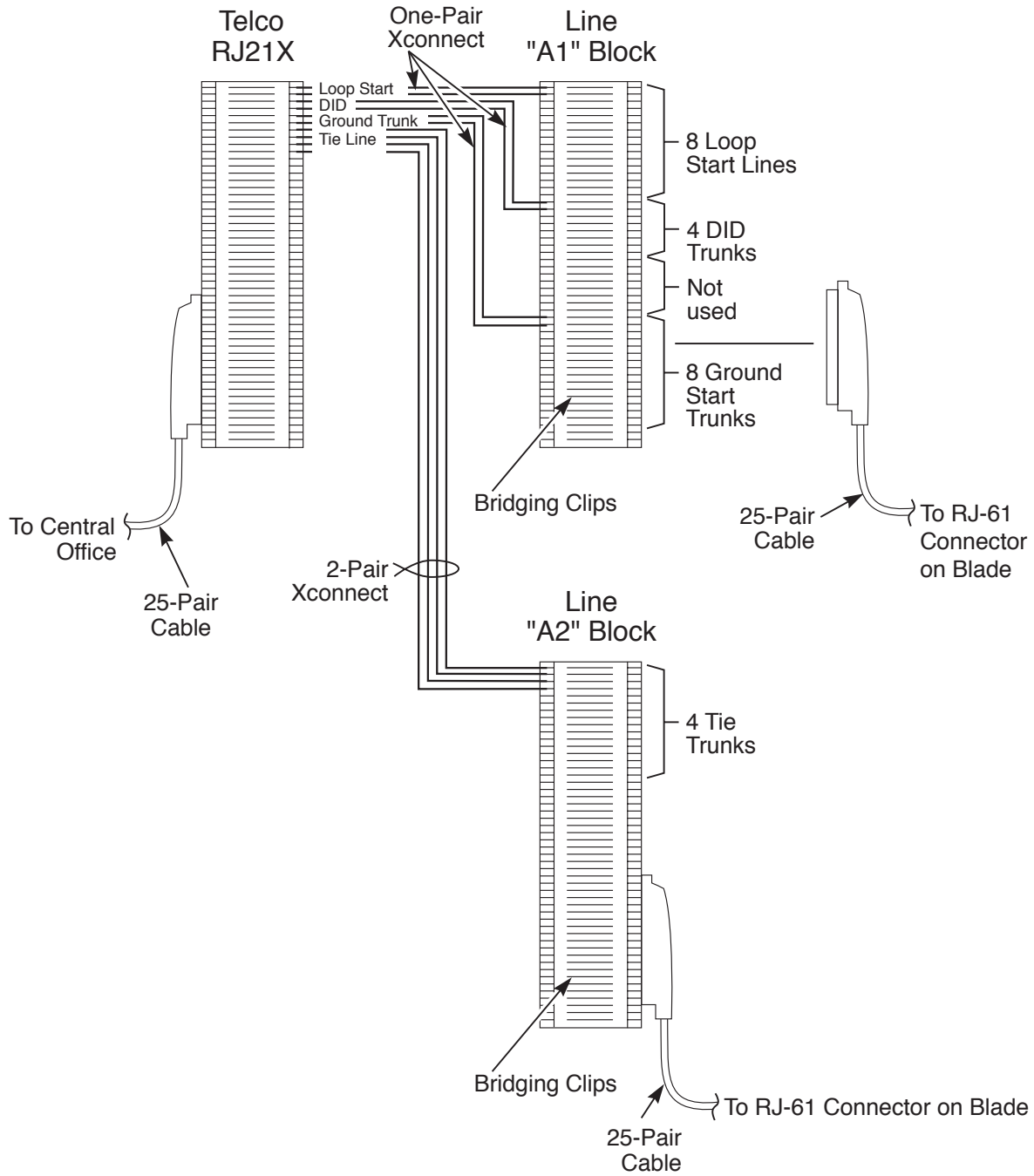


Figure 3-6: TYPICAL TRUNK/LINE INSTALLATION

## SECTION 3-9 INSTALLING DID TRUNKS

### 3.9.1 DID Trunks

Direct Inward Dialing trunks must be bridged from the telco RJ21X to a line cross-connect (A) block. Each DID Trunk requires one-pair cross-connect from the RJ21X to the line (A) block.

The A block connects to the DID blade and an RJ-61 jack. The line (A) block should be arranged in groups of 4 DID trunks (8 pins) or 8 DID trunks (16 pins) to correspond with the chassis slot equipped with a DIOPU blade.

#### *Installing DID Trunks*

1. Punch down one pair cross-connect to the tip and ring leads for each DID trunk on the CPE (customer) side of the RJ21X.
2. Punch down the other end of the cross-connect to the line (A) block tip and ring leads.
3. Punch down a 25-pair cable to the opposite side of the line (A) block.
4. Plug in the corresponding RJ-61 connector to the DID blade connector.
5. Install bridging clips on the A block.



Repeat steps 1-5 for each DID trunk. Label cross-connect blocks A2, A3, etc.

## SECTION 3-10 INSTALLING A DID CHOKE

### 3.10.1 DID Choke

If your central office has a high level of AC noise or if your site is experiencing excessive hum on the DID lines, a customer-provided isolation transformer can be installed between the UX5000 and telco blocks to help to suppress the hum.

DID trunks must be bridged from the telco RJ21X to a line cross-connect (A) block. The choke is installed between these two blocks.

#### ***DID Choke Installation:***

1. Remove the bridging clips on the (A) block and telco block for the DID lines.
2. From the telco block, solder the Tip lead to the "3" connector on the choke.
3. From the telco block, take the Ring lead and solder it to the "1" connector on the choke.
4. From the (A) block, take the Tip 1 lead and solder it to the "4" connector on the choke.
5. Solder the Ring 1 lead from the (A) block to the "2" connector on the choke.
6. Reinstall the bridging clips as required.



# Chapter 4 - Terminals and Optional Equipment

## SECTION 4-1 Terminal and Optional Equipment Overview

### 4.1.1 Overview

The following charts provide a quick overview of the upgrade options available with the UX5000 phones.

Terminal Upgrades			
Category		Equipment	Comment
Digital Keypad	Enhanced	DG-32e (DESI-Less terminal)	
		DG-24e (24-Button w/ LCD)	Can be upgraded to DG-32e
		DG-12e (12-Button w/ LCD)	Can be upgraded to DG-24e and DG-32e
	Value	DG-6v (6-Button w/ LCD)	No Option Interface
		DG-2v (2-Button w/o LCD)	No Option Interface
IP Terminal	IP-CTS	IP-CTS (DESI-Less w/ color touch panel LCD)	
	Enhanced	IP-32e (DESI-Less)	
		IP-24e (24-Button w/ LCD)	Can be upgraded to IP-32e
		IP-12e (12-Button w/ LCD)	Can be upgraded to IP-24e and IP-32e
	Value	IP-6v (6-Button w/ LCD)	No Option Interface
		IP-2v (2-Button w/o LCD)	No Option Interface

Terminal Upgrades			
Category	Equipment	Comment	
Options	Common	Bluetooth Cordless Handset with Hub (Class 1), 60-Button DSS Console, Bluetooth HUB Adapter (Class 2), Ten Key Dial Pad Kit, 12-Button Line Key Kit, 16-Button DLS, PSA, ADA	The 60-Button DSS Console can be paired with any digital or IP terminal except for the Value <i>IP</i> terminals. There are no options for the Value terminals except for the Ten Key Dial Pad Kit.
	Digital	Backlit LCD for Enhanced terminals, APR, DESI-Less Line Key/LCD Unit	For Digital Enhanced terminals
	IP	DESI-Less Line Key/LCD Unit	For IP Enhanced terminals

Option Compatibility						
Options		Terminals:				
		IP			Digital	
		IP-CTS	Enhanced	Value	Enhanced	Value
	Ten Key Dial Pad Kit	✓	✓	✓	✓	✓
	12 Line Key Kit	NA (Built in)	✓	NA	✓	NA
	16-Button DLS	✓	✓	NA	✓	NA
Common	BCH: Bluetooth Cordless Handset with Hub (Class 1)	✓	✓	NA	✓	NA
	BHA: Bluetooth HUB Adapter (Class 2)	✓	✓	NA	✓	NA
	ADA: Analog Recording Adapter	✓	✓	NA	✓	NA
	PSA: PSTN Adapter for Analog	✓	✓	NA	✓	NA
	DSS: 60-Button DSS Console	✓ (connects to side option slot)	✓ (connects to side option slot)	NA	✓ (connects to system chassis)	✓ (connects to system chassis)
Digital	APR: Analog Port Adapter with Ringer	NA	NA	NA	✓	NA
	DESI-Less Line Key/LCD Unit (8LK)	NA	NA	NA	✓	NA
	Backlit LCD	NA	NA	NA	✓	NA
IP	DESI-Less Line Key/LCD Unit (8LK)	NA (Built in)	✓	NA	NA	NA

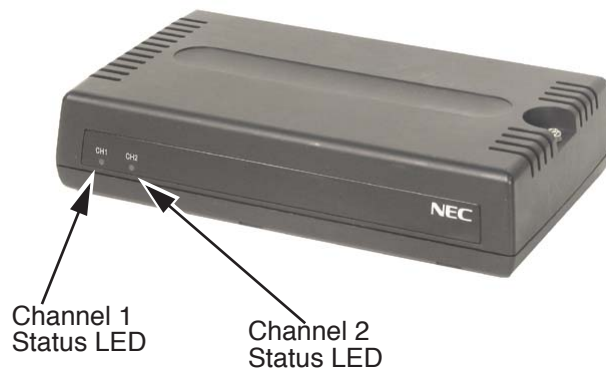
## SECTION 4-2 2PGDAD MODULE

### 4.2.1 Using a 2PGDAD Module (Figure 4-1 - Figure 4-8)

The 2PGDAD module provides two circuits which allow connection to external terminals such as:

- Door Box
- External Speaker
- External Music Source (external MOH)
- External Recording System
- External Ringing

The system allows for 2PGDAD modules to be installed for Door Boxes and Paging. The 2PGDAD module 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 2PGDAD module connects to any available digital extension port on an ESIU or 082U blade. The terminal connections made within the PGDAD module and the jumper settings determine what features are used for each circuit.



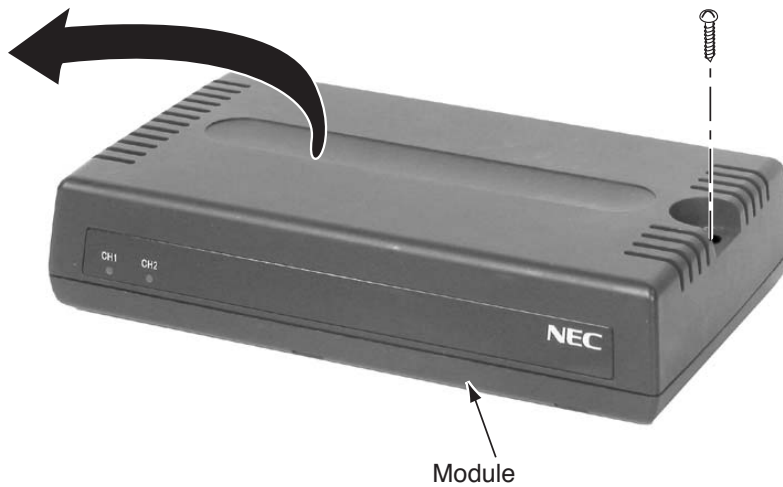
**Figure 4-1: 2PGDAD MODULE**

### 4.2.2 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.

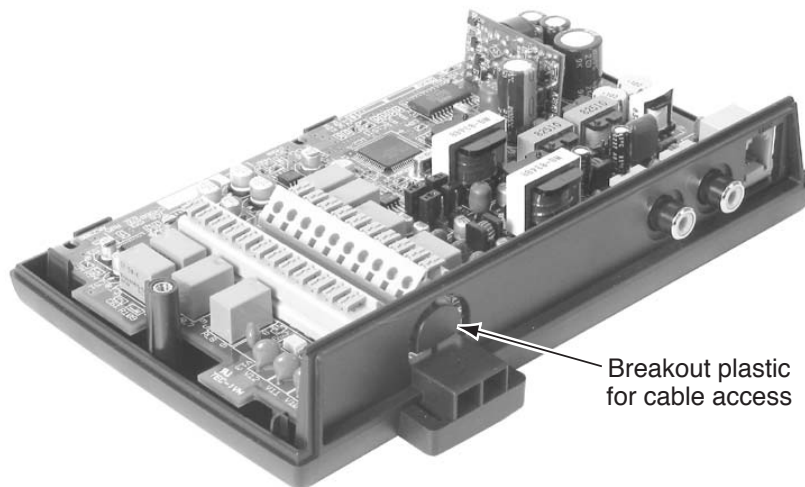
### 4.2.3 Setting Up 2PGDAD Module Connections

- If the 2PGDAD Module is to be wall mounted, it is recommended that all the cable connections be made first.
  - In order for the module to ID correctly after setting the jumpers, if the port to be used was previously assigned, set the circuit type to "0" for the module's port in Program 10-03-01 prior to connecting the line cord to the 2PGDAD Module.
1. Remove the screw from the front of the 2PGDAD module.



**Figure 4-2: REMOVE COVER FROM 2PGDAD MODULE**

2. Using a screwdriver, break out the plastic piece covering the cable hole.



**Figure 4-3: REMOVE PLASTIC COVER FROM CABLE HOLE**

3. Set the S3 - S6 jumpers to the proper settings for the function to be used.

	S3	S4	Function	LED Indication
<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>Channel 2</b>	S5	S6	Function	LED Indication
	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.

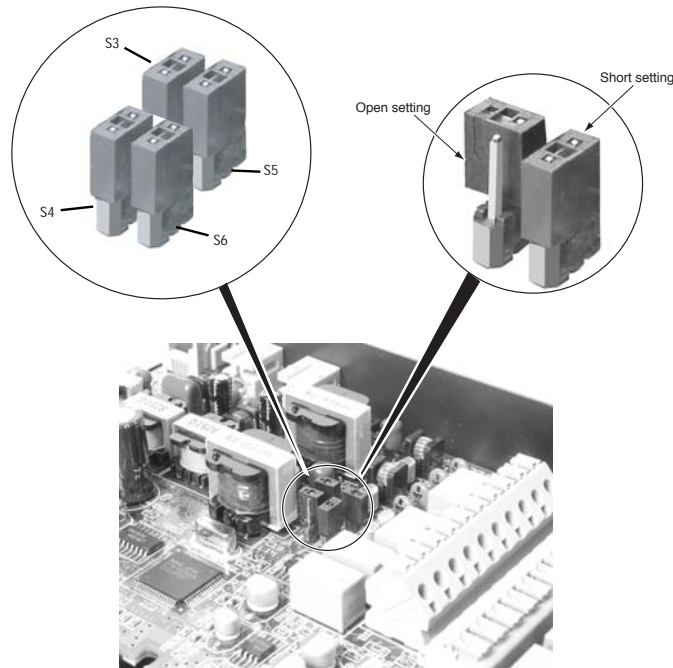
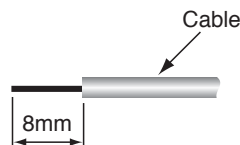


Figure 4-4: JUMPER SETTINGS

4. 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.



5. Insert the cable into the proper CN4 or CN5 location while holding down the lock button (holding down this lock button is easiest with a flat-head screwdriver). Once the cable is in place, release the lock button.
  - Refer to the specific function being connected for more detail on 2PGDAD connections.

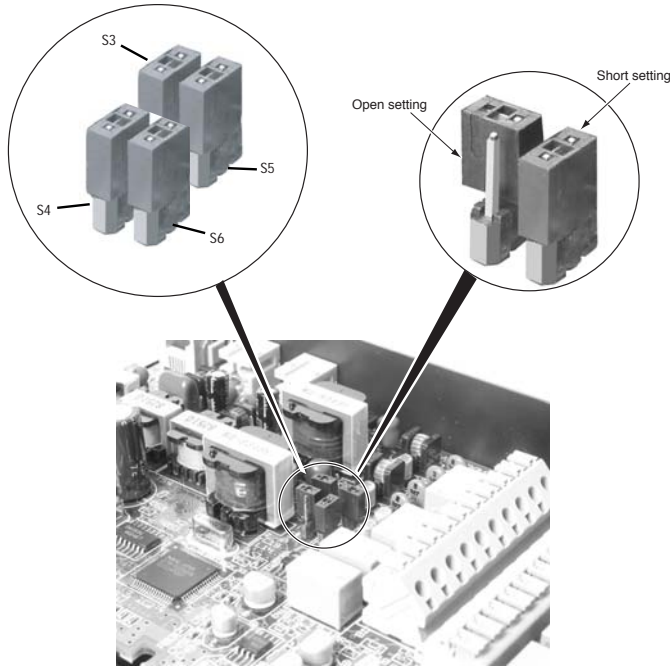


Figure 4-5: CONNECTING CABLE TO THE 2PGDAD MODULE

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 2PGDAD module.

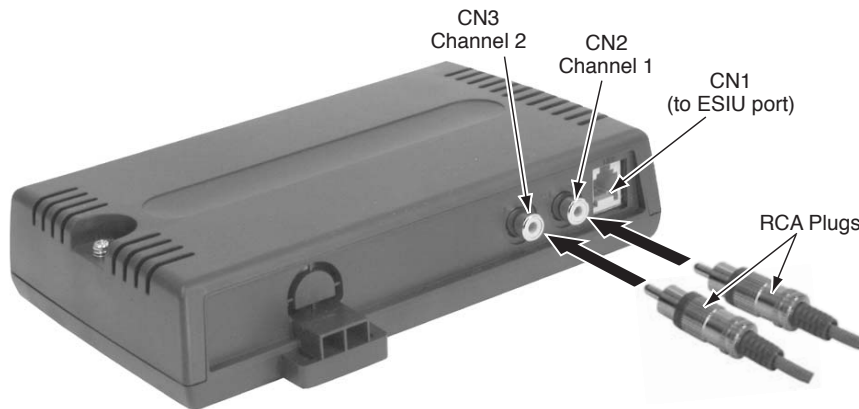


Figure 4-6: 2PGDAD MODULE CONNECTIONS

9. Install a modular jack for each 2PGDAD module. 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.
  - In order for the module to ID correctly after setting the jumpers, if the port to be used was previously assigned, set the circuit type to "0" for the module's port in Program 10-03-01 prior to connecting the line cord to the 2PGDAD Module.
12. Plug a modular line cord from the mod jack to the CN1 connector on the 2PGDAD module.



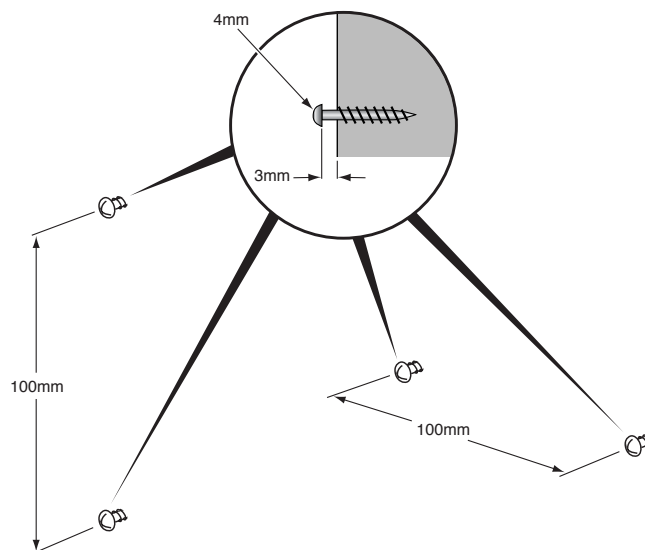
***In some cases, when testing the operation of an extension port when connecting to a Cordless II, Cordless Lite II, or 2PGDAD module, a technician may connect a line cord directly from an extension port on the UX5000 ESIU blade. Though this is not the recommended connection, it can be used to test these devices.***

***Should a direct connection of this type be made to the base station of the Cordless II or Cordless Lite II, or to a 2PGDAD module, the line cord must be 2-wire (1-pair). If a 2-pair wire is used, the system will provide power to the unused pair. This can prevent the cordless telephone from acquiring a link with the base station or it can damage the 2PGDAD module or the UX5000 station blade.***

***The recommended connection is to punch down 2 wires to the cross-connect block, then connect the extension block to the RJ61 connector on the blade.***

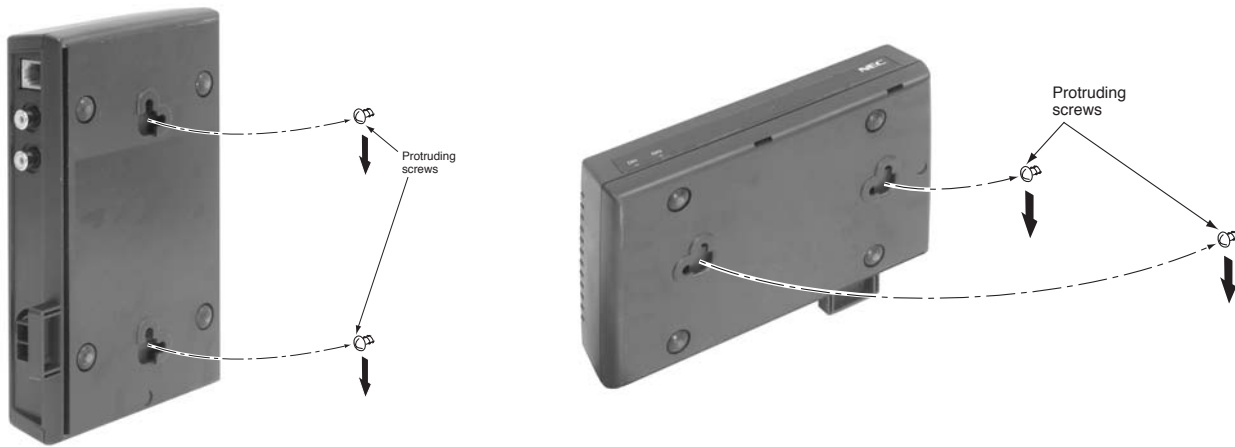
13. **Optional:**

To wall mount the 2PGDAD module, 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 4-7: INSTALLING THE SCREWS**

14. The back of the 2PGDAD module has two key-hole type openings. Place the 2PGDAD module over the two screws and slide it down or over (depending on the positioning) to lock it in place.



**Figure 4-8: WALL MOUNTING THE 2PGDAD MODULE**



## SECTION 4-3

### DIAL PAD / BUTTON KIT REPLACEMENT

#### 4.3.1 Dial Pads/Button Kits

With the UX5000 digital keysets (Enhanced terminals only) or IP terminals (IP-CTS or Enhanced terminals only), replacement dial pads are available which can enhance the operations of the terminal for a specific use (such as Hotel/Motel, ACD, retirement facility).

The current available replacement dial pad is for the Retro look (with Volume Up and Down keys and no Navigation pad). A label for Braille usage is available as well. A replacement dial pad is also used with the PSA Adapter (refer to Section 4-14 POWER FAILURE TERMINALS on page 4-53 for details on installing this dial pad.) Other versions will be available in the near future.

The following installation instructions can be used for Value 2-Button or 6-Button, Enhanced 12-Button or 24-Button, or DESI-Less terminals. As the Value 2-Button and 6-Button currently have their version of the Retro dial pad installed, there is no replacement required.

#### 4.3.2 Dial Pad Installation

1. Remove any cable from the terminal (line cord, LAN cable, AC power).
2. Remove the existing dial button kit by prying up the lower plastic panel covering the dial pad. Also remove the designation sheet used for labelling the terminal.
3. In the upper left-hand corner of the existing dial button kit, press the locking tab in towards the dial pad keys while lifting off the dial button kit.
4. Insert the tabs of the new dial button kit located at the base of the dial button kit into the notches on the terminal.
5. Push the upper portion of the dial button kit down until it clicks into position.
6. Press the buttons one by one to make sure that they are not stuck or that they have too much play.
7. Reattach the designation sheet and the upper and lower panels to the terminal.

#### 4.3.3 Programming the *Digital* Terminal for the Dial Pad

1. With the terminal not plugged in and the handset on-hook, press the “4” and “6” buttons on the dial pad and connect the terminal cables.
  - This places the terminal into Service Class R/W mode. The MW LED should be lit.
2. Press “2” to enter the Button Kit mode.
  - The MW LED should flash.

3. Following the directions below for the type of dial pad installed.

Dial Pad Type	Push	LED Indication
Japanese	0 1	Line 1 LED on Red
Model A Terminal	0 2	Line 2 LED on Red
Model B UX5000 Terminal	0 3	Line 1 and 2 LED on Red
Call Center	0 4	Line 1 LED on Green
Hotel-1	0 5	Line 2 LED on Green
Hotel-2	0 6	Line 1 and 2 LED on Green
Retirement Home	0 7	Line 1 LED flashing Red
Japan 32-Button	0 8	Line 2 LED flashing Red
Japan Value	0 9	Line 1 and 2 LED flashing Red
Model A Value	1 0	Line 1 LED flashing Green
Model B Value	1 1	Line 2 LED flashing Green
Reserve	1 2	Line 1 and 2 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 terminal to idle condition.

#### 4.3.4 Programming the IP Terminal for the Dial Pad and Line Key Kit

1. Enter the terminal's program mode by pressing HOLD CONF \* #.
2. At the log-in 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 dial button kit being used by pressing the Up/Down key.

Line Key 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
Kit 9	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 dial button kit selected above will be highlighted.

Line Key Entry	Description
Line12	Enhanced 12-Button
Line24	Enhanced 24-Button
Line32	Enhanced 32-Button
Line8	DESI-Less
Line6	Value 6-Button
Line2	Value 2-Button
Line0	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.



## SECTION 4-4 DOOR BOX

### 4.4.1 Installing a Door Box (Figure 4-9 - Figure 4-10)

**A 2PGDAD Module is required for this feature.**

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 2PGDAD module audio output can optionally support two analog Door Boxes. In addition, you can connect each circuit's 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 2PGDAD 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 2PGDAD modules are numbered 5-8.

**The relay closes when the Door Box/external page zone is called. The maximum applied voltage is 24vDC at .5A for each contact.**



A 2PGDAD circuit used for an analog Door Box cannot also be used for External Paging.

1. Make sure the jumper in the 2PGDAD module for the associated Door Box is set correctly. (Refer to Figure 4-4 **JUMPER SETTINGS** on page 4-5).
2. If a line cord was not previously connected to the 2PGDAD, complete Steps 3-6. Otherwise, skip to Step 7.
3. Install a modular jack for each 2PGDAD module. 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 2PGDAD module.
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 2PGDAD module to the Door Box terminals. These wires must be routed through the opening in the bottom of the Door Box mounting bracket.
  - Be sure to maintain the proper polarity.
10. Replace the front half of the Door Box and reattach the screw to secure it in place.

11. To connect a Door Box to an external relay for an unlock device, for example, connect one-pair 24 AWG station cable from the Relay 5 (for Door Box 1) or Relay 6 (for Door Box 2) connectors (CN5) in the 2PGDAD module. Connect the opposite end to the unlock device.

Refer to *Door Box* in the Software Manual for additional details.

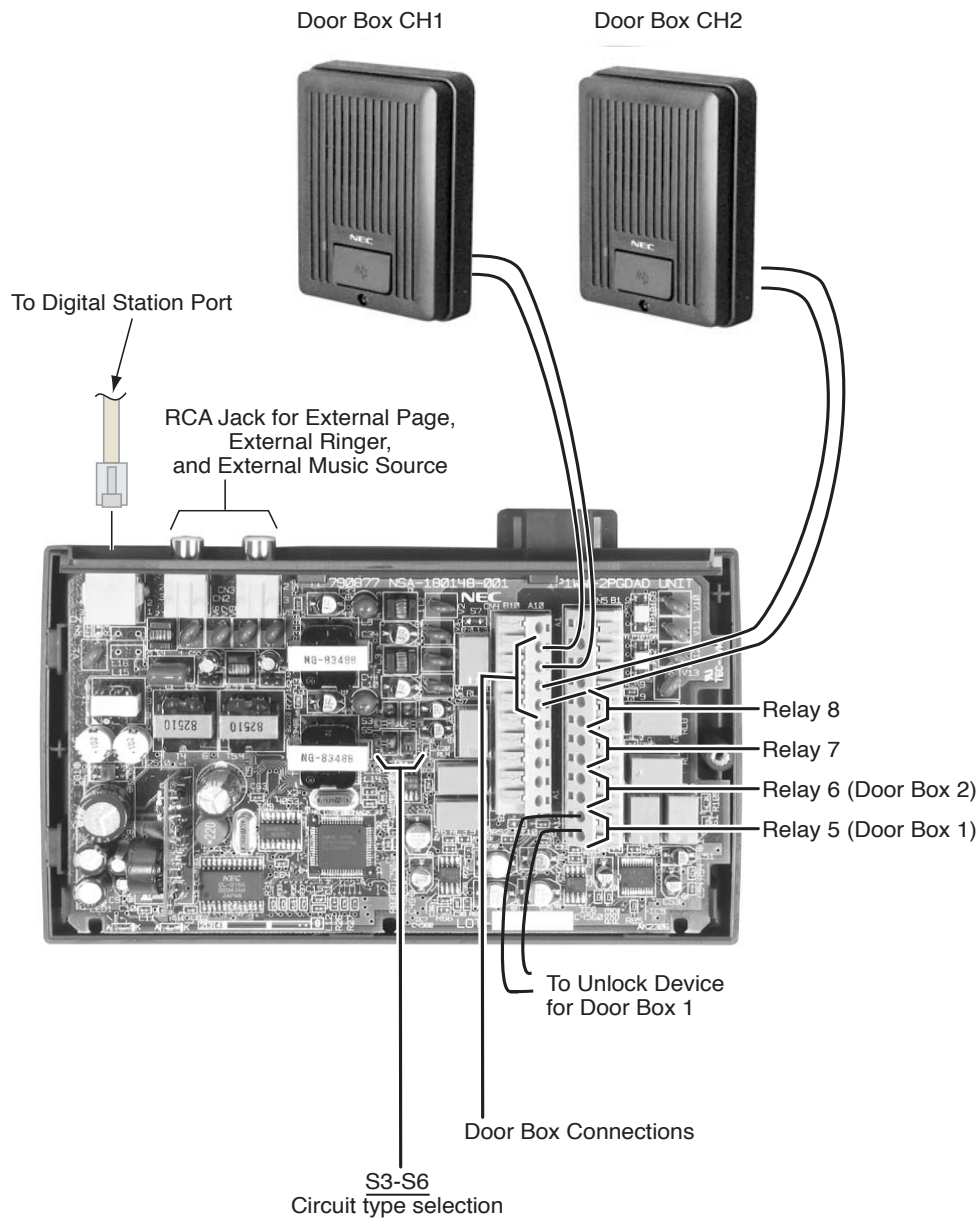


Figure 4-9: SETTING THE 2PGDAD FOR A DOOR BOX

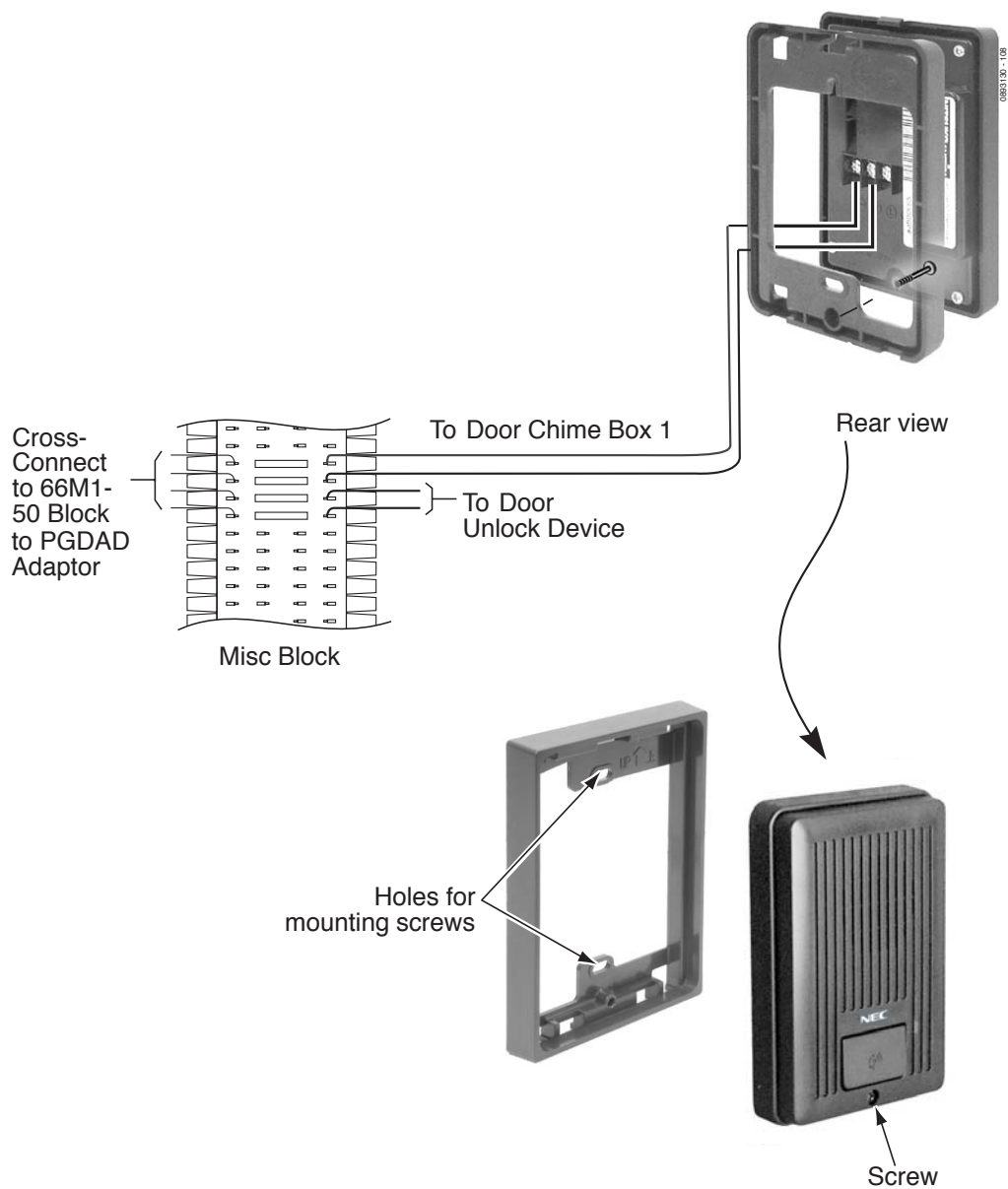


Figure 4-10: INSTALLING A DOOR BOX





## SECTION 4-5 DSS CONSOLE

### 4.5.1 Using a DSS Console

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 60 programmable keys, while the 16-Button DLS provides 16 programmable keys. Keep the following in mind when installing DSS Consoles:

- A 16-Button DLS does **not** require a separate digital station port.
- A 60-Button DSS Console requires a separate digital station port when pairing with a digital keyset. For IP terminals, the console is connected to the side option slot using a special cable which is included with the DSS Console. Using the DSS Console on an IP terminal also requires an AC power source (AC-2R, P/N 780135).
- **An IP terminal** can have **only** a 16-Button DLS OR one 60-Button DSS Console - it cannot have both items attached to the terminal.  
**A digital keyset** can have a 16-Button DLS installed as well as up to 32 60-Button DSS Consoles assigned. The 60-Button DSS Console is installed to the right of the 16-Button DLS.
- A 60-Button DSS Console attached to an IP terminal can provide up to 113 keys. A Page Switch key (Program 30-03-01, code 95) must be defined on the bottom row of DSS keys (keys 55-60). This will allow access to the additional keys. However, note that on the second level of DSS keys, the bottom row (keys 55-60) will remain on the first level of keys.
- Additional information on installing the 16-Button DLS is also available in the Adapters section. Refer to **4.13.2.1 Installing the 16-Button DLS:** on page 4-36.

Option Compatibility				
IP Terminal			Digital Keyset	
IP-CTS	Enhanced	Value	Enhanced	Value
✓	✓	NA	✓	✓

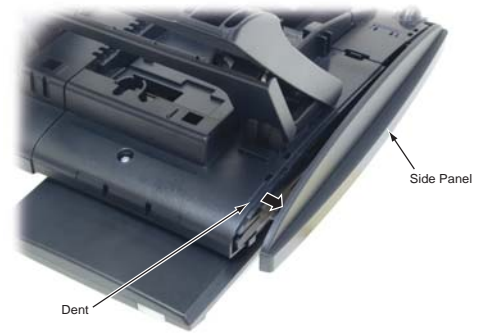
For specifications, refer to Section 6-1 UX5000 SYSTEM SPECIFICATIONS on page 6-1.

For additional information, refer to *Direct Station Selection (DSS) Console* in the Software Manual.

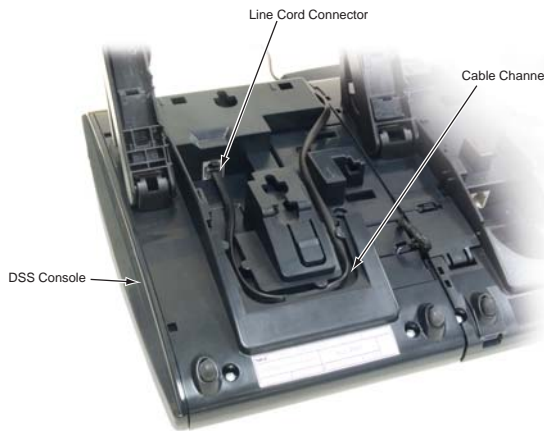
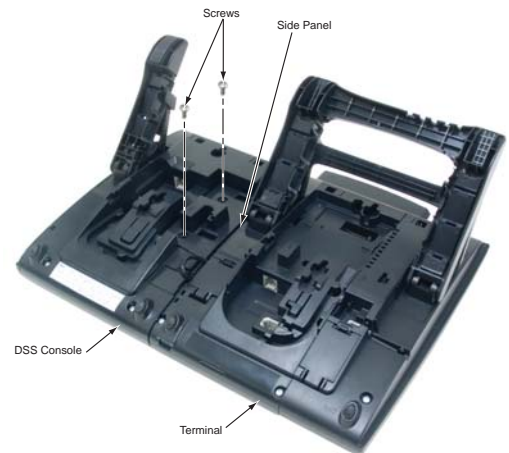
### 4.5.2 Installing a 60-Button DSS Console to a Digital Keypad

1. Install a modular jack for each 60-Button DSS Console. The modular jack should be within six feet of the terminal.
2. For each 60-Button DSS Console, run one-pair 24 AWG station cable from the cross-connect block to a modular jack. Ground the unused pair.
3. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.

4. The console can be physically attached to the keypad. First, remove the right side panel from the keypad (or 16-Button DLS, if installed). Hook a finger on the hollow indent on the back of the terminal (near the top) and gently pull off the panel.
5. Place the DSS side panel onto the side of the keypad and screw into place using the 3 screws provided.



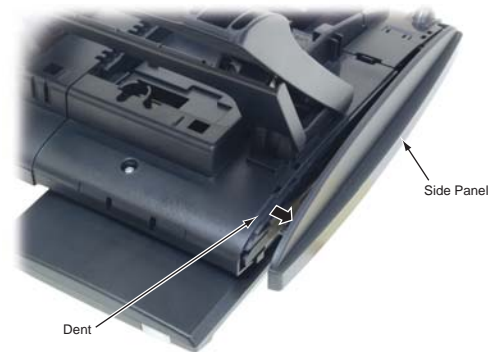
6. Slide the DSS Console over the DSS side panel until it clicks into place.
7. Secure the console to the side panel using the 2 screws provided.
8. Connect a line cord from the modular jack to the RJ11 connector on the bottom of the DSS console.



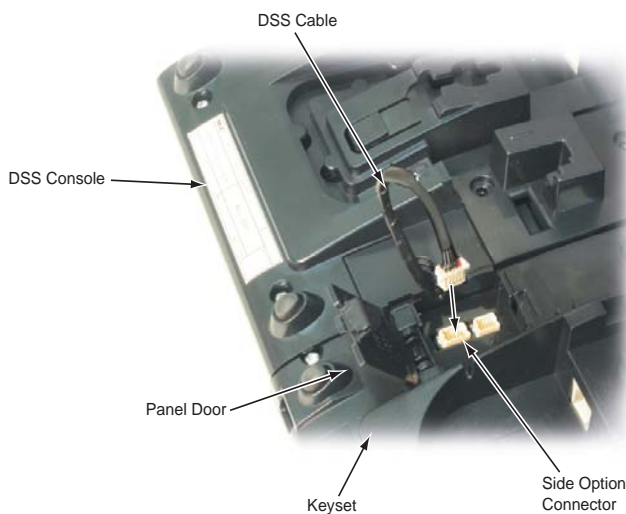
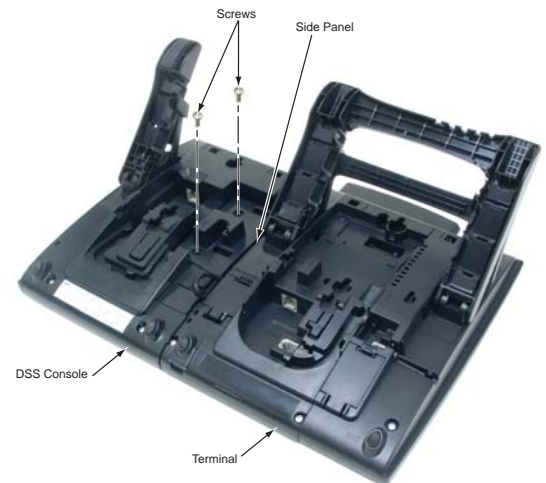
9. Route the line cord cable through the cable guide on the bottom of the console.

### 4.5.3 Installing a 60-Button DSS Console to an IP Terminal

1. The console should be physically attached to the keyset. First, remove any cabling to the terminal, then remove the right side panel from the keyset (or 16-Button DLS, if installed). Hook a finger on the hollow indent on the back of the terminal (near the top) and gently pull off the panel.
2. Place the DSS side panel onto the side of the keyset and screw into place using the 3 screws provided.



3. Slide the DSS Console over the DSS side panel until it clicks into place.
4. Secure the console to the side panel using the 2 screws provided.
5. Connect the DSS Console to the IP terminal using the special cable provided. The cable connections on the IP terminal and on the DSS Console are located under the small panel on the bottom of the terminal.



6. Connect an AC adapter (AC-2R, P/N 780135) to the DSS Console for power.

#### 4.5.1 To program a DSS Console . . .

With the default settings, there are no DSS Consoles assigned.

1. 10-03-01 : Blade Setup  
The system automatically assigns the terminal type (10) for the port which has a DSS console installed. *When installing a DSS, the system must auto-detect the console in order for the LEDS to function correctly. When connecting the DSS to a extension previously defined with another circuit type, undefine the circuit type (enter 00 in Program 10-03 for the extension number), then connect the DSS Console.*
2. 15-05-22 : IP Phone Terminal Basic Data Setup - DSS Console Assignment  
When an IP terminal is to use a DSS Console, assign the console number (01-32) using this option. This program must also be used to delete the association between an IP terminal and a console. Refer to Program 30-02 when associating with a digital keyset.
3. 30-02-01 : DSS Console Extension Assignment  
Designate the *digital* extensions that have DSS Consoles connected to them.
4. 30-03-01 : DSS Console Key Assignment  
Customize the functions of the DSS Console keys.
5. 30-04-01 : Alternate DSS Console Key Assignment  
If the console should have Alternate Answering, use this program to assign the Alternate Answering Destination.

## SECTION 4-6

### EXTERNAL PAGING

#### 4.6.1 External Page (Figure 4-11)

Two external page zone/door box circuits are provided by each 2PGDAD installed. Each Door Box/external page circuit provides a dry relay contact. The external page speakers provided by the 2PGDAD modules are 1-8 - the relays on the 2PGDAD modules are numbered 1-8. Refer to Paging, External in the Software Manual for additional details.

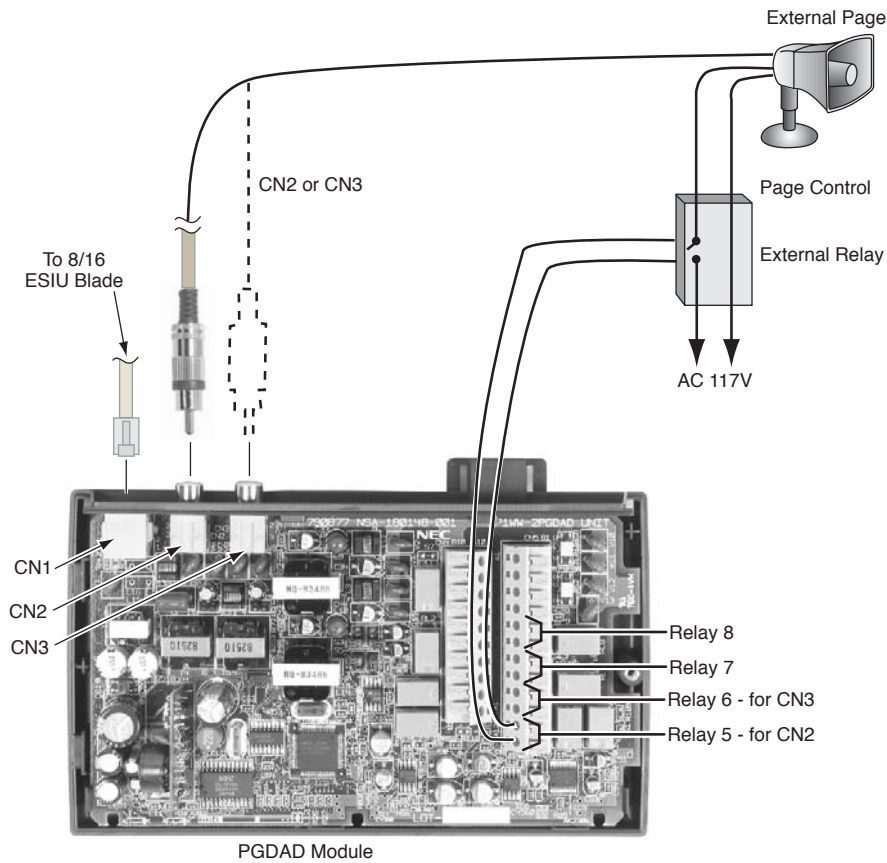
The 2PGDAD module can be used for talkback with External Page, as can a CO trunk port with the proper external page equipment (ex: Valcom) - set Program 31-06-03 to "0" for talkback.



A 2PGDAD circuit used for External Paging cannot also be used for an analog Door Box.

#### 4.6.2 Installing an External Page System

1. **Connecting to the 2PGDAD Module:**  
Make sure the jumper in the 2PGDAD module for the channel is set correctly. (Refer to Figure 4-4 **JUMPER SETTINGS** on page 4-5).
2. If a line cord was not previously connected to the 2PGDAD, complete Steps 3-6. Otherwise, skip to Step 7.
3. Install a modular jack for each 2PGDAD module. 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 2PGDAD module.
7. Connect the two-conductor station cable from the CN5 connectors within the 2PGDAD module to the external relay/external page.



**Figure 4-11: 2PGDAD CABLE CONNECTION**



The 2PGDAD module 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 2PGDAD module and, if required, an external page amplifier can be used for additional amplification.

The page output of the CCPU does not provide any amplification (for a maximum output of -3 dBm, 600 ohms at 1KHz).

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## SECTION 4-7

### EXTERNAL PAGING AND DOOR BOX/PAGE RELAYS

#### 4.7.1 External Page Relays

Four external dry contact relays are available when a 2PGDAD is installed which can be used to activate ancillary devices (i.e. door unlock devices). When the relay on the 2PGDAD 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 2PGDAD modules are numbered 5-8. Each Door Box/external page circuit provides a dry relay contact.

#### 4.7.2 Door Box /External Page Relay Contacts (Figure 4-11)

##### 4.7.2.1 To connect a dry contact relay device to a Door Box/External Page Relay:

1. **Connecting to the 2PGDAD Module:**  
Make sure the jumper in the 2PGDAD module for the channel is set correctly. (Refer to Figure 4-4 **JUMPER SETTINGS** on page 4-5).
2. If a line cord was not previously connected to the 2PGDAD, complete Steps 3-6. Otherwise, skip to Step 7.
3. Install a modular jack for each 2PGDAD module. 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 2PGDAD module.
7. Connect the two-conductor station cable from the CN5 connectors within the 2PGDAD module 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.





## SECTION 4-8

### EXTERNAL RECORDING SYSTEM / EXTERNAL RINGER

#### 4.8.1 External Recording System or External Ringer

The 2PGDAD allows for 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 PGDAD 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 2PGDAD module can optionally control customer-provided external ringers (loud bells) and buzzers. When an extension user dials the ACI analog port extension number, the associated PGDAD 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.

#### 4.8.2 Installing an External Recording System or External Ringer

1. **Connecting to the 2PGDAD Module:**  
Make sure the jumper in the 2PGDAD module for the channel is set correctly. (Refer to Figure 4-4 **JUMPER SETTINGS** on page 4-5).
2. If a line cord was not previously connected to the 2PGDAD, complete Steps 3-6. Otherwise, skip to Step 7.
3. Install a modular jack for each 2PGDAD module. 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 2PGDAD module.
7. Connect an RCA jack to the audio output(s) on the back of the 2PGDAD module.
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.



## SECTION 4-9

### FULL DUPLEX SETTING

#### 4.9.1 Full Duplex Setting for Terminals

Full-duplex mode for conversations allows both parties to talk and be heard simultaneously. All of the UX5000 IP terminals are full-duplex and this cannot be changed. The UX5000 digital keysets are full-duplex - except the 6-Button or 2-Button terminals which are half-duplex). If required, this setting can be changed on the digital terminals to half-duplex mode. The following installation instructions can be used for the Enhanced 12-Button or 24-Button, or DESI-Less terminals.

#### 4.9.2 Programming the Digital Terminal for the Full Duplex

1. With the Enhanced 12-Button or 24-Button, or DESI-Less terminal not plugged in and the handset on-hook, press the "4" and "6" buttons on the dial pad and connect the terminal cables.
  - This places the terminal into Service Class R/W mode. The MW LED will not be lit.
2. Press "8" to enter the Full Duplex (FDS) mode.
3. Push "1" to set to off or "2" to set to on.
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 terminal to idle condition.



## SECTION 4-10 HEADSETS

### 4.10.1 Connecting a Headset (Figure 4-12)

A keyset user can utilize a customer-provided headset in place of the handset. Like using Handsfree, using the headset frees up the user's hands for other work. However, Headset Operation provides privacy not available from handsfree.

The headset plugs into a separate jack on the bottom of the terminal. This allows the use of the handset or headset - whichever is convenient at the time.

Simply connect the headset into the headset jack located on the bottom of the terminal. (This jack is located near the handset jack, so make sure to connect to the proper jack.) The headset jack is pre-amplified and the addition of an after-market amplification device can result in poor audio performance.

Examples of compatible headsets are:

Plantronics Polaris Headsets:	Part Number
Polaris SupraPlus/NC-M (monaural with noise canceling transmitter)	750643
Polaris SupraPlus/NC-B (binaural with noise canceling transmitter)	750645
Polaris SupraPlus/VT-M (monaural with voice tube transmitter)	750644
Polaris Encore/VT-M (monaural with voice tube transmitter)	750634
Polaris Encore/NC-B (binaural with noise canceling transmitter)	750635
Polaris Tristar/VT-M (monaural with noise canceling transmitter)	750630
Polaris Mirage/VT-M (monaural with voice tube transmitter)	750631



**Figure 4-12: HEADSET CONNECTION**

## SECTION 4-11 LINE KEY REPLACEMENT

### 4.11.1 Line Keys

With the UX5000 digital keysets or IP terminals, replacement line keys are available which can add to the number of line keys available for a terminal. The following installation instructions can be used for Value 2-Button or 6-Button, Enhanced 12-Button or 24-Button, or DESI-less terminals.

### 4.11.2 Installation

1. Remove any cable from the terminal (line cord, LAN cable, AC power).
2. Remove the upper plastic panel covering the line keys. Also remove the designation sheet used for labelling the terminal.
3. Remove the side panel located on the right side of the terminal by prying up the edges of the panel.
4. From the right side of the terminal, lift off the filler piece where the new line key module will be installed.
5. Insert the new line key module.
6. Reattach the side panel on the terminal by pushing the panel until it snaps into place.
7. Attach the new designation sheet and the plastic panel over the line keys.

### 4.11.3 Programming the *Digital* Terminal for the Correct Number of Line Keys

1. With the terminal not plugged in and the handset on-hook, press the “4” and “6” buttons on the dial pad and connect the terminal cables.
  - This places the terminal into Service Class R/W mode. The MW LED will not be lit.
2. Press “1” to enter the Line Key Type mode.
  - The MW LED should flash.
3. Following the directions below for the type of line key module installed.

Line Key Module 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 terminal to idle condition.

#### 4.11.4 Programming the IP Terminal for the Dial Pad and Line Key Kit

1. Enter the terminal's program mode by pressing **HOLD CONF \* #**.
2. At the log-in 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 dial button kit being used by pressing the Up/Down key.

Line Key Entry	Description
<b>Kit1</b>	Type A - Japan with cursor key
<b>Kit2</b>	Type A - US with cursor key
<b>Kit3</b>	Type B - US with cursor key
<b>Kit4</b>	
<b>Kit8</b>	32 Line Key without cursor key
<b>Kit 9</b>	Type A - Japan without cursor key
<b>Kit10</b>	Type A - US without cursor key
<b>Kit11</b>	Type B - US without cursor key
<b>Kit12</b>	

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 dial button kit selected above will be highlighted.

Line Key Entry	Description
<b>Line12</b>	Enhanced 12-Button
<b>Line24</b>	Enhanced 24-Button
<b>Line32</b>	Enhanced 32-Button
<b>Line8</b>	DESI-Less
<b>Line6</b>	Value 6-Button
<b>Line2</b>	Value 2-Button
<b>Line0</b>	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.

## SECTION 4-12 MUSIC SOURCES

### 4.12.1 Music on Hold

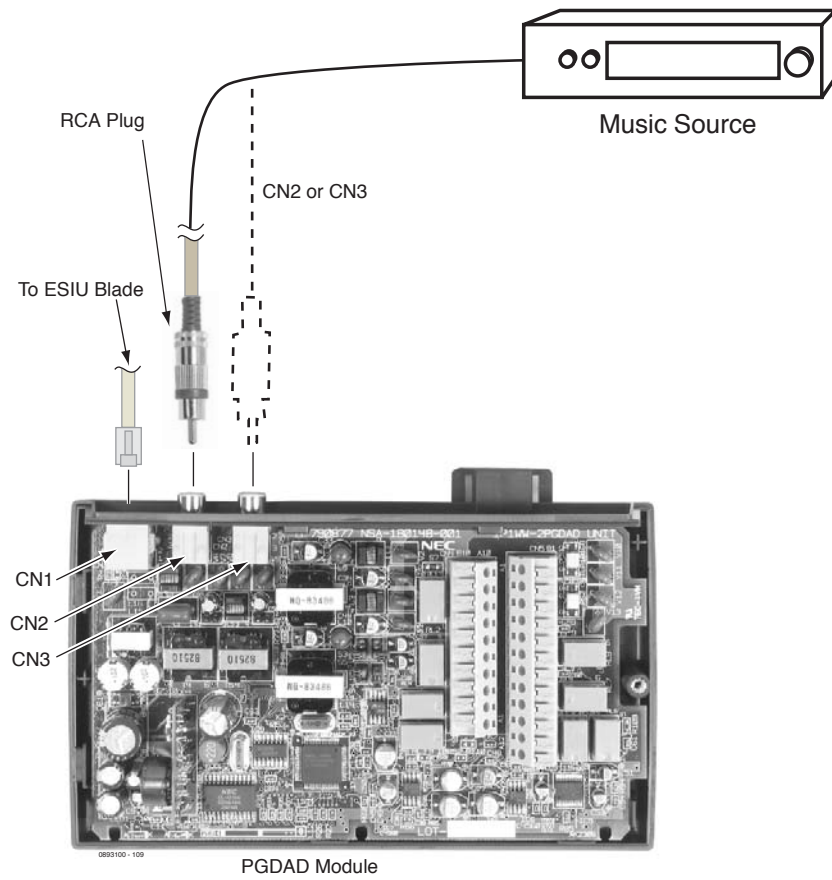
The system can provide Music on Hold from either an internally synthesized source on the CCPU or from an external source. The external MOH can be a tuner, tape deck, CD player, etc.

In addition to a connector on the CCPU, the 2PGDAD modules also provide connections for external MOH sources. When using external music sources for external MOH, programming determines the MOH source for each trunk. Refer to *Music on Hold* in the Software Manual for more details.

### 4.12.2 Installing External Music on Hold

1. **Connecting to the 2PGDAD Module:**  
Make sure the jumper in the 2PGDAD module for the channel is set correctly. (Refer to Figure 4-4 **JUMPER SETTINGS** on page 4-5).
2. If a line cord was not previously connected to the 2PGDAD, complete Steps 3-6. Otherwise, skip to Step 7.
3. Install a modular jack for each 2PGDAD module. 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 2PGDAD module.
7. Connect an RCA jack to the audio output(s) on the back of the 2PGDAD module.
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 4-13: 2PGDAD CONNECTIONS**

## SECTION 4-13 TERMINAL ADAPTERS

### 4.13.1 Using Adapters

The UX5000 digital keysets and IP terminals provide 3 types of optional interfaces/adapters: handset units, adapters for the bottom of the terminals, and line key kits. Each UX5000 keyset/terminal may have multiple optional adapters installed, depending on the type of keyset/terminal and the adapter used. These adapters provide the keyset different capabilities, depending on the adapters installed.

- Only the ILPA, ADA and PSA Adapters can be used on the IP phones.
- 16-Button DLS (16LK)
- ADA - Conversation Recording
- APR - Analog Port Adapter with Ringer
- BCH - Bluetooth Cordless Handset
- BHA - Bluetooth Hub Adapter
- PSA - Keyset/IP Terminal Power Failure



If Aspire keysets are connected to the UX5000 system, then these phones will support the use of the CTA (RS-232 Serial Interface) and CTU (USB) adapters as well. However, only for reports and SMDR - TAPI is not available with these units on the UX5000 system.

When installing or removing the adapters, ***the keyset should first be unplugged from the system.***

<b>Handset Options - Handset Device</b>
● Standard Handset with PSA Built-In Cradle
● Standard Handset with Standard Cradle
● Bluetooth Cordless Handset (BTH) with Cordless Handset RF Cradle (BTC)
<ul style="list-style-type: none"> <li>☞ The Cordless handset RF Cradle uses both the Handset Option connection and the Bottom of the Terminal connection (preventing any voice/data devices from being installed)</li> </ul>
<b>Bottom of the Terminal Adapters - Voice/Data Device</b>
● BHA
● ADA
● APR
<b>Side Connector - Dedicated Data Devices</b>
● 16-Button DLS
● 60-Button DSS (IP)

### 4.13.2 16-Button DLS (Figure 4-14)

This optional unit connects to the side connector to the right of the terminal. This unit provides 16 additional keys which gives a keyset user a Busy Lamp Field (BLF) and one-button access to extensions, trunks and system features. Digital keysets with a 16-Button DLS installed can also have a 60-Button DSS Console connected. However, IP terminals can have either a 16-Button DLS or a 60-Button DSS Console - it cannot have both units installed.

Once defined in system programming, these keys are used the same as the line, loop, or Programmable Function keys on the digital keyset or IP terminal.

- ☞ This module is connected to the keyset/terminal using a special cable. This cable is provided with the module.

Keep the following in mind when installing 16-Button DLS units or DSS Consoles:

- A 16-Button DLS does **not** require a separate digital station port.
- **An IP terminal** can have **only** a 16-Button DLS OR a 60-Button DSS Console - it cannot have both items attached to the terminal.  
**A digital keyset** can have a 16-Button DLS installed as well as a 60-Button DSS Console. The 60-Button DSS Console is installed to the right of the 16-Button DLS.

Option Compatibility				
IP Terminal			Digital Keyset	
IP-CTS	Enhanced	Value	Enhanced	Value
✓	✓	NA	✓	NA

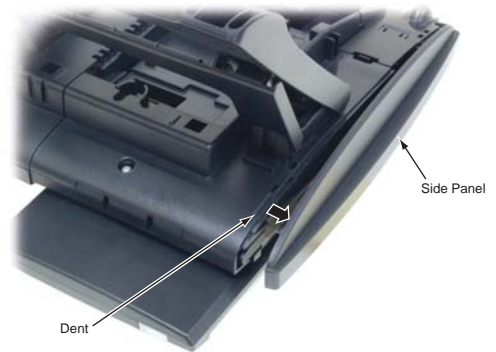
For specifications, refer to Section 6-1 UX5000 SYSTEM SPECIFICATIONS on page 6-1.



Figure 4-14: 16-BUTTON DLS

#### 4.13.2.1 Installing the 16-Button DLS:

1. Unplug any cables from the keyset (line cord, LAN cable, power adapter).
2. Remove the side panel from the right-hand side of the terminal. Hook a finger on the hollow indent on the back of the terminal (near the top) and gently pull off the panel.
3. Connect the adapter so the side of the terminal aligning the tabs up.



4. Secure the adapter with the two screws provided.
5. Turn the terminal upside down.
6. Open the panel located on the bottom of the terminal and connect the cable from the 16LK adapter.
7. Attach the single leg provided to the bottom of the DLS. The plastic notch on the leg is placed into the rectangular opening on the bottom of the DLS. Then slide the leg back until it clicks into place.
  - Adjust the leg height as required.
  - To remove the leg, press on the locking tab as the base of the leg and slide the leg forward.
8. Turn the terminal right-side up and reconnect any required cables.



### 4.13.3 ADA Adapter

Using the ADA Adapter provides a recording jack connection which provides a connection from a terminal to an external tape recorder or speaker. Both sides of the conversation are recorded. The adapter output is a 3.5 mm diameter **stereo** mini-jack for recording or a Barrel Terminal for ACD. (*Do not use a mono cable or a cable with a resistor.*) You can connect directly to an AUX level input on a recorder or page amplifier.

When installing or removing the adapters on the bottom of the terminals, **the keyset should first be unplugged from the system**. Terminals with an adapter installed can be wall-mounted, however, a separate wall-mount bracket must be used (P/N 680610).

Option Compatibility				
IP Terminal			Digital Keyset	
IP-CTS	Enhanced	Value	Enhanced	Value
✓	✓	NA	✓	NA

For specifications, refer to UX5000 SYSTEM SPECIFICATIONS (page 6-1).



- When recording handsfree (half-duplex) mode using the built-in speakerphone, the record warning tone may not be audible to the far-end party.
- The transmit recording level is lower than the receiving voice level for intercom calls; the transmit recording level for CO calls is normal.



***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.***

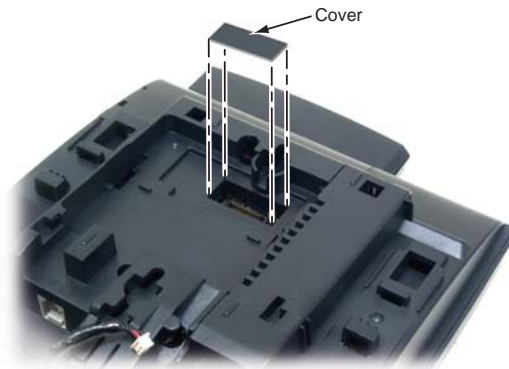
***The handset only records when a call is placed or answered.***

**4.13.3.1 Installing the ADA Adapter:**

1. Set the dip switch for recording: Position 1 and 6 ON, all others OFF.

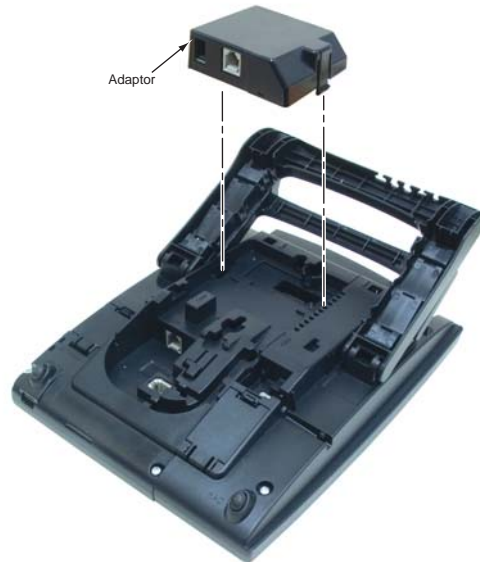
ADA Dip Switches	
<b>Bit 1</b>	Recording confirmation sent. On: OPIA path of terminal is opened. Off: OPIA path of terminal is closed.
<b>Bit 2</b>	Not Used - Transformer used for voice input on or off.
<b>Bit 3</b>	Used for voice inputting via a TRANS1. On: Used, Off: Not used.
<b>Bit 4</b>	Relay Control. On: The relay is used for VOR recorder. Off: Relay does not work for ACD recording.
<b>Bit 5</b>	Off: 600 Ohm, On: 30Ohm
<b>Bit 6</b>	Reset when recording finished.
<b>Bit 7</b>	On: Uses voice input from PC. Connects it with relay and analog switch.
<b>Bit 8</b>	Unused

2. Unplug the keyset completely: line cord, LAN cable, and any power adapter which may be connected to the keyset.
3. Lower the legs of the keyset if they are raised.
4. Remove the connector cover on the bottom of the keyset.



**Figure 4-15: REMOVE THE CONNECTOR COVER**

5. Install the adapter on the bottom of the terminal



6. Return the terminal to an upright position and reconnect all the cables.
7. Connect the stereo mini-jack wire between the ADA and the cassette recorder or audio input.
  - When recording using the LINE IN jack on a cassette recorder, disp switch 5 needs to be off. When using the MIC jack on a cassette recorder, switch 5 must be set to on.
  - Make sure to connection the cable to the audio input (for example, on the PC's sound card). Plugging the adapter into any other connector may damage the ADA adapter.
8. Check Program 10-03-04 or 10-03-05 to make sure the system recognizes the ADA adapter.
  - To remove the adapter, push the right and left tabs to release.
  - To avoid any hardware problems, when removing the adapter, first unplug the line cord, then the power cord, then any other adapter cables.

#### 4.13.4 APR Adapters

The APR Adapter provides an analog interface for the digital Enhanced keyset. The analog device can be a single line terminal, modem, credit card, reader, wireless headset, or any other comatible analog device. It 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).

The adapter receives it power from the keyset. The maximum distance between the APR Adapter and the analog terminal is 49'.

When installing or removing the adapters, ***the keyset should first be unplugged from the system.*** Terminals with an adapter installed can be wall-mounted, however, a separate wall-mount bracket must be used (P/N 680610).

The APR Adapter does not support reverse-polarity.

Option Compatibility				
IP Terminal			Digital Keypad	
IP-CTS	Enhanced	Value	Enhanced	Value
NA	NA	NA	✓	NA

For specifications, refer to UX5000 SYSTEM SPECIFICATIONS (page 6-1).

**4.13.4.1 Installing the APR Adapter:**

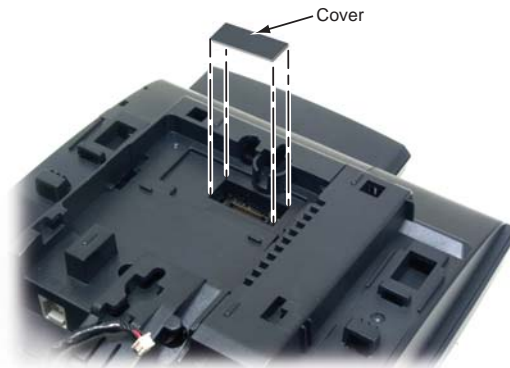
1. Set the dip switches.

APR Dip Switches	
<b>Bit 1</b>	Retro mode - Set to On when a UX5000 keyset with an APR adapter is used on an Aspire telephone system (then set bits 2-4). Set to Off for a UX5000 keyset with an APR adapter is used on a UX5000 system. (bits 2-4 or disregarded).
<b>Bit 2</b>	With retro mode on, determine if the CPU controls the dB exchange (On) or if the APR Bit 3 controls it (Off).
<b>Bit 3</b>	With retro mode on, determine if Non-0dB exchange/Hook Flash Start Time should be used (On) or of 0dB exchange/Hook Flash Start Time is used (Off).
<b>Bit 4</b>	With retro mode on, select the impedance: Off = 600ohm, On = Complex
<b>Bit 5</b>	Unused
<b>Bit 6</b>	For firmware upgrade. Normal operation has this bit On.
<b>Bit 7</b>	Unused
<b>Bit 8</b>	Unused

2. Unplug the keyset completely: line cord, LAN cable, and any power adapter which may be connected to the keyset.
3. Lower the legs of the keyset if they are raised.

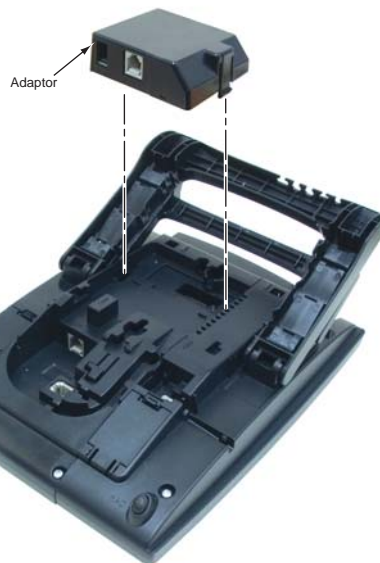


4. Remove the connector cover on the bottom of the keyset.



**Figure 4-16: REMOVE THE CONNECTOR COVER**

5. Install the adaptor on the bottom of the terminal.



6. Return the terminal to an upright position and reconnect all the cables.
7. Plug the line cord back into the keyset.
8. Plug the end of the line cord for the analog device into the jack on the adapter. The opposite end should then be connected to the analog device.
  - To avoid any hardware problems, when removing the adapter, first unplug the line cord, then the power cord, then any other adapter cables.
  - The analog device should be placed no greater than 15 meters away from the keyset.

### 4.13.5 Bluetooth Cordless Handset (BCH) Interface

This optional interface provides the keyset user the option to use Bluetooth technology to provide a cordless handset. This handset/cradle combination provides:

- Keyset-like Handset
- 8 Line Buttons
- Function Button
- Dial Button
- Display
- All Keyset 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 within a distance of 1 meter between each device simultaneously. This maximum can be affected by the installation environment.

This adapter uses both the Handset Device and Bottom Slot connectors (preventing other adapters - such as ADA, APR, and PSA - from being used on the same keyset).

The BCH and a Bluetooth headset cannot be used at the same time.

When charging the BCH, the following LEDs provide indications of the status:

<b>On-Hook Charging:</b>	Red = Charging	Green = Charging Complete	Flashing Red = New Message
<b>Off-Hook (Idle):</b>	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 incompletd 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. The time and date stored with the information is received from the terminal.

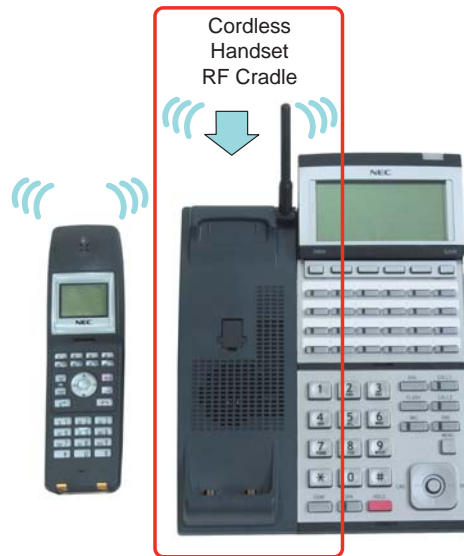


Figure 4-17: BLUETOOTH CORDLESS HANDSET

Option Compatibility				
IP Terminal			Digital Keypad	
IP-CTS	Enhanced	Value	Enhanced	Value
✓	✓	NA	✓	NA

For specifications, refer to UX5000 SYSTEM SPECIFICATIONS (page 6-1).

#### 4.13.5.1 Operation

##### 4.13.5.1.1 BTH / Bluetooth Handset:

*Display:* Supports 20 characters/2 line display. Icons indicate antenna strength and battery level. The display contrast is adjusted using the volume up/down keys on the keypad/terminal.

*Touch Tone:* Press 'o' on the dial pad to activate/deactivate the touch tone. When activated, a 1 kHz single tone will be heard when any key is pressed.

*Music on Hold:* Music is provided by the UX5000 system for keysets or from the IP terminal.

*Volume Control:* The volume for handset and ringer volume is adjusted using the BTH's cursor key.

##### 4.13.5.1.1 BTC / Bluetooth Cradle:

*Charging:* Built-in battery charger. To recharge the handset, place the handset on the Bluetooth Cradle.

**4.13.6 Bluetooth Hub (BHA)**

The Bluetooth Hub is used in conjunction with Bluetooth-compatible cell phones/headsets. With this hub, you can answer and receive cell phone calls through your keyset/IP terminal. In addition, this hub supports the use of a Bluetooth-compatible headset.



**Figure 4-18: BLUETOOTH HUB**

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 within a distance of 1 meter between each device simultaneously. This maximum can be affected by the installation environment.

The BHA and a Bluetooth handset (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.

Option Compatibility				
IP Terminal			Digital Keyset	
IP-CTS	Enhanced	Value	Enhanced	Value
✓	✓	NA	✓	NA

For specifications, refer to UX5000 SYSTEM SPECIFICATIONS (page 6-1).

#### 4.13.6.1 Operation

##### 4.13.6.1.1 BHA / Bluetooth Hub Adapter:

###### **Using a Headset:**

*Outgoing Call:* Push the TALK button on the Bluetooth headset and dial the telephone number.

*Incoming Call:* Push the TALK button. Ringing is provided by the BTC.

*Adjust the Volume:* Press the Volume button on the terminal.

###### **Using a Cell Phone:**

*Cell Phone Linkage feature:* Supported. This allows the use of a desktop handset when placing/answering calls using a cell phone line.

- To make an outgoing call, press the “cell phone line” key configured on the keyset/IP terminal and pick up the handset of the keyset/IP terminal.

*With this feature, the Bluetooth headset cannot be used at the same time.*

- To receive an incoming call from the linked cell phone, pick up the handset of the keyset/IP terminal when it rings.

**Volume Control:** The volume for handset and ringer volume is adjusted using the volume control on the digital keyset/IP terminal.

#### 4.13.7 PSA-R Adapter (Figure 4-19)

Using the PSA Adapter provides power failure capability for the IP (Enhanced or IP-CTS) and digital Enhanced keysets. This allows a user to make or receive an outside call using the central office if a keyset is unable to make or receive a call, if for instance, there was a power failure. In this case, the connection of the IP keyset would automatically be changed from LAN to PSTN (public switched telephone network). This allows the dial pad keys (0-9, \* and #) to be used for placing and receiving calls - no other keyset functions are available.

When using this option, the handset must be replaced with the PSA and the dial pad must be replaced to the double-contact type to disable the dial pad backlit option.

The operation occurs in the following instances:

- No power supplied to the keyset
  - *The connection is automatically switched to an analog PSTN line when power failure occurs.*
  - *Unless it was manually switched to PSTN mode, it will automatically switch back once power is restored and the terminal is in an idle condition.*
- PSTN is selected using the PSTN-IP/Digital Switch on the adapter
  - The PSTN mode is kept until the adapter is switched back to IP/Digital mode.

 Headsets are not supported by the PSA Adapter.

 The backlight function does not operation on a terminal with a PSA Adapter installed.

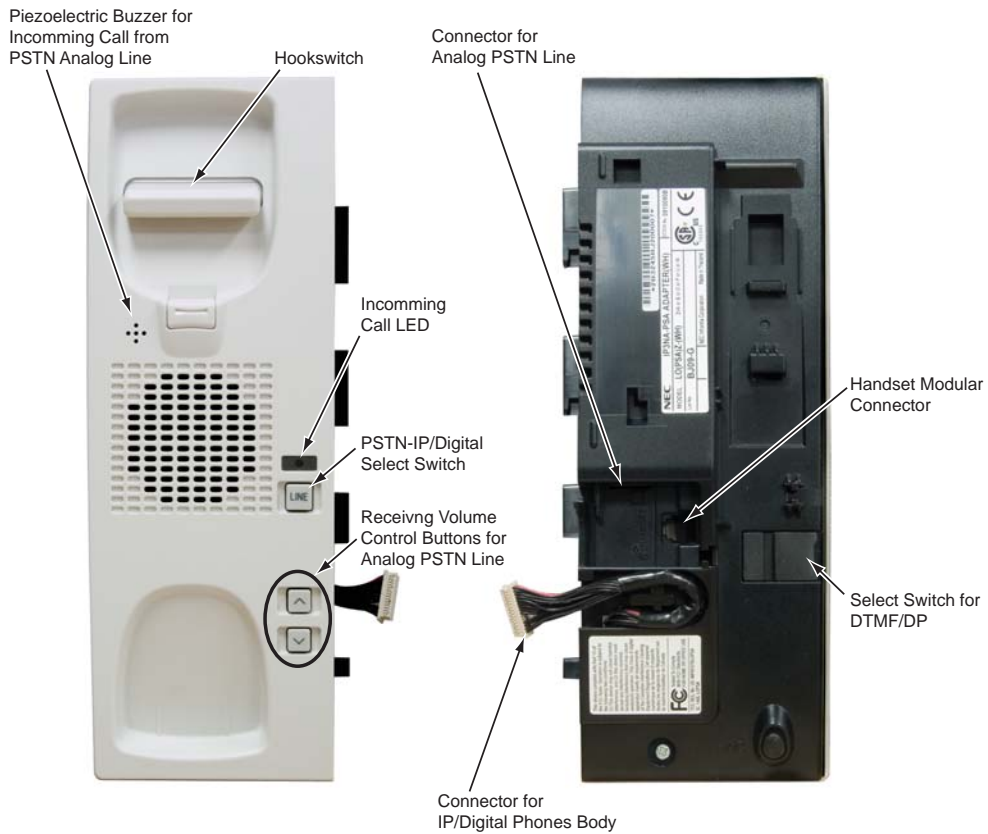


Figure 4-19: PSA LAYOUT

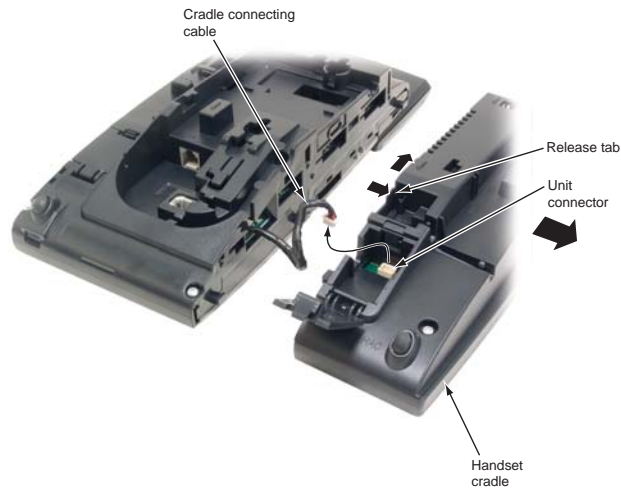
Option Compatibility				
IP Terminal			Digital Keypad	
IP-CTS	Enhanced	Value	Enhanced	Value
✓	✓	NA	✓	NA

For specifications, refer to UX5000 SYSTEM SPECIFICATIONS (page 6-1).

**4.13.7.1 Installing the PSA-R Adapter:**

1. Unplug any cables to the keyset (line cord, LAN cable, AC power).
2. Unplug the handset coil cord from the bottom of the terminal and remove the handset.
3. Turn the terminal upside down.

4. Press the handset cradle release tab towards the cradle.

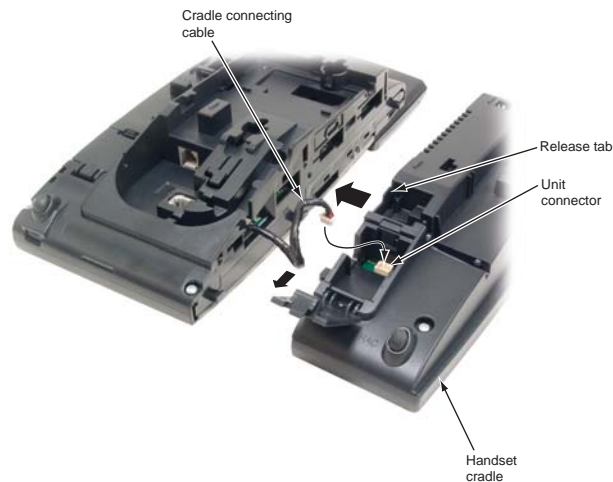


**Figure 4-20: ATTACHING THE PSA**

5. Slide the handset cradle away from the terminal and remove the connecting cable from the terminal unit connector.
6. Plug in the cradle connecting cable of the PSA-R handset into the terminal unit connector.

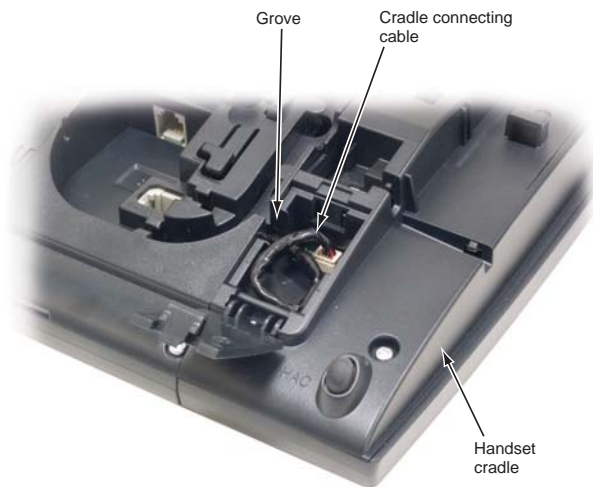


7. Insert the tab on the PSA-R into the slot on the terminal base.
  - The cradle connecting cable should be set into the groove to prevent it from being pinched during the installation.



**Figure 4-21: CONNECT THE PSA**

8. Slide the handset cradle in and down until it clicks into place and set the cradle connecting cable into the groove.



**Figure 4-22: ATTACHING THE PSA CABLES**

9. Insert the modular plug on the handset's coil cord into the handset connect on the back of the terminal. Set the cable into the groove to secure.
10. Remove the existing dial button kit by prying up the upper and lower plastic panels covering the dial pad. Also remove the designation sheet used for labelling the terminal.
11. Lift off the dial button kit while pulling towards the front of the terminal.
12. Insert the tabs of the new dial button kit located at the base of the dial button kit into the notches on the terminal. The bottom tabs must be positioned first in order for the top tabs to seat properly.
13. Push the upper portion of the dial button kit down until it clicks into position. It must click into position for proper connection.

- The dial pad should be flush with the surrounding plastic.
  - If the PSA dial pad needs to be removed, press the release located in the upper left-hand corner of the dial pad toward the dial pad numbers and lift the dial pad up.
14. Press the buttons one by one to make sure that they are not stuck or that they have too much play.
  15. Reattach the designation sheet and the upper and lower panels to the terminal.
  16. Connect the line cord from an analog CO line to the adapter.
    - This should be a PSTN, dedicated CO trunk.
    - This connection can also be to a main system having a PF circuit.
  17. Plug the LAN cable into the keyset and connect the AC adapter into the keyset, if required.



**CAUTION:** Before installing or removing the PSA-R adapter, be sure to first remove the line cord, LAN cable, and then AC adapter from the outlet.

#### 4.13.7.2 Using the PSA-R Adapter:

With an analog line connected, the PSA-R adapter will automatically switch to the analog line connection when power is lost.

##### Placing Calls:

1. When the PSTN line has been activated either manually by the switch or due to a power failure, use the dial pad buttons (0-9, \*, #) to place an outside call.
  - Other than receiving calls, no other keyset functions are available.
  - The # and \* keys are not functional if the DTMF/DP selector switch is set to pulse mode.

##### Answering Calls:

1. When a call is received, the PSA-R adapter rings using the piezoelectric buzzer and the LED blinks. If the PSTN-IP/Digital Switch is set to PSTN (functions as power failure terminal), answer the call by pickup up the handset. If the switch is set to the IP/Digital position, the terminal functions as a system terminal when there is power and as a power failure terminal when the power is off.
2. If an analog line is connected, the PSTN-IP/Digital selector switch can be used to switch to the analog line manually (without having to lose power). If an incoming call is received on the analog line while the PSA-R is connected to regular communications server trunks, the terminating LED blinks and a ring tone is heard.
  - You must complete your present call prior to answering the analog trunk call, otherwise your original call will be disconnected.
  - Other than receiving calls, no other keyset functions are available while used as a power failure terminal (PSTN).

Adjusting the Ring Volume

1. Use the Volume Control buttons located on the PSA-R adapter to adjust the volume level.
  - Other than receiving calls, no other keyset functions are available.

When Power is Restored

1. 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 will continue until the handset is placed into the cradle. Once this occurs, the IP keyset will restart and reconnect to the LAN. If the PSTN mode was manually set by the switch, it must be set back to the IP/Digital position before the adapter will switch modes.
  - Other than receiving calls, no other keyset functions are available.

Setting for Pulse or DTMF

1. Set the DTMF/DP Selector Switch on the bottom of the terminal to either DTMF or DP.



## SECTION 4-14

### POWER FAILURE TERMINALS

#### 4.14.1 Power Failure (Figure 4-23)

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 COIU blade.

The 4COIU blade provides 2 Power Failure Transfer circuits. The CN3 connector provides connection to 2 analog trunk ports, ***which are polarity sensitive (tip to tip, ring to ring)***. The power failure circuits, however, are not polarity sensitive.



***! Important !***

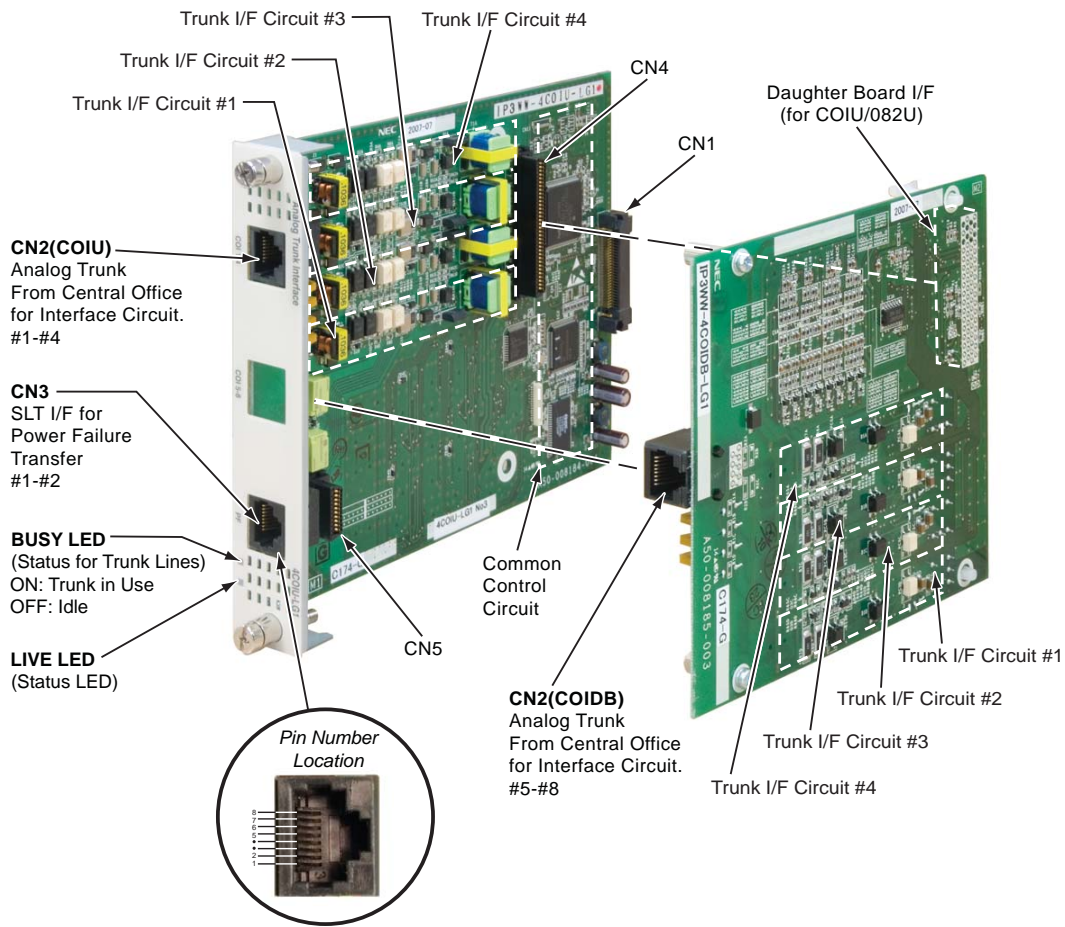
***When connecting the RJ61 cables to the COIU blade, note the position of the Power Failure connector. Do not confuse this connector as the trunk connector.***

#### 4.14.2 Connector Pin-Outs on COIU Blade for Power Failure Circuits

RJ61 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	-

**4.14.3 Installing the Power Failure Terminals:**

1. Connect an RJ-61 connector to the CN3 power failure port on the COIU blade installed in the UX5000 system.
  2. Install a modular jack for each single line terminal supporting PF operation (2 per COIU). The modular jack should be within six feet of the terminal.
  3. For each jack 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.
- When the power goes out, trunks 1 and 2 automatically switch to the SLT terminals to answer/receive calls. Once the power returns, the trunks automatically switch back. Any current calls can be completed first, then the trunks will switch back.



*The 4COIU blade with 4COIUDB is shown.*

**Figure 4-23: POWER FAILURE CIRCUIT INSTALLATION**

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## SECTION 4-15

### SLT ADAPTER

#### 4.15.1 Using the SLT Adapter (Figure 4-24 - Figure 4-26)

The SLT Adapter converts a digital port from an ESIU blade into an analog port which can be used for connecting on-premise 2500 type single line devices (i.e., terminals, fax machines, modems, etc.). Each SLT Adapter requires its own digital port.

- The SLT Adapter supports Caller ID if provided by the telco.

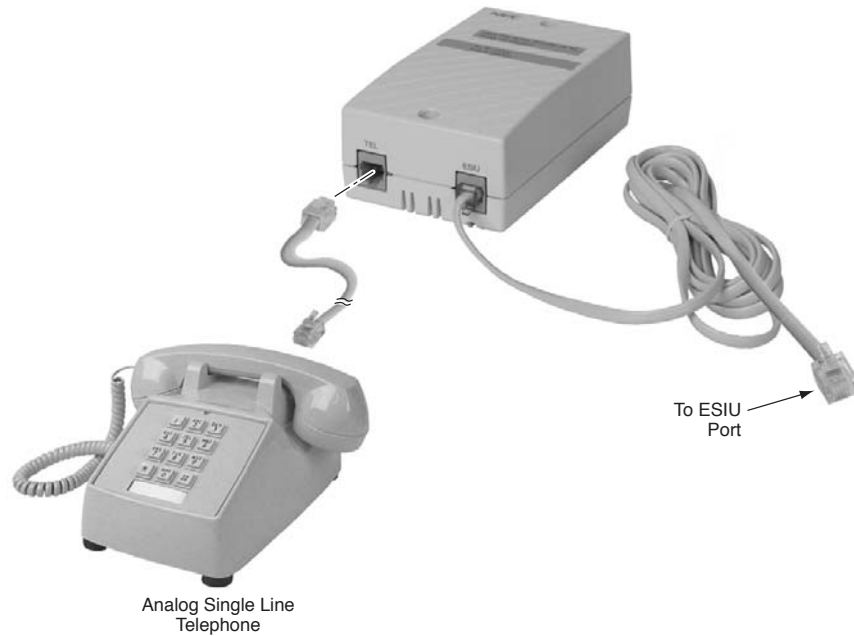
The SLT Adapter provides the ring generator circuit used by the analog device. The unit provides constant current which is fixed at 47 mA.

Maximum Cable Distance From ESIU	600m @ 24 AWG
Loop Resistance	500 ohms

Refer to *Single Line Terminals* in the Software Manual for more details.

### 4.15.2 Installing the SLT Adapter

1. Punch down one pair 24 AWG station cable for each SLT Adapter to a cross-connect block.



**Figure 4-24: INSTALLING THE SLT ADAPTER**

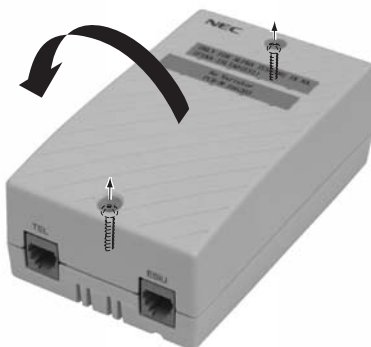
2. Run one-pair cross-connect from the cross-connect block to the extension (B) block for each SLT Adapter.
3. Connect the extension (B) block's 25-pair cable to the corresponding RJ-61 connector on the ESIU blade.
4. Install bridging clips on the extension (B) block.
5. Install a modular jack for the SLT Adapter within six feet of the module's location.
6. Terminate the station cable WHT/BLU - BLU/WHT leads to the RED and GRN lugs in the modular jack.
7. Plug a line cord into the SLT Adapter's connector marked "ESIU". Plug the opposite end of the line cord into the modular jack.
8. Plug a second line cord into the SLT Adapter's connector marked "TEL". The opposite end of the line cord should be plugged into the analog device to be used.

Refer to *Single Line Terminals* in the Software Manual for programming details.



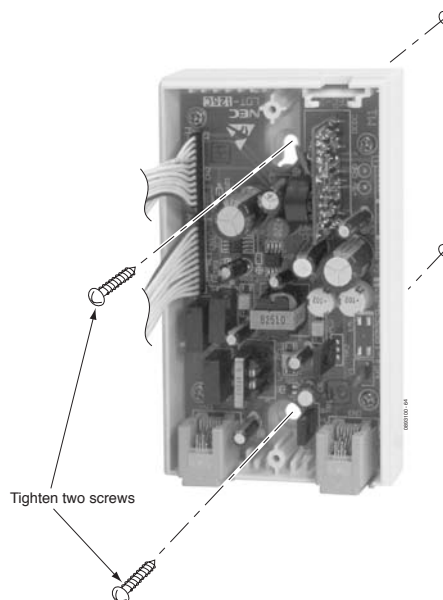
### 4.15.3 Wall-Mounting the SLT Adapter

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 4-25: REMOVING THE COVER**

4. Using the two screws provided with the SLT Adapter, attach the back cover to the desired location.



**Figure 4-26: 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 4-16

### Terminals

- Optional interfaces for features such as PSA Built-In Cradle, Bluetooth Cordless Handset (BCH), Bluetooth Hub (BHA), ADA, and 16 Line Key Modules, can be attached to most terminals.

#### 4.16.1 IP-CTS

This is available as an IP terminal.



**Figure 4-27: IP-CTS Terminal**

The IP-CTS terminal is the system's premier terminal instrument, featuring:

- Color-LCD with Touch Panel
- XML Open Interface Support
- Full Duplex Handsfree
- Gigabit Ethernet
- Menu/Soft Key Operation
- Navigation Pad
- Information Protection/Lock Button
- Backlit Dial Pad
- Backlit Display
- Directory
- XML Application
- Enhancement of Incoming Ringing
- Bluetooth Interface
- Network management (voice quality improvement)
- Downloading
- NAT & Firewall Traversal

- IPv6 (future)
- VPN
- Security Enhancement of Auto Configuration
- Network Authentication
- Security (Summary)
- LLDP (future)
- Protection for Terminal Information

 **At a glance (some features require optional equipment)**

IP-CTS ( <i>IP</i> ) Terminal					
Function Keys:	✓	Digital DESI-Less Line Key/LCD Unit:	No	60-Button DSS Console:	✓
Handsfree (Speakerphone):		IP DESI-Less Line Key/LCD Unit:	No	ADA Adapter:	✓
Full Duplex	✓			APR Adapter:	No
Half Duplex	-			BCH Adapter:	✓
Dual LEDs:	✓	12 Line Key Kit:	No	BHA Adapter:	✓
Backlit LCD:	✓	16-Button DLS	✓	PSA Adapter:	✓
Backlit Display	✓	Headset Jack:	✓	Retro Dial Pad	✓
Soft Keys:	✓	Lock Button:	✓		

#### 4.16.2 Programming the *IP* Terminal for the 911 Dialing When Lock Feature Activated

The Lock button on the IP terminals will provide a user with the ability to prevent calls on their phone while away from their desk. This will prevent all calls from being dialed - including 911. In order to allow anyone to dial 911 from a locked IP terminal, each terminal must be set up to override the lock function. Each IP terminal can have up to 3 emergency numbers defined which can be dialed when a terminal is locked. Perform the following steps on any IP terminal which may be used to dial an emergency number.

1. Enter the terminal's program mode by pressing HOLD CONF \* #.
2. At the log-in screen, enter the user name (default: ADMIN) and password (default: 6633222) and press the OK Soft Key.
3. Press Soft Key 6 for "Application Setting".
4. Press Soft Key 5 for "Emergency Call".
5. Press Soft Key 1, 2 or 3 for the emergency number entry.
6. Dial the emergency number to be allowed (ex: 911).
7. Press Soft Key 4 for "OK" to complete.
8. Continue pressing Soft Key 4 to exit (Exit-Exit-Save). The terminal will reset automatically.



***! Important !***

***Once a locked terminal is used to dial an emergency number, the terminal will be unlocked until the Lock button is pressed again.***

### 4.16.3 Enhanced: DESI-Less

This terminal is available as an IP terminal or as a digital keyset.




**Figure 4-28: DESI-Less Terminal**

The DESI-Less Enhanced terminal features:

- Full-Dot Gray Scale Backlit Double LCD
- DESI-Less Line Key
- Full Duplex Handsfree
- Gigabit Ethernet
- Menu/Soft Key Operation
- Navigation Pad
- Information Protection Button
- Backlit Dial Pad
- Backlit Display

The IP terminal also supports the following features:

- Directory
- XML Application
- Enhancement of Incoming Ringing
- Bluetooth Interface
- Network management (voice quality improvement)
- Downloading
- NAT & Firewall Traversal
- IPv6 (future)
- VPN
- Security Enhancement of Auto Configuration
- Network Authentication
- Security (Summary)
- LLDP (future)
- Protection for Terminal Information

 **At a glance**

Enhanced DESI-Less ( <i>Digital</i> ) Terminal (some features require optional equipment)				
Function Keys:	✓	Digital DESI-Less Line	No	60-Button DSS Console: ✓
Handsfree (Speakerphone):	Full Duplex ✓ Half Duplex -	Key/LCD Unit:		ADA Adapter: ✓
		IP DESI-Less Line Key/ LCD Unit:	No	APR Adapter: No BCH Adapter: ✓
Dual LEDs:	✓	12 Line Key Kit:	✓	BHA Adapter: ✓
Backlit LCD:	✓	16-Button DLS	✓	PSA Adapter: ✓
Backlit Display	✓	Headset Jack:	✓	Retro Dial Pad ✓
Soft Keys:	✓	Lock Button:	No	

 **At a glance**

Enhanced DESI-Less ( <i>IP</i> ) Terminal (some features require optional equipment)				
Function Keys:	✓	Digital DESI-Less Line	No	60-Button DSS Console: ✓
Handsfree (Speakerphone):	Full Duplex ✓ Half Duplex -	Key/LCD Unit:		ADA Adapter: ✓
		IP DESI-Less Line Key/ LCD Unit:	No	APR Adapter: No BCH Adapter: ✓
Dual LEDs:	✓	12 Line Key Kit:	✓	BHA Adapter: ✓
Backlit LCD:	✓	16-Button DLS	✓	PSA Adapter: ✓
Backlit Display	✓	Headset Jack:	✓	Retro Dial Pad ✓
Soft Keys:	✓	Lock Button:	✓	

**4.16.3.1 Programming the Terminal's Display Contrast**

1. With the terminal not plugged in and the handset on-hook, press the "4" and "6" buttons on the dial pad and connect the terminal cables.
2. This places the terminal into Service Class R/W mode. The MW LED will not be lit.
3. Press "5" to enter the Main LCD Contrast Setting mode.
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 terminal to idle condition.

**4.16.3.2 Programming the Terminal's Displayed Names**

1. The names displayed on the DESI-Less terminal must be defined in system programming - Program 15-20-01 : LCD Line Key Name Assignment.

#### 4.16.4 Programming the IP Terminal for the 911 Dialing When Lock Feature Activated

The Lock button on the IP terminals will provide a user with the ability to prevent calls on their phone while away from their desk. This will prevent all calls from being dialed - including 911. In order to allow anyone to dial 911 from a locked IP terminal, each terminal must be set up to override the lock function. Each IP terminal can have up to 3 emergency numbers defined which can be dialed when a terminal is locked. Perform the following steps on any IP terminal which may be used to dial an emergency number.

1. Enter the terminal's program mode by pressing HOLD CONF \* #.
2. At the log-in screen, enter the user name (default: ADMIN) and password (default: 6633222) and press the OK Soft Key.
3. Press Soft Key 6 for "Application Setting".
4. Press Soft Key 5 for "Emergency Call".
5. Press Soft Key 1, 2 or 3 for the emergency number entry.
6. Dial the emergency number to be allowed (ex: 911).
7. Press Soft Key 4 for "OK" to complete.
8. Continue pressing Soft Key 4 to exit (Exit-Exit-Save). The terminal will reset automatically.



***! Important !***

***Once a locked terminal is used to dial an emergency number, the terminal will be unlocked until the Lock button is pressed again.***

#### 4.16.5 Enhanced: 12-Button Display, 24-Button Display

These terminals are available as IP phones or as digital keysets.



Figure 4-29: Enhanced Terminal

These Enhanced terminals feature:

- Full-Dot Gray Scale Backlit LCD
- Full Duplex Handsfree
- Gigabit Ethernet
- Menu/Soft Key Operation
- Navigation Pad
- Information Protection Button
- Backlit Dial Pad
- Backlit Display (standard on IP terminals and **optional** on digital terminals)

The IP terminal also supports the following features:

- Directory
- XML Application
- Enhancement of Incoming Ringing
- Bluetooth Interface
- Network management (voice quality improvement)
- Downloading
- NAT & Firewall Traversal
- IPv6 (future)
- VPN
- Security Enhancement of Auto Configuration
- Network Authentication
- Security (Summary)
- LLDP (future)
- Protection for Terminal Information



 **At a glance**

Enhanced ( <i>Digital</i> ) Terminal (some features require optional equipment)					
Function Keys:	✓	Digital DESI-Less Line	✓	60-Button DSS Console:	✓
Handsfree (Speakerphone):	Full Duplex ✓ Half Duplex -	Key/LCD Unit:		ADA Adapter:	✓
		IP DESI-Less Line Key/ LCD Unit:	No	APR Adapter:	✓
Dual LEDs:	✓	12 Line Key Kit:	✓	BCH Adapter:	✓
Backlit LCD:	✓	16-Button DLS	✓	BHA Adapter:	✓
Backlit Display	✓	Headset Jack:	✓	PSA Adapter:	✓
Soft Keys:	✓	Lock Button:	No	Retro Dial Pad	✓

 **At a glance**

Enhanced ( <i>IP</i> ) Terminal (some features require optional equipment)					
Function Keys:	✓	Digital DESI-Less Line	No	60-Button DSS Console:	✓
Handsfree (Speakerphone):	Full Duplex ✓ Half Duplex -	Key/LCD Unit:		ADA Adapter:	✓
		IP DESI-Less Line Key/ LCD Unit:	✓	APR Adapter:	No
Dual LEDs:	✓	12 Line Key Kit:	✓	BCH Adapter:	✓
Backlit LCD:	✓	16-Button DLS	✓	BHA Adapter:	✓
Backlit Display	✓	Headset Jack:	✓	PSA Adapter:	✓
Soft Keys:	✓	Lock Button:	✓	Retro Dial Pad	✓

#### 4.16.6 Programming the *IP* Terminal for the 911 Dialing When Lock Feature Activated

The Lock button on the IP terminals will provide a user with the ability to prevent calls on their phone while away from their desk. This will prevent all calls from being dialed - including 911. In order to allow anyone to dial 911 from a locked IP terminal, each terminal must be set up to override the lock function. Each IP terminal can have up to 3 emergency numbers defined which can be dialed when a terminal is locked. Perform the following steps on any IP terminal which may be used to dial an emergency number.

1. Enter the terminal's program mode by pressing HOLD CONF \* #.
2. At the log-in screen, enter the user name (default: ADMIN) and password (default: 6633222) and press the OK Soft Key.
3. Press Soft Key 6 for "Application Setting".
4. Press Soft Key 5 for "Emergency Call".
5. Press Soft Key 1, 2 or 3 for the emergency number entry.
6. Dial the emergency number to be allowed (ex: 911).
7. Press Soft Key 4 for "OK" to complete.
8. Continue pressing Soft Key 4 to exit (Exit-Exit-Save). The terminal will reset automatically.

*! Important !*



**Once a locked terminal is used to dial an emergency number, the terminal will be unlocked until the Lock button is pressed again.**

#### 4.16.7 Value: 6-Button Display, 2-Button w/o LCD

These terminals are available as IP phones or as digital keysets.



**Figure 4-30: 6-Button and 2-Button Value Terminals**

These Value terminals feature:

- Full-Dot Black and White LCD
- 6 Line Button with LCD
- 2 Line Button without LCD

The IP terminal also supports the following features:

- Directory
- XML Application
- Enhancement of Incoming Ringing
- Network management (voice quality improvement)
- Downloading
- NAT & Firewall Traversal
- IPv6 (future)
- VPN
- Security Enhancement of Auto Configuration
- Network Authentication
- Security (Summary)
- LLDP (future)
- Protection for Terminal Information

 **At a glance (some features require optional equipment)**

Value ( <i>Digital</i> ) Terminal					
Function Keys:	✓	Digital DESI-Less Line Key/LCD Unit:	No	60-Button DSS Console:	✓
Handsfree (Speakerphone):	Full Duplex -	IP DESI-Less Line Key/LCD Unit:	No	ADA Adapter:	No
				APR Adapter:	No
	Half Duplex ✓			BCH Adapter:	No
Dual LEDs:	✓	12 Line Key Kit:	No	BHA Adapter:	No
Backlit LCD:	No	16-Button DLS	No	PSA Adapter:	No
Backlit Display	No	Headset Jack:	No	Retro Dial Pad	✓
Soft Keys:		Lock Button:	No		
	2-Button Non-Display No				
	6-Button Display ✓				

 **At a glance (some features require optional equipment)**

Value ( <i>IP</i> ) Terminal					
Function Keys:	✓	Digital DESI-Less Line Key/LCD Unit:	No	60-Button DSS Console:	✓
Handsfree (Speakerphone):	Full Duplex ✓	IP DESI-Less Line Key/LCD Unit:	No	ADA Adapter:	No
				APR Adapter:	No
	Half Duplex -			BCH Adapter:	No
Dual LEDs:	✓	12 Line Key Kit:	No	BHA Adapter:	No
Backlit LCD:	No	16-Button DLS	No	PSA Adapter:	No
Backlit Display	No	Headset Jack:	No	Retro Dial Pad	✓
Soft Keys:		Lock Button:	✓		
	2-Button Non-Display No				
	6-Button Display ✓				

#### 4.16.8 Programming the *IP* Terminal for the 911 Dialing When Lock Feature Activated

The Lock button on the IP terminals will provide a user with the ability to prevent calls on their phone while away from their desk. This will prevent all calls from being dialed - including 911. In order to allow anyone to dial 911 from a locked IP terminal, each terminal must be set up to override the lock function. Each IP terminal can have up to 3 emergency numbers defined which can be dialed when a terminal is locked. Perform the following steps on any IP terminal which may be used to dial an emergency number.

1. Enter the terminal's program mode by pressing HOLD CONF \* #.
2. At the log-in screen, enter the user name (default: ADMIN) and password (default: 6633222) and press the OK Soft Key.
3. Press Soft Key 6 for "Application Setting".
4. Press Soft Key 5 for "Emergency Call".
5. Press Soft Key 1, 2 or 3 for the emergency number entry.

6. Dial the emergency number to be allowed (ex: 911).
7. Press Soft Key 4 for "OK" to complete.
8. Continue pressing Soft Key 4 to exit (Exit-Exit-Save). The terminal will reset automatically.



*! Important !*

***Once a locked terminal is used to dial an emergency number, the terminal will be unlocked until the Lock button is pressed again.***

## SECTION 4-17

### TERMINAL LABELING

#### 4.17.1 Labeling Your Terminal (Figure 4-31 - Figure 4-32)

The UX5000 terminals can be easily labeled by removing the clear plastic faceplate on the terminal. These labels can be printed by hand, typewriter, or by using the UX5000 Labelmaker program. Labels for this are on 8 1/2 x 11" paper, which allows for easy printing by any printer - dot matrix, laser, etc.

##### 4.17.1.1 Removing the Faceplate:

1. At the bottom of each of the faceplates, you'll notice a small notch in the faceplate plastic. Use this notch to help lift the faceplate up.
  - There may be 1 or 2 faceplates depending on the type of terminal used.



**Figure 4-31: REMOVING THE FACEPLATE**

#### 4.17.1.2 Replacing the Faceplate:

1. Place the top edge of the faceplate into the small notches on the phone.
2. Gently press the bottom of the faceplate down until it snaps back into place.



Figure 4-32: REPLACING THE FACEPLATE

## SECTION 4-18

### TERMINAL LEGS

#### 4.18.1 Using the Terminal Legs

The UX5000 terminals provide two legs for angling the terminal to best suit each user (this is in addition to the display positioning provided by display terminals). The legs can be set for four different heights.

#### 4.18.2 Adjusting the Leg Height (Figure 4-33 - Figure 4-34)

1. When first placing a terminal, the upper and lower legs are folded out flat. Rotate the lower leg (located at the front of the terminal) towards the back. Lower the upper leg down and gently press the left and right sides into the lower leg. Note that the upper leg has 2 small tabs that fit into notches on the lower leg. After positioning these tabs over the notches, gently press the upper leg down until it clicks into place in the lower leg. This is the first position.



**Figure 4-33: RAISING THE TERMINAL HEIGHT**

2. To set to the second, third, and fourth positions, gently press the lower leg down until the upper leg clicks into the desired position..



**Figure 4-34: INCREASING THE TERMINAL HEIGHT**

3. To set the terminal back to a lower position, first gently press the lower leg down to unsecure the upper leg. Then gently lift the upper leg up and slide it to the desired position.

### 4.18.3 Removing/Attaching the Legs

When necessary, you may need to remove the terminal legs. The process is the same whether it's for a full leg stand (as with the terminals) or a single leg (as with the 16-Button DLS).

1. With the equipment face down and the LCD positioned away from you, press the locking tabs down while sliding the leg unit back.

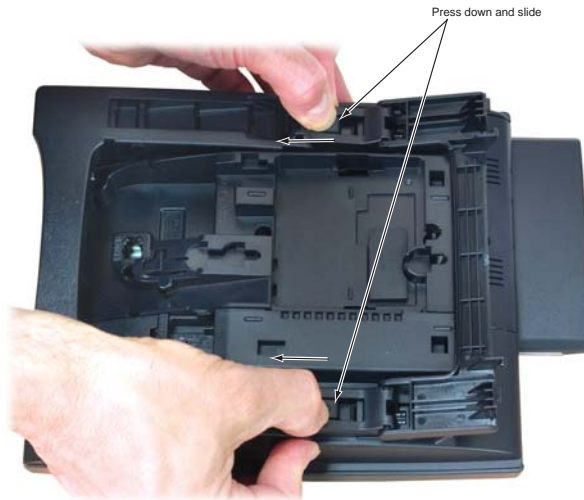


Figure 4-35: REMOVING THE TERMINAL LEG(S)

### 4.18.4 Attaching the Legs

When necessary, you may need to attach the terminal legs. The process is the same whether it's for a full leg stand (as with the terminals) or a single leg (as with the 16-Button DLS).

1. With the equipment face down and the LCD positioned away from you, hold the legs vertically positioning the leg connectors toward the terminal base.
2. Place the leg attachment connectors on the equipment base and slide forward over the base receptors until the leg(s) click into place.



Figure 4-36: ATTACHING THE TERMINAL LEG(S)



## SECTION 4-19

### WALL-MOUNT BRACKET

#### 4.19.1 Using the Wall-Mount Bracket

Each UX5000 terminal/console provides the ability to wall-mount the equipment using a standard wall-mount plate. This allows the terminal to be mounted to a wall at a convenient location.

Terminals with an ADA or APR adapter installed must use a wall-mount adapter (P/N 680610).

#### 4.19.2 Installing the Keypad Wall-Mount Bracket (Figure 4-37 - Figure 4-39)

1. Flatten the legs on the equipment (terminal/console) to be wall-mounted.
2. Connect the line cord cable from the terminal to the jack in the wall-mount plate.
3. Position the equipment to be wall-mounted over the 2 support screws on the wall-mount plate.
4. Gently slide the equipment down over the support screws, ensuring that both the top and bottom screws are covered.
  - The equipment should snap into place. Make sure the equipment is securely attached.

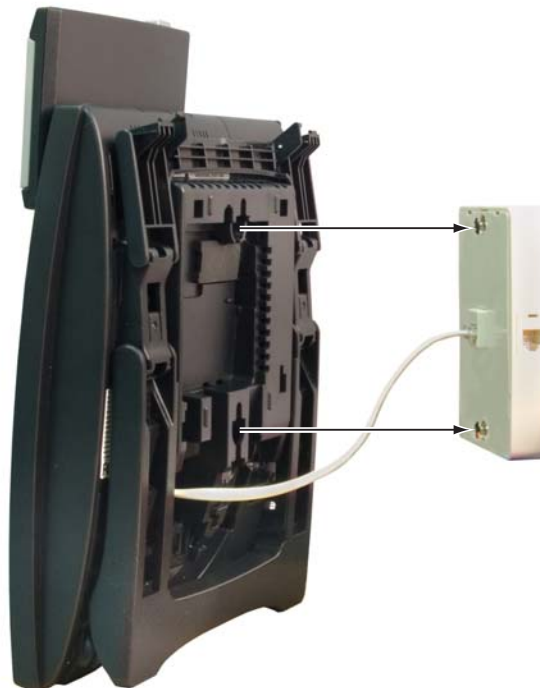


Figure 4-37: ATTACHING TO THE WALL-MOUNT PLATE

5. For terminals, remove the hookswitch hanger by sliding it up.
6. Flip the hookswitch hanger over so the tab is positioned at the top. Slide the hook back into the terminal.



**Figure 4-38: REMOVING THE HOOKSWITCH HANGER**



**Figure 4-39: INSTALLING THE HOOKSWITCH HANGER**

# Chapter 5 - LAN Connection

## SECTION 5-1 LAN DEVICES

### 5.1.1 Using LANs

Using a LAN setup (local area network) with the UX5000 system complies with the ethernet standard (10Base-T/100Base-TX).

To connect a telephone to a LAN connection, the system allows the use of a UX5000 digital IP keyset or an H.323 IP digital telephone.

If connecting a LAN to a WAN (wide area network), follow the instructions included with the ADSL modem or gateway device.

### 5.1.2 IP Address

Equipment/devices used in the UX5000 LAN setup must have an IP address assignment. An IP address assigns a unique address for each device. There are two types of IP addresses: Private and Global. A Private IP Address is not accessible through the internet - a Global IP Address can be accessed through the internet.

With a Private IP Address, with equipment that does not access the internet directly, addresses can be assigned to the equipment within Class A, B or C by assigning a number within the class's range of numbers.

Class	Allowed IP Address	Recommended Environment
A	10.0.0.0 ---10.22.255.255	Large Scale Network
B	172.16.0.0 --- 172.31.255.255	Mid Scale Network
C	192.168.0.0 --- 192.168.255.255	Small Scale Network

With a Global IP Address, connected equipment can be accessed through the internet, so each address must be unique. To avoid a conflict, the addresses are controlled by ARIN (American Registry for Internet Numbers). To obtain a Global IP Address, contact ARIN or apply with your local ISP (internet service provider).

The first one to three groups of numbers (depending on the subnet mask) identify the network on which your computer is located. The remaining group(s) of numbers identify your computer on that network.

### 5.1.3 Subnet Mask

As the IP Address includes information to identify both the network and the final destination, the Subnet Mask is used to set apart the network and destination information.

The default subnet masks are:

Class	Default Subnet Mask
A	255.0.0.0
B	255.255.0.0
C	255.255.255.0

In the above table, you'll see that the Subnet Mask is made up of four groups of numbers. When a group contains the number '255', this is telling the router to ignore or mask that group of numbers in the IP address as it is defining the network location of the final destination. So, for example, if the IP Address were: 172.16.0.10 and the Subnet Mask used was Class B (255.255.0.0), the first two groups of numbers (172.16) would be ignored once they reached the proper network location. The next two groups (0.10) would be the final destination within the LAN to which the connection is to be made.

### 5.1.4 DHCP

DHCP (Dynamic Host Configuration Protocol) is a protocol which assigns a dynamic IP Address. Network control may be easier with DHCP as there is no need to assign and program individual IP Addresses for the LAN equipment. To use a dynamic IP Address, a DHCP server must be provided. The UX5000 system provides the ability to use DHCP.

When equipment which is connected to the LAN (the DHCP client) is requesting an IP Address, it searches the DHCP server. When the request for an address is recognized, the DHCP server assigns an IP Address, Subnet definition, and the IP Address of the router, etc., based upon the system programming.

Note that the CCPU must always have a static IP address. This address is set in **Program 10-12-01 : CCPU Network Setup - IP Address** (default: 192.168.0.10).

### 5.1.5 Gatekeeper

Whenever an H.323 terminal activates, a check is made of the network to see if there are any gatekeepers available. When a gatekeeper is present, it provides users with:

- **Address Translation**  
Users typically do not know the IP addresses of other terminals. When a user makes a call, the gatekeeper translates an alias address (name or number) to the destination address.
- **Admissions Control**  
Users will not all be able to access the network at the same time because of limited shared resources. Gatekeepers may restrict network access based on call authorization, bandwidth usage, or some other criteria. It is important to note that Admissions Control is a way to preserve the integrity of the calls (provide QoS guarantees) that are already up and operating when a user requests access.
- **Bandwidth Control**  
Besides network access control, the gatekeeper offers network managers the ability to restrict or assign bandwidth to different applications along certain protocol conventions. This is another place network managers can enforce QoS guarantees and other enterprise-wide usage policies.

### 5.1.1 IP Hardware

#### ***Blade:***

- **VOIPDB** - The VOIPDBs provide channel (32, 64 or 128) voice packet gateway unit and work as a media gateway for VoIP communication. The VoIP daughter board is required for either VoIP trunks or when using VoIP keysets which talk to non-IP keysets. VoIP keyset-to-VoIP keyset can talk without a media gateway and without using any DSP resources using the Peer-to-Peer feature. Refer to the VoIP feature in the UX5000 Software Manual for more detail on the Peer-to-Peer feature.

#### ***Terminals:***

- **IP-CTS, P/N 0910080 (black)**
- **IP-24e, P/N 0910068 (black) or 0910070 (white)**
- **IP-12e, P/N 0910064 (black) or 0910066 (white)**
- **IP-6v, P/N 0910062 (black)**
- **IP-2v, P/N 0910060 (black)**



# Chapter 6 - Specifications and Parts List

## SECTION 6-1 UX5000 SYSTEM SPECIFICATIONS

UX5000 System Capacities						
	9.5" Chassis	19" Chassis	19" Chassis x 2	19" Chassis x4	Networked System Maximum	Notes
Trunk Ports - Analog (CO/PBX lines) - IP (SIP) - PRI - 1.5M/2M - BRI Channels	16 128 48 16	40 128 96 40	88 128 192 88	184 128 200 184	200 128 200 200	Full license required for maximum number of ports. * Maximum number of simultaneous calls (128) is limited by the IP Pad Channels available.
Extension Ports - Digital/Analog [-24V] - IP Terminals - Analog [-48V]	32 512 * 8	80 512 * 20	160 512 * 44	320 512 * 92	512 512 * 512	Full license required for maximum number of ports. * 512 is peer-to-peer; maximum independent of chassis configuration.
IP-RFP For DECT	32	32	32	32	32	Max Channels: 128 (4Bx32)
Softphone	128					Limited by 1st party CTI max. License required

UX5000 System Capacities						
	9.5" Chassis	19" Chassis	19" Chassis x 2	19" Chassis x4	Networked System Maximum	Notes
TDM Timeslots/ Channels	48	104	208	416	712	
VoIP Channels: - With sRTP - Without sRTP	96 Channels 128 Channels					
Voice Mail Ports	16 Ports					
V.34bis (33.6 kbps) Modem	1 Channel					
* <b>NOTE:</b> Maximum capacities above are determined by maximum blade per function. Additional factors may limit these quantities (such as load factor, available bandwidth, VIF and compression).						

UX5000 System Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	Networked Chassis	Notes
Conference Circuits	64	64	64	64	64	32-parties max per Conference
SLT Adapter	32	80	96	368	512	Limited by load factor
2PGDAD Modules	32	80	96	368	512	Limited by load factor Max. Channels: 96 ACI 8 Door Boxes 8 Pages
Door Box/Door Unlock Contacts	8	8	8	8	8	
Internal Page Zones	64	64	64	64	64	
External Page Zones	9	9	9	9	9	
Universal Blade Slots	3 (1 required for CCPU)	6 (1 required for CCPU)	6	24 (1 required for CCPU)	1200 (1 CCPU required for each site)	
* <b>NOTE:</b> Maximum capacities above are determined by maximum blade configuration allowed. When installing single line sets, DISA, or tie lines, CCPU circuits must be allocated for DTMF receivers. To install single line sets with CO/PBX line access, or when installing immediate-start tie lines, CCPU circuits must be allocated for dial tone detection.						



UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
Chassis: 9.5" Chassis-B1 - Base Chassis with power supply (3 slots)	1	1	1	4	CygniLink: 64 AspireNet: 200 (4 per site)	-
9.5" Chassis-E1 - Expansion Chassis (3 slots)	0	1	1	4	CygniLink: 64 AspireNet: 200 (4 per site)	-
19" Chassis-A1 - Base or Expansion Chassis (6 slots)	0	1	1	4	CygniLink: 64 AspireNet: 200 (4 per site)	-
CCPU Central Processing Unit	1 (installed in CCPU slot)	1 (installed in CCPU slot)	0	1 (installed in CCPU slot)	16: CygniLink 50: AspireNet (1 per site) (installed in CCPU slot)	-
EXIFU Expansion Blade: EXIFU-B (for Base Chassis)	0	1	0	1	50 (1 per site)	-
EXIFU-E (for Expansion Chassis)	0	0	1	3	CygniLink: 48 AspireNet: 150 (3 per site)	-
External Battery Box	1	1	1	1	CygniLink: 16 AspireNet: 50 (1 per site)	-

UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
VMDB-A1/B1 (installs on CCPU)	1	1	0	1	CygniLink: 16 AspireNet: 50 (1 per site)	Channels: 16
MEMDB-A1 (installs on CCPU)	1	1	0	1	CygniLink: 16 AspireNet: 50 (1 per site)	-
VOIPDB-A1 VoIP Media Gateway (installs on CCPU)	1	1	0	1	CygniLink: 16 AspireNet: 50 (1 per site)	-
8ESIU 8 Digital Stations <b>OR</b> 16ESIU 16 Digital Stations	2	5	5	20	32	Extensions: 512 (16x32)
4SLIU 4 Analog Stations <b>OR</b> 8SLIU 8 Analog Stations	2	5	5	20	32	Extensions: 256 (8x32)
4SLIDB 4 Analog Stations Daughter Board <b>OR</b> 8SLIDB 8 Analog Stations Daughter Board (installs on SLIU)	2	5	5	20	32	Extensions: 256 (8x32)
4COIU-LG1 4 Analog/Loop Start Trunks (with ground start)	2	5	6	23	25	Trunks: 200 (8x25)
4COIDB-LG1 8 Analog/Loop Start Trunks (with ground start) (installs on 4COIU-LG1)	2	5	6	23	25	Trunks: 200 (8x25)

UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
2BRIU-A1 2 Two-Channel BRI Circuits	2	5	6	23	T-Bus (TRK): 25 S-Bus (STA): 64	<u>T-Bus</u> Trunks: 50 (2x25) Channels: 100 (2Bx50) <u>S-Bus</u> Extensions: 128 (2x64) Channels: 256 (2Bx128)
2BRIDB-A1 2 Two-Channel BRI Circuits (installs on 2BRIU-A1)	2	5	6	23	T-Bus (TRK): 25 S-Bus (STA): 64	<u>T-Bus</u> Trunks: 50 (2x25) Channels: 100 (2Bx50) <u>S-Bus</u> Extensions: 128 (2x64) Channels: 256 (2Bx128)
1PRIU 24 T1/PRI Trunks / Channels	2	4	4	16	TRK: 8 STA: 21	192 (24Bx8)
4TLIU 4 E&M Tie Line Trunks	2	5	6	23	50	Trunks: 200 (4x50)
4DIOPU 4 DID/OPX Trunks	2	5	6	23	TRK: 50 STA: 128	Trunks: 200 (4x50) Extensions: 512 (4x128)
082U-A1 Digital/SLT Combo Blade (8 Digital Plus 2 SLT Ports)	1	Without MEMDB: 1 With MEMDB: 1 Per Chassis	Without MEMDB: 1 With MEMDB: 1 Per Chassis	Without MEMDB: 1 With MEMDB: 1 Per Chassis	Without MEMDB: 1 With MEMDB: 1 Per Chassis	
APSU-A1	2	2	2	2	CygnLink: 32 AspireNet: 100 (2 per site)	-

UX5000 Blade Capacities						
	9.5" Chassis	19" Chassis w/CCPU	19" Chassis w/o CCPU	19" Chassis x4	System Max. w/ Networking	Max. Trunks/Ext/ Channels
6SHUBU 6 Switch Hub with PoE	2	2	3	12	240 (6x240 sites)	1440 (6x240 sites)
8CNF 8 Circuit Conference Blade	2	5	6	23	32	-
16CNF 16 Circuit Conference Blade	2	5	6	23	32	-
RTU-B1 Router	2	2	2	8	CygniLink: 32 AspireNet: 100 (2 per site)	-
PVAU	2	5	6	23		
GSWU	2	3	3	12		

\* **NOTE:** Maximum capacities above are determined by maximum blade per function. Additional factors may limit these quantities (such as load factor, available bandwidth, VIF and compression).

### Environmental Requirements

Meeting established environmental standards maximizes the life of the system. Refer to the Standard Practices Manual for further information. Be sure that the site is not:

1. In direct sunlight or in hot, cold or humid places.
2. In dusty areas or in areas where sulfuric gases are produced.
3. In places where shocks or vibrations are frequent or strong.
4. In places where water or other fluids comes in contact with the main equipment.
5. In areas near high-frequency machines or electric welders.
6. Near computers, telexes, microwaves, air conditioners, etc.
7. Near radio antennas (including shortwave).

### Environmental Specifications

Chassis, Key Telephones, BCH, BHA, 16LK, Console, ADA, APR. PSA/PSTN

Temperature: 0°C - 40°C (32 - 104°F)

Humidity: 10-90% RH (non-condensing)

**Storage:**

Temperature: -20°C - 60°C (-4 - 140°F)

Humidity: 10-90% RH

Blades - EXIFU, VMDB, MEMDB, ESIU, 1PRIU

Temperature: 0°C - 40°C (32 - 104°F)

Humidity: 10-90% RH (non-condensing)

**Storage:**

Temperature: -20°C - 60°C (-4 - 140°F)

Humidity: 10-90% RH

Blades - SLIU, SLIDB, COIU, COIDB

Temperature: 0°C - 40°C (32 - 104°F)

Humidity: 20-90% RH (non-condensing)

**Storage:**

Temperature: -20°C - 60°C (-4 - 140°F)

Humidity: 20-90% RH

Door Box

Temperature: -20°C - 60°C (-4 - 140°F)

Humidity: 20-80% (non-condensing)

UX5000 Power Supply

**Operating:**

Temperature: 0°C - +40°C (32 - 104°F)

Humidity: 20-90% RH

### Power Requirements

A dedicated 110 VAC 60 Hz circuit located within seven feet of the chassis is required. You should install a separate dedicated outlet for each chassis.

### Site Requirements

The system can be floor-, wall- or rack-mounted. Brackets secure each chassis to a wall. These mounting brackets also provide for a desktop placement.

### UX5000 Electrical Specifications

#### Power Supply

AC Power Supply

Dedicated 15 Amp circuit

Power Requirements: 120 VAC @ 15A Controlling/Base Chassis

Input Voltage: 100VAC to 240VAC (Rated Voltage: 115VAC / 120VAC)

Input Current: 3A (at 100VAC) to 1.5A (at 240VAC) per power supply

Output Voltage Type Supplied: +3.3VDC / +5VDC / -24VDC / -48VDC / -27.3VDC

(Charging Voltage for Battery Backup)

Frequency: 45Hz - 66Hz (Rated frequency: 50/60Hz)

Phase and Wire: Single Phase 2 Line Type

Grounding Requirements: No. 14 AWG copper wire

#### Feeding Voltage

Digital/OPX/DID: -48V

SLT: 25mA / -28V

ADA/APR Adapters, 16-Button DLS, 60-Button DSS, Digital and IP Terminals:

Electrical Standard: FCC Part15 Class B, FCC Part68

Safety Standard: UL/CSA 60950

BCH/BHA Adapters:

Electrical Standard: FCC Part15, Sub Part C, FCC Part68

Safety Standard: UL/CSA 60950

DC Output Method						
Output Voltage Types / Rated Voltage	+3.3V	+5V	-28V	-24V Output for External Fan	-48V	-27.3V (Charging for Backup Battery)
Voltage Variation	+3.135V ~ +3.465V (+3.3V +/- 5%)	+4.75V ~ +5.25V (+5.0V +/- 5%)	-26.6V ~ - 29.4V (-28.0V +/- 5%)	-21.6V ~ - 26.4V (-24.0V +/- 10%)	-43.2V ~ - 52.8V (-48.0 +/- 10%)	-26.5V ~ - 28.2V (-27.3V +/- 3%)
Output Current - Rated Current	8.0A	1.5A	3.0A	0.15A	2.0A	0.2A
Output Current - Output Current Range	0.5A ~ 8.0A	0.0A ~ 1.5A	0.0A ~ 3.0A	0.0A ~ 3.0A	0.0A ~ 2.0A	0.0A ~ 0.2A
Rated Output Power Consumption	26.4W	7.5W	Total 96W	Total 96W	Total 96W	5.46W
Ripple/Noise	Less than 100mV p-p	Less than 100mV p-p	Less than 200mV p-p	Less than 200mV p-p	Less than 200mV p-p	Less than 200mV p-p
Noise Level	Less than - 65dBm	Less than - 65dBm	Less than - 65dBm	Less than - 65dBm	Less than - 65dBm	Less than - 65dBm
Overvoltage Protection	3.7 ~ 8.0V	5.6 ~ 13.0V	-32.3 ~ -38.2V	-32.3 ~ -38.2V	-55.0 ~ -64.8V	-
Overcurrent Protection	9.0 ~ 11.0A	2.0 ~ 3.0A	3.0 ~ 5.0A	3.0 ~ 5.0A	2.5 ~ 4.0A	0.22A (Max)
Connecting Load Capacitor	2000 $\mu$ F	2000 $\mu$ F	8000 $\mu$ F	8000 $\mu$ F	8000 $\mu$ F	-

<b>Mechanical Specifications</b>				
<b>Equipment</b>	<b>Width</b>	<b>Depth</b>	<b>Height</b>	<b>Weight</b>
UX5000 19" Chassis-A1	16.9" (430mm)	14.6" (36mm)	3.6" (88mm)	approx. 8 kg (when all slots occupied)
Value Digital Telephone: DG-2v (2-Button Non-Display) DG-6v (6-Button Display)	179mm 179mm	225mm 225mm	112mm 112mm	0.9 kg 0.9 kg
Value IP Telephone: IP-2v (2-Button Non-Display) IP-6v (6-Button Display)	179mm 179mm	225mm 225mm	112mm 112mm	0.9 kg 0.9 kg
Enhanced Digital Telephone: DG-12e (12-Button Display) DG-24e (24-Button Display) DG-32e (DESI-Less)	179mm 179mm 179mm	258mm 258mm 272mm	112mm 112mm 112mm	1 kg 1 kg 1.1 kg
Enhanced IP Telephone: IP-12e (12-Button Display) IP-24e (24-Button Display) IP-32e (DESI-Less)	179mm 179mm 179mm	258mm 258mm 272mm	112mm 112mm 112mm	1 kg 1 kg 1.1 kg
Enhanced IP-CTS Telephone	227mm	250mm	112mm	1.2 kg
60-Button DSS	224mm	137mm	57mm	600g
16-Button DLS (16LK)	46.3mm	224mm	57mm	300g
ADA	65mm	82mm	25mm	150g
APR	65mm	82mm	25mm	150g
BCH	64mm	223mm	112mm	300g
BHA	65mm	82mm	25mm	150g
BTH	51mm	180mm	33mm	200g
Door Box	3 7/8"	1"	5 1/8"	6.5 oz



<b>IP-CTS Telephone</b>		
<b>LCD</b>	5.7" TFT QVGA 16-bit Color with Backlit Touch Panel 2 Size Display - Double height characters can be displayed Maximum screen size is 28 characters (double byte character 14 characters) x 4 rows	
<b>Lock Button</b>	Terminal information is locked by the Lock button. Status is indicated by a red LED.	
<b>Line Key</b>	LCD Displayed Key	
<b>Fixed Function Keys</b>	Ten keys (0-9, *, #) - Backlit, Cursor and Function Keys (changeable for vertical markets)	
<b>Soft Key</b>	4 Buttons plus CHECK and CLEAR	
<b>Headset Interface</b>	Yes	
<b>Option</b>	<b>Bottom - 1 slot</b>	BCH (Bluetooth Cordless Handset) - uses the Bottom and Handset slots BHA (Bluetooth Hub) ADA (Recording Adapter)
	<b>Handset - 1 slot</b>	BCH (Bluetooth Cordless Handset) - uses the Bottom and Handset slots PSA (PSTN Adapter for Analog)
	<b>Side - 2 slots</b>	16 Line Key (16LK) Module 60-Button DSS Console
<b>Module</b>	Ten Key Dial Pad Kit	
<b>CODEC</b>	Narrow Band - 3.4kHz Audio Bandwidth: G.711, G.711 Appendix II, G.729A, G.729aB Wide Band - 7kHz Audio Bandwidth G.722 - 64kbps	
<b>Handset Bandwidth</b>	Wide Band (300~7000Hz) with Hearing Aid Compatibility (HAC)	
<b>MIC</b>	Omni Directional	
<b>Speakerphone</b>	Full Duplex Wideband (300-7000Hz)	
<b>WAV Ring Tone</b>	Downloadable WAV Music Support (8/16kHz Sampling)	
<b>LAN</b>	2 Ports 10Base-T (IEEE802.3) 100Base-TX (IEEE802.3u) 1000Base-T (IEEE802.3ab)	
<b>Power Feed</b>	Center Power Feed: IEEE802.3aF PoE (need ILPA for CISCO PoE) Local Power Feed: AC Adapter (27V 750mA)	
<b>Power Consumption</b>	Approx. 10.2W without options	
<b>Message/Incoming Call LED</b>	7 Color	

IP-CTS Telephone		
<b>Tilt</b>		Adjustable (main body and LCD)
<b>Wall Mount</b>		Built-In
<b>RoHS Compliant</b>		Yes
IP-CTS Telephone		
Item		Explanation
<b>Telephony Function</b>	Call Protocol	NEC Enhanced SIP / KTS Enhanced SIP RTP (Audio)
	CODEC	Narrow Band - 3.4kHz Audio Bandwidth G.711, G.711 Appendix II, G.729a, G.729aB Wide Band - 7kHz Audio Bandwidth G.722 - 64kbps
	Improved Voice Quality / QoS	Acoustic Echo Canceller Adaptive Jitter Buffer Packet Loss Concealment (G.711 Appendix I) IEEE802.1p Priority ToS Value (IP Precedence, Diffserve (DSCP))
<b>Network Function</b>	Protocol	TCP/IP (IPv4, TCP, UDP) TFTP FTP HTTP/HTTPS DNS
	Plug & Play	DHCP (RFC-1532/1533 compatible) DHCP (Vendor Extensions) (RFC-2131/2132 compatible) Auto Config (NEC proprietary)
	Authentication Protocol	IEEE802.1X Supplicant EAPOL Forwarding (for PC port's supplicant)
	LAN I/F Setting	Speed (Auto, 100M, 10M) Duplex (Auto, Full, Half) Auto-MDI/MDIX (When both Speed and Duplex are set to Auto) Tag VLAN (IEEE802.1Q) Port VLAN (PC Port only)
	NAT	SupPorts SIP-ALG
	Remote Connection	VPN Client (IPsec)
	Security	Authentication (Call control, XML browser, etc.) Encryption (Call control, RTP, etc.)
	Management Function	SIP, CDP QoS Trouble information notification (NEC proprietary) Self-test can be performed with the telephone or with the IP Mhone Manager. Loopback test of voice media can be performed by call control server

IP-CTS Telephone		
<b>Maintenance Function</b>	Configuration	IP Phone Manager (Windows based) Handset Programming WebPro
	Firmware Update	Manual and Automatic Update
<b>Security</b>	Protection of Personal Information	Protection for Terminal information Password Protection Remote Lock
<b>Standard Application (only LCD phone)</b>	Browser	XML Browser
<b>Ringer/MOH Tone</b>	Downloadable	Ringer : Yes Music on Hold: WAV file stored in IP terminal - 3 to 5 files can be stored (8kHz WAV File - 32 seconds max / 16kHz WAV File - 16 seconds max)
<b>Other</b>	Presence Indication	Supported
	Instant Message	Supported. Max. 300 characters, Max. 8 destinations simultaneously. New message indicated by MW LED or chime.
	Menu	Menu / Shortcut Menu
	Desktop	Desktop Icon Wallpaper Screen Saver

Enhanced IP Telephones		
<b>LCD</b>	IP-32e (DESI-Less)	2 LCD Displays - One for Call Control, One for Line Keys 224x96 Dot Matrix Gray Scale LCD with Backlit 28x6 (8x16 Font) or 34x8 (6x12 Font) Line: Alphanumeric 14x6 (16x16 Font) or 18x8 (12x12 Font) Line: Japanese Kanji  2 Size Display - Double height characters can be displayed Maximum screen size is 28 characters (double byte character 14 characters) x 4 rows
	IP-24e, IP-12e	224x96 Dot Matrix Gray Scale LCD with Backlit 28x6 (8x16 Font) or 34x8 (6x12 Font) Line: Alphanumeric 14x6 (16x16 Font) or 18x8 (12x12 Font) Line: Japanese Kanji  2 Size Display - Double height characters can be displayed Maximum screen size is 28 characters (double byte character 14 characters) x 4 rows
<b>Line Key</b>	IP-32e (DESI-Less)	8-Button with Red & Green LEDs 4 Page (8 line x 3 + 8 One Touch)
	IP-24e, IP-12e	12/24-Button with Red & Green LEDs
<b>Lock Button</b>		Terminal information is locked by the Lock button. Status is indicated by an LED.

Enhanced IP Telephones		
<b>Fixed Function Keys</b>	Ten keys (0-9, *, #) - Backlit, Cursor and Function Keys (changeable for vertical markets)	
<b>Soft Key</b>	4 Buttons plus CHECK and CLEAR	
<b>Headset Interface</b>	Yes	
<b>Option</b>	<b>Bottom - 1 slot</b>	ADA (Recording Adapter) BHA (Bluetooth Hub) BCH (Bluetooth Cordless Handset) - uses the Bottom and Handset slots
	<b>Handset - 1 slot</b>	BCH (Bluetooth Cordless Handset) - uses the Bottom and Handset slots PSA (PSTN Adapter for Analog)
	<b>Side - 1 slot</b>	16-Button DLS Module 60-Button DSS Console
<b>Module</b>	DESI-Less Line Key/LCD Unit for IP 12 Line Key (12LK) Kit Ten Key Dial Pad Kit	
<b>CODEC</b>	Narrow Band - 3.4kHz Audio Bandwidth G.711, G.711 Appendix II, G.729a, G.729aB Wideband - 7kHz Audio Bandwidth G.722 - 64kbps	
<b>Handset Bandwidth</b>	300~7000Hz	
<b>MIC</b>	Omni Directional	
<b>Speakerphone</b>	Full Duplex Wideband (300-7000Hz)	
<b>WAV Ring Tone</b>	Downloadable WAV Music Support (8/16kHz Sampling)	
<b>LAN</b>	2 Ports 10Base-T (IEEE802.3) 100Base-TX (IEEE802.3u) 1000Base-T (IEEE802.3ab)	
<b>Power Feed</b>	Center Power Feed: IEEE802.3aF PoE (need ILPA for CISCO PoE) Local Power Feed: AC Adapter (27V 750mA)	
<b>Power Consumption</b>	<b>12-Button Display/24-Button Display:</b> Approx. 8.4W without options <b>DESI-Less:</b> Approx. 8.2W without options	
<b>Message LED</b>	7 Color	
<b>Tilt</b>	Adjustable (main body and LCD)	
<b>Wall Mount</b>	Built-In	
<b>RoHS Compliant</b>	Yes	

Enhanced IP Telephones		
Item	Explanation	
<b>Telephony Function</b>	Call Protocol	NEC Enhanced SIP / KTS Enhanced SIP RTP (Audio)
	CODEC	Narrow Band - 3.4kHz Audio Bandwidth G.711, G.711 Appendix II, G.729a, G.729aB Wide Band - 7kHz Audio Bandwidth G.722 - 64kbps
	Improved Voice Quality / QoS	Acoustic Echo Canceller Adaptive Jitter Buffer Packet Loss Concealment (G.711 Appendix I) IEEE802.1p Priority ToS Value (IP Precedence, Diffserve (DSCP))
<b>Network Function</b>	Protocol	TCP/IP (IPv4, TCP, UDP) TFTP FTP HTTP/HTTPS DNS
	Plug & Play	DHCP (RFC-1532/1533 compatible) DHCP (Vendor Extensions) (RFC-2131/2132 compatible) Auto Config (NEC proprietary)
	Authentication Protocol	IEEE802.1X Supplicant EAPOL Forwarding (for PC port's supplicant)
	LAN I/F Setting	Speed (Auto, 100M, 10M) Duplex (Auto, Full, Half) Auto-MDI/MDIX (When both Speed and Duplex are set to Auto) Tag VLAN (IEEE802.1Q) Port VLAN (PC Port only)
	NAT	SupPorts SIP-ALG
	Remote Connection	VPN Client (IPsec)
	Security	Authentication (Call control, XML browser, etc.) Encryption (Call control, RTP, etc.)
	Management Function	SIP, CDP QoS Trouble information notification (NEC proprietary) Loopback test of voice media can be performed by call control server
<b>Maintenance Function</b>	Configuration	IP Phone Manager (Windows based) Handset Programming WebPro
	Firmware Update	Manual and Automatic Update

Enhanced IP Telephones		
<b>Security</b>	Protection of Personal Information	Protection for Terminal information Password Protection Remote Lock
<b>Standard Application (only LCD phone)</b>	Browser	XML Browser
<b>Ringer/MOH Tone</b>	Downloadable	Ringer : Yes Music on Hold: WAV file stored in IP terminal - 3 to 5 files can be stored (8kHz WAV File - 32 seconds max / 16kHz WAV File - 16 seconds max)
<b>Other</b>	Presence Indication	Supported
	Instant Message	Supported
	Menu	Menu / Shortcut Menu
	Desktop	Desktop Icon Screen Saver

Value IP Telephones		
<b>LCD</b>	with LCD	168x41 Full-Dot Matrix Gray Scale LCD <i>without</i> Backlit 28 characters x 3 row
	Non-Display	None
<b>Line Key</b>	with LCD	6-Button with Red & Green LEDs
	Non-Display	2-Button with Red & Green LEDs
<b>Fixed Function Keys</b>	with LCD	Ten keys (0-9, *, #), Cursor and Function Keys (changeable for vertical markets)
	Non-Display	Supports Keys Provided
<b>Soft Key</b>	with LCD	4 Buttons plus CHECK and CLEAR
	Non-Display	No
<b>Headset Interface</b>		No
<b>Option</b>		No Adapters
<b>Module</b>		Ten Key Dial Pad Kit
<b>CODEC</b>		Narrow Band - 3.4kHz Audio Bandwidth G.711, G.711 Appendix II, G.729a, G.729aB
<b>Handset Bandwidth</b>		Narrow Band with Hearing Aid Compatibility (HAC)
<b>MIC</b>		Omni Directional
<b>Speakerphone</b>		Full Duplex Narrow Band
<b>WAV Ring Tone</b>		No

Value IP Telephones		
<b>LAN</b>	2 Ports 10Base-T (IEEE802.3) 100Base-TX (IEEE802.3u)	
<b>Power Feed</b>	Center Power Feed: IEEE802.3aF PoE (need ILPA for CISCO PoE) Local Power Feed: AC Adapter (27V 750mA)	
<b>Power Consumption</b>	<b>2-Button Non-Display:</b> Approx. 4.0W <b>6-Button Display:</b> Approx. 4.4W with LCD	
<b>Message LED</b>	3 Color	
<b>Tilt</b>	Adjustable (main body and LCD)	
<b>Wall Mount</b>	Built-In	
<b>RoHS Compliant</b>	Yes	
Value IP Telephones		
Item		Explanation
<b>Telephony Function</b>	Call Protocol	NEC Enhanced SIP / KTS Enhanced SIP RTP (Audio)
	CODEC	Narrow Band - 3.4kHz Audio Bandwidth G.711, G.711 Appendix II, G.729a, G.729aB
	Improved Voice Quality / QoS	Acoustic Echo Canceller Adaptive Jitter Buffer Packet Loss Concealment (G.711 Appendix I) IEEE802.1p Priority ToS Value (IP Precedence, Diffserve (DSCP))

Value IP Telephones		
<b>Network Function</b>	Protocol	TCP/IP (IPv4, TCP, UDP) TFTP FTP HTTP/HTTPS DNS
	Plug & Play	DHCP (RFC-1532/1533 compatible) DHCP (Vendor Extensions) (RFC-2131/2132 compatible) Auto Config (NEC proprietary)
	Authentication Protocol	IEEE802.1X Supplicant EAPOL Forwarding (for PC port's supplicant)
	LAN I/F Setting	Speed (Auto, 100M, 10M) Duplex (Auto, Full, Half) Auto-MDI/MDIX (When both Speed and Duplex are set to Auto) Tag VLAN (IEEE802.1Q) Port VLAN (PC Port only)
	NAT	SupPorts SIP-ALG
	Remote Connection	VPN Client (IPsec)
	Security	Authentication (Call control, XML browser, etc.) Encryption (Call control, RTP, etc.)
	Management Function	Trouble information notification (NEC proprietary)
<b>Maintenance Function</b>	Configuration	IP Phone Manager (Windows based) Handset Programming
	Firmware Update	Manual and Automatic Update
<b>Security</b>	Protection of Personal Information	Protection for Terminal information Password Protection Remote Lock
<b>Standard Application (only LCD phone)</b>	Browser	XML Browser
<b>Ringer/MOH Tone</b>	Downloadable	Ringer : No Music on Hold: WAV file stored in IP terminal
<b>Other</b>	Presence Indication	Not Supported
	Instant Message	Not Supported



Enhanced Digital Telephones		
<b>LCD</b>	DS-32e (DESI-Less)	1. Call Control Area 168x55 Dot Matrix Black & White LCD with Backlit 28 characters x 4 rows (6x12 Font) : Alphanumeric 14 characters x 4 rows (12x12 Font) : Japanese Kanji 2. Line Key Area 12 Characters and Icon: Alphanumeric 5 Characters and Icon: Japanese Kanji
	DS-12e, DG-24e	168*55 Dot Matrix Black & White LCD <i>without</i> Backlit 28 characters x 4 rows (6x12 Font) : Alphanumeric 14 characters x 4 rows (12x12 Font) : Japanese Kanji
<b>Line Key</b>	DS-32e (DESI-Less)	8-Button with Red & Green LEDs 4 Page (8 line x 3 + 8 One Touch)
	DS-12e, DG-24e	12/24-Button with Red & Green LEDs
<b>Fixed Function Keys</b>		Ten keys (0-9, *, #), Cursor and Function Keys (changeable for vertical markets)
<b>Soft Key</b>		4 Buttons plus CHECK and CLEAR
<b>Headset Interface</b>		Yes
<b>Handset Bandwidth</b>		300~3400Hz
<b>MIC</b>		Omni Directional
<b>Speakerphone</b>		Wideband (300-3400Hz)
<b>Option</b>	<b>Bottom - 1 slot</b>	ADA (Recording Adapter) APR (Analog Port Adapter with Ringer) BHA (Bluetooth Hub) BCH (Bluetooth Cordless Handset) - uses the Bottom and Handset slots
	<b>Handset - 1 slot</b>	BCH (Bluetooth Cordless Handset) - uses the Bottom and Handset slots PSA (PSTN Adapter for Analog)
	<b>Side - 1 slot</b>	16-Button DLS) Module
<b>Module</b>		12 Line Key (12LK) Kit Backlit LCD for Digital Value Terminal Ten Key Dial Pad Kit DESI-Less Line Key/LCD Unit for Digital
<b>Speakerphone</b>		Full Duplex
<b>Input Voltage</b>		DC 12 - 53 V (terminal end)
<b>Power Consumption</b>		<b>24-Button Display:</b> Approx. 2.0W without options <b>DG-32e (DESI-Less):</b> Approx. 2.2W without options
<b>Message LED</b>		3 Color
<b>Tilt</b>		Adjustable (main body and LCD)
<b>Wall Mount</b>		Built-In
<b>RoHS Compliant</b>		Yes

Value Digital Telephones		
LCD	with LCD	24 characters x 3 row LCD <i>without</i> Backlit
	Non-Display	None
Line Key	with LCD	6-Button with Red & Green LEDs
	Non-Display	2-Button with Red & Green LEDs
Fixed Function Keys		Ten keys (0-9, *, #), Cursor and Function Keys (changeable for vertical markets)
Soft Key	with LCD	4 Buttons plus CHECK and CLEAR
	Non-Display	No
Headset Interface		No
Handset Bandwidth		300~3400Hz
MIC		Omni Directional
Speakerphone		Wideband (300-3400Hz)
Option		No
Module		Ten Key Dial Pad Kit
Speakerphone		Half Duplex
Input Voltage		DC 12 - 53 V (terminal end)
Power Consumption		<b>2-Button Non-Display:</b> Approx. 1.0W <b>6-Button Display:</b> Approx. 1.1W with LCD
Message LED		3 Color
Tilt		Adjustable (main body but not LCD)
Wall Mount		Built-In
RoHS Compliant		Yes

082U Combination Blade
<p><b>Analog Ports:</b>            Constant Current System (20mA / -28Vdc)            Resistance: 600 Ohm (loop)            For Polarity Reversing, Number Display, and Message Waiting: -110VDC            Ringer Signal: 16Hz, 35Vrms, -28Vdc</p>

2PGDAD Module/NTCPU Input/Output	
Audio/Music Input Input Impedance: External Amplifier Input:	47 KOhm @ 1KHz 12dBV 5KOhm
Audio/Paging Output <b>2PGDAD:</b> Output Impedance: Maximum Output: <b>CCPU:</b> Output Impedance: Maximum Output:	600 Ohms @ 1 KHz +8 dBm  600 Ohms @ 1 KHz -3 dBm
Relay Contacts Configuration: Maximum Contact Ratings:	Normally Open 24 VDC, 0.5A 120 VAC, 0.25A
Night Mode Relay Connection, Input Break: Make:	48 VDC 7 mA

10 Key Dial Pad Kit, Dedicated Double-Contact	
<b>Purpose</b>	Added When PSA Used to Provide Dedicated Double-Contact Dial Pad <i>Without</i> Backlit
<b>Target Phone</b>	IP-CTS and Enhanced IP Phones Enhanced Digital Phones
<b>Install To</b>	Dial Pad
<b>AC Adapter</b>	Not Required

12LK Kit - Line Key Kit	
<b>Purpose</b>	Provide 12 Additional Line Keys
<b>Target Phone</b>	DG-12e or IP-12e (Enhanced 12-Button Displays)
<b>Install Location</b>	Line Key Area
<b>Number of Keys</b>	12 Keys
<b>LED Color</b>	Red and Green
<b>AC Adapter</b>	Not Required

<b>16-Button DLS Module</b>	
<b>Purpose</b>	Provide Additional Line/Loop/Programmable Function Keys
<b>Target Phone</b>	IP-CTS Enhanced IP-12e, IP-24e, IP-32e, DG-12e, DG-24e, DG-32e (12-Button Display, 24-Button Display, DESI-Less Phone)
<b>Install To</b>	Left of Terminal (special connector)
<b>Number of Keys</b>	16 Keys with LEDs
<b>LED Color</b>	Red and Green
<b>AC Adapter</b>	Not Required
<b>Power Feed</b>	Digital Keypad: Received from 2-Wire Line IP Terminal: Received from 3-Wire Line
<b>Power Consumption</b>	Approx. 0.5W
<b>RoHS Compliant</b>	Yes

<b>ADA - Recording Adapter</b>	
<b>Purpose</b>	Recording of Handset/Headset/Speakerphone Speech
<b>Target Phone</b>	IP-CTS and Enhanced IP Phones Enhanced Digital Phones
<b>Install Slot</b>	Bottom Slot
<b>Interface to Recorder</b>	For Tape Recorder: Stereo Mini-Jack (3.5 mm diameter) For ACD: Barrel Terminal (AMP)
<b>Recording Playback</b>	Stereo
<b>Playback Path</b>	When voice recording to a PC using a CTI application, it is possible to playback through the telephone.
<b>Feature</b>	Voice Sent to Recorder Hookswitch Information
<b>Power Consumption</b>	0.8W approximately
<b>Power Feed / AC Adapter</b>	Supplied by telephone - no separate AC adapter required (unless over 900m line length from system chassis).
<b>Terminal Impedance</b>	600 ohm or 30 ohm
<b>Confirmation Tone Output</b>	Confirmation tone to far end possible if recording device has confirmation tone generation
<b>Control for Recording</b>	Recording started/stopped by off-hook or VOR (synchronized with voice level) of the recording machine. When the terminal is idle, no recording is done.
<b>RoHS Compliant</b>	Yes
<b>Retrofit</b>	Can connect to UX5000 telephone on an Aspire system.

<b>APR - Analog Port with Ringer Adapter</b>	
<b>Purpose</b>	Connecting Analog Device (fax/modem/cordless phone)
<b>Target Phone</b>	Enhanced Digital Phones
<b>Install Slot</b>	Bottom Slot
<b>Interface</b>	RJ11
<b>Feature</b>	MF Signal Relay to Chassis Ringer Generation Voice Path Connection Not Polarity Sensitive Change of B-Channel (B1/B2) Possible by System
<b>AC Adapter</b>	48v Power Required (when over 600 meters in line length)
<b>Power Feed</b>	Supplied by telephone - no separate AC adapter required (unless over 900m line length from system chassis).
<b>Power Consumption</b>	Approx. 1.2W
<b>Terminal Impedance</b>	600 ohm or complex (selectable)
<b>Ring Output Voltage</b>	50Vrms
<b>Distance (APR-SLT)</b>	Max. 15m (49 feet) - Less than loop resistance 5.4 ohm
<b>Supply Current to Analog Line</b>	Less than 26mA (no branch connection)
<b>RoHS Compliant</b>	Yes
<b>Retrofit</b>	Can connect to UX5000 telephone on an Aspire system.

<b>BGM/MOH Music Source Input</b>	
Input Impedance:	47KOhm / 1Khz
Input Level:	Nominal 250 mV (-10 dBm)
Maximum Input:	1V RMS
Inputs for MOH and BGM are located on the CCPU blade. The 2PGDAD also provides MOH inputs.	

BHA - Bluetooth Hub Adapter	
<b>Purpose</b>	Provide Bluetooth Hub Adapter Using Common Bluetooth Technology
<b>Target Peripheral</b>	Bluetooth Headset or Cell Phone (answering incoming cell phone calls)
<b>Install Slot</b>	Bottom Slot
<b>Wireless Class</b>	1 (1mW100mW)
<b>Distance</b>	2 Meters
<b>Maximum Units Installed</b>	16 within 100 meters (outside) or 50 meters (inside). No 2 devices should be closer than 1 meter.
<b>Bluetooth Version</b>	2.0 Class 1
<b>AC Adapter</b>	IP Phone: Not Required Digital Phone: Not Required
<b>Power Consumption</b>	0.8W
<b>Power Feed</b>	From digital or IP telephone
<b>RoHS Compliant</b>	Yes
<b>Retrofit</b>	<b>Cannot</b> connect to Aspire keyset.
<b>Voice Call</b>	Handsfree with BTC Speaker Call: IP Terminal: Wide band 7 kHz audio bandwidth Digital Terminal: Narrow band 3.4 kHz audio bandwidth Bluetooth Headset Call: Bluetooth headset only supPorts narrow band audio BTH and Bluetooth headset cannot be used simultaneously

<b>BCH - Bluetooth Cordless Handset with Hub</b>	
<b>Purpose</b>	Provide Cordless Handset Terminal Using Common Bluetooth Technology
<b>Cordless Handset Display</b>	Black and White LCD 120x82 Dot Matrix Grayscale LCD <i>with</i> Backlit 20 digit x 2 line (5x12 dot / font): Alphanumeric 10 digit x 2 line (12x12 dot/font): Japanese Kanji Remaining 2 lines for displaying icons
<b>Cordless Handset Keys</b>	8 2-Color Line Keys with LED 6 Function keys (Talk, Disconnect, Hold, etc.) 10 Key Dial Pad (-9, *, #) - Backlit Cursor Keys (4 Direction keys and 1 Enter key)
<b>Target Phone</b>	IP-CTS, IP Enhanced, Digital Enhanced
<b>Install Slot</b>	Charge Cradle Connects to Handset Slot (left of terminal - handset cradle needs to be changed) and Interface Cable Connects to Bottom Slot
<b>Speaker</b>	For Ringing
<b>Soft Keys</b>	No
<b>Options</b>	No Adapters
<b>Headset Jack</b>	Yes
<b>Wireless Class</b>	1 (1mW/100mW)
<b>Distance</b>	100 Meters Outside, 50 Meters Indoors
<b>Maximum Units Installed</b>	16 within above distance. No 2 devices should be closer than 1 meter.
<b>Bluetooth Version</b>	2.0 Class 1
<b>AC Adapter</b>	IP Phone: Not Required (power is fed from IP Phone) Digital Phone: 48v Power Required (when over 400 meters in line length)
<b>Power Consumption</b>	1.5W (with BTH which is approx. 0.5W)
<b>Talk Time</b>	8 hours on full charge
<b>Charge Time</b>	16 hours for full charge
<b>Stand-By Time</b>	30 hours (full charge, interval on/off) 24 hours (full charge, continuously on)
<b>Battery</b>	Li-Ion Battery installed on BTH
<b>Power Feed</b>	From digital or IP telephone
<b>RoHS Compliant</b>	Yes
<b>Retrofit</b>	<b>Cannot</b> connect to Aspire keyset.

<b>BCH - Bluetooth Cordless Handset with Hub</b>	
<b>Voice Call</b>	Handsfree with BTC Speaker Call: IP Terminal: Wide band 7 kHz audio bandwidth Digital Terminal: Narrow band 3.4 kHz audio bandwidth Bluetooth Headset Call: Bluetooth headset only supports narrow band audio BTH and Bluetooth headset cannot be used simultaneously

<b>DESI-Less LK/LCD Unit for IP Phone</b>	
<b>Purpose</b>	Provide Additional LCD Line Keys
<b>Target Phone</b>	Enhanced IP Phones
<b>LCD</b>	2 LCD Displays - One for Call Control, One for Line Keys 224*96 Dot Matrix Gray Scale LCD with Backlit 28*6 (8* 16 Font) or 34*8 (6* 12 Font) Line: Alphanumeric 14*6 (16* 16 Font) or 18*8 (12* 12 Font) Line: Japanese Kanji
<b>Install To</b>	Line Key Area
<b>Number of Keys</b>	8 Keys
<b>LED Color</b>	Red and Green
<b>AC Adapter</b>	Not Required

<b>DESI-Less LK/LCD Unit for Digital Phone</b>	
<b>Purpose</b>	Provide Additional LCD Line Keys
<b>Target Phone</b>	Enhanced Digital Phones
<b>LCD</b>	1. Call Control Area 168*58 Dot Matrix Black & White LCD with Backlit 28*4 (6* 12 Font) Line: Alphanumeric 14*4 (12* 12 Font) Line: Japanese Kanji 2. Line Key Area 12 Characters and Icon: Alphanumeric 5 Characters and Icon: Japanese Kanji
<b>Install To</b>	Line Key Area
<b>Number of Keys</b>	8 Keys
<b>LED Color</b>	Red and Green
<b>AC Adapter</b>	Not Required



<b>DSS Console - 60-Button Direct Station Selection</b>	
<b>Purpose</b>	Provide Additional Function Keys
<b>Install Slot</b>	IP Phone: Right of Terminal (connected to the side option slot using a special cable) Digital Phone: Direct Connection to System
<b>Number of Keys</b>	60 Keys with LEDS Multiple Page Support (8 pages) for Each Key
<b>LED Color</b>	Red
<b>AC Adapter</b>	IP Phone: Required Digital Phone: Not Required
<b>Power Feed</b>	For IP Terminal: 27V 750mA (option) For Digital Keysets: Received from 2-Wire Line
<b>Power Consumption</b>	Approx. 1.0W
<b>RoHS Compliant</b>	Yes

<b>Door Box/External Paging</b>	
Output Impedance:	600 Ohm
Output Level:	Nominal 250 mV (-10 dBm)
Maximum Output:	400 mV RMS
Configuration:	Normally open

<b>PSA - PSTN Adapter for Analog</b>	
<b>Purpose</b>	Provide Functionality In Case of Power Failure or Down Network Capability for PSTN & PBX Connection in Remote Office
<b>Target Peripheral</b>	IP-CTS and Enhanced IP Phones Enhanced Digital Phones
<b>Install Slot</b>	Handset Slot (left of terminal - handset cradle needs to be changed)
<b>Ten Key Dial Pad</b>	Must Change Dial Pad Kit on Telephone To Dedicated Double-Contact Dial Pad Key Without Backlit
<b>PSTN &amp; PBX Selection Key</b>	Yes (surface on the cradle)
<b>PSTN Type</b>	Analog PSTN
<b>Dial Method</b>	MF/DP 20pps/10pps)
<b>AC Adapter</b>	Not Required
<b>Public Standard</b>	UL/CSA 60950, FCC Part. 15 Class B, FCC Part 68, RoHS

### SLT Adapter

Constant Current Circuit: Current fixed at 20mA / -48Vdc  
Resistance (Between SLT Adapter and Telephone): 500 Ohm (loop)

#### Signal Method

On-Hook Condition: 48VDC  
Ringer Signal: 180 Vp-p, 16Hz

### SLIU BLADE / SLIDB

#### Signal Method

On-Hook Condition: -46VDC +- 3VDC  
Message Waiting Signal: -110VDC +- 3VDC or FSK  
Ringer Signal: 16Hz/20Hz/25Hz, 75Vrms +-1Vrms (no load condition), -28Vdc  
Constant Current Type Battery Feeding: (25mA / -28Vdc)


### UL Listed System

A label will be affixed to the product with the letters UL inside a circle which is the symbol used by UL to indicate that a product is UL Listed. If you see a small "c" outside the symbol, then the product also meets the requirements for Canada.

### Cabling Requirements

1. Do not run station cable in parallel with the AC source, telex or computer, etc. If the cables are near cable runs to those devices, use shielded cable with grounded shields or install the cable in conduit.
2. When cables must be run on the floor, use cable protectors.
3. Cable runs for key terminals, single line telephones, Door Boxes, and 2PGDAD Modules must be a dedicated, isolated cable pair.
4. The Telco RJ21X and cross-connect blocks should install to the right of the Controlling /Base chassis. Extension blocks and cross-connect blocks should be installed to the left of the Controlling/Base chassis.

UX5000 Cable Requirements				
Device	Cable Type		Cable Run Length (ft)	Notes
Key Telephone, DSS Console:	CAT5	2-wire 26 AWG	• 1312	
		2-wire 24 AWG	• 2790 (no AC or options) • 3940 (with AC, no options)	
		2-wire 22 AWG	• 2624	
Single Line Telephone, Analog Terminals:	CAT5	2-wire 26 AWG 2-wire 24 AWG 2-wire 22 AWG	3280 4921 8202	Constant Current: 20mA Loop Resistance: Below 600 Ohm (Includes resistance of telephone)
SLT Adapter:	CAT5	2-wire 26 AWG	1148	500 Ohms resistance between SLT adaptor and terminal (including phone's DC termination)
		2-wire 24 AWG	1968	
	2-wire 22 AWG	2624		
SLTAD to SLT:		2-wire 26 AWG	2953	
PSA Adapter:	CAT5	2-wire	Loop Resistance: Below 1700 Ohm	Internal resistance of PSA: 350 Ohms (20mA) (includes resistance of PSA)
2PGDAD Adapter:	CAT5	2-wire 26 AWG	1312	
		2-wire 24 AWG	1968	
		2-wire 22 AWG	2624	
Using Under Carpet Cable: Use stranded wire under carpet cable. The use of this cable decreases the cable run length by 50%.				
CCPU to PC:	LAN UTP 10Base-T/ 100Base- TX	4-wire	328	
NTCPU to Hub:	LAN UTP 10Base-T/ 100Base- TX	10Base-T: 4--wire 100Base-TX: 8-wire	328	

UX5000 Cable Requirements				
Device	Cable Type		Cable Run Length (ft)	Notes
CCPU to Printer:	LAN UTP 10Base-T/ 100Base-TX	10Base-T: 4--wire 100Base-TX: 8-wire	328	
LAN Equipment (IP Telephone, Hub, etc.)	LAN (UTP)	LAN (UTP) cable with category 3 or more for 10Base-T, and 5 or more for 100 Base-TX	328.08 (100 meters)	Regardless of whether it receives power from the AC adapter or switching hub.
				
DID Trunks:	CAT5		Analog DID = 2,500 ohms OPX = 1,500 ohms	Includes SLT or exchange
Tie Line Trunks:	CAT5	2-wire 26 AWG 2-wire 24 AWG 2-wire 22 AWG	13,123 20,997 34,777	Limitation depends on the connecting Router, Multiplexer or Exchange. If the UX5000 is connected to another UX5000 directly, up to 1,500 ohms loop resistance (including system).
2/4/8BRIU to ISDN Terminals:	CAT5	4-wire 24 AWG	Point-Multipoint short connection: 329 Point-Multipoint long connection: 094 Point-Point connection: 164-	
1PRIU to ISDN Terminal:	CAT5	4-wire 24 AWG	164	From main device to IP terminal and within 328'.
ISDN Terminal:	CAT5	4-wire 24 AWG	Point-Multipoint Short Connection: 328 Point-Multipoint Extension: 984 Point-Point: 1640	

## SECTION 6-2

### PARTS LIST

Common Equipment	
Description	Part Number
9.5" Controlling/Base Chassis - 3 blade chassis (IP3NA-3KSU-B1)	0910000
9.5" Expansion Chassis - 3 blade expansion chassis (IP3WW-3KSU-E1)	0910002
19" Chassis - 6 blade chassis (IP3NA-6KSU-A1)	0910004
Upper Joint Bracket Set (IP3WW-UPPER JOINT BRACKET SET)	0910011
Blank Slot Cover Set for 9.5" or 19" Chassis (IP3WW-BLANK SLOT COVER SET)	0910012
AC Power Cable (IP3NE- AC Power Cable -US)	670529
9.5" Chassis Battery Box, short term (10 minutes) (IP3WW-SMALL BATT BOX) (requires Battery Set, P/N 670511)	0910006
9.5" or 19" Chassis Battery Box, long term (3 hours) (IP3WW-LARGE BATT BOX) (requires Battery Set, P/N 670512)	0910007
19" Chassis Battery Box, short term (10 minutes) (2.3AH-12V BATT)	0910009
Long Term Battery Box Rack Mount Bracket Set (IP3WW-L BATT BOX RACK MOUNT BRACKET)	0910014
Battery Mount for 6-Slot Chassis	670509
Short Term Battery Set (12V 0.8Ah Battery) for 9.5" 3-Slot Chassis (IP3WW-SMALL BATT SET) : Includes 2 Batteries	670511
Short Term Battery Set for 19 6-Slot Chassis	670533
Long Term Battery Set (12V 0.8Ah) (IP3WW-LARGE BATT SET) : Includes 3 Batteries	670512
Battery Cable for Internal Battery 2U Chassis (IP3WW -BATT CABLE -INT BATT)	670530
Battery Cable for External Battery 2U Chassis (IP3WW -BATT CABLE -EXT BATT)	670531
Floor Mount Bracket Set for 9.5" Chassis (IP3WW-STD BRACKET SET)	0910013
Floor Mount set for all Chassis when using Long Term Battery Box (3 Blade, 6 Blade and CPU blade for IPS) (IP3NE-FLOOR MOUNT SET)	670019
	670508
Rack Mount Set for 6-Slot Chassis (IP3WW-STD BRACKET SET)	670510
Wall Mount Set for 6-Slot/CPU Blade Chassis	670513
Rack Mount Set for 3-Slot Chassis (IP3-STD BRACKET SET)	0910008

Blades	
Description	Part Number
<b>Common</b>	
CPU Main Processor (IP3NA-CCPU-A1)	0911001
Expansion Interface for Controlling Chassis (IP3WW-EXIFU-B1)	0911020
Expansion Interface for Additional Chassis-Bs (IP3WW-EXIFU-E1)	0911022
Voice Mail Daughter Board on CCPU - 16 Ports (IP3WW-16VMDB-A1)	0911024
Voice Mail Daughter Board w/Modem on CCPU - 16 Ports (IP3WW-16VMDB-B1)	0911026
Memory Expansion Board on CCPU (IP3WW-MEMDB-A1)	0911028 /0911060
32-Port VoIP Daughter Board on CCPU (IP3WW-32VOIPDB-A1)	0911030
64-Port VoIP Daughter Board on CCPU (IP3WW-64VOIPDB-A1)	0911032
128-Port VoIP Daughter Board on CCPU (IP3WW-128VOIPDB-A1)	0911034
In-Skin Router Blade (IP3WW-RTU-B1)	0911062
Application Server/Voice Mail (IP3WW-APSU-A1)	0911064
Switching HUB Base (IP3WW-GSWU-B1)	0911066
Switching HUB Exp. (IP3WW-GSWU-E1)	0911068
Switching Hub Blade (SWHUBU)	
Conference Bridge (IP3WW-PVAU-A1)	0911070

Blades	
Description	Part Number
<b>Trunk Interfaces</b>	
4-Port Analog Loop/Ground Start Trunk Blade ((IP3WW-4COIU-LG1)	0911072
4 Port Analog Loop/Ground Start Trunk Daughter Board for Combination Blade or COIU Blade (IP3WW-4COIDB-LG1)	0911074
2-Port BRI Blade (IP3WW-2BRIU-A1)	0911048
2-Port BRI Daughter Board (IP3WW-2BRIDB-A1)	0911050
1-Port T1/PRI Blade (IP3WW-1PRIU-A1)	0911052
4-Port DID/OPX Blade (IP3WW-4DIOPU-A1)	0911054
4-Port E&M Tie Line Blade (IP3WW-4TILU-A1)	0911056
<b>Station Interfaces</b>	
8-Port Digital Station Blade (IP3WW-8ESIU-A1)	0911036
16-Port Digital Station Blade (IP3WW-16ESIU-A1)	0911038
8-Port Digital Station Daughter Board	0911076
4-Port SLT Blade with Message Waiting (IP3WW-4SLIU-A1)	0911040
8-Port SLT Blade with Message Waiting (IP3WW-8SLIU-A1)	0911044
4-Port SLT Daughter Board with Message Waiting on 4/8SLIU-A1 (IP3WW-4SLIDB-A1)	0911042
8-Port SLT Daughter Board with Message Waiting on 4/8SLIU-A1 (IP3WW-8SLIDB-A1)	0911046
Combination Blade, 8 digital/2 analog extensions (IP3WW-082U-A1)	0911058

Station Equipment	
Description	Part Number
Value Digital 2-Button (DG-2v) Terminal w/o LCD (BK) (IP3NA-2TH TEL(BK))	0910040
Value Digital 6-Button (DG-6v) Terminal w/ LCD (BK) (IP3NA-6TXH TEL(BK))	0910042
Enhanced Digital 12-Button (DG-12e) Terminal w/ LCD (BK) (IP3NA-12TXH TEL(BK))	0910044
Enhanced Digital 12-Button (DG-12e) Terminal w/ LCD (WH) (IP3NA-12TXH TEL(WH))	0910046
Enhanced Digital 24-Button (DG-24e) Terminal w/ LCD (BK) (IP3NA-24TXH TEL(BK))	0910048
Enhanced Digital 24-Button (DG-24e) Terminal w/ LCD (WH) (IP3NA-24TXH TEL(WH))	0910050
Enhanced Digital 12-Button Display Terminal + BCH (BK) (IP3NA-12TXH(BT) TEL(BK))	0910052
Enhanced Digital 12-Button Display Terminal + PSA (BK) (IP3NA-12TXH(PA) TEL(BK))	0910054
Enhanced Digital DESI-Less (DG-32e) (BK) (IP3NA-8LTXH TEL(BK))	0910056
Enhanced Digital DESI-Less (DG-32e) (WH) (IP3NA-8LTXH TEL(WH))	0910058
Value IP 2-Button (IP-2v) Terminal w/o LCD (BK) (IP3NA-2TIH TEL(BK))	0910060
Value IP 6-Button (IP-6v) Terminal w/ LCD (BK) (IP3NA-6TIXH TEL(BK))	0910062
Enhanced IP 12-Button (IP-12e) Terminal w/ LCD (BK) (IP3NA-12TIXH TEL(BK))	0910064
Enhanced IP 12-Button (IP-12e) Terminal w/ LCD (WH) (IP3NA-12TIXH TEL(WH))	0910066
Enhanced IP 24-Button (IP-24e) Terminal w/ LCD (BK) (IP3NA-24TIXH TEL(BK))	0910068
Enhanced IP 24-Button (IP-24e) Terminal w/ LCD (WH) (IP3NA-24TIXH TEL(WH))	0910070
Enhanced IP 12-Button Display Terminal + PSA (BK) (IP3NA-12TIXH(PA) TEL(BK))	0910072
Enhanced IP 12-Button Display Terminal + BCH (BK) (IP3NA-12TIXH(BT) TEL(BK))	0910074
Enhanced IP DESI-Less (IP-32e) (BK) (IP3NA-8LTIXH TEL(BK))	0910076
Enhanced IP DESI-Less (IP-32e) (WH) (IP3NA-8LTIXH TEL(WH))	0910078
IP-CTS Terminal (BK) (IP3NA-320TISXH TEL(BK))	0910080
Retrofit Keypad Assembly (BK) (IP3NA-BS-Retro(BK))	0910102
Retrofit Keypad Assembly (WH) (IP3NA-BS-Retro(WH))	0910103
12LK Kit (BK) (IP3NA-12LK-L(BK))	0910104
12LK Kit (WH) (IP3NA-12LK-L(WH))	0910106
DESI-Less LK/LCD Unit for Digital Terminal (BK) (IP3NA-8LKD-L(BK))	0910108
DESI-Less LK/LCD Unit for Digital Terminal (WH) (IP3NA-8LKD-L(WH))	0910110
DESI-Less LK/LCD Unit for IP Terminal (BK) (IP3NA-8LKI-LD(BK))	0910112
DESI-Less LK/LCD Unit for IP Terminal (WH) (IP3NA-8LKI-LD(WH))	0910114

<b>Corded Headsets</b>	
<b>Description</b>	<b>Part Number</b>
Plantronics Polaris Headsets:	
Polaris SupraPlus/NC-M (monaural with noise canceling transmitter)	750643
Polaris SupraPlus/NC-B (binaural with noise canceling transmitter)	750645
Polaris SupraPlus/VT-M (monaural with voice tube transmitter)	750644
Polaris Encore/VT-M (monaural with voice tube transmitter)	750634
Polaris Encore/NC-B (binaural with noise canceling transmitter)	750635
Polaris Tristar/VT-M (monaural with noise canceling transmitter)	750630
Polaris Mirage/VT-M (monaural with voice tube transmitter)	750631
Accessories/Replacement Parts for Polaris Headsets:	
Polaris Extension Cable-10 Ft (for all Polaris models)	750655
Ear Cushion (Pkg of 2) (for Supra & Encore models)	750656
Clothing Clip (Qty 1) (for Mirage, Tristar & encore models)	750657
Wind Screen (Qty 1) (for Supra NC models - not SupraPlus)	750650
Clear Voice Tube (for Encore & Tristar models)	750652
Clear Voice Tube (for Mirage & Supra models)	750651
Rainbow Voice Tube Pack (Pkg of 6) (for Encore & Tristar models)	750654
Rainbow Voice Tube Pack (Pkg of 6) (for Mirage & Supra models)	750653
Corded Headset 2-Page Brochure (Pkg of 25)	750629

<b>Peripheral Station Equipment</b>	
<b>Description</b>	<b>Part Number</b>
Analog Port Adapter w/Ringer (APR) (IP3NA-APR ADAPTER(BK))	0910082
Analog Recording Adapter (ADA) - black (IP3WW-ADA ADAPTER(BK))	0910084
Bluetooth Hub Adapter (Class 2) (BHA) - black (IP3NA-BHA ADAPTER(BK))	0910086
PSTN Adapter for Analog (PSA) - black (IP3NA-PSA ADAPTER(BK))	0910088
PSTN Adapter for Analog (PSA) - white (IP3NA-PSA ADAPTER(WH))	0910090
Bluetooth Cordless Handset with Hub (Class 1) (BCH) - black (IP3NA-BCH ADAPTER(BK))	0910092
60-Button Console (BK) (IP3WW-60D DSS(BK))	0910094
60-Button Console (WH) (IP3WW-60D DSS(WH))	0910096
16-Button DLS (16LK Unit) (BK) (IP3WW-16DL DLS(BK))	0910098
16-Button DLS (16LK Unit) (WH) (IP3WW-16DL DLS(WH))	0910100
2PGDAD Module (for Door Box/Page/ACI) (IP1WW-PGDAD)	0910015
SLT Adapter (IP1NA-1SLTAD)	0910010
Door Box	92245
In-Line Power Adapter (ILPA) for IP Terminals	780122
AC Adapter (AC-2R)	780135
Braille Dial Designation Sticker (for all UX5000 Terminals)	690612
Wall-Mount for Use With Adapters	680610



Equipment	
Description	Part Number
Compact Flash Media for IVR Application (AKS IVR APP CF)	670839
Q-master External Application Server (AKS Qmaster APP Server)	670841
XML Application (Common Key, IPS, UBSD) (AKSU XML APP CD)	670842
Hotel/Motel PMS Application (AKSU PMS APP UNIT)	859451
Kentrox Satellite 932 CSU	859451
MISC.	
Compact Flash Media 4 Pt/16 Hr 256M for IntraMail with VRS (AU IntraMail - 256M APP CF)	0910505
Compact Flash Media 4 Pt/32 Hr 512M for IntraMail (AU IntraMail - 512M APP CF)	0910506
Compact Flash Media 2G for UX Mail - 125 hour (AU UM - 2G APP CF)	0910530
Compact Flash Media 8G for UX Mail - 550 Hour (AU UM - 8G APP CF)	0910531
Compact Flash Media for Multi-Media Conference Bridge (AU CONF BRIDGE APP CF)	0910532
Compact Flash Media for IVR Application (AU IVR APP CF)	0910533
Desktop Application CD for User Desktop (AU DESKTOP PC APP CD) consists of:	0910527
- UX5000 Desktop Suite (Softphone, PC Assistant, PC Attendant)	
- Interactive UG	
- End-User Programming	
- UX5000 inDepth	
System Application CD (AU SYSTEM PC APP CD) consists of:	0910528
- UX5000 CallAnalyst	
- UX5000 PCPro	
- UX5000 inDepth MIS	

DESI Labels	
Description	Part Number
DESI Sheet for 2-Button IP/Digital Value Terminal (3parts/sheet) (DESI IP3NA-2T (25 PKG))	0910700
DESI Sheet for 6-Button IP/Digital Value Terminal (3parts/sheet) (DESI IP3NA-6T (25 PKG))	0910701
DESI Sheet for 12-Button IP/Digital Enhanced Terminal (2parts/sheet) (DESI IP3NA-12T (25 PKG))	0910702
DESI Sheet for 24-Button IP/Digital Enhanced Terminal (2parts/sheet) (DESI IP3NA-24T (25 PKG))	0910703
DESI Sheet for Standard Dial/FNC (DESI IP3NA-NewUI DIAL (25 PKG))	0910704
DESI Sheet for CTS Terminal Dial/FNC (DESI IP3NA-SOPHI DIAL (25 PKG))	0910705
DESI Sheet for Retro Dial/FNC (DESI IP3NA-Retro DIAL (25 PKG))	0910706
DESI Sheet for 16-Button DLS (16LK) (3parts/sheet) (DESI IP3NA 16LK (25 PKG))	0910707
DESI Sheet for 60-Button DSS Console (1parts/sheet) (DESI IP3WW-60D (25 PKG))	0910708

Spare Parts	
Description	Part Number
LCD Unit W/ backlit (BK) (IP3NA-LBU-LCD(BK))	0910116
LCD Unit W/ backlit (WH) (IP3NA-LBU-LCD(WH))	0910118
Wall Mount Unit (IP3NA-WM)	0910120
Spare Narrow Band Handset (BK) (IP3NA-HANDSET Narrow (BK))	0912001
Spare Narrow Band Handset (WH) (IP3NA-HANDSET Narrow (WH))	0912002
Spare Wide Band Handset (BK) (IP3NA-HANDSET Wide (BK))	0912003
Spare Wide Band Handset (WH) (IP3NA-HANDSET Wide (WH))	0912004
Spare Handset Cord 12 FT (BK) (IP3WW-Handset Cord 12 FT (BK) SET)	0912005
Spare Handset Cord 12 FT (HW) (IP3WW-Handset Cord 12 FT (WH) SET)	0912006
Spare Handset Cord 25 FT (BK) (IP3WW-Handset Cord 25 FT (BK) SET)	0912007
Spare Handset Cord 25 FT (BK) (IP3WW-Handset Cord 25 FT (WH) SET)	0912008
Spare Handset Hanger (BK) (IP3WW-Handset Hanger (BK) SET)	0912009
Spare Handset Hanger (WH) (IP3WW-Handset Hanger (WH) SET)	0912010
Spare Line Cord (BK) (IP3WW-Line Cord (BK) SET)	0912011
Push to Mute Handset (IP3NA PTM Handset (BK))	0912012
Push to Talk Handset (IP3NA PTT Handset (BK))	0912013
Spare Plastic Cover Kit (2 BTN) (IP3WW-LKPANEL 2BTN SET)	0912014
Spare Plastic Cover Kit (6 BTN) (IP3WW-LKPANEL 6BTN SET)	0912015
Spare Plastic Cover Kit (12 BTN) (IP3WW-LKPANEL 12BTN SET)	0912016
Spare Plastic Cover Kit (24 BTN) (IP3WW-LKPANEL 24BTN SET)	0912017
Spare Plastic Cover Kit (16 BTN) (IP3WW-LKPANEL 16BTN SET)	0912018
Spare Plastic Cover Kit (60 BTN) (IP3WW-LKPANEL 60BTN SET)	0912019
Digital Base (IP3NA-Digital Value Base UNIT)	0912020
Digital Standard LCD (BK) (IP3NA-DLU-LCD(STD) (BK))	0912021
Digital Standard LCD (WH) (IP3NA-DLU-LCD(STD) (WH))	0912022
IP Base (IP3NA-IP Value Base UNIT)	0912023
IP LCD w/ Backlit (BK) (IP3NA-ILU-LCD(STD) (BK))	0912024
IP LCD w/ Backlit (WH) (IP3NA-ILU-LCD(STD) (WH))	0912025
Ten Key Dial Pad Kit (IP3NA-TENKEY(STD) SET)	0912026
Standard Function Key (BK) (IP3NA-FNCKEY(STD) (BK) SET)	0912027
Standard Function Key (WH) (IP3NA-FNCKEY(STD) (WH) SET)	0912028
12-Line Key w/ Soft Key (IP3WW-12LKSoft SET)	0912029
12-Line Key (IP3WW-12LK SET)	0912030
Cradle (BK) (IP3NA-Cradle(STD) (BK))	0912032
Cradle (WH) (IP3NA-Cradle(STD) (WH))	0912033
Enhanced Telephone Directory Card Unit	680738
Value Telephone Directory Card Unit	680739
IP3NA-8WV AC CHARGER	0910121
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TYX3588-010197 (Headset Adapter)	0910123

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