

NEC

1. Installing Cabinets

2. PCB Installation and Startup

3. Installing Extensions and Trunks

4. Telephones and Optional Equipment

5. Data and SMDR

6. LAN Connection

7. Specifications and Parts

The logo for Aspire, featuring the word "Aspire" in a blue, italicized, sans-serif font.

Hardware Manual

02.16

Technical Support Web Site:
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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:

NEC Unified Solutions, Inc.
4 Forest Parkway
Shelton, CT 06484
necunifiedsolutions.com

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Section 1: Installing the Main and Expansion Cabinets

GENERAL PRECAUTIONS

- 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.
- Use only commercial AC power to prevent shock or fire.
- Use the power cord supplied for the cabinet.
- Do not bundle AC power cords together to prevent the cords from overheating.
- Make sure the cabinet has a proper earth ground.
- Install batteries with the correct polarity to prevent damaging equipment.
- The cabinet should not be placed on unstable surfaces to avoid damage.

INSTALLING THE MAIN CABINET

Unpacking

Unpack the equipment and check it against your equipment lists. 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.

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 America specifications in the Standard Practices Manual (P/N N2710STD**).

Site Requirements

The system can be floor-mounted, wall-mounted, or rack-mounted. It is equipped with a bracket which can be used to secure each cabinet in any of these installations. Ensure that enough space is available to allow the installation of an expansion cabinet above the Main Cabinet.

The system requires a three-prong dedicated 110 VAC 60 Hz circuit (NEMA 5-15 receptacle) located within 7 feet of the AC receptacle. Telco should install the RJ21X to the right of the Main Cabinet. Extension blocks should be installed to the left of the Main Cabinet.

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

- 1 green 14AWG ground wire (installed to the backplane)
- 1 black three-prong power cord (packed outside the cabinet)
- 1 19" mounting bracket for floor or wall mounting packed outside the cabinet

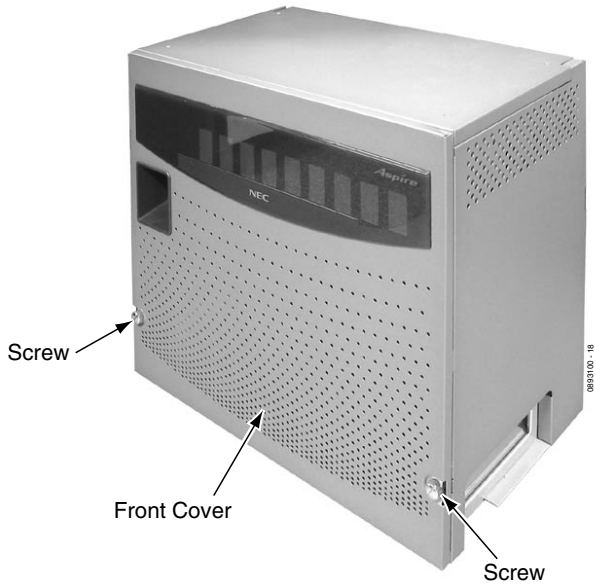
Environmental Requirements

Meeting and maintaining established environmental standards maximizes the life of the system. Be sure that the site selected for the cabinet 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 oil comes in contact with the unit.
5. In areas near high-frequency machines or electric welders.
6. Near computers, telexes, microwaves, air conditioners, etc.
7. Near radio antennas (including shortwave).

Removing the Front Cover (Figure 1-1)

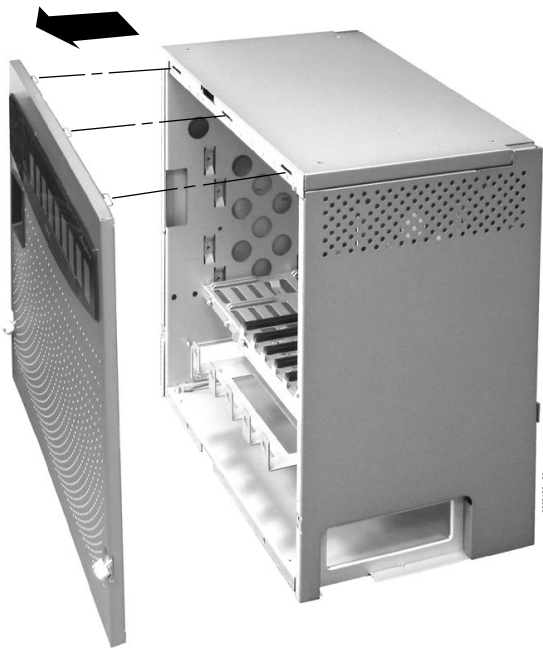
1. Position the cabinet on the floor near the MDF within 7 feet of the dedicated AC outlet. (Do not secure the cabinet to the wall at this time).
2. Loosen two front panel retaining screws.
3. Slide the front cover to the right then pull straight out.



Step 1



Step 2



Step 3

Figure 1-1: REMOVING THE FRONT COVER

Removing the Side Panels (Figure 1-2)

1. Loosen the side panel retaining screws located on the front of the cabinet. Remove the side panel covers of the Main Cabinet by pulling out slightly then moving it towards the back of the cabinet to unhook the panel.

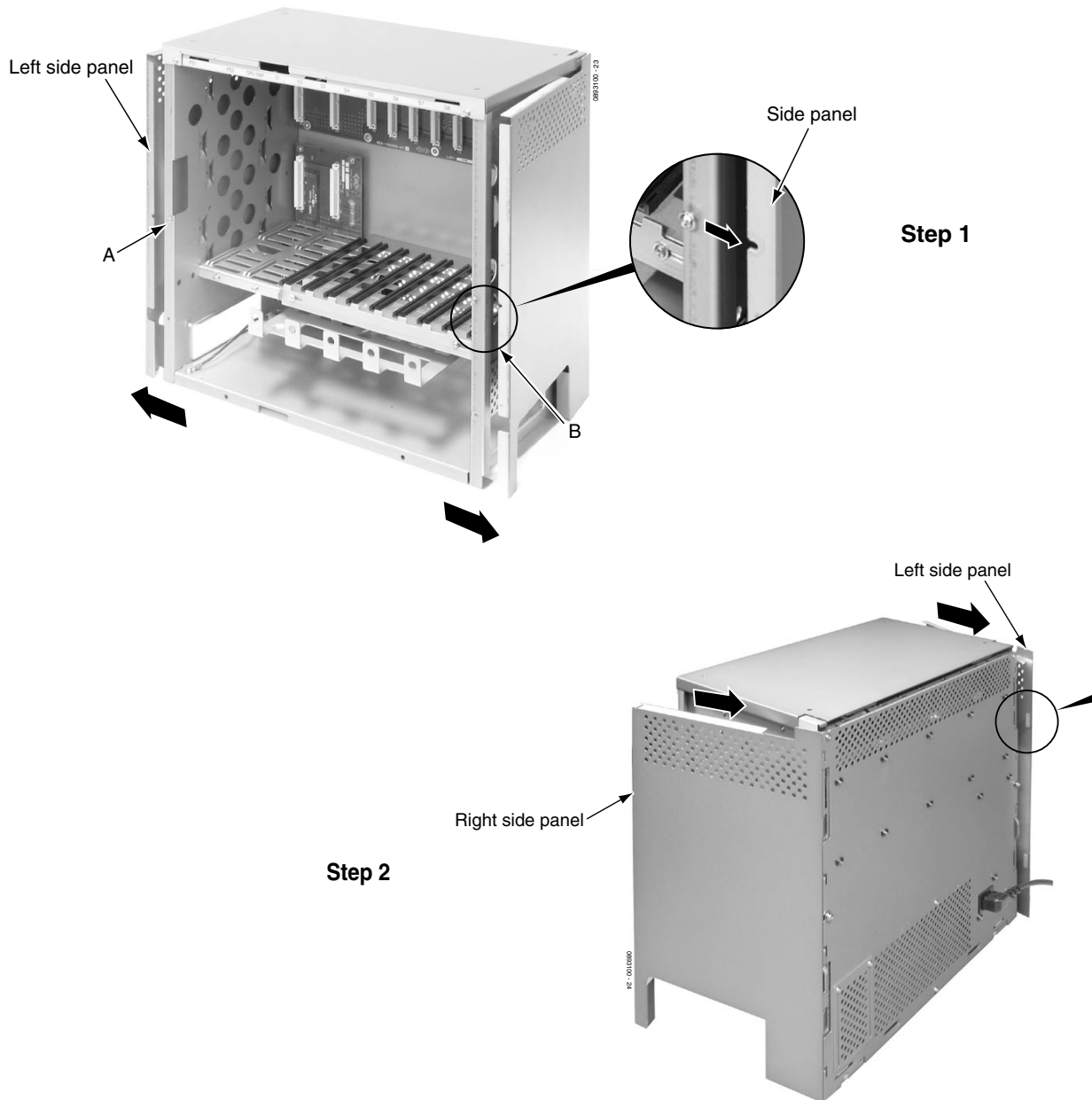


Figure 1-2: REMOVING THE SIDE PANELS

Securing the Main Cabinet to the Floor (Figure 1-3 - Figure 1-7)

1. Install the wall bracket on the floor providing the appropriate spacing as shown below.

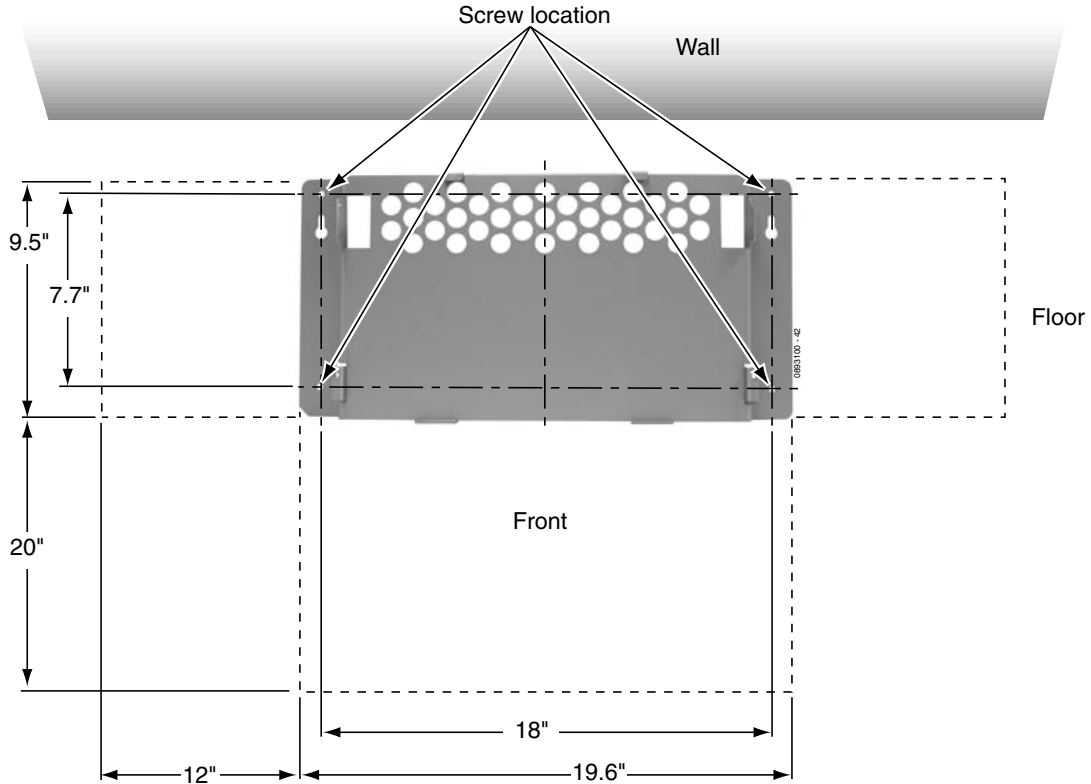


Figure 1-3: INSTALLING THE MOUNTING BRACKET

2. Secure the mounting bracket to the floor using 4 6mm anchor bolts.

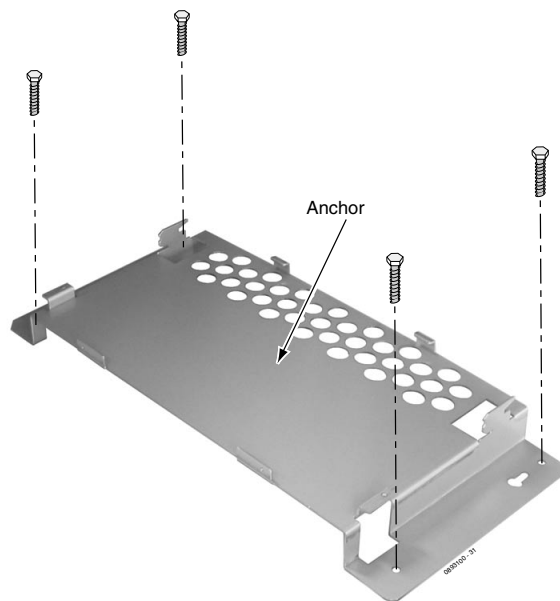


Figure 1-4: SECURE THE MOUNTING BRACKET WITH THE SCREWS

3. Remove the 2 screws from the front of the mounting bracket.

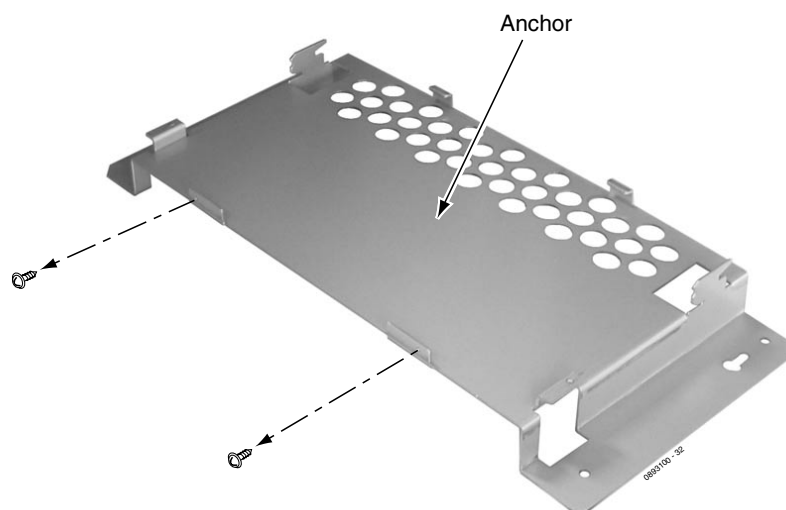


Figure 1-5: REMOVE THE SCREWS FROM THE MOUNTING BRACKET

4. Place the cabinet on the secured mounting bracket and slide backwards.

1

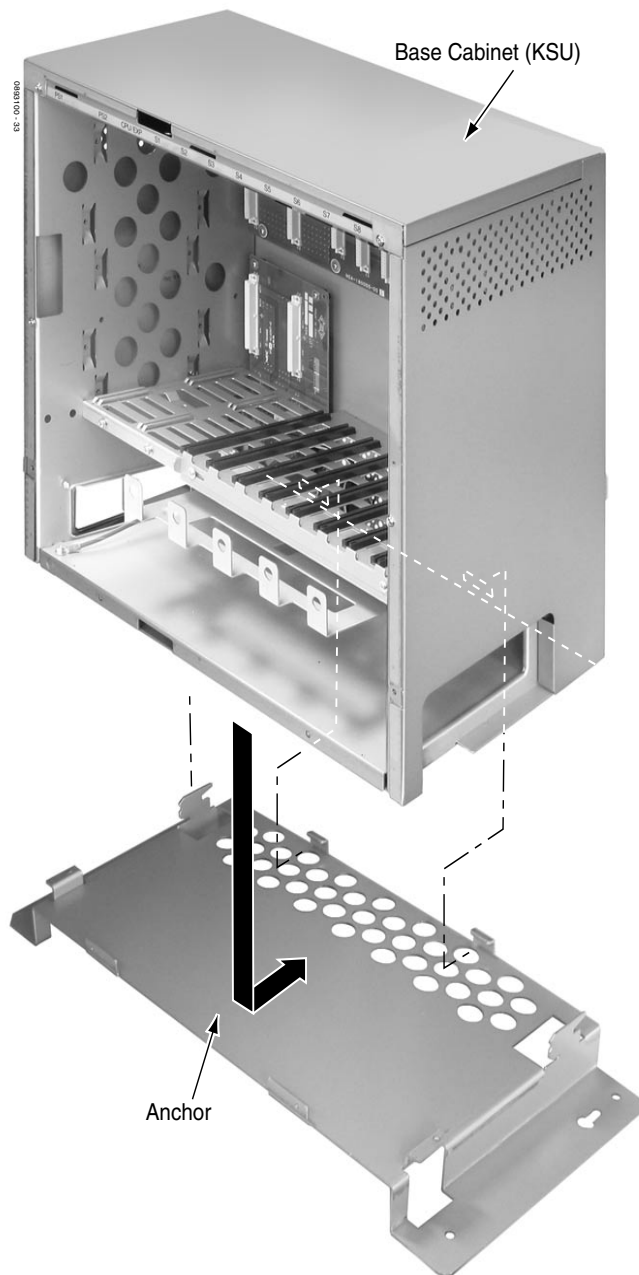


Figure 1-6: ATTACHING THE CABINET TO THE MOUNTING BRACKET

5. Secure the cabinet to the mounting bracket by reinstalling the two screws removed from the mounting bracket in step 2.

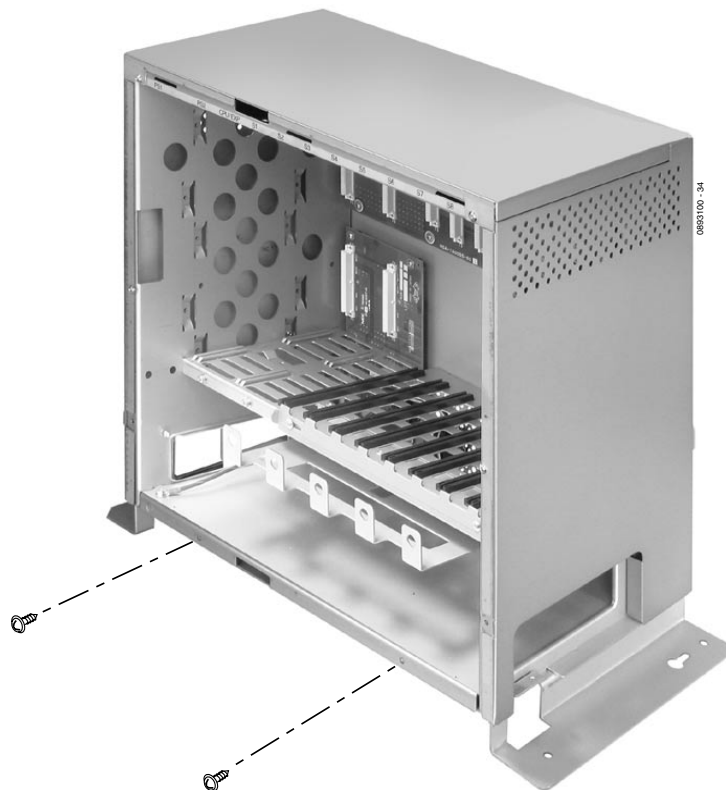


Figure 1-7: REINSTALL SCREWS

Securing the Main Cabinet to the Wall (Figure 1-8 - Figure 1-12)

1. Install the wall bracket to the wall providing the appropriate spacing as shown below. The two top key-hole screws should protrude from the wall about 1/8" to allow the bracket to slide over the screw heads.
It is suggested that plywood first be installed on the wall where the cabinet will be positioned. This allows for secure anchoring of the screws which will be supporting the weight of the cabinet.
Note: To comply with UL requirements, please note that only one cabinet should be wall mounted. Two cabinets result in too much weight to be safely mounted together.

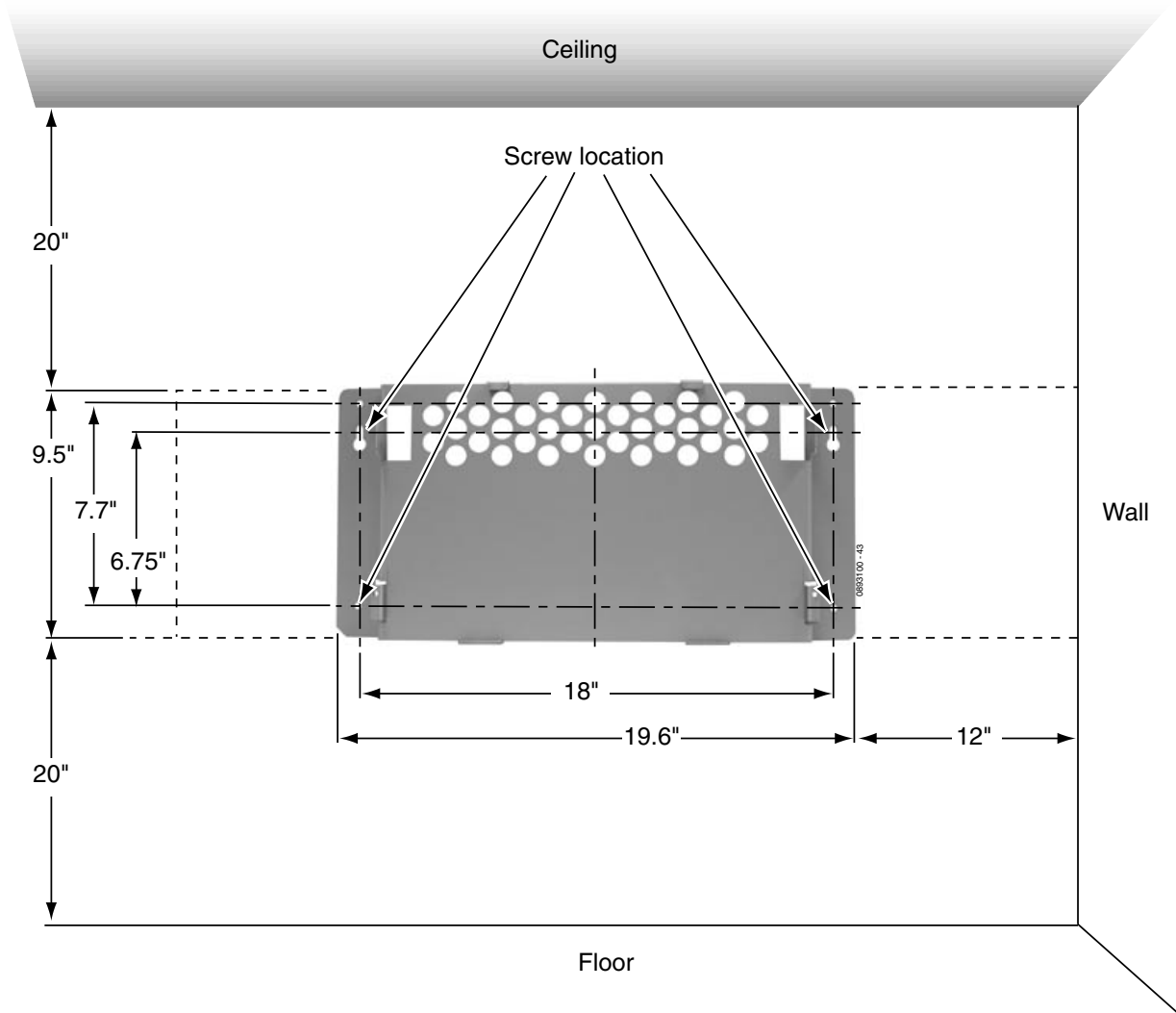


Figure 1-8: INSTALLING THE MOUNTING BRACKET

2. Remove the 2 screws from the back of the cabinet.

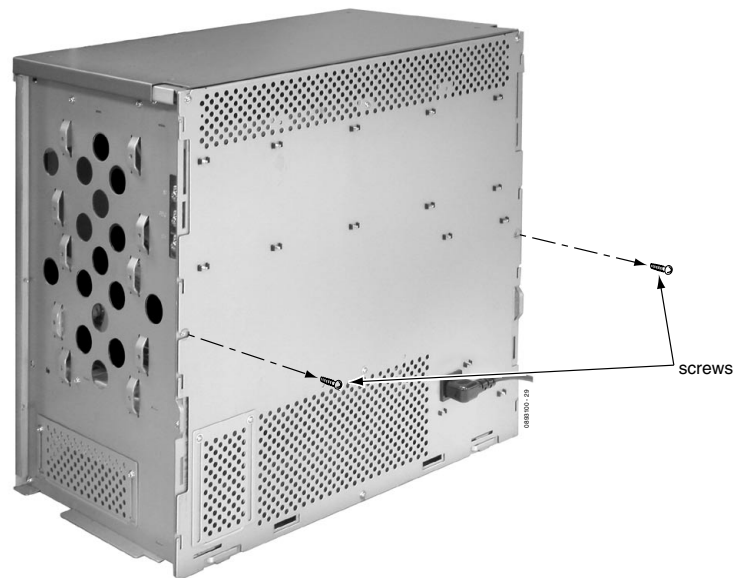


Figure 1-9: REMOVE THE SCREWS FROM THE CABINET

3. Hook the mounting bracket onto the back of the cabinet.

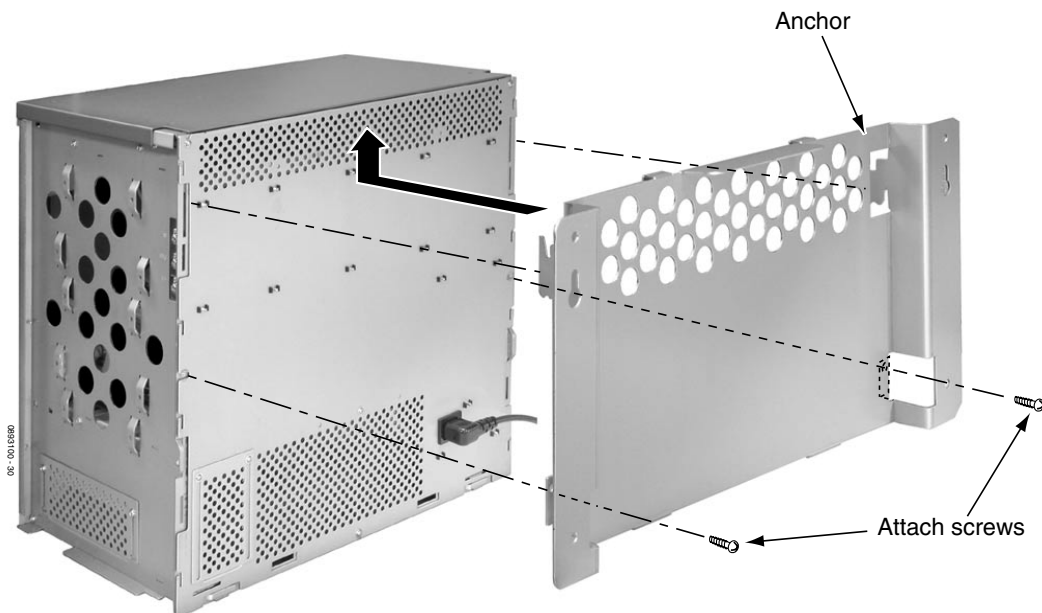


Figure 1-10: ATTACH BRACKET TO THE CABINET

4. Plug the power cord into the back of the cabinet.
Due to the spacing between the cabinet and the wall, this cannot be done once the cabinet is hung.
5. Replace the two screws removed in step 2 to secure the bracket to the cabinet.

- 6. Lift the cabinet into position and slide the mounting bracket over the screws attached to the wall.

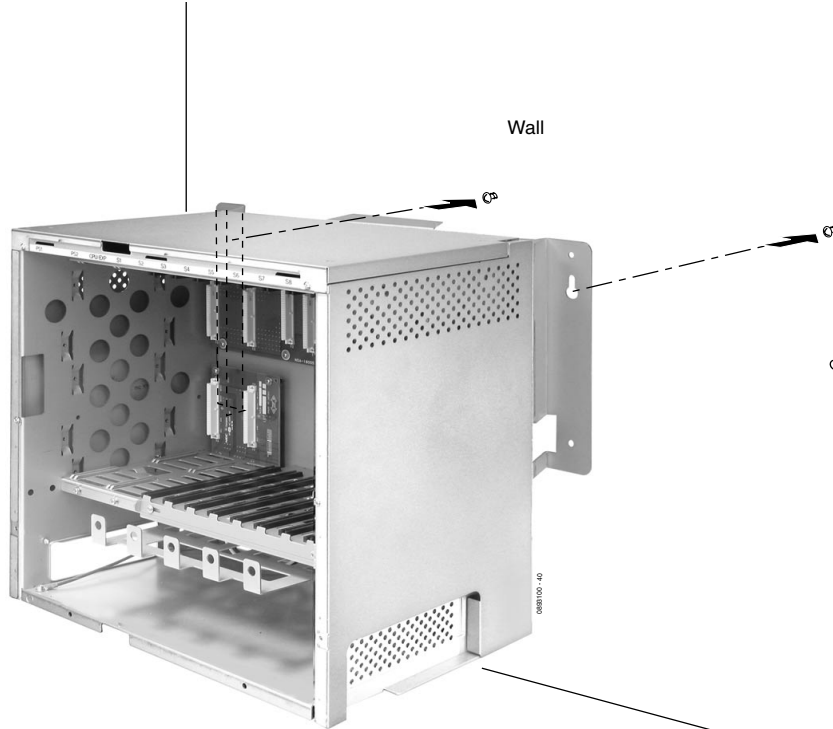


Figure 1-11: ATTACHING THE CABINET TO THE MOUNTING BRACKET

- 7. Secure the cabinet to the wall by inserting the two screws into the bottom half of the mounting bracket.

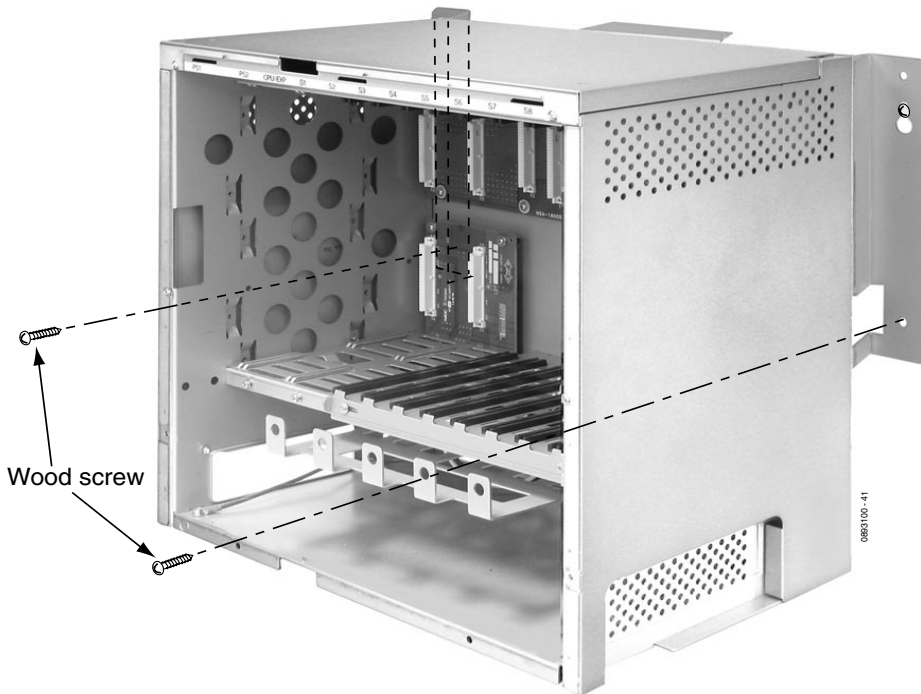


Figure 1-12: FASTEN BRACKET TO WALL

Securing the Main Cabinet to a Rack (Figure 1-13 - Figure 1-17)

1. Install the 19" rack mount bracket.

The cabinet will require approximately 16" of height within the rack.

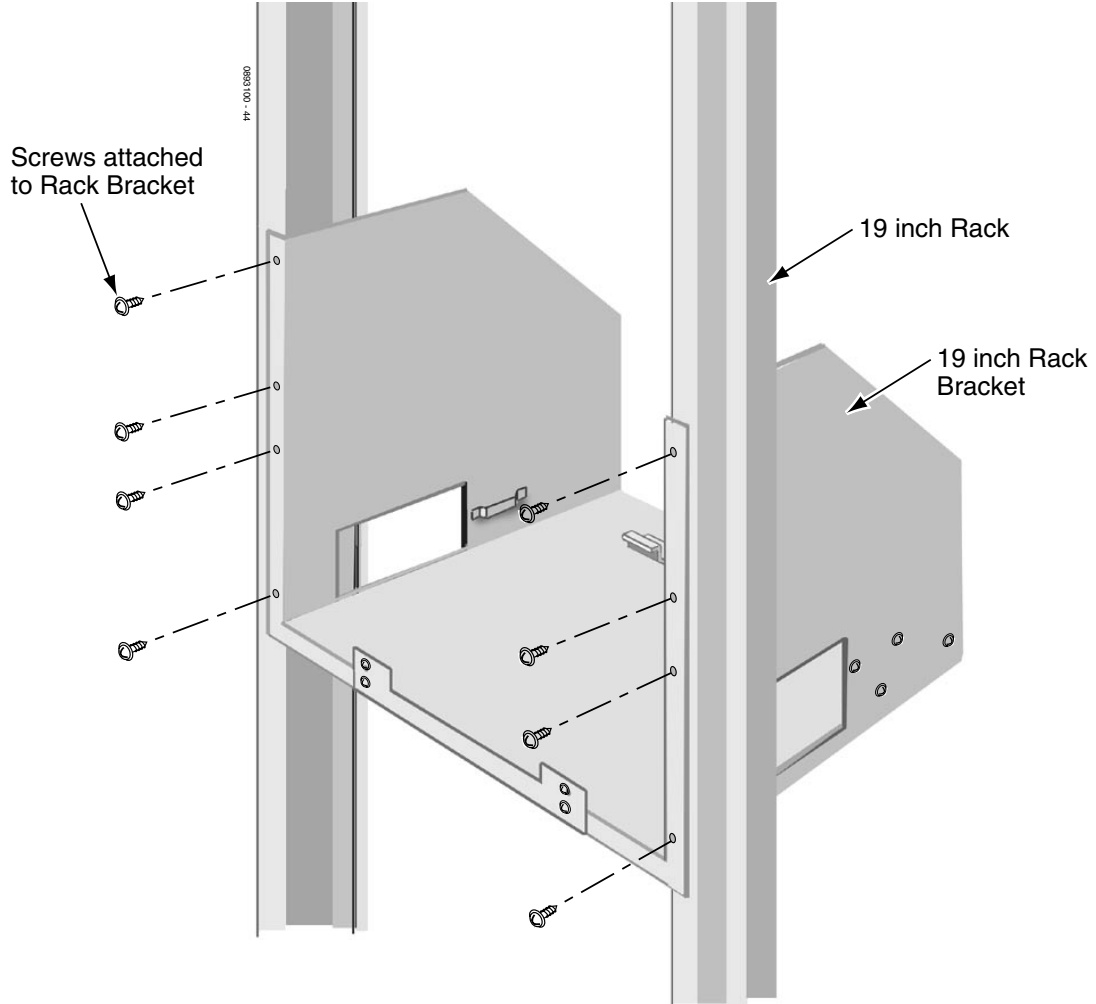


Figure 1-13: INSTALLING THE MOUNTING BRACKET ON THE RACK

2. Remove the 2 screws from the front of the rack mount bracket.

1

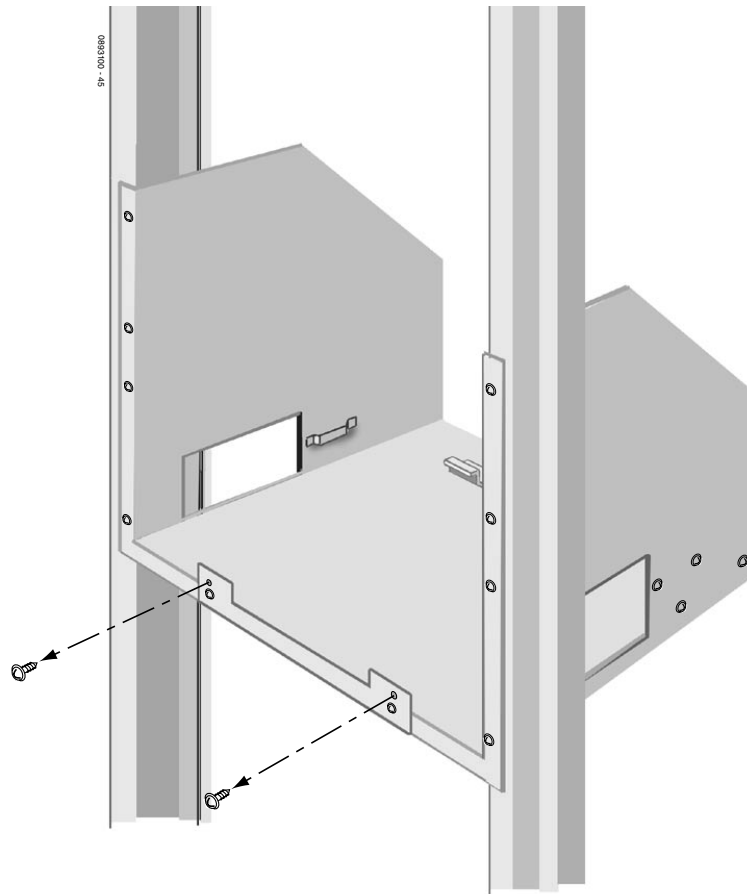


Figure 1-14: REMOVE THE SCREWS FROM THE RACK

3. Connect the earth ground wire to the cabinet. See *GROUNDING THE CABINETS* on page 1-34 for complete details on grounding the system.

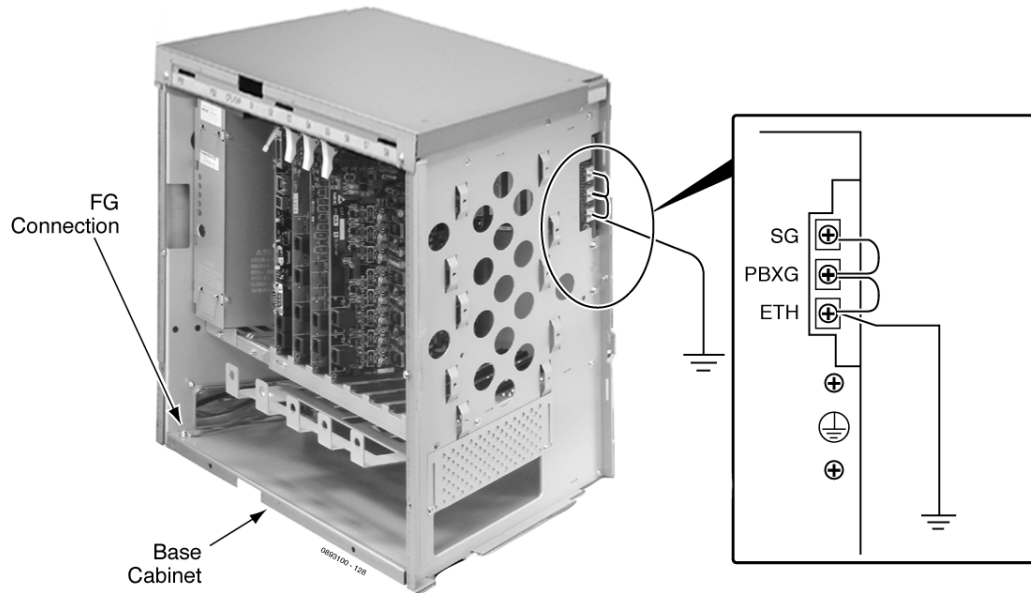


Figure 1-15: CONNECTING THE EARTH GROUND

4. Replace the side panels of the cabinet.
This must be done at this point as the panels cannot be accessed once the cabinet is mounted in the rack.
5. Place the cabinet in the rack, making sure the hooks on the mounting bracket are inserted into the back of the cabinet, securing it in place.

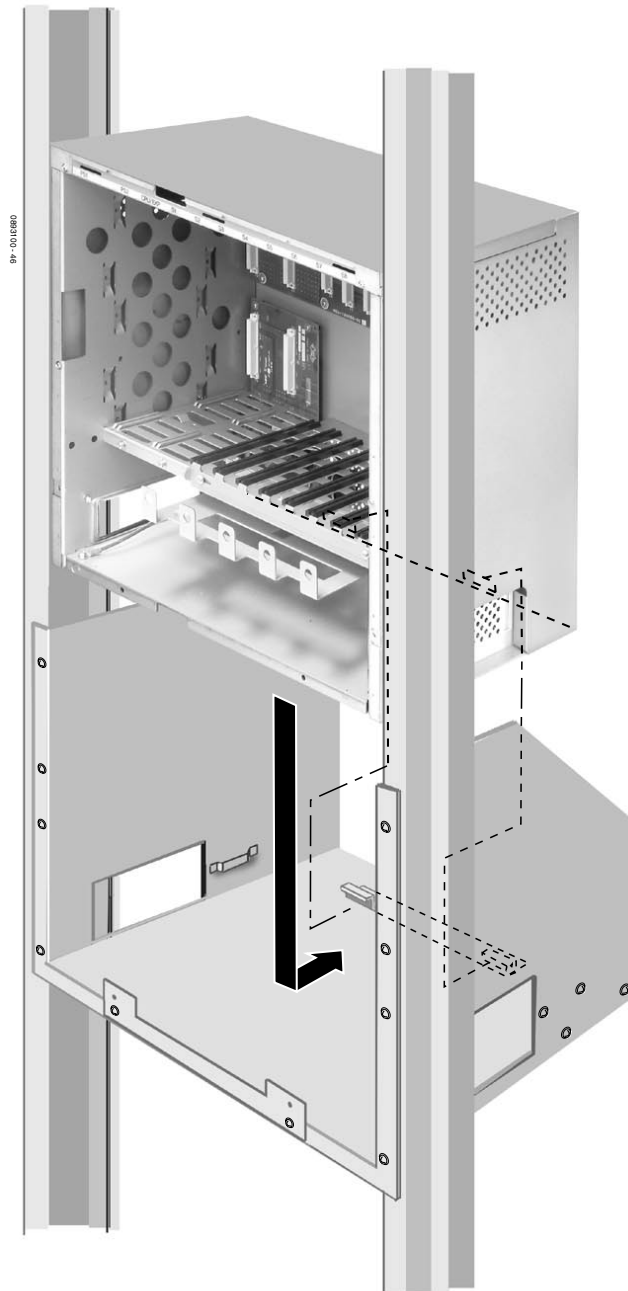


Figure 1-16: INSTALLING THE CABINET IN THE RACK

6. Replace the screws in the front of the rack which were removed in step 2.

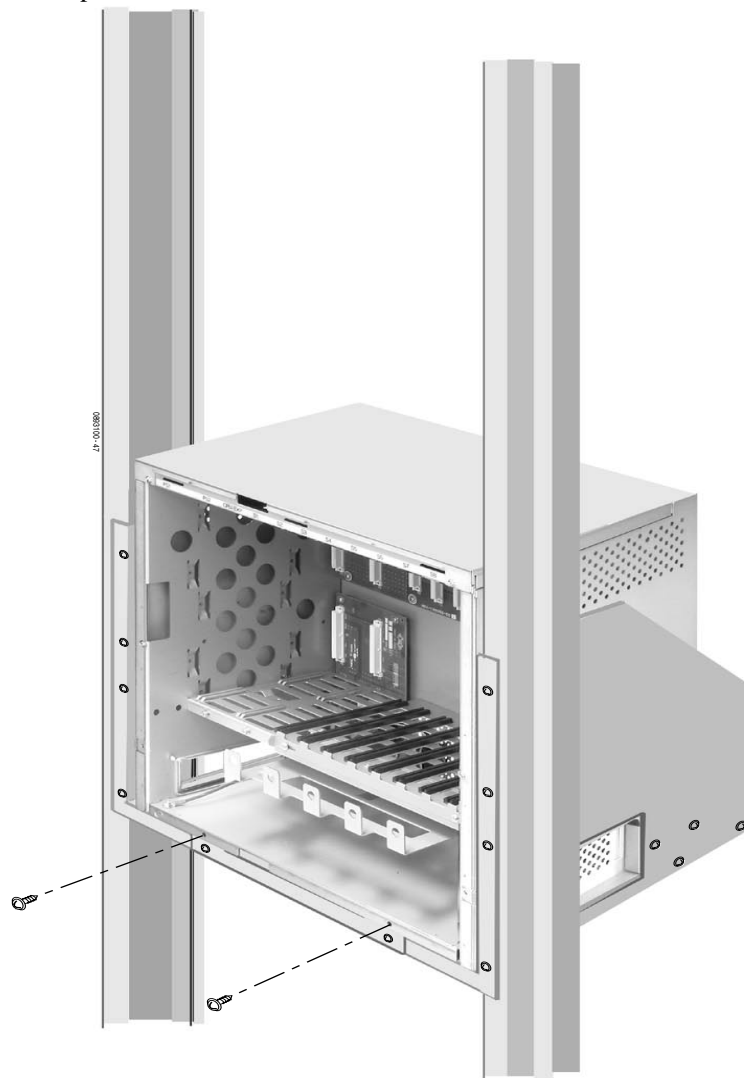


Figure 1-17: SECURING THE CABINET TO THE RACK

INSTALLING AN EXPANSION CABINET

Expansion Cabinet

The Expansion Cabinet requires at least one power supply. Two power supplies may be required, depending on the load factor for the system. Refer to **Load Factor** (page 2-2) for more. The Expansion Cabinet uses an expansion bracket which attaches to the top cover of the Main Cabinet. An Expansion Cabinet kit is also required to connect the Main Cabinet NTCPU to the Expansion Cabinet.

Note: To comply with UL requirements, please note that only one cabinet should be wall mounted. Two cabinets result in too much weight to be safely mounted together.

Before Installing an Expansion Cabinet

1. Power down the Main Cabinet.
2. Remove the Main Cabinet from the wall (if necessary).
3. Remove the front and side covers from the Main Cabinet. Refer back to Figure 1-1 and Figure 1-2 if necessary.
4. Remove the front and side covers of the Expansion Cabinet.

Expanding a Floor System (Figure 1-18 - Figure 1-25)

It is strongly recommended to secure the expansion cabinet to the wall.

1. Remove the two screws from the expansion bracket.

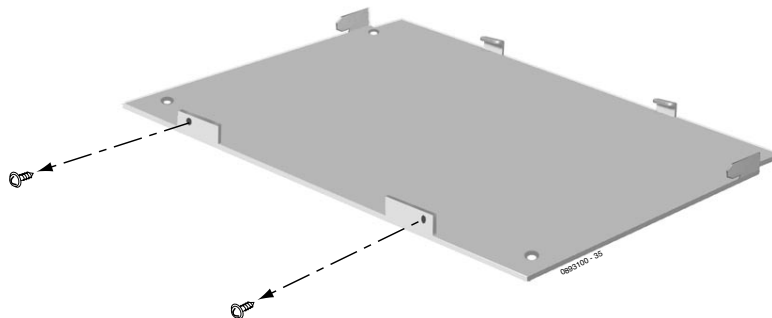


Figure 1-18: REMOVING THE SCREWS FROM THE BRACKET

2. Place the expansion bracket on the top of the main cabinet. Using the screws provided with the expansion bracket, secure the bracket to the top of the main cabinet.

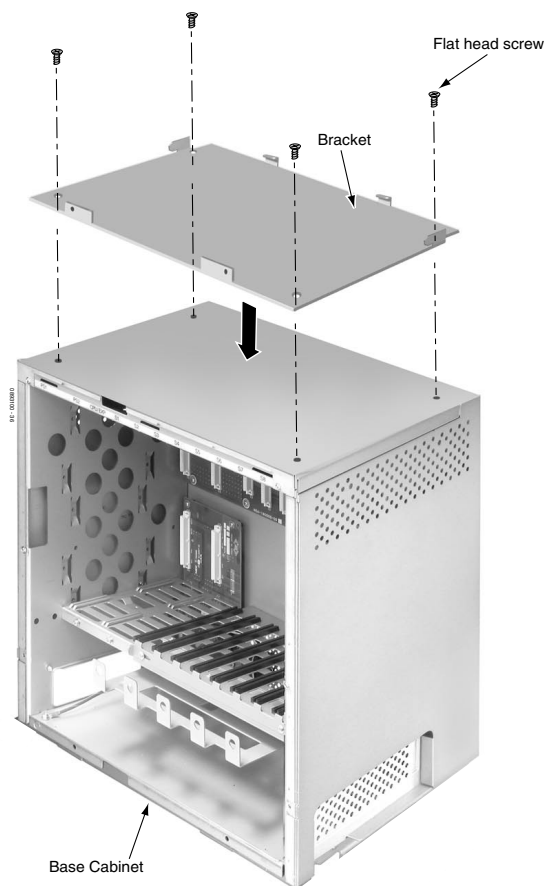


Figure 1-19: SECURE THE EXPANSION BRACKET TO THE MAIN CABINET

3. Remove the 2 screws from the back of the expansion cabinet.

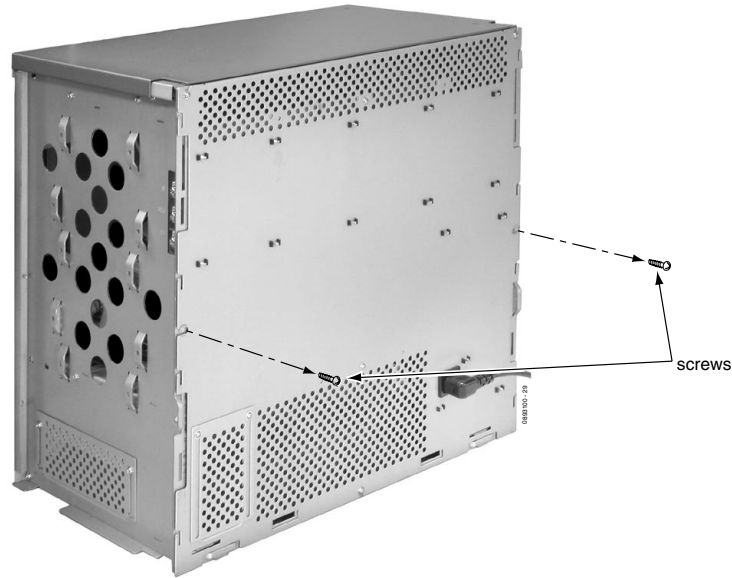


Figure 1-20: REMOVE THE SCREWS FROM THE CABINET

4. Hook the mounting bracket onto the back of the expansion cabinet.

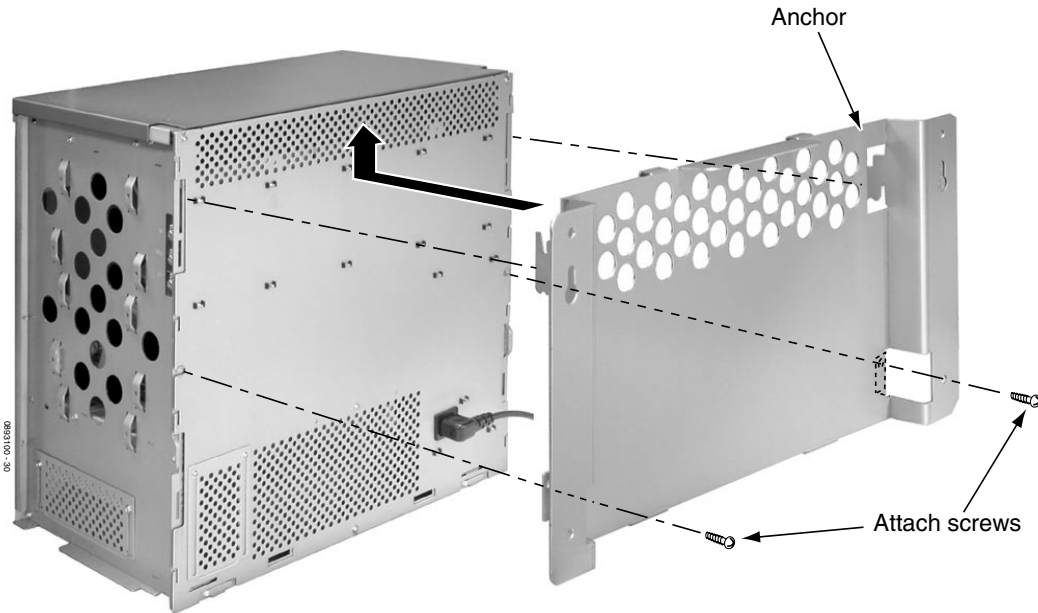


Figure 1-21: ATTACH BRACKET TO THE CABINET

5. Replace the two screws removed in step 3 to secure the bracket to the expansion cabinet.
6. Place the expansion cabinet on the secured mounting bracket and slide backwards.

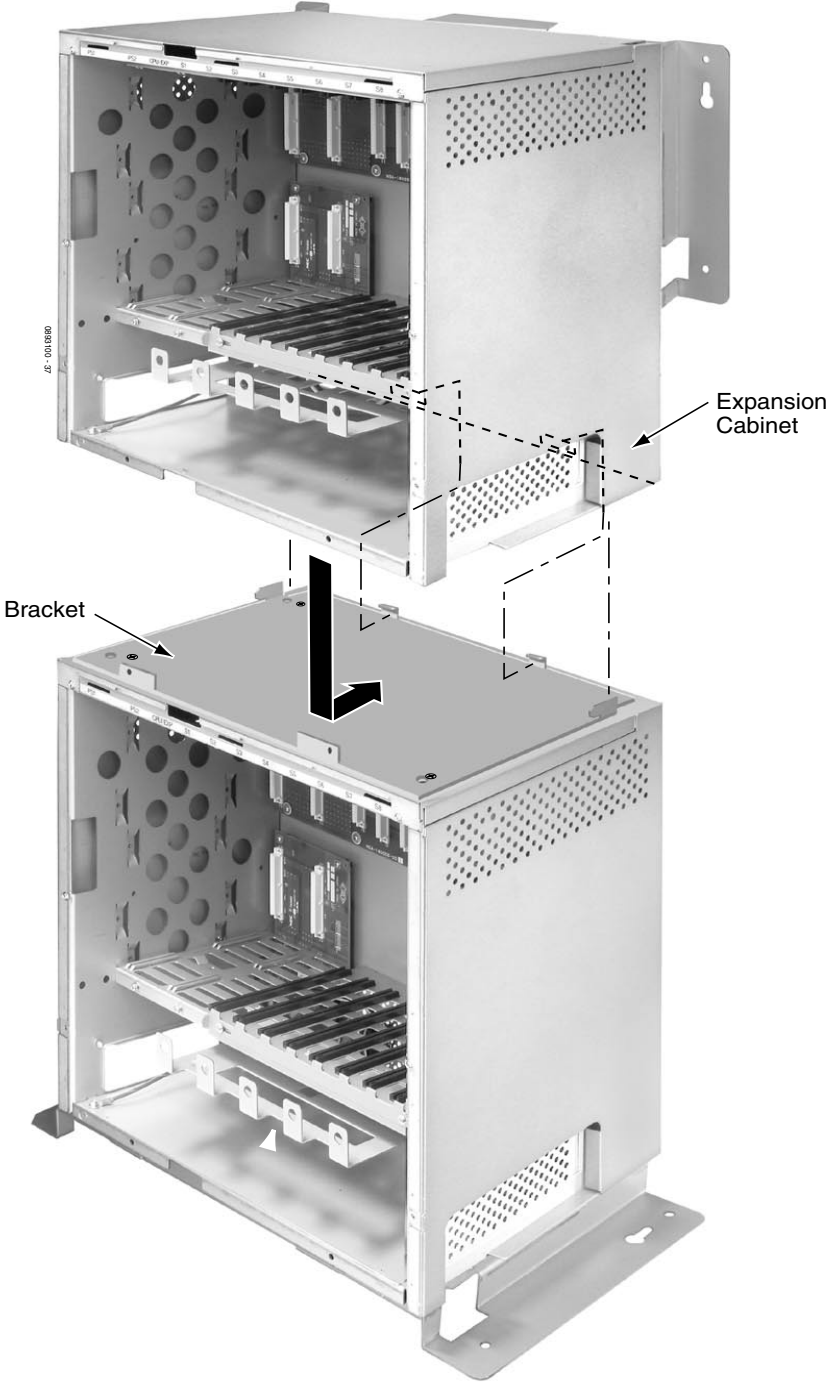


Figure 1-22: ATTACHING THE EXPANSION CABINET TO THE MOUNTING BRACKET

- 7. Secure the expansion cabinet to the wall using four wood screws.

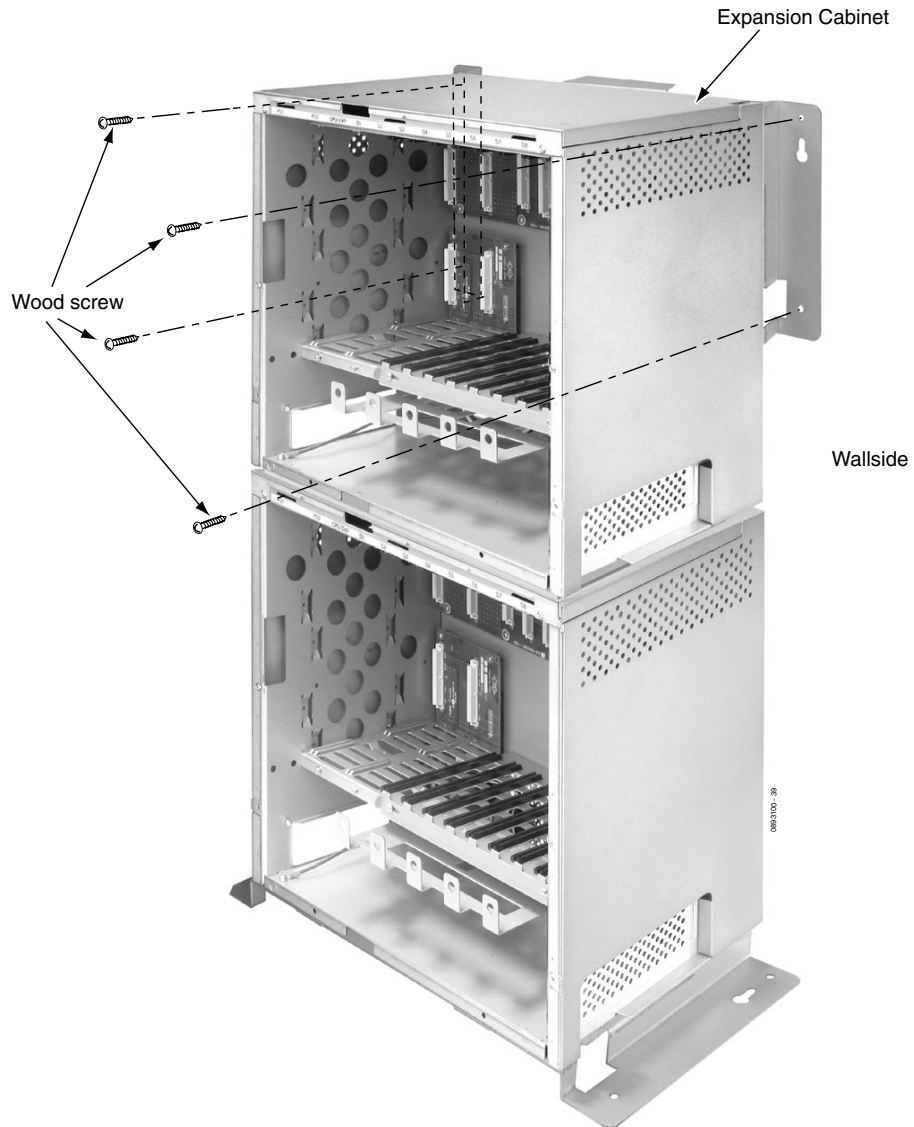


Figure 1-23: SECURE MOUNTING BRACKET TO THE WALL

- Secure the expansion cabinet to the main cabinet by reinstalling the two screws removed from the expansion bracket in step 1.

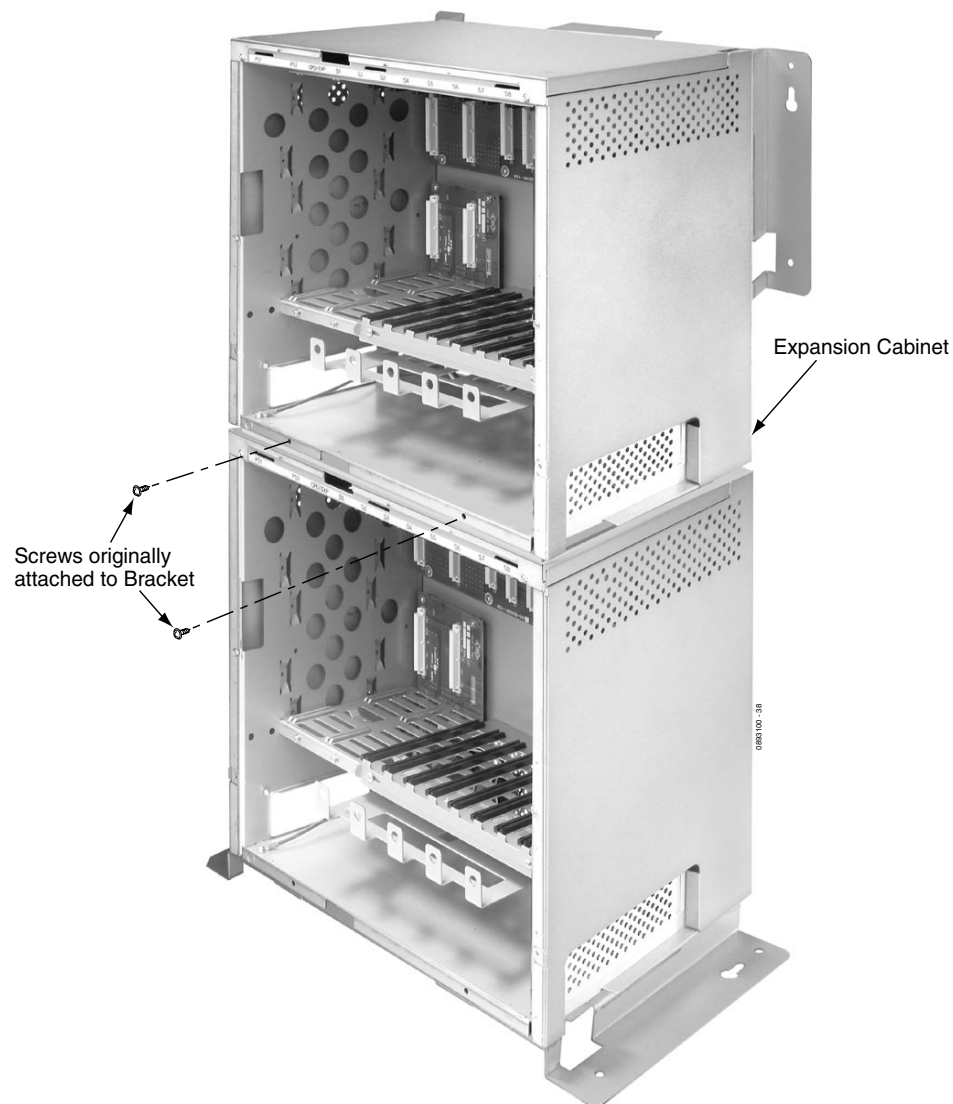


Figure 1-24: REINSTALL SCREWS

- On the inside of the front covers, loosen the screws for the top or bottom shutters (the top shutter for the main cabinet cover, bottom for expansion cabinet cover).

10. Slide the shutters to the left to allow a pass-through for the EXIFU cables. Retighten these screws.

1

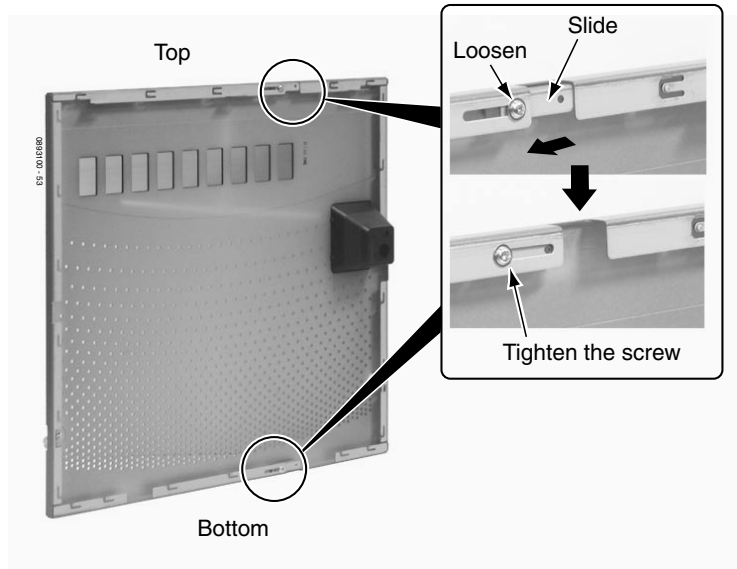


Figure 1-25: MOVING THE FRONT PANEL SHUTTERS

Expanding a Rack Mounted System (Figure 1-26 - Figure 1-35)

1. Remove the two screws from the expansion bracket.

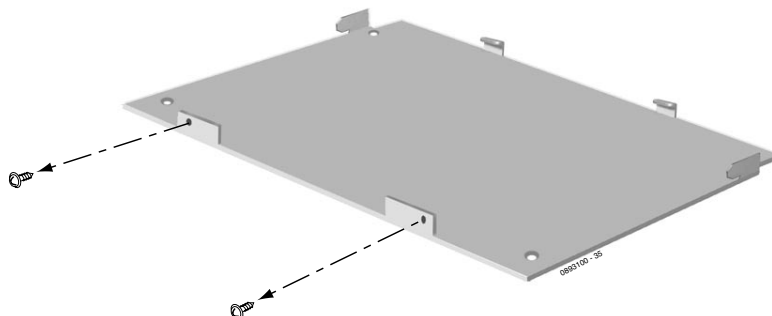


Figure 1-26: REMOVING THE SCREWS FROM THE BRACKET

2. Place the expansion bracket on the top of the base cabinet. Using the screws provided with the expansion bracket, secure the bracket to the top of the main cabinet.

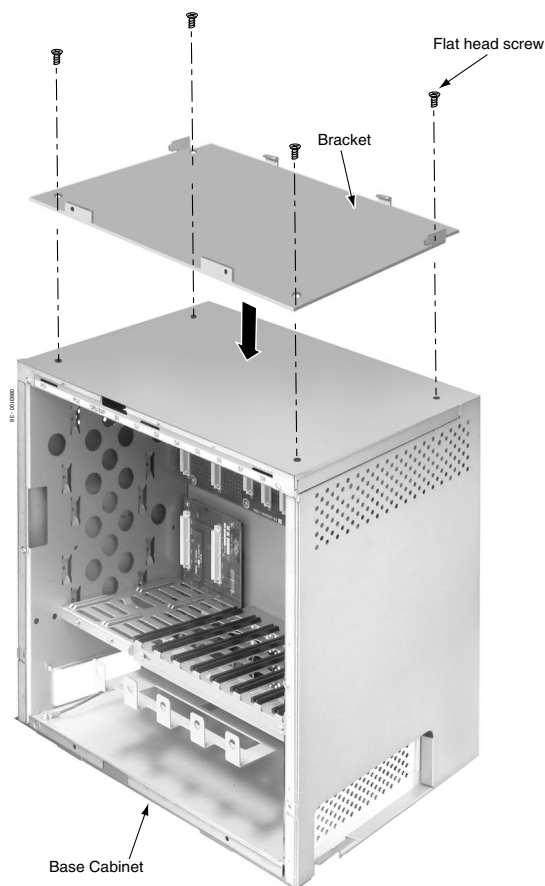


Figure 1-27: SECURE THE EXPANSION BRACKET TO THE MAIN CABINET

3. Connect the earth ground wire to the cabinets. See *GROUNDING THE CABINETS* on page 1-34 for complete details on grounding the system.

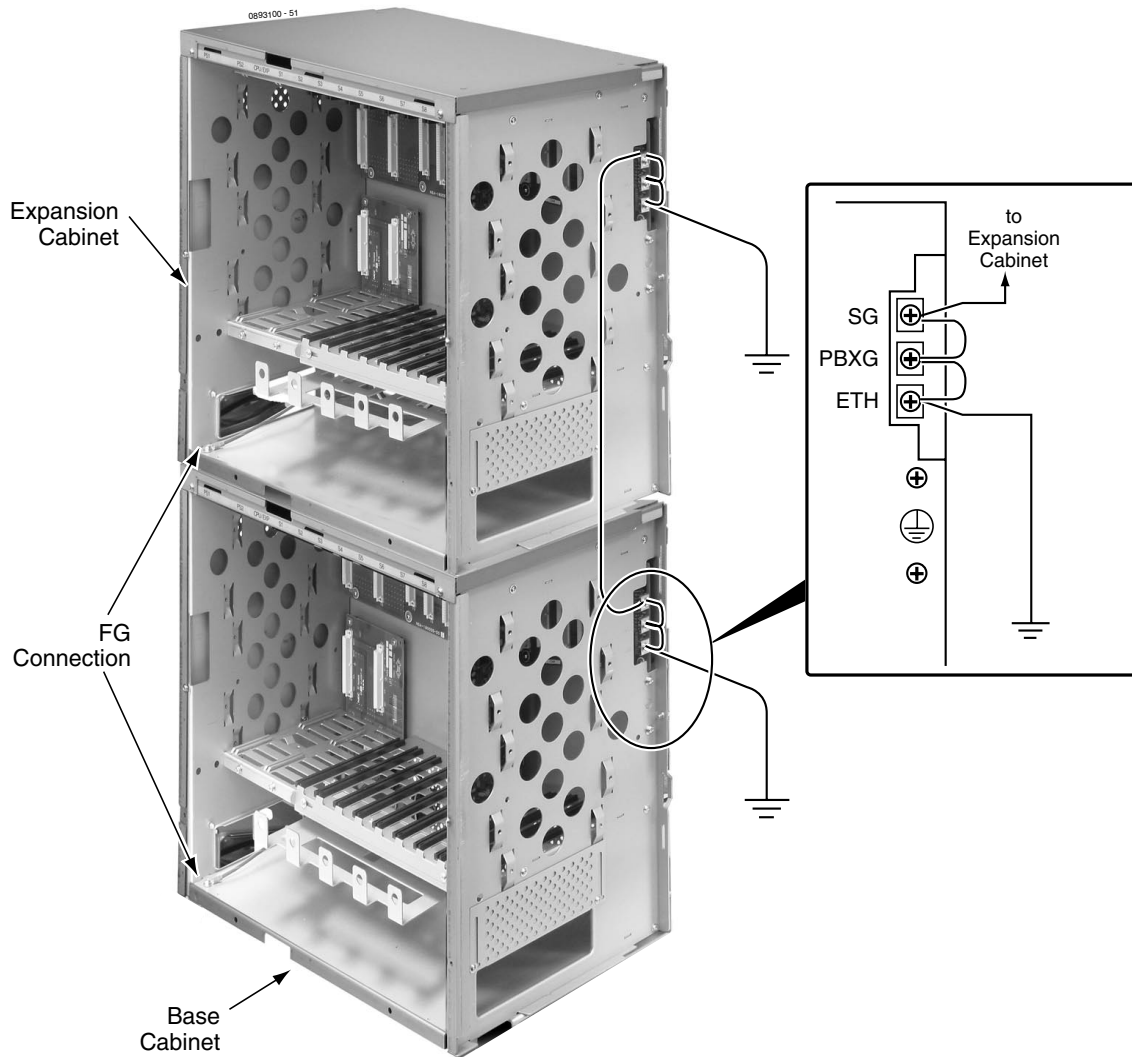


Figure 1-28: CONNECTING THE EARTH GROUND

4. Replace the side panels of the cabinets.
This must be done at this point as the panels cannot be accessed once the cabinets are mounted in the rack.

- 5. Install the 19" rack mount bracket.
The cabinet will require approximately 32" of height within the rack.

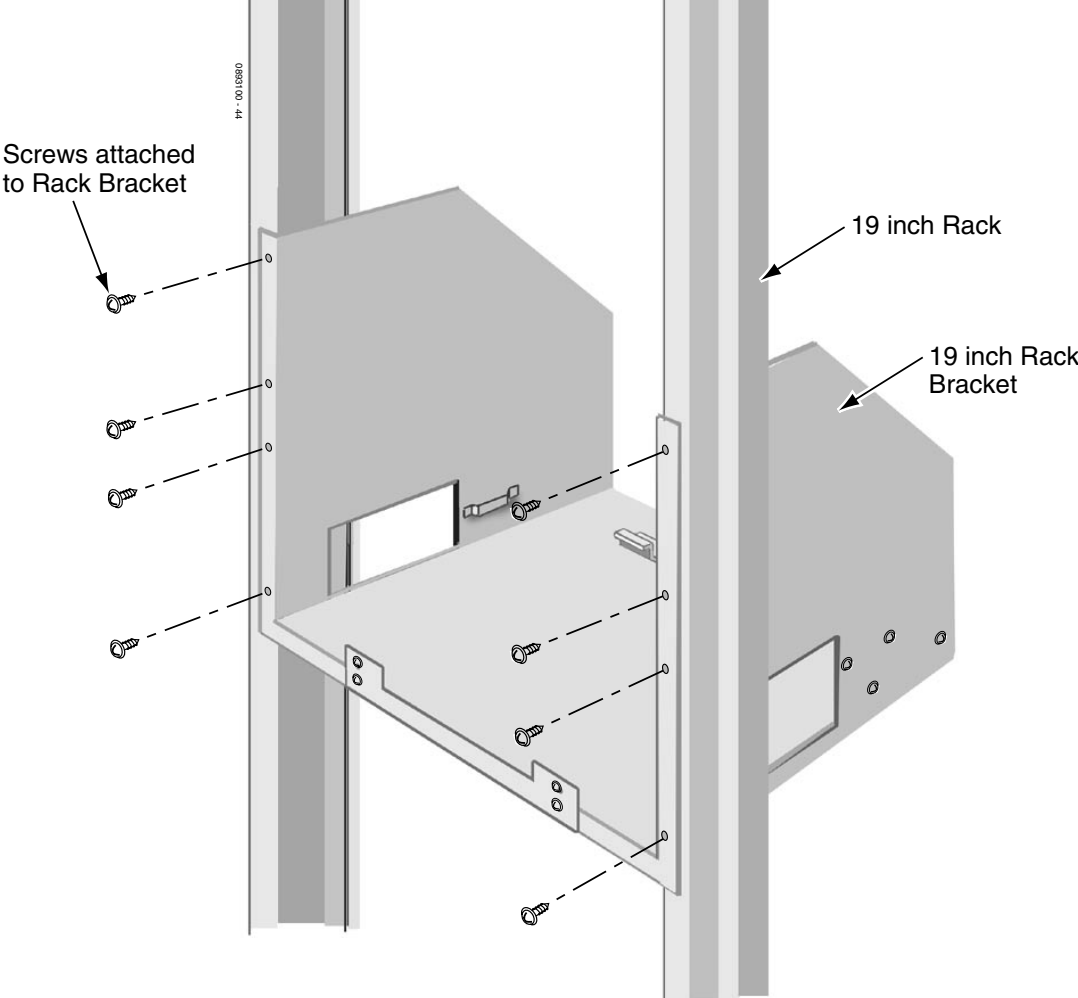


Figure 1-29: INSTALLING THE MOUNTING BRACKET ON THE RACK

- Using the belt provided by the rack mount system, connect the belt to the rack bracket.

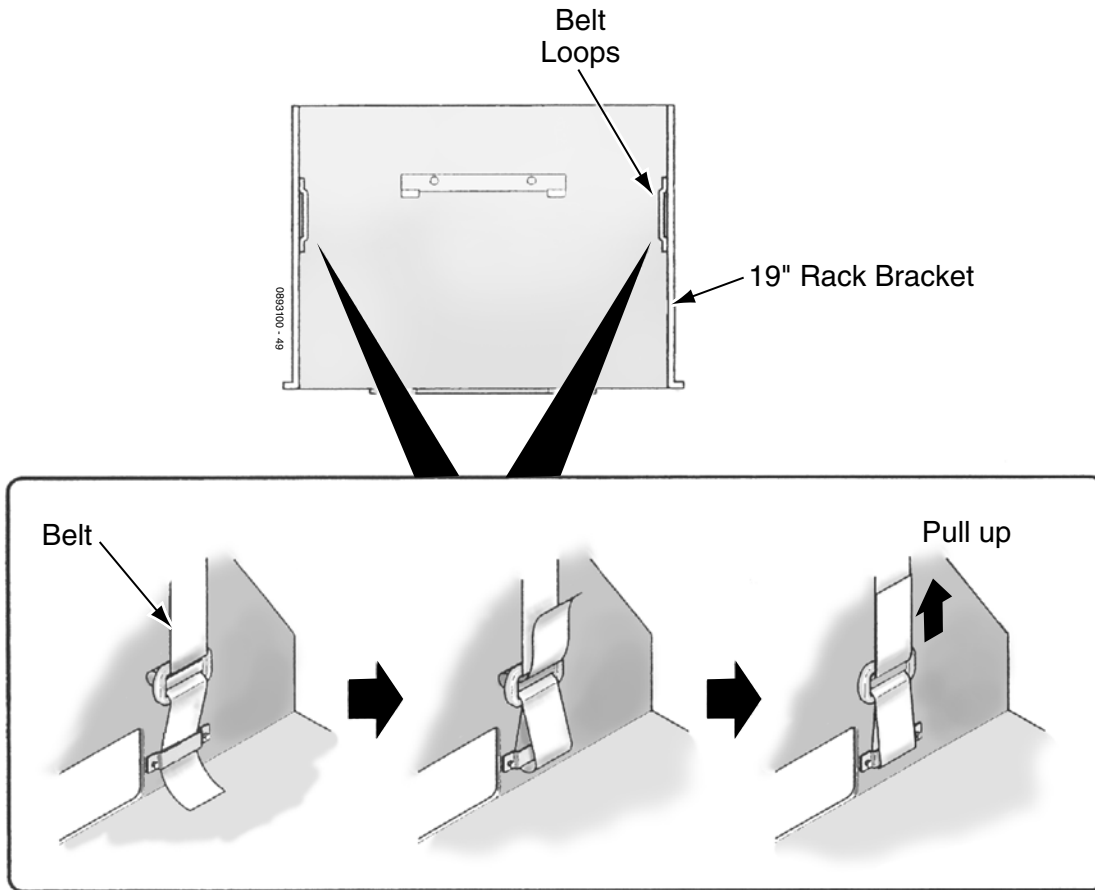


Figure 1-30: CONNECTING THE BELT TO THE RACK BRACKET

7. Remove the 2 screws from the front of the rack mount bracket.

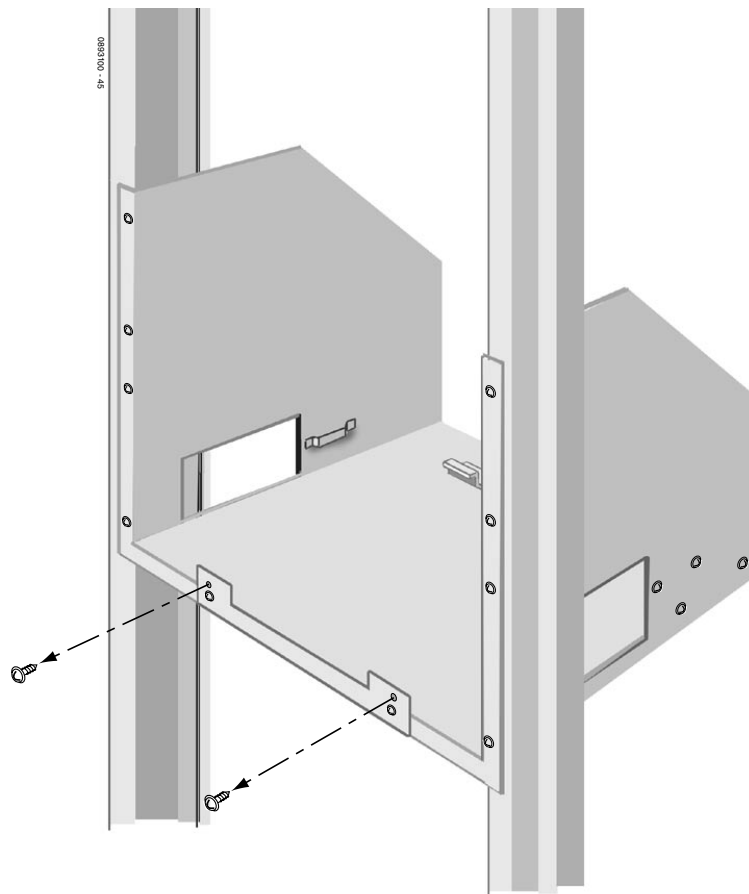


Figure 1-31: REMOVE THE SCREWS FROM THE RACK

8. Place the cabinets in the rack, making sure the hooks on the mounting bracket are inserted into the back of the cabinet, securing it in place.

1

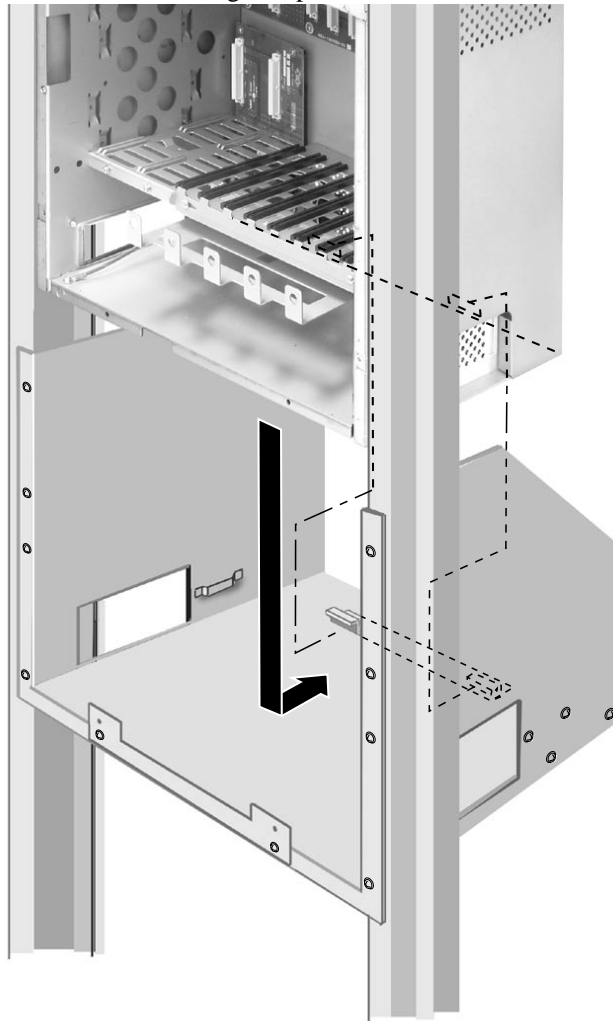


Figure 1-32: INSTALLING THE CABINETS IN THE RACK

9. Secure the two cabinets together by tightening the belt around both cabinets.

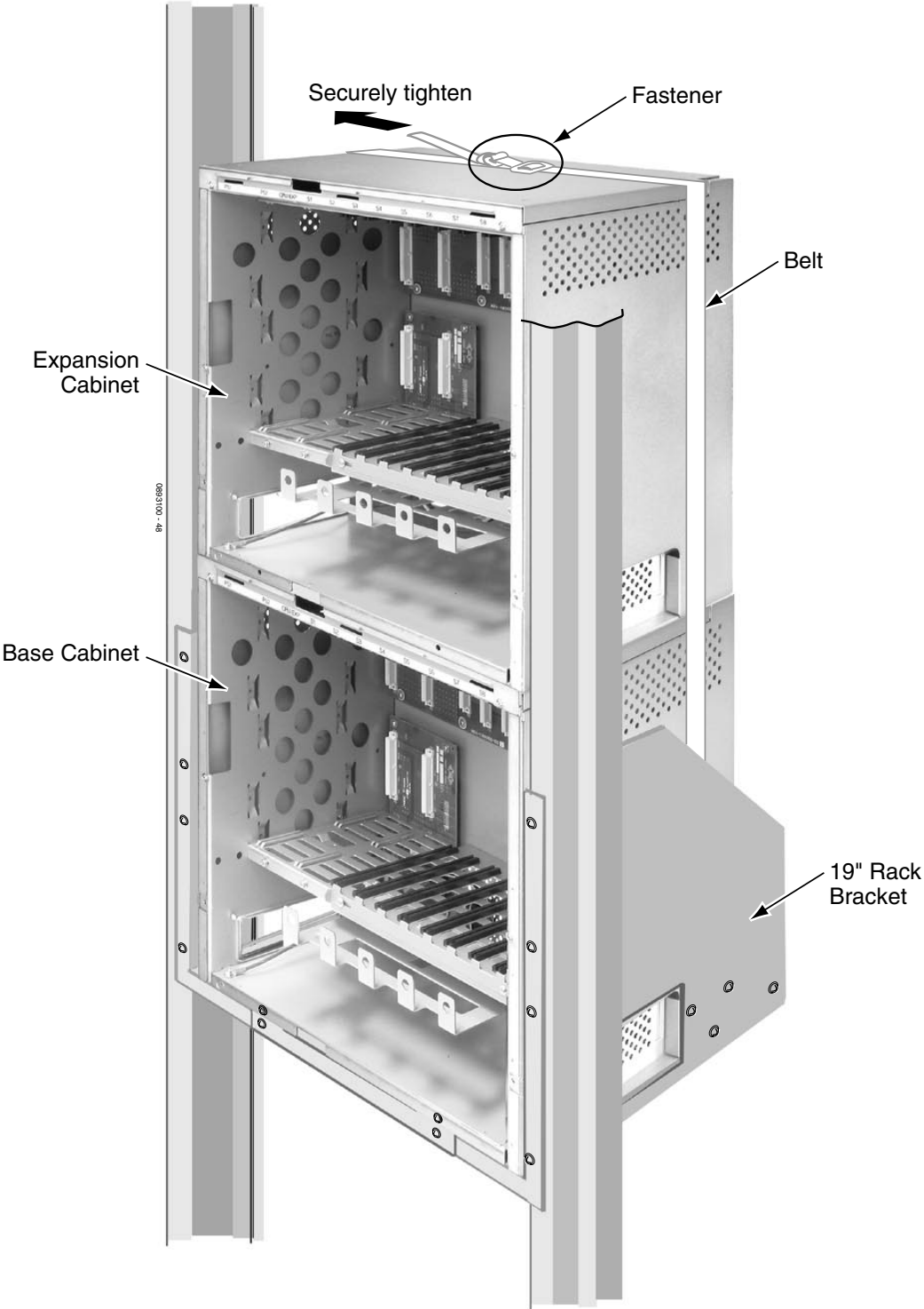


Figure 1-33: SECURING THE CABINETS TOGETHER

- 10. Replace the screws in the front of the rack which were removed in step 7.

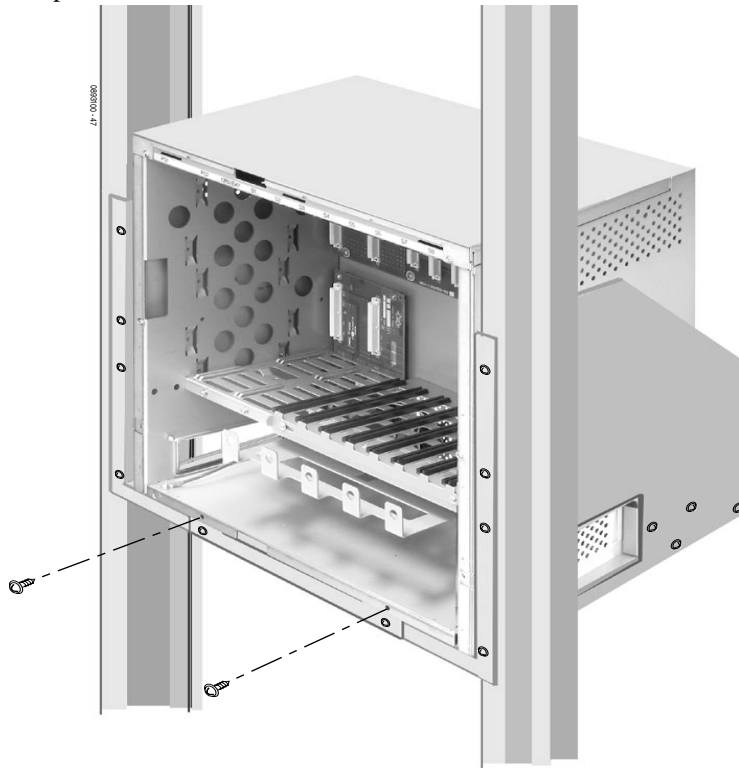


Figure 1-34: SECURING THE CABINETS TO THE RACK

- 11. On the inside of the front cover, loosen the screws for the top and bottom shutters.
- 12. Slide the shutters to the left to allow a pass-through for the EXIFU cables. Retighten these screws.

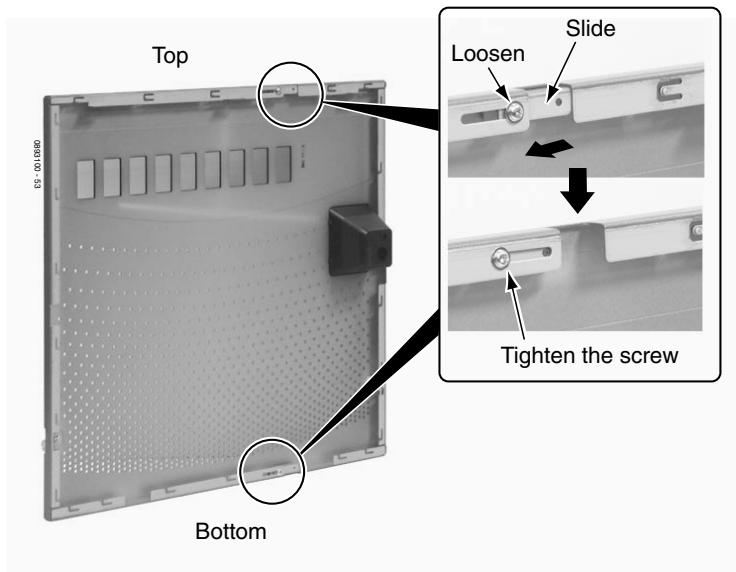


Figure 1-35: MOVING THE FRONT PANEL SHUTTERS

INSTALLING THE POWER SUPPLY

Installing Power Supplies in the Main and Expansion Cabinets (Figure 1-36 - Figure 1-38)

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

Each system cabinet requires at least one power supply. In order to determine if a second power supply is required, the Aspire load factor charts should be followed. Refer to *Load Factor* on page 2-2 for complete information. **In addition to the system load factor, note that one power supply can provide power to 64 analog or digital telephones. If more than 64 telephones are connected to a cabinet, a second power supply must be used.**

The first power supply is installed in the PS1 slot on the right side of the cabinet. The second power supply is installed in the PS2 slot. The two screws used to secure the power supply are factory-installed on the cabinet.

If power is turned off on the expansion cabinet's power supply, it only affects that particular cabinet. The main cabinet continues to operate normally. To turn off power with two cabinets, only the power switch on the main cabinet needs to be turned off.

To Install/Replace the Power Supply:

Note: Remove the Main Cabinet's AC power cord from the AC receptacle.

1. Remove the two power supply mounting screws from the PSx slot in the cabinet.

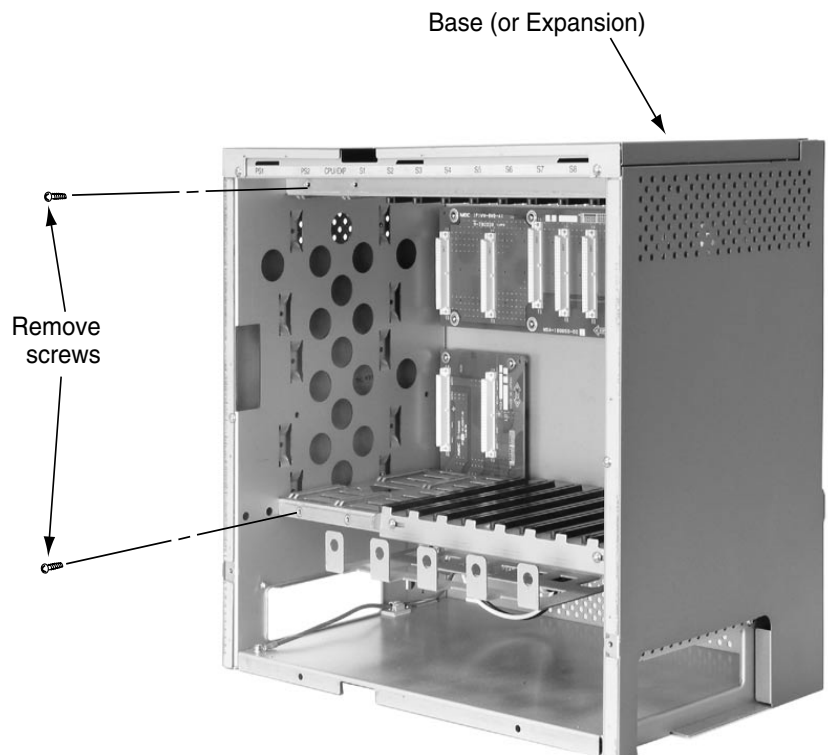


Figure 1-36: REMOVE THE SCREWS

2. Insert the power supply into the cabinet.

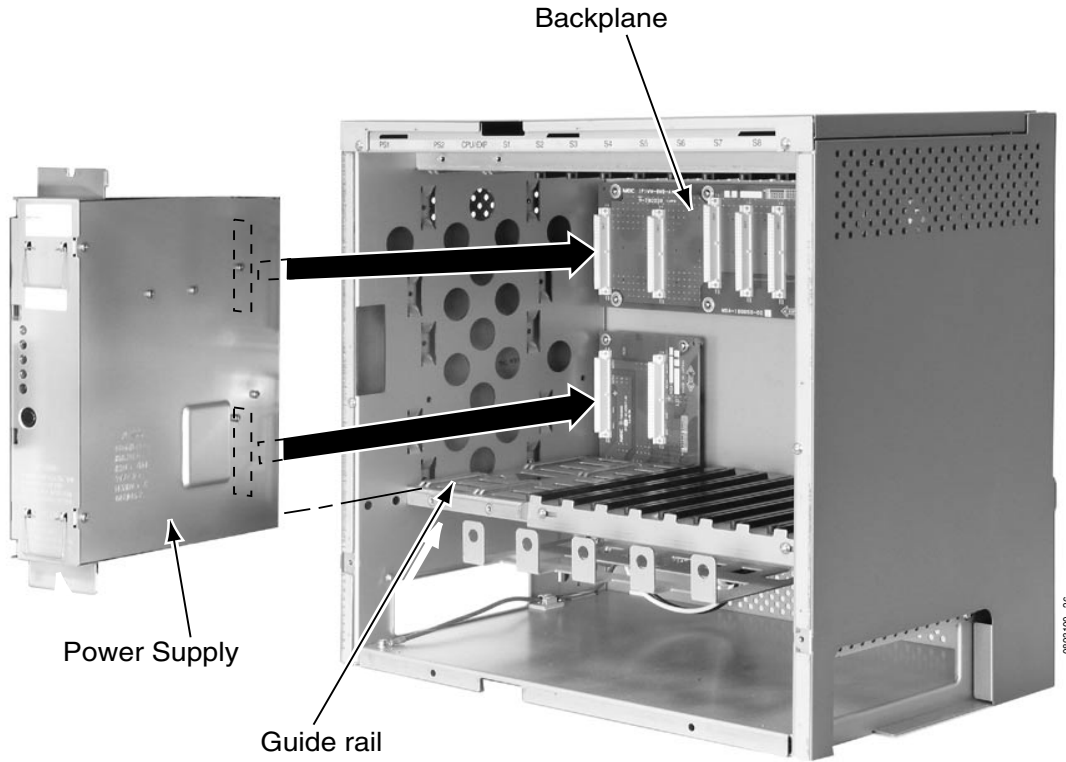


Figure 1-37: INSTALLING THE POWER SUPPLY

3. Secure the power supply to the cabinet by re-inserting and tightening the two screws.

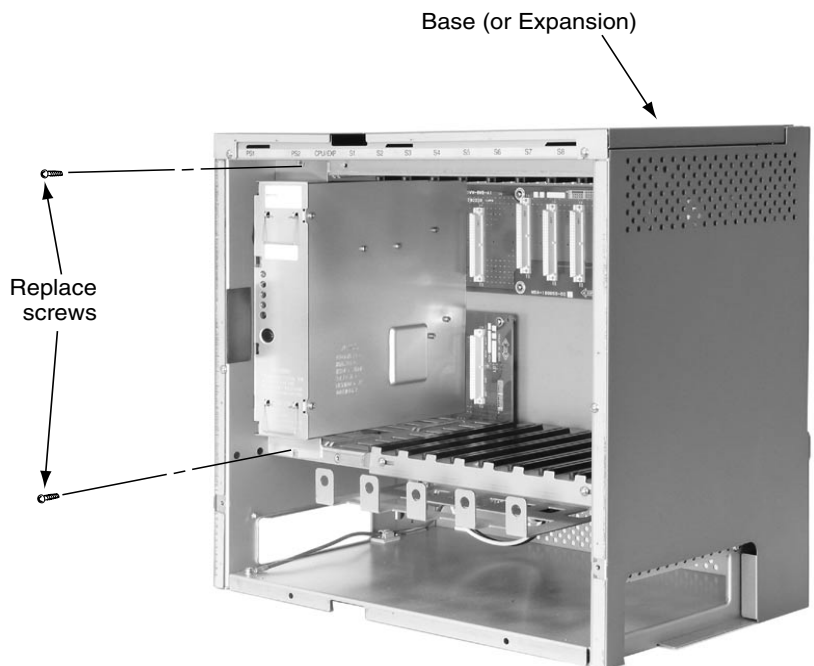


Figure 1-38: SECURING THE POWER SUPPLY

GROUNDING THE CABINETS

Connecting the System Ground (Figure 1-39)

The SG, PBXG, and ETH ground lugs are located on the right side of the cabinet. The side panel must be removed in order to access them. The FG lug is on the inside of the cabinet, on the lower left.

1. In each cabinet, strap the SG (signal ground) lug to the PBXG (CO/PBX ground start trunk ground) lug using 14 AWG.
2. In each cabinet, strap the PBXG (CO/PBX ground) lug to the ETH (earth ground) lug using 14 AWG.
3. Ground each cabinet by connecting a 14 AWG wire from the ETH lug on the right side of the cabinet to a known earth ground (such as a cold water pipe).
4. When using an expansion cabinet, connect a 14 AWG wire from the expansion cabinet SG ground lug to the SG ground lug in the main cabinet.
5. From the factory, the FG is already connected to the AC power source.

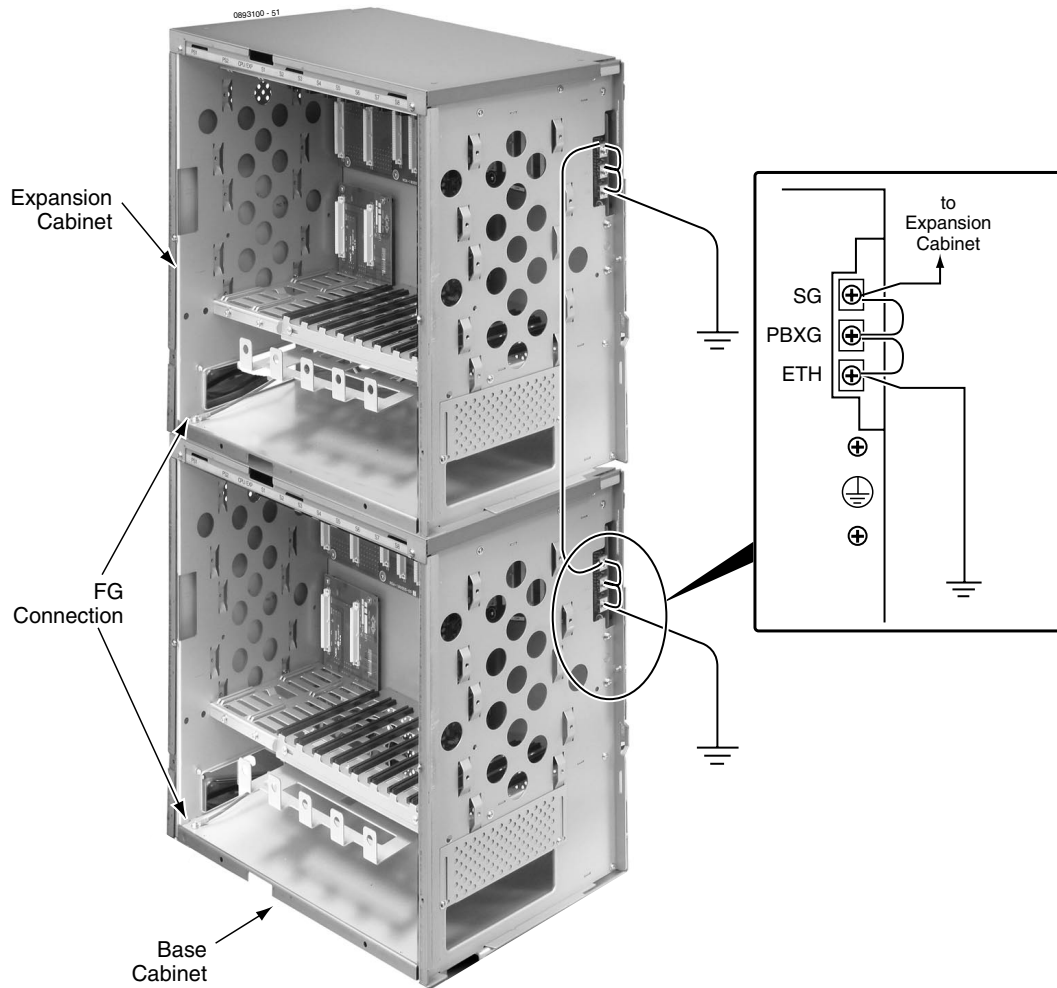


Figure 1-39: GROUNDING THE CABINET

The ground lug descriptions are as follows:

- **SG (Signal Ground)**
The plus side of the supplied voltage to single line telephones in the PBX requires a connection to the earth. The SG ground lug should be connected to the PBXG lug. This ground lug is also used with any multi-cabinet system. The SG lugs on both cabinets should be connected.
- **PBXG (CO/PBX Ground Start Trunk Ground)**
The PBXG line on the backplane is connected to this ground lug. This ground lug should be connected to the earth when using DID, E&M or ground start trunk cards in the system.
- **ETH (Earth Ground)**
This ground lug is used for lightning protection. It should always be connected to the earth.
- **FG (Frame Ground)**
This ground lug is connected to the earth wire of the power supply cable and also connected to the metal frame of the main equipment. This ground lug should be connected to the earth if the earth cable of power supply cable is not connected to the earth.

COMPLETING THE INSTALLATION

Reinstalling the Front Cover (Figure 1-40)

1. Line up the brackets on the front cover with the slots in the cabinet and insert the cover.

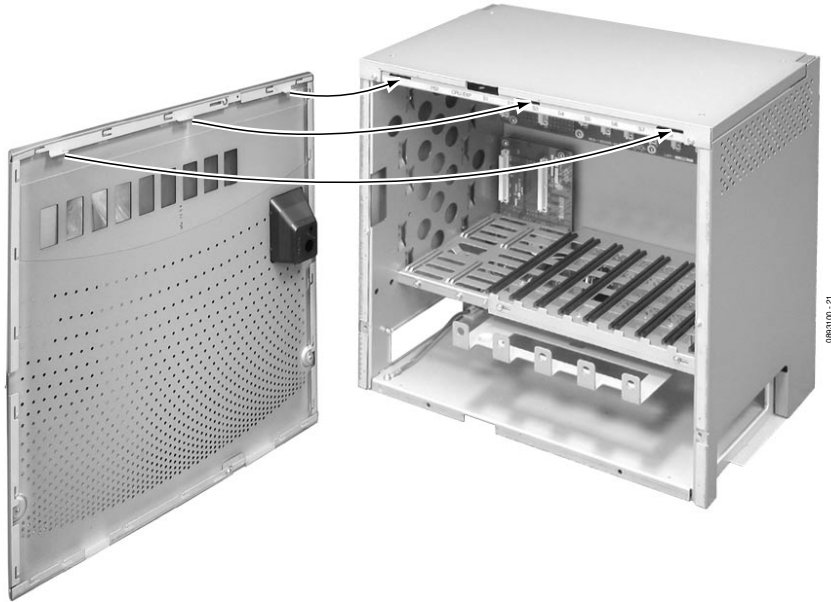


Figure 1-40: RE-INSTALLING THE FRONT COVER

2. Slide the cover to the left.



Figure 1-41: RE-INSTALLING THE FRONT COVER

3. Tighten the two cover retaining screws.

The each cabinet has three cable pass-throughs - one on the left panel, right panel, and rear panel. The shutters on the unused pass-throughs should be closed in order to help keep dust out of the cabinet.

1. Loosen the two screws holding the shutter open.
2. Slide the shutter to the left or right and let the shutter drop closed.
3. Tighten the screws.

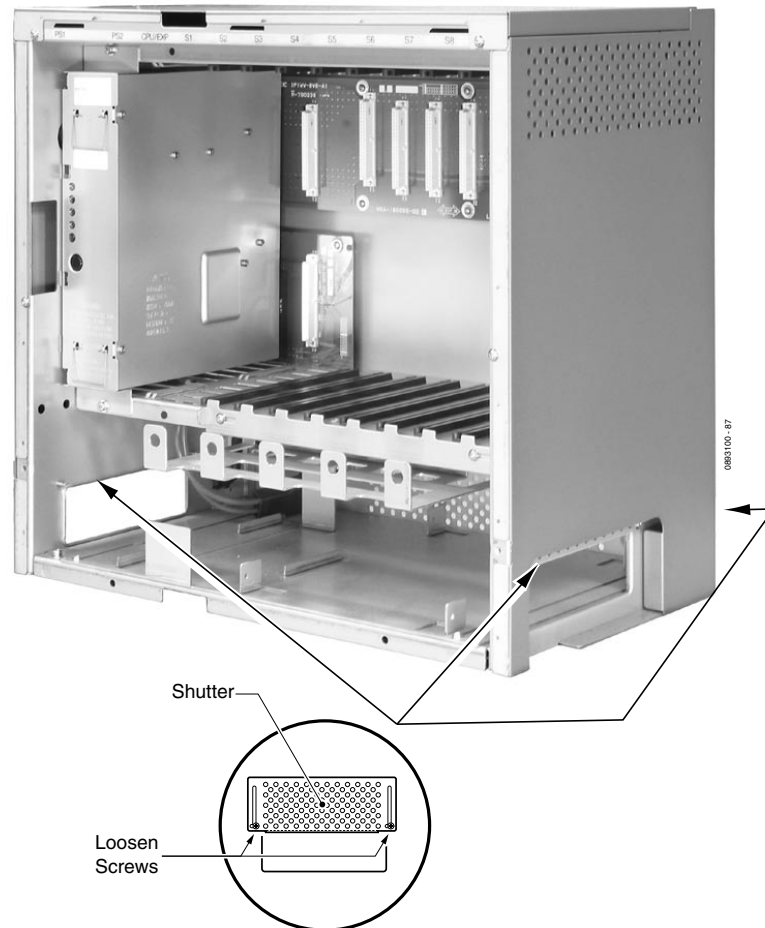


Figure 1-42: CLOSING THE CABINET SHUTTERS

- For Your Notes -

Section 2: 2

PCB Installation and Startup

PCB LAYOUT

PCB Location

Determine the slot position for each PCB. In the Main Cabinet:

- CPU/EXP slot - dedicated for the NTCPU
- Slot 1 - should be dedicated for a ESIU PCB

In the Expansion Cabinet:

- CPU/EXP slot - dedicated for the Expansion PCB

The Main and Expansion Cabinets:

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

Use the table below to determine the PCB for each slot.

EXIFU	9	10	11	12	13	14	15	16
NTCPU	ESIU	2	3	4	5	6	7	8

Important Notes

- Make sure to follow the steps indicated in **Powering Up the System** (page 2-57) for an initial system install. This will ensure that you start the system with the default system settings.
- To delete a PCB from the system, *the PCB must first be removed from the system cabinet*, then Program 90-05-01 can be used to delete the slot definition.

Load Factor

Each system cabinet must have at least one power supply installed. In order to determine if a second power supply is required, the following load factor charts should be followed. Both charts should be completed for each cabinet. If either the PCB *or* module chart exceeds their limit (60 for PCBs or 150 for modules), then a second power supply is required. Each chart is listed twice for your convenience - one to be used for cabinet 1, the second for cabinet 2. **In addition to the system load factor, note that one power supply can provide power to 64 analog or digital telephones. If more than 64 telephones are connected to a cabinet, a second power supply must be used.**

Cabinet 1

Each PCB	Load Factor	Number Installed	Total for Cabinet 1
NTCPU	10		
DSPDB-A1/B1	5		
8COIU-LS1/LG1	3		
4COIU-LS1/LG1	3		
2BRIU	6		
4BRIU	6		
8BRIU	6		
1PRIU	3		
4TLIU	2		
4/8DIOPU	4		
8ESIU	3		
16ESIU	3		
16DSTU	3		
8SLIU	3		
8SLIDB	3		
4/8/12DSIU	10		
8SHUBU	13		
4VOIPU	8		
4VOIPDB	1		
16VOIPU	15		
16VOIPDB	5		
VMSU	20		
VMDB	5		
FMSU	15		
FMDB	5		
If the total number exceeds 60, a second power supply is required (120 maximum per cabinet). <i>The Module Load Factor must also be considered when determining the number of power supplies.</i>			

Each Station Equipment Item	Load Factor	Number Installed	Total for Cabinet 2
ADA Adapter	1		
APR Adapter	0	-	-
APA Adapter	1		
CTA Adapter	3		
CTU Adapter	0	-	-
IP Adapter	0	-	-
PGDAD	2		
SLT ADP	5		
Aspire Wireless (DECT) Base Station (RFP)	2		
Keypad - non-IP (64 max. with one power supply)	1		
Keypad - IP (10 max. with one power supply and no other non-IP keysets)	7		
Super Display Keypad (64 max. with one power supply)	2		
i-Series Keypad	3		
24-Button DLS	1		
110-Button DSS	1		
Analog Telephone	1		
<p>If the total number exceeds 150, a second power supply is required (300 maximum per cabinet).</p> <p><i>The PCB Load Factor must also be considered when determining the number of power supplies.</i></p>			

Cabinet 2

Each PCB	Load Factor	Number Installed	Total for Cabinet 1
NTCPU	10		
DSPDB-A1/B1	5		
8COIU-LS1/LG1	3		
4COIU-LS1/LG1	3		
2BRIU	6		
4BRIU	6		
8BRIU	6		
1PRIU	3		
4TLIU	2		
4/8DIOPU	4		
8ESIU	3		
16ESIU	3		
16DSTU	3		
8SLIU	3		
8SLIDB	3		
4/8/12DSIU	10		
8SHUBU	13		
4VOIPU	8		
4VOIPDB	1		
16VOIPU	15		
16VOIPDB	5		
VMSU	20		
VMDB	5		
FMSU	15		
FMDB	5		
If the total number exceeds 60, a second power supply is required (120 maximum per cabinet). <i>The Module Load Factor must also be considered when determining the number of power supplies.</i>			

Each Station Equipment Item	Load Factor	Number Installed	Total for Cabinet 2
ADA Adapter	1		
APR Adapter	0	-	-
APA Adapter	1		
CTA Adapter	3		
CTU Adapter	0	-	-
IP Adapter	0	-	-
PGDAD	2		
SLT ADP	5		
Aspire Wireless (DECT) Base Station (RFP)	2		
Keypad - non-IP (64 max. with one power supply)	1		
Keypad - IP (10 max. with one power supply and no other non-IP keysets)	7		
Super Display Keypad (64 max. with one power supply)	2		
i-Series Keypad	3		
24-Button DLS	1		
110-Button DSS	1		
Analog Telephone	1		
<p>If the total number exceeds 150, a second power supply is required (300 maximum per cabinet).</p> <p><i>The PCB Load Factor must also be considered when determining the number of power supplies.</i></p>			

Order of Installing Extension PCBs

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

To avoid unexpected extension/trunk numbering if the VoIP or Voice Mail PCBs register with the system first, install these PCBs after the other types of extension and trunk PCBs have been installed.

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

Order of Install	PCB Slot #	Ext Numbers
1	1	301-316
2	2	317-332
3	4	333-348
4	3	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.

Order of Installing Trunk PCBs

Installing COIU-LS1/LG1, 4TLIU, DIOPU, or BRI PCB's:

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

To avoid unexpected extension/trunk numbering if the VoIP or Voice Mail PCBs register with the system first, install these PCBs after the other types of extension and trunk PCBs have been installed.

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

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

Installing T1/PRI PCBs

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

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

PCB INSTALLATION

Handling the PCBs

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

- Ground Main Cabinet and Expansion Cabinets
- Wear a grounded wrist strap to install/remove any PCBs
- Do not touch PCB components. Handle with white pulls.
- Although it is recommended to installed the PCBs with the system power off, all PCBs can be installed hot (*except the CPRU, 4VMSU, AND 2/4FMSU PCBs*).
- The power supply units must only be installed with the system power OFF.

2

"Busying Out" Extension/Line PCBs

The run/block switch on extension/trunk PCBs "busies out" idle circuits. Extensions/lines cannot make a call or be called. Calls in progress before the PCB is "made-busy" are not affected. The PCB can be pulled out without interrupting a call in progress.

An extension/line PCB 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)

Installing an Extension or Trunk PCB (Figure 2-1, Figure 2-2)

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

- Set the run/block switch **DOWN**.
- Loosen the two screws holding the PCB retaining bar in place and slide the bar to the right.

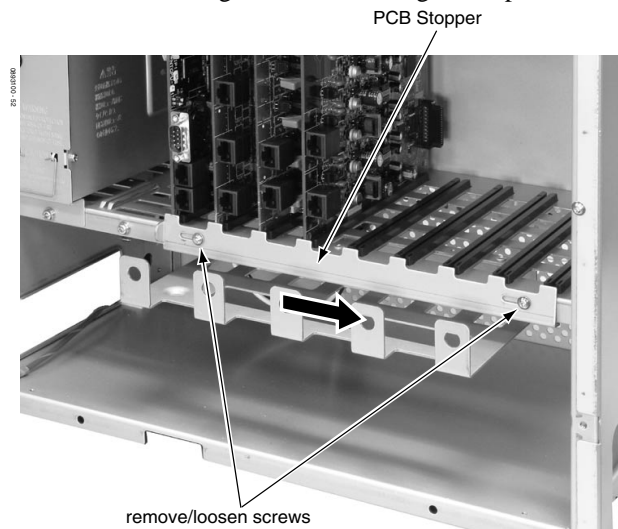


Figure 2-1: MOVING RETAINING BAR

- Insert the PCB within the guide rail and push the PCB securely into position. After installing all the PCBs, the PCB retaining bar should be moved back into position and the screws should be tightened.

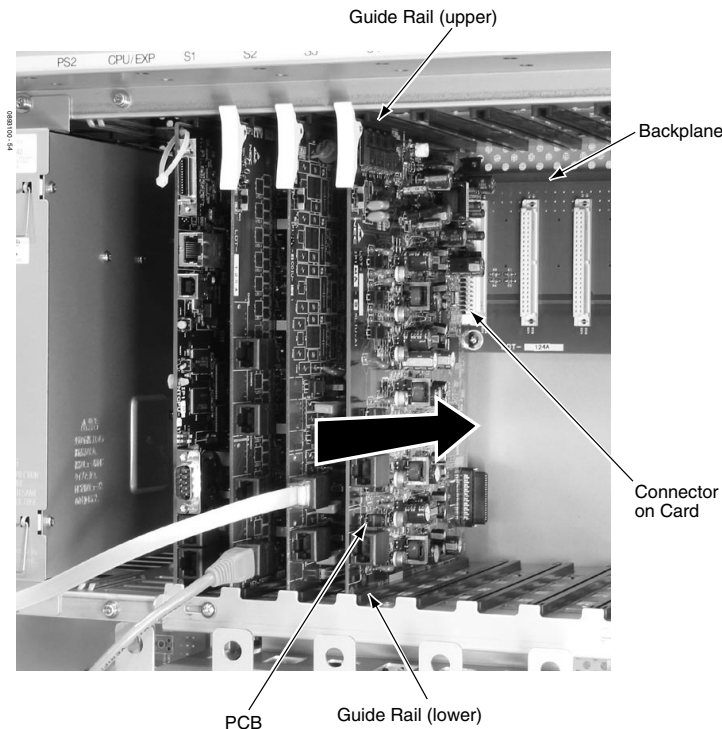


Figure 2-2: INSERTING PCBs

- Set the run/block switch UP. The Status LED starts flashing when the PCB starts processing (15 seconds).

Removing an Extension or Trunk PCB

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

- Set the run/block switch **DOWN**.
- When the STATUS LED stops flashing, all extensions/trunks are idle.
- Remove the PCB by lifting the white pull clip on the top of the PCB and pull the PCB out.

Uninstalling a PCB Slot Through Software

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

Where to Install the PCBs

**Maximum Configuration: 200 Trunks
512 Extensions Including IP and Wireless
(256 maximum digital/analog extensions)**

The system’s universal architecture gives you great flexibility when installing PCBs. You can install a PCB in any slot, provided you follow the guidelines in the chart below. Note that the maximums displayed are when using the Enhanced NTCPU (P/N 08931038). Refer to the PCB information for maximums when using the Basic (P/N 0891002) with or without the Feature Upgrade PAL (P/N 0891039).



Item	Description	Max.
NTCPU	32-Bit Central Processing Unit	1 in main cabinet
DSPDB	DSP Resource - Daughter Board	1 installed on NTCPU
8ESIU	8 Digital Stations	16 per system
16ESIU	16 Digital Stations	16 per system
8SLIU	8 Analog Stations	15 per system
8SLIDB	8 Analog Stations - Daughter Board	15 per system
8DSIU	8 DECT Base Stations	1 per system
12DSIU	12 DECT Base Stations	1 per system
16DSTU	16 i-Series Telephones	15 per system
4COIU-LS1	4 Analog/Loop Start Trunks (no ground start)	15 per system
8COIU-LS1	8 Analog/Loop Start Trunks (no ground start)	15 per system
4COIU-LG1	4 Analog/Loop Start Trunks (with ground start)	15 per system
8COIU-LG1	8 Analog/Loop Start Trunks (with ground start)	15 per system
2BRIU	2 Two-Channel BRI Circuits	15 per system
4BRIU	4 Two-Channel BRI Circuits	15 per system
8BRIU	8 Two-Channel BRI Circuits	As T-Bus: 12 per system As S-Bus: 15 per system
1PRIU	24 T1/PRI Trunks/Channels	8 per system
4TLIU	4 E&M Tie Line Trunks	15 per system
4DIOPU	4 DID/OPX Trunks	15 per system
8DIOPU	8 DID/OPX Trunks	15 per system
2FMSU	2 Flash Memory Voice Mail	1 per system
4FMSU	4 Flash Memory Voice Mail	1 per system
4VMSU	4 HDD Voice Mail	1 per system
4VMDB	4 HDD Voice Mail - Daughter Board	1 per system
8SHUBU	8 Switch Hub	8 per system
4VOIPU	4 VoIP Media Gateway	15 per system
4VOIPDB	4 VoIP Media Gateway - Daughter Board	15 per system
16VOIPU	16 VoIP Media Gateway	15 per system
16VOIPDB	16 VoIP Media Gateway - Daughter Board	15 per system

Central Processing Unit (NTCPU) PCB (Figure 2-3)

The NTCPU controls all the functions and operations of the Aspire system using the system software loaded into the NTCPU memory. One 32-bit NTCPU PCB must be installed in the CPU slot in the Main Cabinet. There are two versions of NTCPU. The first version, P/N 0891002, is a 64-port basic CPU. The second version, P/N 0891038, is a feature-enhanced, 256 extension port CPU.

To upgrade from the 64-port NTCPU, a Feature Upgrade chip (P/N 0891039) is available. The NTCPU provides a connector (CN14) for the upgrade PAL EPROM chip. Make sure when installing this upgrade chip on the NTCPU that you wear a grounded wrist strap.

The 64-port basic CPU (P/N 0891002), with the basic factory-installed PAL chip, provides:

- 64 ports maximum for trunks, extensions, and voice mail (internal or external)
- 64 ports maximum for the NEC Aspire Wireless 2.4 GHz and IP Phones
- 256 virtual extensions
- Supports the 4VOIPU PCB and 4VOIPDB

NOT SUPPORTED by the 64-port basic CPU, with the basic factory-installed PAL chip:

- Expansion Cabinet
- DSPDB Daughter Board (limiting the DTMF Receiver, Call Progress Tone Detection and Caller ID Receivers to 32 channels)
- VRS (Requires DSPDB Daughter Board)
- Third-Party CTI/TAPI
- 16VOIPU PCB and 16VOIPDB
- T1 Trunks
- ACD
- PRI Trunks
- BRI S-Bus/T-Bus
- E&M Trunks
- Networking

The 64-port basic CPU (P/N 0891002), with the Feature Upgrade PAL chip, provides:

- 64 ports maximum for trunks, extensions, and voice mail (internal or external)
- 64 ports maximum for the NEC Aspire Wireless 2.4 GHz and IP Phones
- 256 virtual extensions
- Supports the 4VOIPU PCB and 4VOIPDB

The 64-port basic CPU, with the Feature Upgrade PAL chip, supports:

- Expansion Cabinet
- DSPDB Daughter Board (limiting the DTMF Receiver, Call Progress Tone Detection and Caller ID Receivers to 32 channels)
- VRS (Requires DSPDB Daughter Board)
- Third-Party CTI/TAPI
- 16VOIPU PCB and 16VOIPDB
- T1 Trunks
- ACD
- PRI Trunks
- BRI S-Bus/T-Bus
- E&M Trunks
- Networking

The enhanced CPU (P/N 0891038) provides:

- 200 trunk ports maximum
- 256 extension and voice mail (internal or external) ports maximum
- 512 ports maximum for the NEC Aspire Wireless 2.4 GHz and IP Phones
- 256 virtual extensions
- Supports the 4VOIPU PCB and 4VOIPDB

The enhanced CPU supports:

- Expansion Cabinet
- DSPDB Daughter Board (limiting the DTMF Receiver, Call Progress Tone Detection and Caller ID Receivers to 32 channels)
- VRS (Requires DSPDB Daughter Board)
- Third-Party CTI/TAPI
- 16VOIPU PCB and 16VOIPDB
- T1 Trunks
- ACD
- PRI Trunks
- BRI S-Bus/T-Bus
- E&M Trunks
- Networking

The NTCPU provides the following:

- Five diagnostic LEDs which indicate the status of various system functions
During normal operation, the "RUN" LED will be flashing and the remaining LEDs will be off.
- 1019x1019 Time Division Multiplex Switch (TDM Switch)
- Digital Phase Locked Loop (DPLL)
- Tone Generator
- DTMF Tone Sender
- 32 Tone Resources (for DTMF Receiver, Caller ID Receiver, and Call Progress Tone Detection)
- System Tone Sender
- MFC Tone Sender
- MF Signal Sender (Sends caller information to CO for E911)
- Call Progress Tone Detector
- C-Channel Control
- Conference; 64 Channels
- Caller ID Receiver; 32 Channels
- Caller ID Sender; 4 or 10 Channels for Analog Stations
This can be expanded up to 20 by disabling 32 channels of the Conference circuits and disabling the MFC Tone Sender.
- A reset switch (RES) which can be used to reset the system
- A load switch (LOAD) which is used for initial system startup or when upgrading system software
- One Serial Port
- One USB Port
- One Ethernet Port (10 Base-T/100 Base-TX)
- One PCMCIA Slot
- One EXIFU Interface Connector
- Two Audio Input Terminals
- One Audio Output Terminal
- One Night Mode Terminal for External Switch
- One Music On Hold External Source
- HDLC Packet Processing
- Real Time Clock (tolerance 30 seconds/month)
- Internal MOH Generation
- One Connector for DSPDB Daughter Board
- One Connector for PAL EPROM
- One lithium battery (Sony CR2032 or equivalent) which provides battery back-up of system data and RAM memory for approximately 30 months

! IMPORTANT !

After removing a previously installed NTCPU, handle the PCB, carefully, from the edges. If certain solder points/resistors are touched on the back of the PCB, some RAM/temporary memory may be lost (ex: time, date, user-defined settings, etc.)

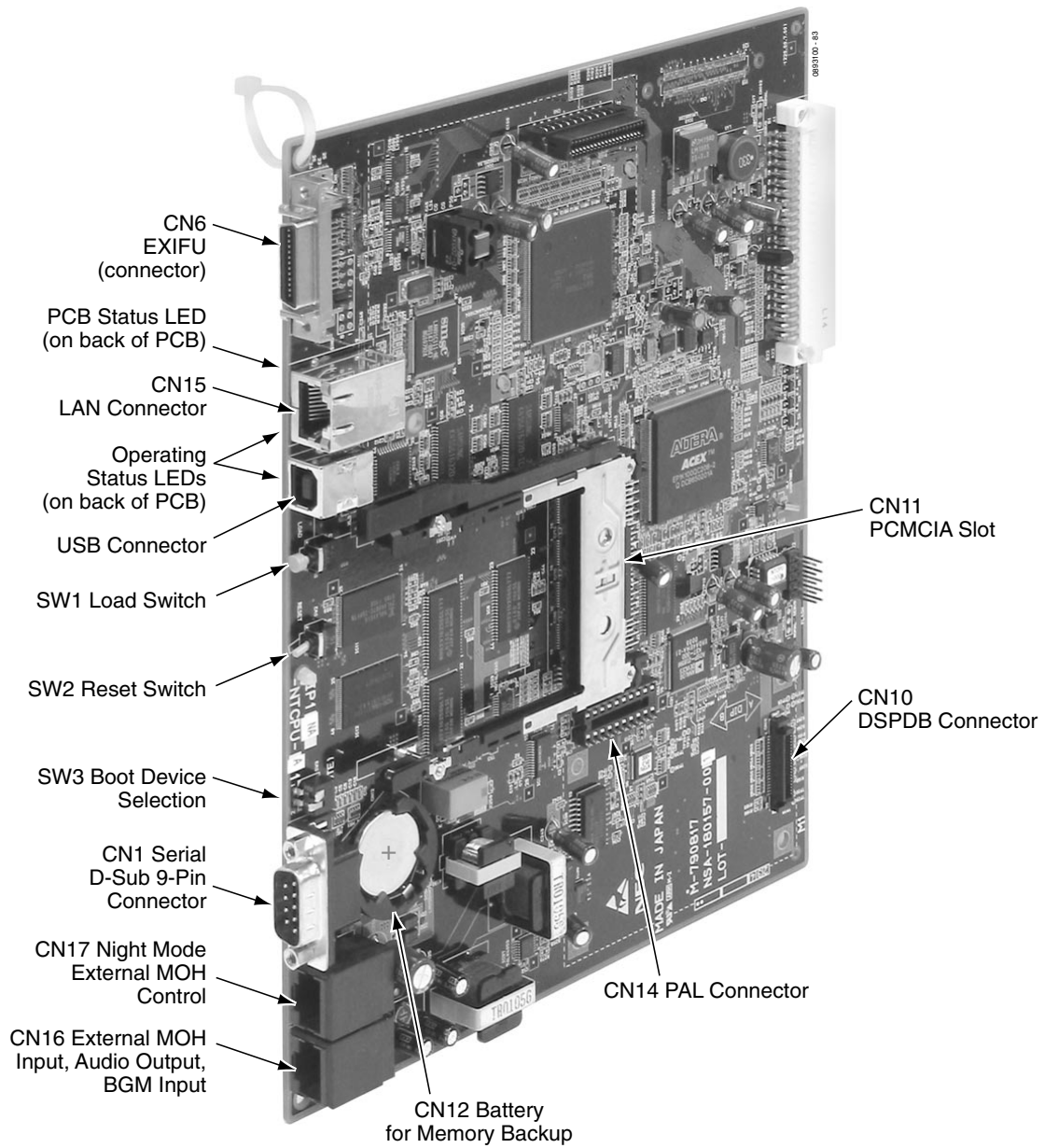


Figure 2-3: CPRU PCB

Switch Settings and LED Indications

Switch	Switch Setting	Operation
SW1 - Load Switch	-	<p>With a system restart or a system reset while holding the SW1 switch (SW3-2 switch set to off):</p> <ul style="list-style-type: none"> With a PC-ATA: System software is updated. Without a PC-ATA: System boots loading stored software. With a Card Other Than a PC-ATA: The card is ignored and the system boots loading stored software.
		<p>With a system restart or a system reset without holding the SW1 switch:</p> <ul style="list-style-type: none"> The system boots loading software stored in flash memory.
SW2 - Reset Toggle	-	The system resets when the toggle switch is lifted using the stored software and data (Hot Start).
SW3 - 1	On	Debugging Mode (CN1 connector used for debugging)
	Off	Normal Mode (CN1 connector used for serial interface)
SW3 - 2	On	(Factory Use) Used to initially load system software
	Off	Normal Mode

The LED indications on the NTCPU represent the following:

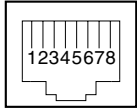
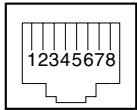
- RUN LED 1 = Indicates the NTCPU is operating
 - LED 0, 2 and 3 = Indicate system alarms
 - LED 4 = Indicates the status of the PCMCIA slot (off with no PC-ATA card installed)
- Refer to Program 90-10 : System Alarm Setup for details on assigning alarm LEDs.*

LED Indication					Status
RUN (LED1)	LED0	LED2	LED3	LED4	
On	Off	Off	Off	On Steady	System starting up
Off	Off	Off	Off	On Steady	System initializing
Off	On	Off	Access Blink	On Steady	Initializing the disk or formatting
Off	Off	On	On	On Steady	Boot program is initializing in the flash memory
Off	On	On	Access Blink	On Steady	Reading system software
On	Blinking	Blinking	Blinking	On Steady	Upgrading system software
On	Blinking	Off	Off	On Steady	Upgrading boot software
On	Blinking	Blinking	Off	On Steady	Finish formatting (SRAM, Flash)
Blinking	Off	Off	Off	On Steady	DRAM error
Blinking	Off	Off	On	On Steady	FPGA version error
Blinking	Off	On	Off	On Steady	SRAM error
Blinking	Off	On	On	On Steady	Flash memory booting error
Blinking	On	On	On	On Steady	Flash memory data error

LED Indication					Status
RUN (LED1)	LED0	LED2	LED3	LED4	
Blinking	Blinking	Blinking	Blinking	On Steady	Reading error of system program
Blinking	Off	Off	Off	On Steady	System starting up

Connector Pin-Outs on NTCPU

Serial Cable Connector - CN1 (D-Sub 9-Pin Male)		
	Pin No.	Signal
	1	DCD
	2	RxD
	3	TxD
	4	DTR
	5	GND
	6	DSR
	7	RTS
	8	CTS
	9	-
USB Cable Connector - CN13 (Standard)		
	Pin No.	Signal
	1	Vcc
	2	-D
	3	+D
	4	GND
Ethernet Cable Connector - CN15 (RJ45) (10Base-T/100Base-TX Port)		
	Pin No.	Signal
	1	Tx+
	2	Tx-
	3	Rx+
	4	
	5	
	6	Rx-
	7	
8		

RJ61 Cable Connector - CN16 (External MOH Source/External Paging)		
NTCPRU Connector	Modular Connector Pin No.	Signal
	1	-
	2	EXMOH
	3	BGM
	4	EXPAG
	5	EXPAG
	6	BGM
	7	EXMOH
	8	-
<ul style="list-style-type: none"> • Pins 3 and 6: BGM Input, Input Impedance = 47 kohm/1 kHz • Pins 4 and 5: External Paging Input • Pins 2 and 7: External Music on Hold Input, Input Impedance 47 kohm/1 kHz 		
RJ61 Cable Connector - CN17 (External Speaker and Night Mode Relay)		
NTCPRU Connector	Modular Connector Pin No.	Signal
	1	-
	2	NTMOD
	3	-
	4	EXCNT
	5	EXCNT
	6	-
	7	NTMOD
	8	-
<ul style="list-style-type: none"> • Pins 3 and 6: External Music (BGM and External MOH), External Paging Speaker Control Relay • Relay = DC (Max. 24 VDC, 0.5A - AC (Max.) 120VAC, 0.25A • Pins 4 and 5: Night Mode Relay Connection, Input Voltage: Break = 48 VDC, Make = 7 mA 		

CPRU Installation (Figure 2-4)

1. Install the battery on the CPRU. The polarity “+” symbol must be on top.
2. Install the DSPDBU daughter board if required. Refer to **DSPDB Daughter Board (Figure 2-6, Figure 2-7)** (page 2-20).
3. Install the PAL EPROM as needed on a 64-port basic NTCPU (P/N 0891002).
 - When installing the chip, be careful not to bend the EPROM pins. Also note that the keyed end of the EPROM should be positioned closest to the ‘1’ pin position. After lining up the pins with the connector, firmly push the EPROM into place.

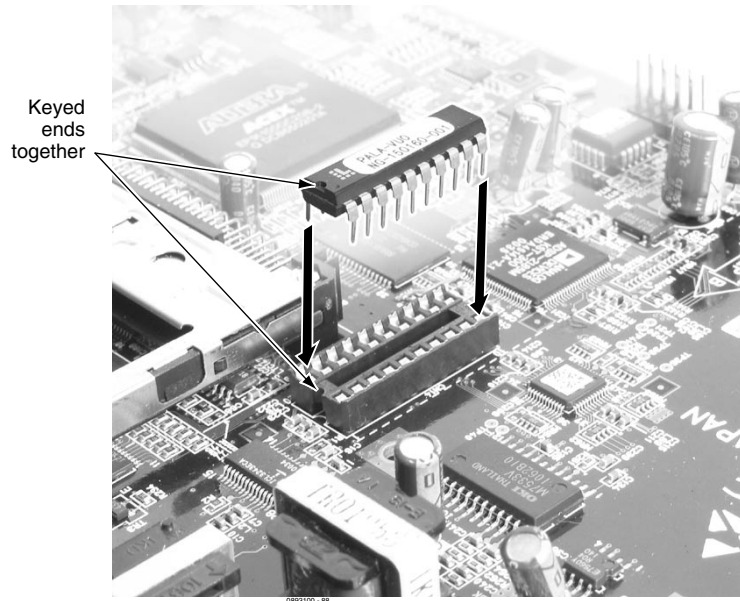


Figure 2-4: INSTALLING THE PAL EPROM

- When removing the chip, use a flat-head screwdriver to gently pry each end of the EPROM up, being careful not to bend the EPROM pins.

4. After being certain that the power supply is shut off, slide the NTCPU into the CPU slot in the main cabinet.
 - Note that the component side of the PCBs should always be facing to the right side of the cabinet (away from the power supplies).*
5. If external BGM or MOH is being installed, plug an RJ61 connector into the CN16 connector on the NTCPU. 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.

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 Aspire requires a system reset, it is recommended that instead of using the reset lever on the NTCPU, that the power be turned off and then back on using the button on the power supply in the PS1 slot (this controls power to both power supplies if there are two installed in the cabinet). With a 2-cabinet system, turn off the expansion cabinet's power supply, then the main cabinet's power supply.

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

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 PCBs are recognized first, set the RUN/BLOCK switches to the BLOCK position until the system has reset. Then, move the switches to the RUN position 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. Push the power button on the PS1 power supply to power down the system.
With a 2-cabinet system, turn off the expansion cabinet's power supply, then the main cabinet's power supply.
2. Once the system has powered down, push in and hold the Load button.
3. Press the power button to power the system back up.
With a 2-cabinet system, turn on the expansion cabinet's power supply, then the main cabinet's power supply.
4. Continue holding the Load button for approximately 3 seconds.
5. Release the Load button.
6. When the system has completed reloading the software (2 minutes), the Status LED will be flashing on the NTCPU.

To Perform a Hot Start:

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

1. Push the power button on the PS1 power supply to power down the system. Once it has powered down, press the button again 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 NTCPU.

To Perform a Software Upgrade:

! Important !

To save customer data prior to updating, a blank 32 meg PC-ATA flash card (P/N 0891061) is required. Insert the card into the NTCPU and, using Program 90-03, save the software to the PC-ATA card. Note that a PC-ATA card can only hold one customer database. Each database to be saved will require its own separate card. Use Program 90-04, with the database to be restored installed in the NTCPU, to reload the customer data if necessary.

After uploading programming data to the system using Program 90-04, exit programming mode (this could take a minute or more to save the database), then reset the system by powering down and back up. Wait a few minutes for the programming to take affect before accessing any lines or special system features. Otherwise some unusual LED indications may be experienced. To prevent the PC-ATA card from possibly being over-written, remove the card after downloading the database.

When restoring a database file, as the slot definitions may be different, remove all PCBs from the system except the NTCPU and the ESIU in slot 1. After the system has been reset, you can reinstall the PCBs. You can use Program 10-03 or Program 90-13-03 prior to updating to record the current slot definitions.

1. Turn the system power off by pressing the power button on the power supply in the PS1 slot (this controls power to both power supplies if there are two installed in the cabinet).
2. Once the system has completed its powering down cycle (all LEDs are off), insert the PC-ATA card containing the software upgrade (P/N 0891060) into the PCMCIA card slot on the NTCPU.
3. Push in and hold the Load button.
4. Turn the system power on by pressing the power button to power the system back up.
5. Continue holding the Load button for approximately 10 seconds.
6. Release the Load button.
7. Wait until the Status LED on the NTCPU have the following indications (approximately 2 minutes): LED 1: Steady Green, LED 0: Flashing Red, LED 2: Flashing Red, LED 3: Flashing Red, LED 4: Steady Red.
8. Turn the system power off by pressing the power button on the power supply in the PS1 slot.
9. Once the system has completed its powering down cycle (all LEDs are off), remove the PC-ATA card.
10. Turn the system power back on.
11. When the system has completed reloading the software, the Status LED will begin flashing on the NTCPU. The remaining 4 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.

Expansion (EXIFU) PCB (Figure 2-5)

The EXIFU PCB provides a connection from the main cabinet to the expansion cabinet. This connection is required with any 2-cabinet setup. Included with the EXIFU PCB is a proprietary cable which must be used to connect the main cabinet and expansion cabinets together.

To install an EXIFU PCB:

1. Install the EXIFU into the CPU/EXP slot in the expansion cabinet.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
2. Install the EXIFU cable to the CN2 connector on the EXIFU PCB. Connect the opposite end to the CN6 connector on the NTCPU.

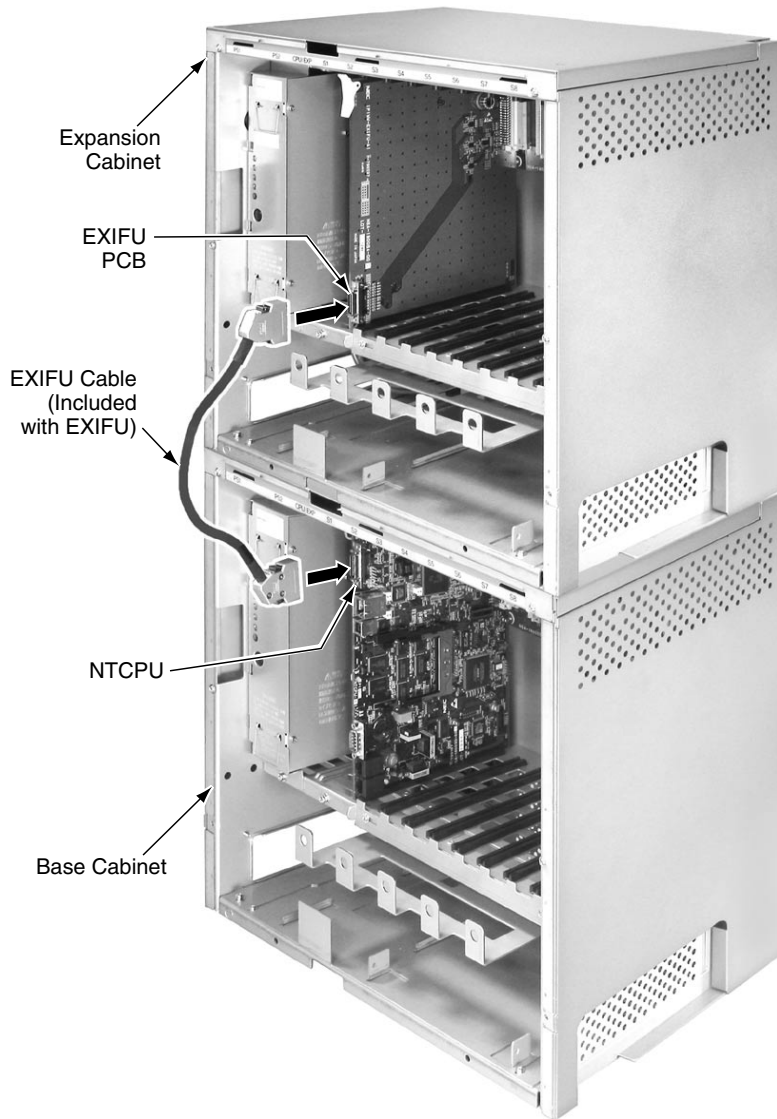


Figure 2-5: EXIFU PCB INSTALLATION

DSPDB Daughter Board (Figure 2-6, Figure 2-7)

The DSPDB provides additional DSP resources as well as the option for the VRS (Voice Response System) feature. This daughter board is mounted on the NTCPU and provides:

- 32 Tone Resources (for DTMF Receiver, Caller ID Receiver, and Call Progress Tone Detection)
- 16 VRS Circuits with a VRS Flash Card Installed (replays up to 16 circuits simultaneously, recording: up to 8 circuits simultaneously)
- Compact Flash Slot for VRS Feature

The receiver circuits are used for DTMF receivers, call progress tone detection, and Caller ID receivers.

To install a DSPDB Daughter Board:

1. Included with the DSPDB are four spacers. Install one spacer in each corner of the daughter board. Make sure to attach the spacers from the back of the daughter board so when installed, the compact flash slot is facing up.
2. Position the daughter board over the CN10 connector on the NTCPU. Push the board into the connector on the NTCPU. Gently push the corners of the daughter board down so the spacers lock into the NTCPU.

To remove the daughter board, use pliers to squeeze the top of the spacers together, then gently pull the daughter board off.

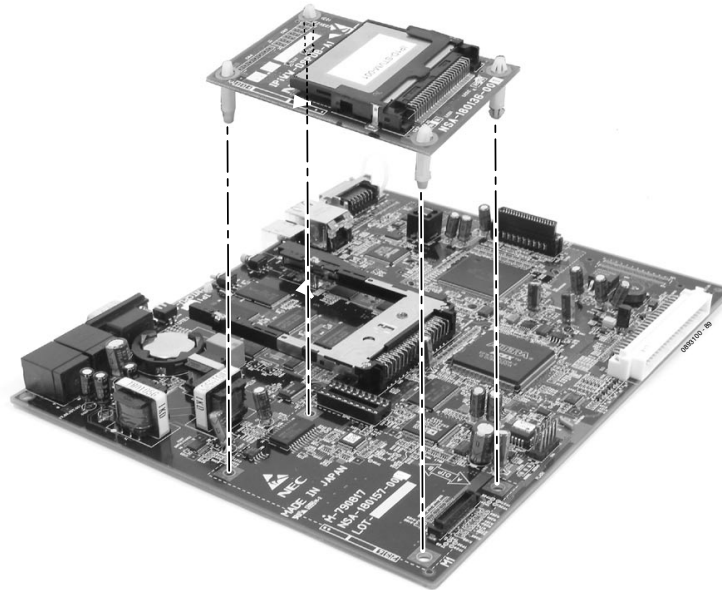
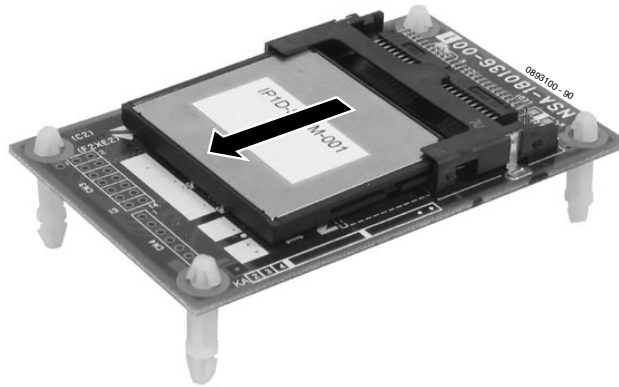


Figure 2-6: DSPDB DAUGHTER BOARD INSTALLATION

To Upgrade the DSPDB Compact Flash Card:

1. With the system power off, remove the NTCPU.
2. Remove the compact flash card from the DSPDB daughter board.
3. Insert the new compact flash card.
4. Reinstall the NTCPU.

**Figure 2-7: REMOVING THE COMPACT FLASH CARD**

Digital Station (8/16ESIU) PCB (Figure 2-8)

The ESIU PCB provides:

- 8 (8ESIU) or 16 (16ESIU) digital extension circuits (used for digital telephones, DSS consoles, 1SLTAD adapters, 2PGDAD adapters)
- 2 (8ESIU) or 4 (16ESIU) extension status LEDs (each LED indicates status for 4 extensions - BL1 used for ports 1-4, BL2 for ports 5-8, BL3 for ports 9-12, and BL4 for ports 13-16).
- 1 PCB status LED
- 1 run/block switch

The CN102, CN103, CN202, and CN203 connectors each provide connection to 4 digital station ports. With the 8ESIU PCB the CN202 and CN203 connectors as well as the BL3 and BL4 LEDs are removed from the PCB.

In order to program the system, an 8ESIU or 16ESIU PCB should be installed in slot 1. However, system programming can be done using the PCPro or WebPro applications or through a VoIP telephone. The ESIU requires one universal slot, with a maximum of 16 PCB's per system.

The 8ESIU consumes 8 ports ranging between ports 001-256. The 16ESIU consumes 16 ports within the same port range.

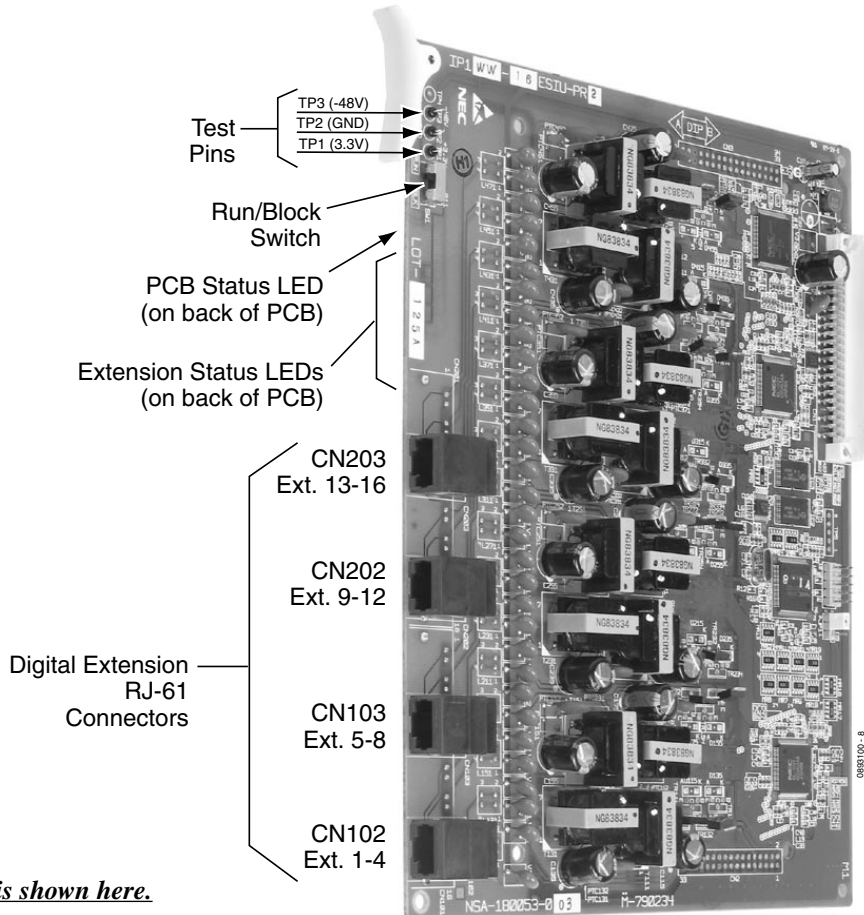
	PCB Maximum's		
	Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
8ESIU	8	8	16
16ESIU	4	4	16

Connector Pin-Outs on ESIU

RJ61 Cable Connector - CN102, CN103, CN202, CN203		
	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

To install the ESIU PCB:

1. Set the run/block switch **DOWN**.
2. Install the ESIU into a slot.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
3. Set the ESIU run/block switch **UP**.



The 16ESIU PCB is shown here.

Figure 2-8: ESIU INSTALLATION

Analog Station (8SLIU) PCB (Figure 2-9)

The 8SLIU PCB provides:

- 8 analog extension ports (used for on-premise analog telephones, fax machines, and analog modems)
- 16 extension status LEDs
- 1 PCB status LED
- 1 run/block switch
- 8 SW1 switches which provide constant current type battery feeding (set to either 20mA [default] or 35mA)
- Connector for 8SLIDB Daughter Board
- Ring Generator
- Message Wait Lamping Ability

Note: 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 CN3 and CN5 connectors each provide connection to 4 analog station ports and are not polarity sensitive.

PCB Maximum's		
Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
7	7	15

Connector Pin-Outs on 8SLIU

RJ61 Cable Connector - CN3		
	Pin No.	Connection
	1	CH4 L1 (tip for port 4)
	2	CH3 L1 (tip for port 3)
	3	CH2 L1 (tip for port 2)
	4	CH1 L2 (ring for port 1)
	5	CH1 L1 (tip for port 1)
	6	CH2 L2 (ring for port 2)
	7	CH3 L2 (ring for port 3)
	8	CH4 L2 (ring for port 4)
RJ61 Cable Connector - CN5		
	Pin No.	Connection
	1	CH8 L1 (tip for port 8)
	2	CH7 L1 (tip for port 7)
	3	CH6 L1 (tip for port 6)
	4	CH5 L2 (ring for port 5)
	5	CH5 L1 (tip for port 5)
	6	CH6 L2 (ring for port 6)
	7	CH7 L2 (ring for port 7)
	8	CH8 L2 (ring for port 8)

Installing an 8SLIU PCB:

1. Set the run/block switch **DOWN**.
If the 8SLIDB is to be used, install this prior to inserting the 8SLIU PCB into the cabinet.
2. Install the 8SLU into the slot.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
3. Set the 8SLIU's run/block switch **UP**.

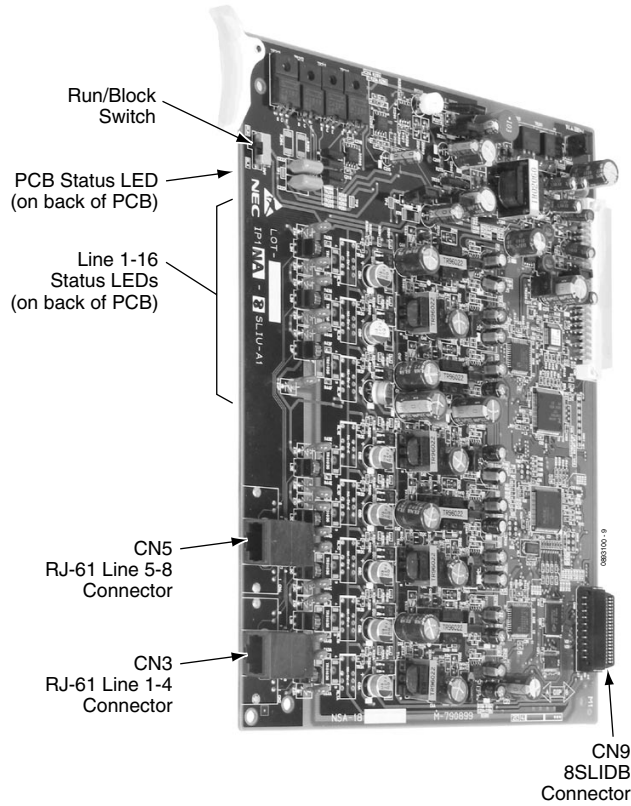


Figure 2-9: 8SLIU INSTALLATION

Analog Station (8SLIDB) Daughter Board (Figure 2-10 - Figure 2-11)

The 8SLIDB daughter board provides:

- 8 analog extension ports (used for on-premise analog telephones, fax machines, and analog modems)
- 8 SW1 switches which provide constant current type battery feeding (set to either 20mA [default] or 35mA)
- Connector for 8SLIU PCB
- Ring Generator
- Message Wait Lamping Ability

Note: 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 CN3 and CN5 connectors each provide connection to 4 analog station ports and are not polarity sensitive. The 8SLIDB is installed on the 8SLIU PCB.

PCB Maximum's		
Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
3	3	15

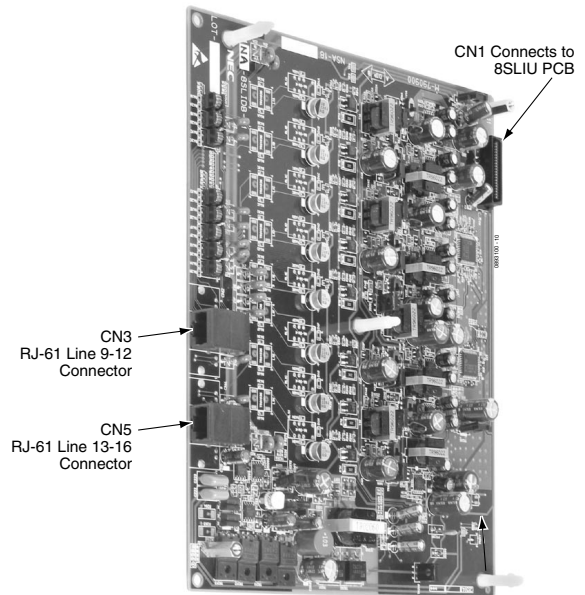


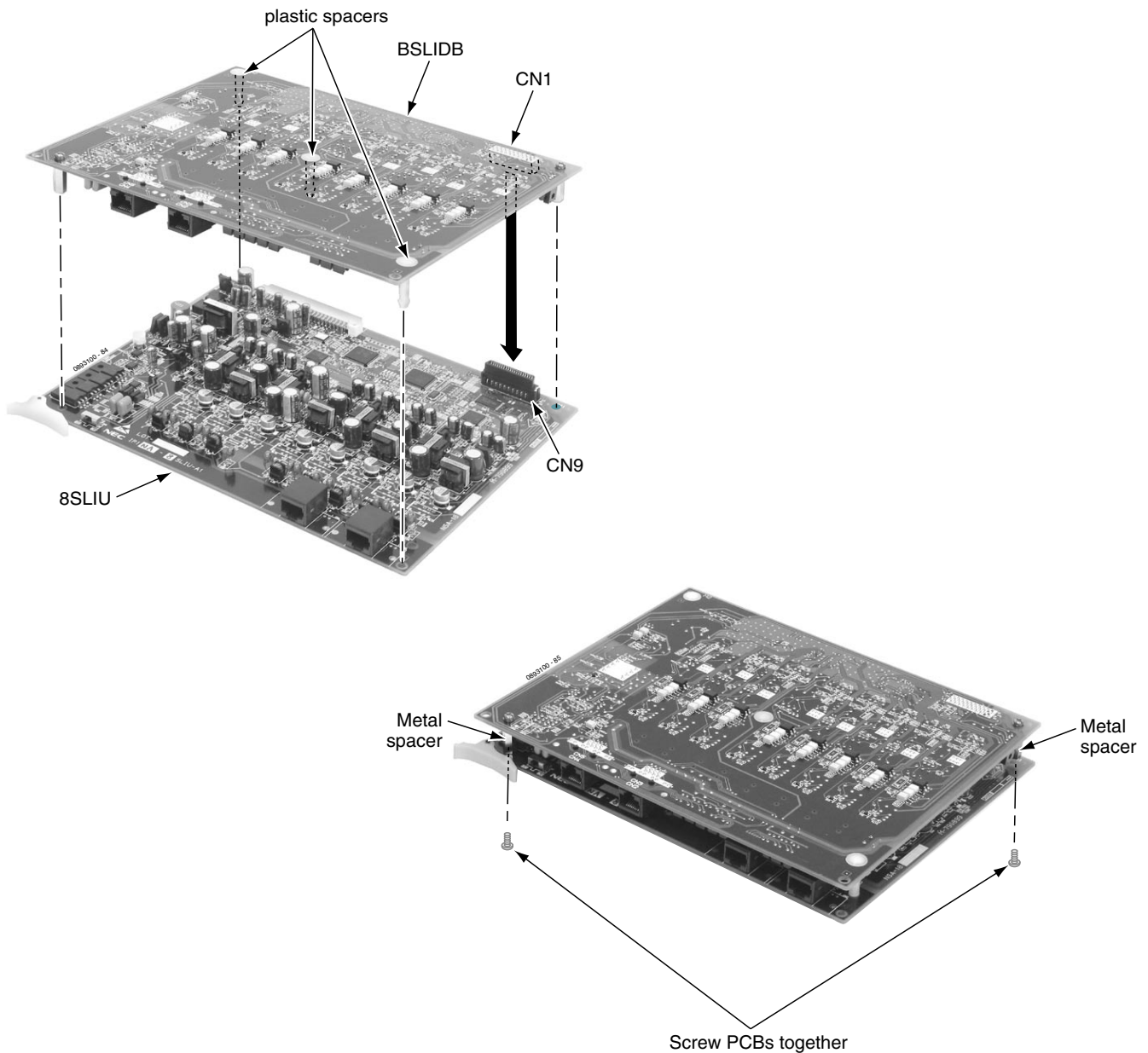
Figure 2-10: 8SLIDB

Connector Pin-Outs on 8SLIDB

RJ61 Cable Connector - CN3		
	Pin No.	Connection
	1	CH12 L1 (tip for port 12)
	2	CH11 L1 (tip for port 11)
	3	CH10 L1 (tip for port 10)
	4	CH9 L2 (ring for port 9)
	5	CH9 L1 (tip for port 9)
	6	CH10 L2 (ring for port 10)
	7	CH11 L2 (ring for port 11)
	8	CH12 L2 (ring for port 12)
RJ61 Cable Connector - CN5		
	Pin No.	Connection
	1	CH16 L1 (tip for port 16)
	2	CH15 L1 (tip for port 15)
	3	CH14 L1 (tip for port 14)
	4	CH13 L2 (ring for port 13)
	5	CH13 L1 (tip for port 13)
	6	CH14 L2 (ring for port 14)
	7	CH15 L2 (ring for port 15)
	8	CH16 L2 (ring for port 16)

Installing an 8SLIDB Daughter Board:

1. Included with the 8SLIDB are three plastic spacers and two metal spacers. The plastic spacers are installed diagonally across the daughter board. The metal spacers are then installed in the remaining two corners. The metal spacers are each secured by a screw, securing the two boards together. Make sure to attach the spacers on the front of the daughter board so when installed, the components are facing the 8SLIU PCB.
2. Position the 8SLIDB's CN1 connector over the CN9 connector on the 8SLIU PCB. Press the boards together, ensuring the plastic spacers lock in place.
3. Install the screws for the metal spacers.
4. Install the 8SLIU PCB into the slot.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
5. Set the 8SLIU's run/block switch **UP**.

**Figure 2-11: 8SLIDB INSTALLATION**

i-Series Digital Station PCB (16DSTU) (Figure 2-12 - Figure 2-11)

Each 16DSTU PCB provides the Aspire system the ability to connect up to 16 i-Series telephones with each port supporting 1 B-channel. The system, using system software 1.06 or higher, allows up to 15 DSTU PCBs (limited by load factor) to be installed, allowing up to 240 i-Series telephones to be connected. Each phone having a load factor of “3”. The following i-Series phones are compatible with the Aspire system:

Model 2 922xx/926xx Series Keysets

32-Button Display Phone, P/N 92293B / 92293W / 92673
32-Button Standard Phone, P/N 92290B / 92290W / 92670
16-Button Display Phone, P/N 92373C / 92373W / 92573 / 92563
16-Button Standard Phone, P/N 92370B / 92370W / 92570 / 92560

Model 3 i-Series Keysets *

34-Button Display Phone, P/N 92783
28-Button Display Phone, P/N 92763
28-Button Standard Phone, P/N 92760
22-Button Display Phone, P/N 92753A / 92750A

** i-Series keysets do not have a gain setting database and will use the phone's initial setting*

In addition, the Remote Extender is also supported using DSTU ports:

The following i-Series hardware is **NOT** supported on the Aspire system:

- 2OPX
- 900/900i/910i Cordless Phone
- DCI-L
- DSLT
- VAU
- Data Module
- Speakerphone Module
- 3ACI
- DCI-A/B
- Digital VANGARD Voice Mail
- DSS Consoles
- Analog Module
- Off-Hook Voice Announce Module
- Super Display Phones

When using i-Series phones on the Aspire system, the following features are **NOT** supported:

- Directory Dial
- Soft Keys
- Changing Incoming CO and ICM Ring Tones (Program 11-11-20)
- Program 10-03 : PCB Setup (DSTU PCB has no programmable options)
- Program 90-07-01 : Extension Control
- Super Display Operation
- Headset Key
- Telephone System Programming (###*)
- Program 90-17-01 : Display Firmware Version

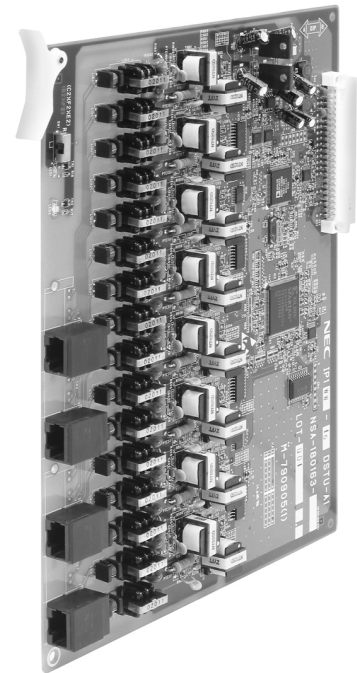


Figure 2-12: 16DSTU PCB

In addition to the above, the 92290x, 92670, 92370x, 92570, 92560, and 92760 phones do **NOT** support:

- Check Abandon Calls (CHECK + CALL2)
- Check Port/Name (CHECK + CALL1)
- Name Program (Service Code 800)
- Language Display (Program 15-02-01)
- Time and Display Display Modes (Program 20-02-07)

Conditions:

- As the Aspire keysets provide 24-character displays and the i-Series keysets provide 20-character displays, the i-Series phones will not indicate any characters over the 20-character limit.
- Some languages are not supported by the i-Series phones (such as Norwegian and Danish) due to the LCD controller differences between the i-Series and Aspire phones.
- The NSL is not supported with Aspire Mail.

2

Installing the 16DSTU PCB:

1. Attach a grounded wrist strap to your wrist and a grounded metal object (such as CEU ground).
2. Remove the cover from the common equipment cabinet by unscrewing the two captive screws on the bottom of the cabinet cover. Slide the front cover to the right then pull straight out.
3. Before proceeding further, make sure the CPRU SW3 - 2 Switch is set to Off (down) in order to retain the current system programming.
4. Set the DSTU Run/Block switch **DOWN**.
5. Install the DSTU PCB into an available slot.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
6. Set the DSTU Run/Block switch **UP**.
7. The DSTU PCB has four connectors (CN6, CN7, CN8, CN9). Each connector is used to connect up to four i-Series station ports.

DSIU PCB (4/8/12DSIU) (Figure 2-12 - Figure 2-11)

The 4DSIU, 8DSIU or 12DSIU PCB provides the ability to use Aspire Wireless (DECT) phones with the Aspire system. Each 4DSIU PCB allows up to 8 Base Stations to be connected, - the 8DSIU PCB allows up to 8 - the 12DSIU PCB allows up to 12. Each RFP connector on the PCB provides connection to 4 Base Stations. As the Base Stations are powered by the DSIU PCB, whenever a DSIU PCB is installed in an Aspire cabinet, **two power supplies must be installed**. Only one DSIU PCB can be installed in a system with a maximum of 120 handsets and 12 Base Stations connected.

The load factor for each version of PCB is 10. In addition, each Base Station on the card adds an additional load factor of 2. So the total load factor for the 4DSIU = 18; the 8DSIU = 26; the 12DSIU = 34. (For example, with a 4DSIU, the PCB's load factor is 10. There are a maximum of 4 Base Stations which can be connected, each with a load factor of 2. The total load factor for the PCB (10) with all possible Base Stations connected (4 x 2=8) would be 18.) Refer to the Aspire M/L Hardware Manual (P/N 0893100) for details on the load factor restrictions.

The maximum number of B-channels supported is 32, which means that the DSIU PCB (any version) can support a maximum of 32 conversations at one time.

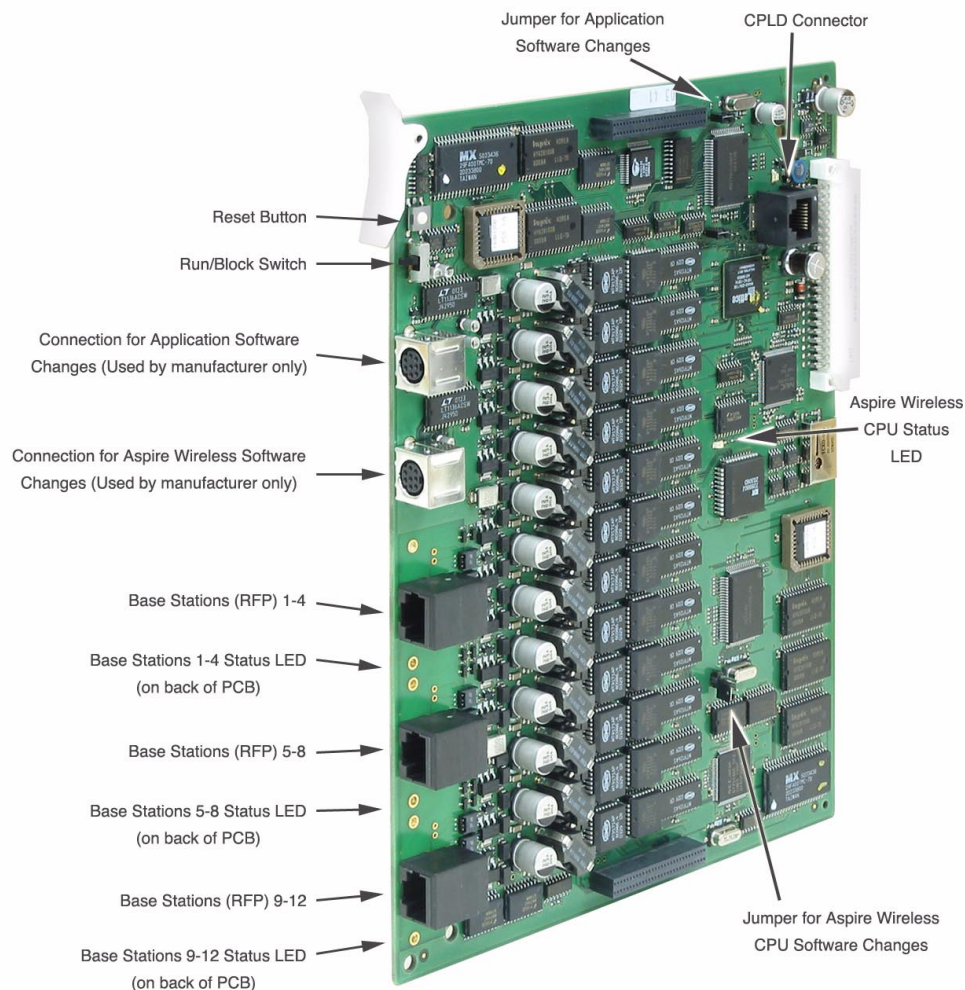


Figure 2-13: DSIU PCB

Cable Pin-Outs

Base Station Connector Pin-Out:

Pin No.	Connection
1	Base Station 4
2	Base Station 3
3	Base Station 2
4	Base Station 1
5	Base Station 1
6	Base Station 2
7	Base Station 3
8	Base Station 4



Mini 8-Pin DIN Connector Pin-Out:

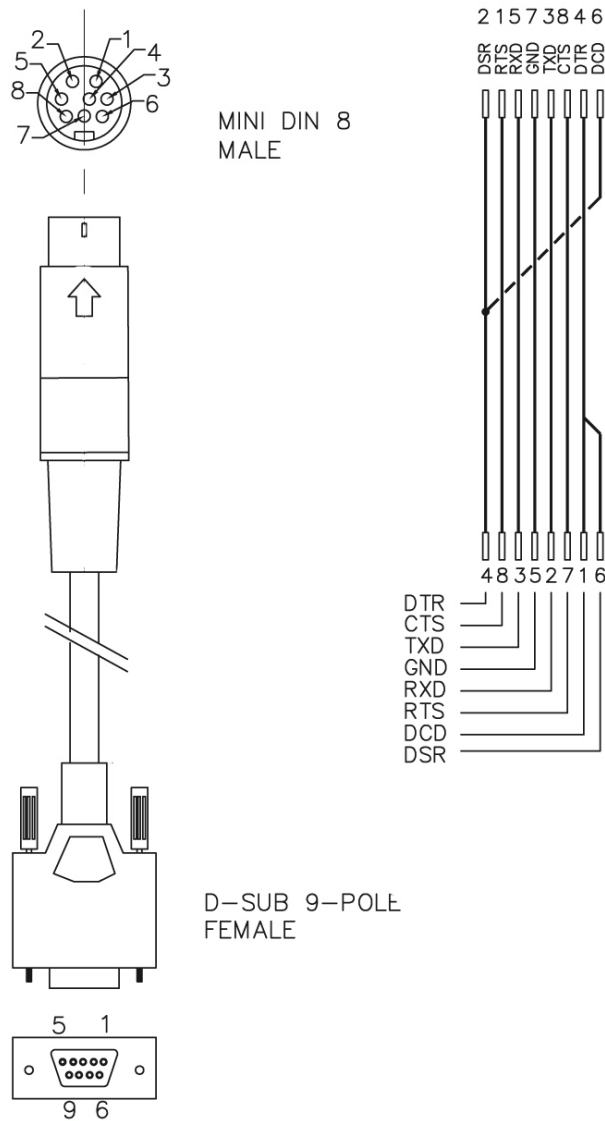


Figure 2-14: DSIU CONNECTOR PIN-OUT

Analog Trunk (4/8COIU) PCB (Figure 2-15)

There are two different types of the COIU PCB. One providing ground start trunks - the other is for loop start trunks only.

The COIU-LS1 PCB provides:

- 4 (4COIU-LS1) or 8 (8COIU-LS1) analog loop start line/trunk circuits - no ground start is provided
- 4 (4COIU-LS1) or 8 (8COIU-LS1) trunk status LEDs
- 4 (4COIU-LS1) or 8 (8COIU-LS1) Caller ID Circuits
- 2 (4/8COIU-LS1) Power Failure Transfer Circuits
- 1 PCB status LED
- 1 run/block switch

The COIU-LG1 PCB provides:

- 4 (4COIU-LG1) or 8 (8COIU-LG1) analog loop start/ground start line/trunk circuits
- 4 (4COIU-LG1) or 8 (8COIU-LG1) trunk status LEDs
- 4 (4COIU-LG1) or 8 (8COIU-LG1) Caller ID Circuits
- 2 (4/8COIU-LG1) Power Failure Transfer Circuits
- 1 PCB status LED
- 1 run/block switch

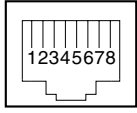
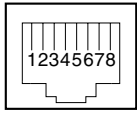
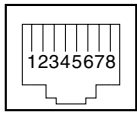
The CN3 and CN5 connectors each provide connection to 4 analog trunk ports, ***which are polarity sensitive (tip to tip, ring to ring)***. The power failure circuits, however, are not polarity sensitive. .

PCB Maximum's			
	Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
4COIU	7	14	15
8COIU	7	7	15

! Important !

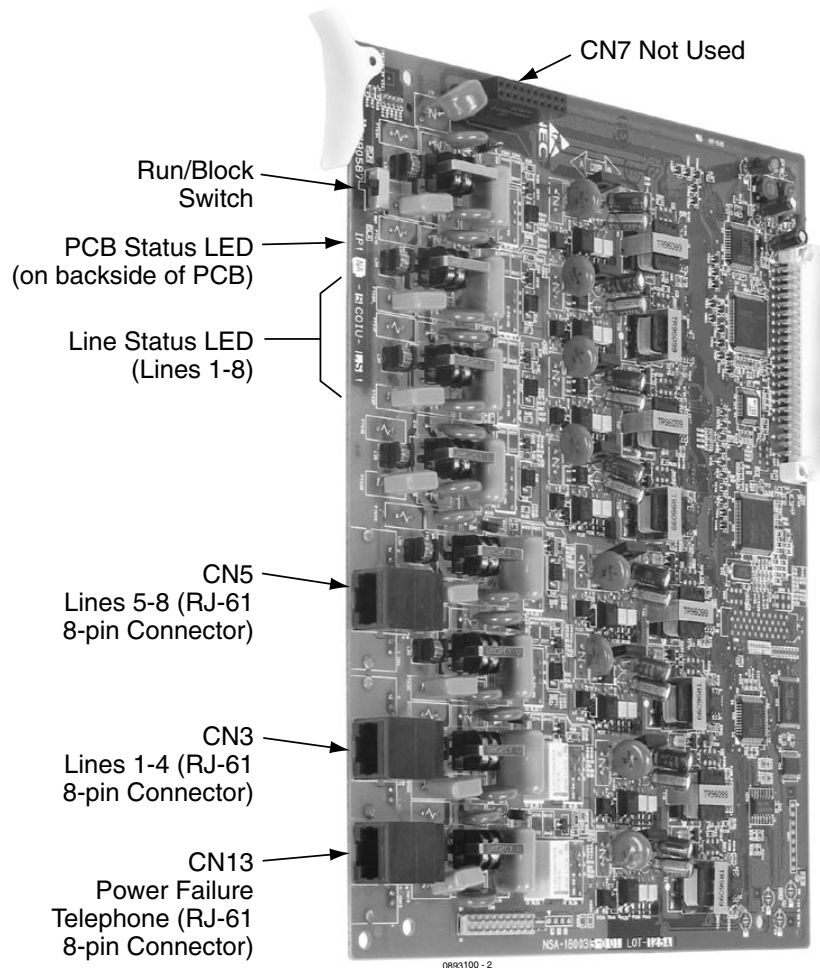
- When using the COIU-LG1 PCB for ground start trunks, the PBX ground ***must*** be connected as described on page 1-34 or the trunks will not function correctly.
- When connecting the RJ61 cables to the COIU PCB, note the position of the Power Failure connector. Do not confuse this connector as the trunk connector.

Connector Pin-Outs on COIU PCB

RJ61 Cable Connector - CN3, Trunks		
The CN3 and CN5 connectors <i>are polarity sensitive (tip to tip, ring to ring)</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	
RJ61 Cable Connector - CN5, Trunks (8COIU Only)		
	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	
RJ61 Cable Connector - CN13, SLT Interface for Power Failure		
	Pin No.	Connection
	1	-
	2	-
	3	Circuit 2 - Tip
	4	Circuit 1 - Ring
	5	Circuit 1 - Tip
	6	Circuit 2 - Ring
	7	-
8	-	

Installing the Analog Trunk PCB:

1. Set the run/block switch **DOWN**.
2. Install the COIU into a slot.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
3. Set the COIU run/block switch **UP**.
With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slowly.
Use Program 14-02-14 to set the trunks as loop or ground start. Loop and ground starts can be combined on one PCB.



The 8COIU PCB is shown here.

Figure 2-15: 4/8COIU INSTALLATION

Direct Inward Dial (DID) (4/8DIOPU) PCB (Figure 2-16)

The 4/8DIOPU PCB 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.

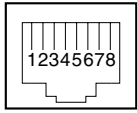
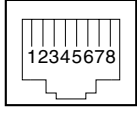
The DIOPU PCB provides:

- 4 (4DIOPU) or 8 (8DIOPU) DID trunk circuits
- 4 (4DIOPU) or 8 (8DIOPU) DID trunk status LEDs
- 1 PCB status LED
- 1 run/block switch

The CN3 and CN5 connectors each provide 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.

PCB Maximum's			
	Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
4DIOPU	7	14	15
8DIOPU	7	7	15

Connector Pin-Outs on DIOPU PCB

RJ61 Cable Connector - CN3			
	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
RJ61 Cable Connector - CN5 (8DIOPU Only)			
	Line No.	Pin No.	Connection
	5	5	Tip
		4	Ring
	6	3	Tip
		6	Ring
	7	2	Tip
		7	Ring
	8	1	Tip
		8	Ring

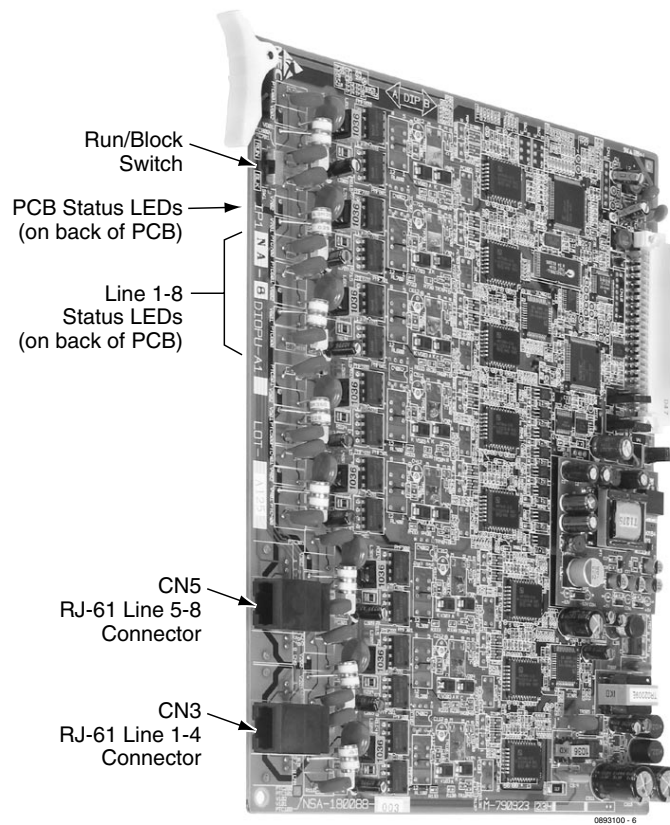
Installing the Direct Inward Dial PCB:

1. Set the run/block switch **DOWN**.
2. Install the DIOPU PCB into a slot.

Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.

3. Set the run/block switch **UP**.

With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slowly.



The 8DIOPU PCB is shown here.

Figure 2-16: DIOPU PCB INSTALLATION

Tie Line (4TLIU) PCB (Figure 2-17)

The 4TLIU Tie Line PCB is an out band dial type analog tie line interface PCB. The PCB supports system connections to either 2-wire (four lead, tip/ring) or 4-wire (eight lead, tip/ring/tip 1/ring 1) E&M signalling tie lines (determined in Program 10-03). Using switches on the PCB, each circuit type can be set as Type I, II, III, IV, or V. Each PCB requires one universal slot and provides:

- 4 4-circuit tie line interfaces
- 4 tie line status LEDs
- 1 PCB status LED
- 1 run/block switch
- 2 straps and 1 switch per circuit to determine the circuit type

PCB Maximum's		
Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
-	14	15

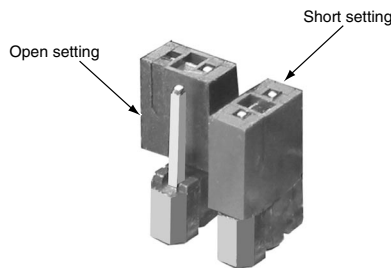
! Important !

When a router or multiplexer is connected instead of a trunk, the SG terminal of the router or multiplexer must be connected to the PBXG and FG grounding terminals on the Aspire cabinet. When a trunk is connected, the PBXG and FG terminals must be connected to the ground. If the PBXG terminal is not connected correctly, the signal may fail.

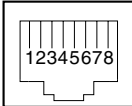
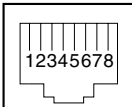
The PCB contains 2 straps and 1 switch. How these items are set determines the type of signaling the system uses. The type of lines the central office provides the customer determines how these switches should be set.

Circuit Type	Channel/Circuit Number 1-4 (CN100-CN400)		
	SWn01 Setting ¹	Sn01 Setting ¹	Sn02 Setting ¹
I	I	Short	Short
II	I	Open	Open
III	V	Open	Short
IV	I	Open	Open
V	V	Short	Short

¹ The "n" is the circuit number being set.



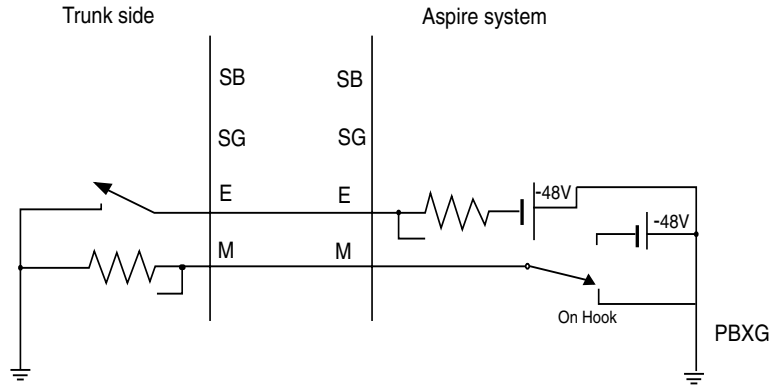
Connector Pin-Outs on 4TLIU PCB

RJ61 Cable Connector - 2-Wire E&M, CN100 - CN400																		
	Pin No.	Connection	Description															
	1	SB	Ground wire for control															
	2	M	Control signal to trunk															
	3	-																
	4	R	Voice signal both ways															
	5	T	Voice signal both ways															
	6	-																
	7	E	Control signal from trunk															
	8	SG	Ground wire for control															
RJ61 Cable Connector - 4-Wire E&M, CN100 - CN400																		
	Pin No.	Connection	Description															
	1	SB	Ground wire for control															
	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	SG	Ground wire for control															
<ul style="list-style-type: none"> Note: Using Type I or Type IV, a system loop back test can be performed by connecting CN100 to CN200. <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><u>CN100</u></th> <th></th> <th><u>CN200</u></th> </tr> </thead> <tbody> <tr> <td>E</td> <td>→</td> <td>M</td> </tr> <tr> <td>M</td> <td>→</td> <td>E</td> </tr> <tr> <td>R</td> <td>→</td> <td>R</td> </tr> <tr> <td>T</td> <td>→</td> <td>T</td> </tr> </tbody> </table>				<u>CN100</u>		<u>CN200</u>	E	→	M	M	→	E	R	→	R	T	→	T
<u>CN100</u>		<u>CN200</u>																
E	→	M																
M	→	E																
R	→	R																
T	→	T																

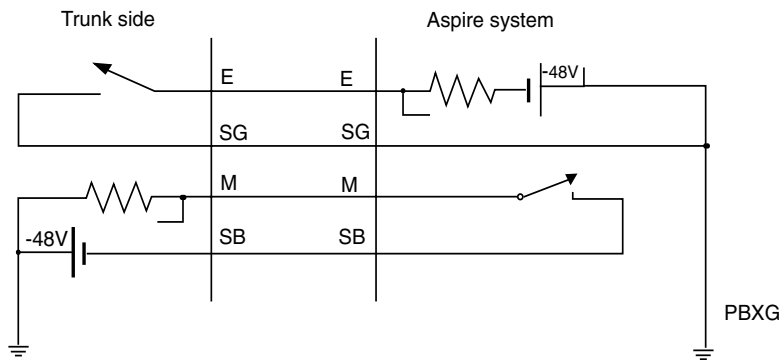
Signaling Method for Circuit Types

Control Signal Connection for Type 1

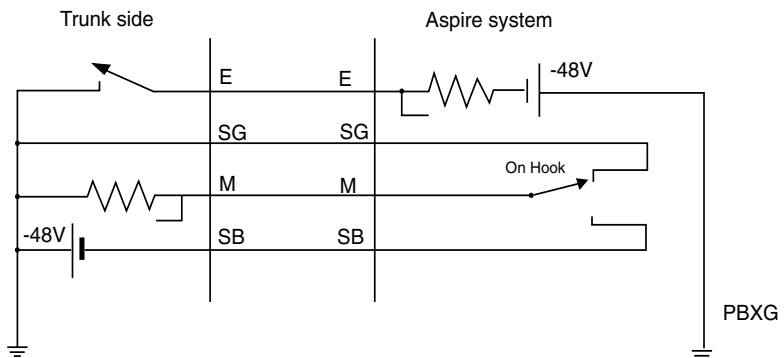
Type 1

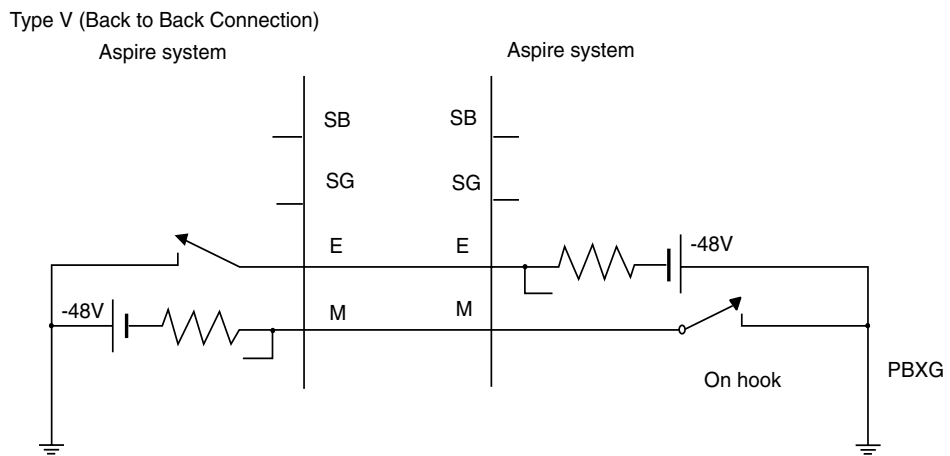
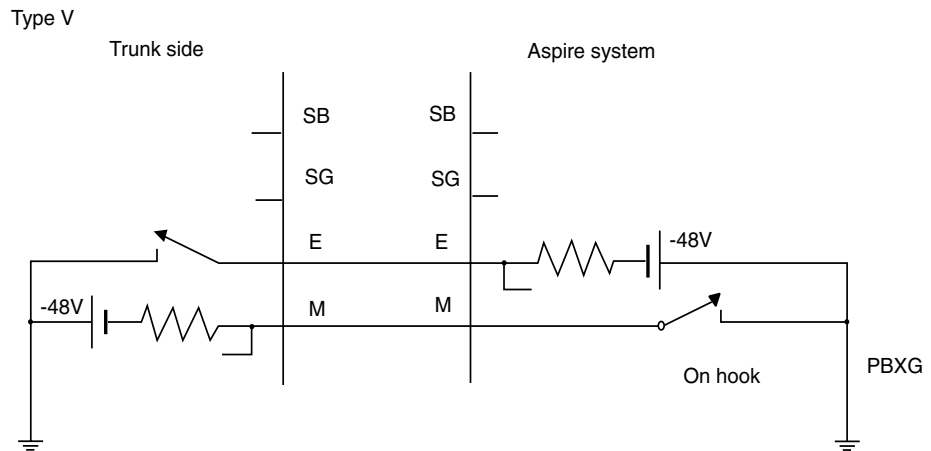
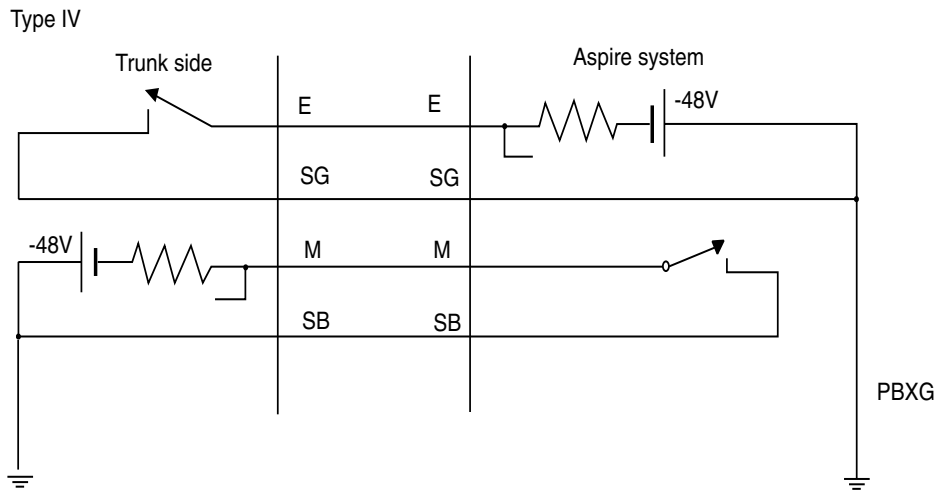


Type II



Type III





Installing the 4TLIU PCB:

1. Set the run/block switch **DOWN**.
2. Set the straps for either the 2-wire or 4-wire (see Figure 2-17).
3. Set the straps for signaling type (1-5).
4. Install the 4TLIU into a slot.

Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.

5. Set the run/block switch **UP**.

With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slow.

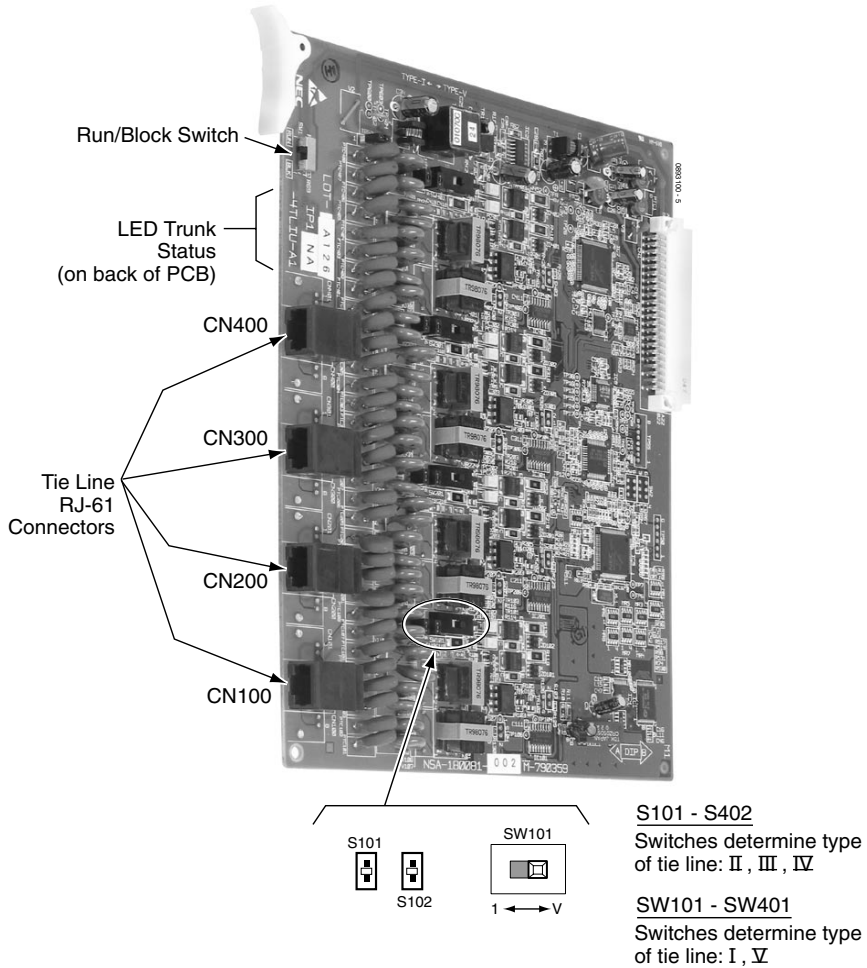


Figure 2-17: 4TLIU TIE LINE PCB INSTALLATION

BRI (2/4/8BRIU) Interface PCB (Figure 2-18)

The BRI PCB provides:

- 2 (2BRIU), 4 (4BRIU), or 8 (8BRIU) 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 (2BRIU), 4 (4BRIU) or 8 (8BRIU) trunk/extension status LEDs
- 1 PCB status LED
- 1 run/block switch

The BRI Interface PCB uses a single universal slot. Each PCB connects to the network via an NTI Network Termination. With the maximum number of PCBs installed, the following can be provided:

- The 2BRI provides 30 BRI circuits and 60 BRI channels.
- The 4BRI provides 60 BRI circuits and 120 BRI channels.
- The 8BRI, when used as T-Bus, provides 96 BRI circuits and 192 BRI channels. When used as S-Bus, 120 BRI circuits and 240 S-Bus station ports are provided.

The trunk circuit can be connected to either an ISDN trunk or ISDN telephone set, depending on the SW102 through SW802 switch settings. When used for S-Bus, a maximum of 8 ISDN terminals can be connected to each circuit.

On the 8BRIU, the first 4 ISDN telephone circuits (1-4) are supplied with DC power from the Aspire system. If the last four circuits (5-8) are to be used for S-Bus, they must use ISDN telephone sets which provide their own local power supply as the system does not provide DC power to these circuits.

	PCB Maximum's		
	Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
2BRIU	-	14	15
4BRIU	-	7	15
8BRIU	-	3	12: T-Bus 15: S-Bus

Setting the SW100-SW800 Switches

In the following cases, the SW100-SW800 switches should be set to the ON position:

- 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.
- If the channel is assigned as S-Bus.

Otherwise, the SW100-SW800 switches should be set to the OFF position.

Switch Name	Switch Position	Result	Comments
SW2	RUN	PCB Active	
	BLK	PCB Active	A new incoming call or new outgoing call will not be initiated on the ISDN line when the switch is set to "BLK".
SW102 SW202 SW302 SW402 SW502 SW602 SW702 SW802	T	T-Bus Connection	
	S	S-Bus Connection	
SW100 SW200 SW300 SW400 SW500 SW600 SW700 SW800	ON	Termination resistor is ON	This switch should be set to ON: 1. When T-Bus with Point-to-Point is selected. 2. When T-Bus with Point-to-Multipoint is selected and if the connection to the Aspire system at the last port of the Bus connection. 3. When S-Bus is selected.
	OFF	Termination resistor is OFF	When T-Bus with Point-to-Multipoint is selected and if the Aspire system is not connected to the last port of the Bus connection, this switch should be OFF.
CN102 CN202 CN302 CN402	ON	With S-Bus selected, the Feeding Power is supplied to the terminal.	If S-Bus is selected, this switch should be ON.
	OFF	With S-Bus selected, the Feeding Power is not supplied to the terminal.	If T-Bus is selected, this switch should be OFF.

Connector Pin-Outs on BRIU PCB

RJ45 Cable Connector - CN5, CN6, CN7, CN8 S-Bus Connection		
	Pin No.	Connection
	1	-
	2	-
	3	RA
	4	TA
	5	TB
	6	RB
	7	-
	8	-

RJ45 Cable Connector - CN5, CN6, CN7, CN8 T-Bus Connection		
	Pin No.	Connection
	1	-
	2	-
	3	TA
	4	RA
	5	RB
	6	TB
	7	-
	8	-

To install a BRI Interface PCB:

1. Set the run/block switch to DOWN.
2. Set the SWn02 jumpers on the BRI PCB for either T-Bus or S-Bus.
3. Set the SWn00 jumpers as either terminated or unterminated.
4. Set the CNn02 jumpers to either provide power (with S-Bus) or not to supply power (with T-Bus).
5. Plug the BRI PCB into the system cabinet.

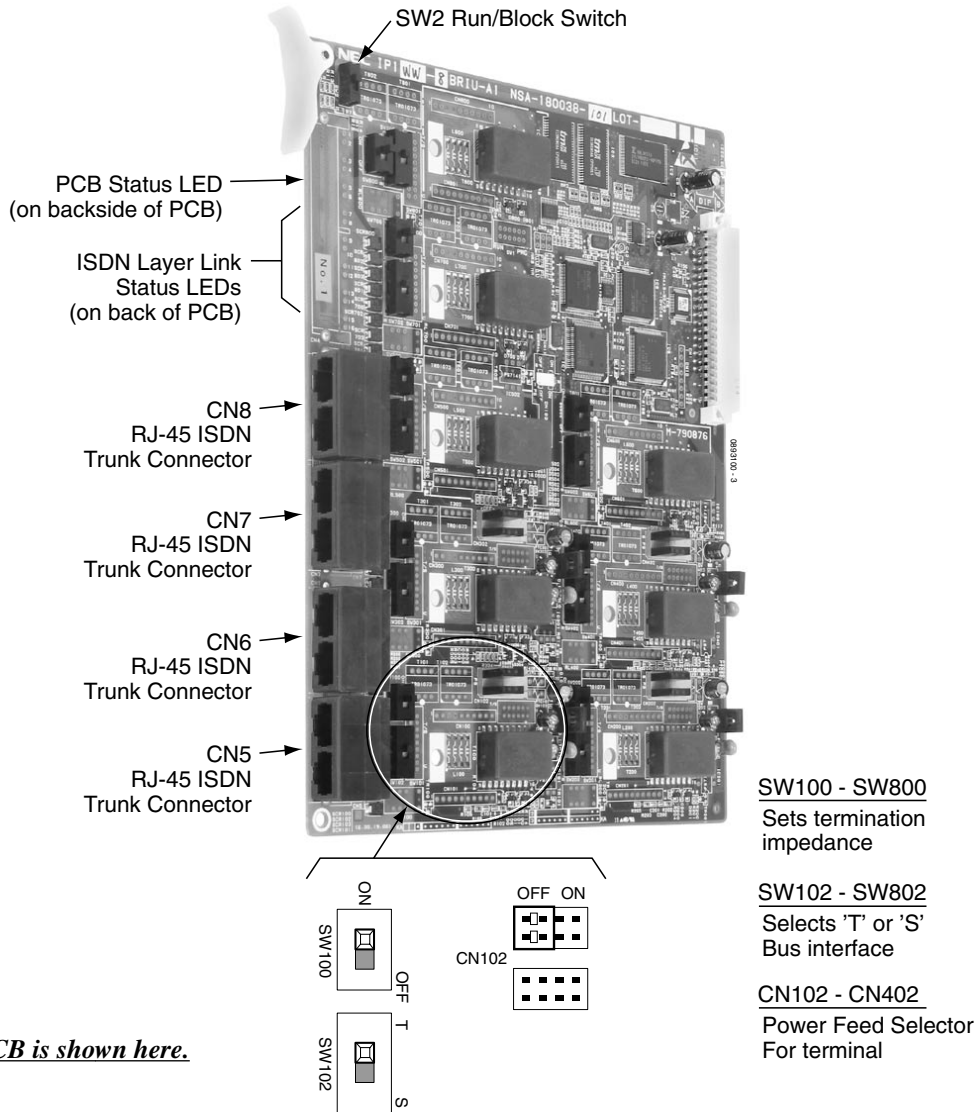
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.

6. Set the run/block switch to UP. 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 be on steady when the Layer 1 link is established. If there is no link, the LED will be off.

7. Connect the cable from the NT1 Network Termination cable to the CN5, CN6, CN7, or CN8 connector on the BRI PCB.



The 8BRIU PCB is shown here.

Figure 2-18: BRI PCB INSTALLATION

T1/PRI (1PRIU) Interface PCB (Figure 2-19)

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

If set for T1, the T1/PRI PCB 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.

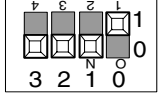
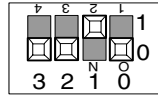
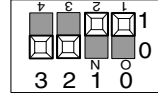
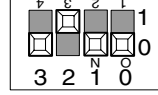
If set for PRI, each T1/PRI PCB provides 24 PRI (23 B& 1 D) channels running at 1.544Mbps with 64Kb/s clear channel. The PCB supports the following PRI services:

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

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

The T1/PRI PCB requires one universal slot and provides a Block switch to busy out the PCB.

PCB Maximum's		
Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
-	2	8: T-Bus 10: S-Bus

Switch Name	Switch Position	Result
SW100	1.5M(PI/T1)	Connecting a PRI/T1 (1.544Mb/s) line.
	2M (PRI/E1)	Connecting a PRI/E1 (2.048Mb/s) line.
SW101	T	T-Bus Connection
	S	S-Bus Connection
SW3 (4 bit dip switch)		PRI (1.544Mb/s)
		T1 (1.544Mb/s)
SW3 (4 bit dip switch) (Cont'd)		PRI (2.048Mb/s)
		E1 (2.048Mb/s)
CN11	Normal	Idle
	Loop	Used with Loop Back testing only.

Connector Pin-Outs on 1PRIU PCB

RJ45 Cable Connector - CN3 S-Bus Connection		
	Pin No.	Connection
	1	TA
	2	TB
	3	-
	4	RA
	5	RB
	6	-
	7	-
	8	-
RJ45 Cable Connector - CN3 T-Bus Connection		
	Pin No.	Connection
	1	RA
	2	RB
	3	-
	4	TA
	5	TB
	6	-
	7	-
	8	-

Network Interface Pinout for the 8-Pin RJ48C Connector	
Pin No.	Connection
1	RxD (R1)
2	RxD (T1)
4	TxD (R)
5	TxD (T)
3, 6	No Connection
7, 8	No Connection

For connection to T1 network: Use AT&T Type ABAM cable or equivalent (individually-shielded twisted pair, rated at 100 ohms at 1 MHz).

Terminal Interface Pinout for the 8-Pin RJ48C Connector	
Pin No.	Connection
1	RxD (R)
2	RxD (T)
4	TxD (R1)
5	TxD (T1)
3, 6	No Connection
7, 8	No Connection

To install a T1/PRI Interface PCB:

1. Set the run/block switch DOWN.
2. Make sure the SW100 switch on the T1/PRI Interface PCB is set to 1.5M (PRI/T1).
3. Set the SW101 dip switches on the T1/PRI PCB for either T-Bus or S-Bus mode.
4. Set the SW3 dip switches on the T1/PRI PCB for either PRI Mode or T1 Mode.
5. Plug the T1/PRI Interface PCB into any universal slot.

Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.

6. Set the RUN/BLOCK switch UP.

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.

7. Connect the cable from the NT1 Network Termination cable to the CN3 connector on the T1/PRI PCB.

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.

With PRI Networking, a cross-over cable must be used on the master system's T1/PRI PCB or CSU to the telco demarcation. If the systems are networked side by side and not through telco, then a straight-through cable is used.

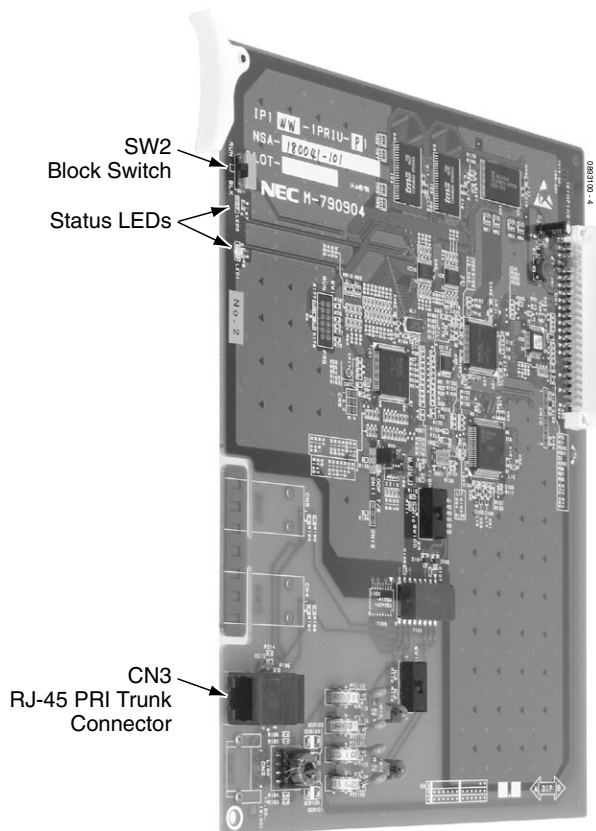


Figure 2-19: T1/PRI Interface (1PRIU) PCB

LAN 8-Port Switching Hub (8SHUBU) PCB (Figure 2-20)

The LAN PCB is an 8-port switching hub which complies with the ethernet specification for both 100Base-TX and 10Base-T. This PCB is compatible in LAN applications using 10Mbps and 100Mbps. All ports will automatically identify and switch 100Base-TX, 10Base-T and Full/Half Duplex.

The 4VOIPU or 16VOIPU PCB, which is required in order for IP telephones to communicate with non-VoIP Aspire phones, as well as to place or receive outside calls, must be connected to either an external switching hub or to the 8SHUBU PCB.

The PCB plugs into a universal slot. Each PCB provides 8 RJ45 port connectors. These are used to connect to LAN terminals. Depending on the type of LAN terminal, the PCB may not be able to detect the difference between straight cable and cross-cable automatically. If auto-crossover is not functioning, use straight cable for that terminal connection.

PCB Maximum's		
Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
4	8 (4 per cabinet)	8 (4 per cabinet)

The 8SHUBU PCB can also be used to provide power over category 5 network cables. This eliminates the need of installing separate power adapters for each IP phone and it allows for centralized power backup.

! CAUTION !

Only Aspire IP phones and Aspire IP Adapters must be connected to the 8SHUBU. The provided DC voltage provided through the spare pairs (4/5, 7/8) may damage any other equipment.

If PoE (power over ethernet) is to be used to eliminate the separate power adapters, due to the power requirements, a separate power source is suggested. ***The Aspire IP phones are not IEEE 802.3AF compliant.*** The NEC BlueFire 200/24 switch or Cisco Data Switch-CDP supported is recommended. The NEC BlueFire 200/24 unit provides layer 2 switch capability in addition to being able to supply ethernet power to 24 NEC IP terminals. For this unit, power feeding is through the signal pair (1/2, 3/6) or spare pair (4/5, 7/8).

Refer to **Section 6: LAN Connection** (page 6-1) for additional information on using PoE on the Aspire.

LED Indications

LED	Function	LED Status	Operation Status	Comments
CN2, CN3 LINK/ACT	LAN Operation Status	Green On	Link Established	Individually for Ports 1-8
		Green Flashing	Communicating Data	Individually for Ports 1-8
		Green Off	Not Activated	Individually for Ports 1-8
CN2, CN3 10/100	LAN Speed Status	Orange On	100Mbps	Individually for Ports 1-8
		Orange Off	10Mbps	Individually for Ports 1-8

Installing the 8SHUBU:

1. Set the run/block switch DOWN.
2. If PoE is to be used, set the JPx00 and JPx01 jumpers to the proper setting for the terminal. Refer to the graphic below the jumper settings.
3. Plug the LAN 8-Port Switching Hub PCB into any universal slot.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
4. Set the RUN/BLOCK switch UP.
With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slowly.
5. Refer to the **Aspire Software Manual (P/N 0893200)** for required programming.

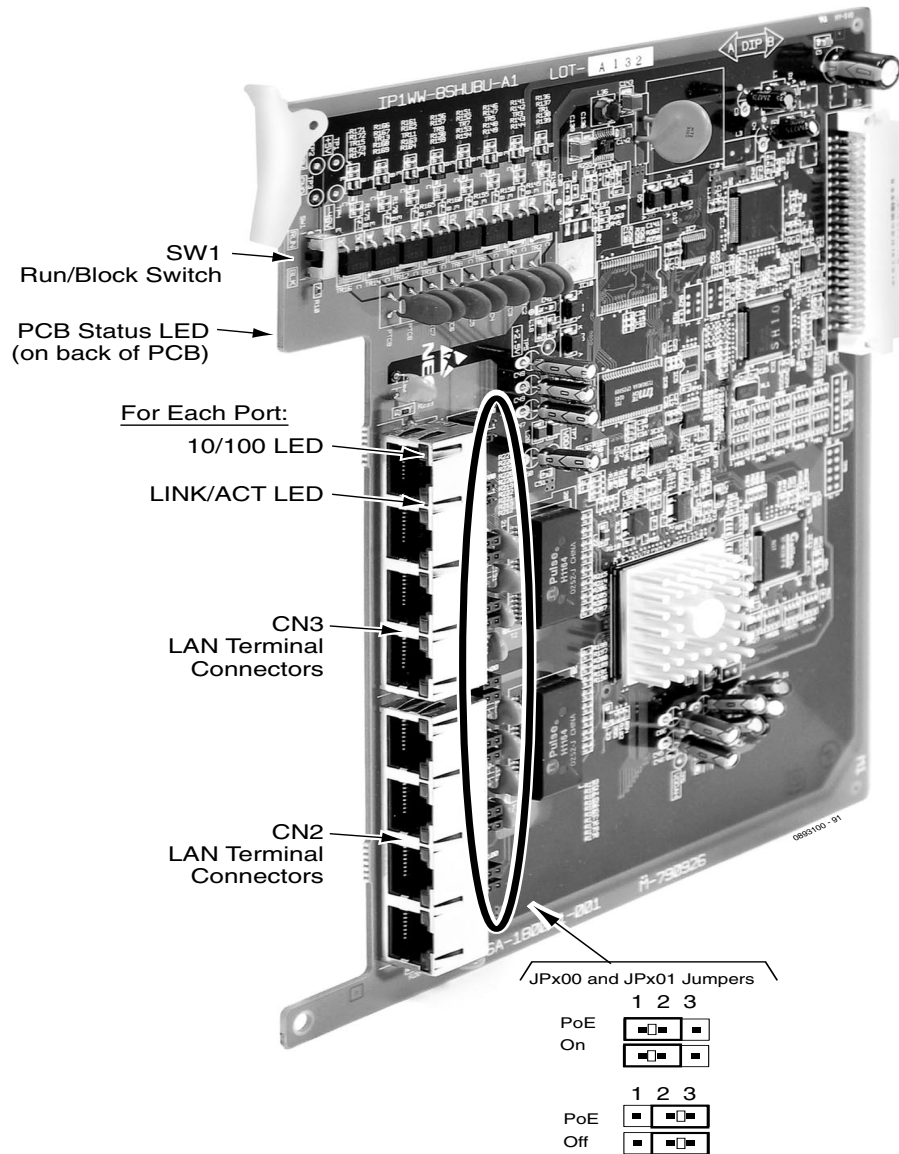


Figure 2-20: 8SHUBU INSTALLATION

VoIP (VOIPU) PCB (Figure 2-21)

The 4VOIPU and 16VOIPU PCBs are used for converting the RTP (Real Time Transfer Protocol) packets via the IP network and PCM highway. 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 PCB converts the IP packet signal into a PCM signal format and connects to the PCM time division switch.

The VOIPU PCB is required in order for IP telephones to communicate with non-VoIP Aspire phones, as well as to place or receive outside calls.

The 4VOIPU PCB provides:

This PCB can be used with either the Basic or Enhanced version of the NTCPU (P/N's 0891002 and 0891038).

- 4VOIPU PCB provides up to 4 channels
- Connector for the 4VOIPDB daughter board (providing an additional 4 channels)
- 1 PCB status LED
- 1 run/block switch

The 16VOIPU PCB provides:

This PCB requires the NTCPU with Feature Upgrade PAL (P/N 0891002 and 0891039) or the Enhanced NTCPU (P/N 0891038).

- 16VOIPU PCB provides up to 16 channels
- Connector for the 16VOIPDB daughter board (providing an additional 16 channels)
- 1 PCB status LED
- 1 run/block switch

PCB Maximum's			
	Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
4VOIPU	7	15	15
16VOIPU	-	7	15

When installing a VoIP PCB, the system allocates the maximum number of trunk ports for the PCB being installed. For instance, the 4VOIPU PCB requires 4 ports, while the 16VOIPU PCB requires 16 ports. If the PCB is not going to be used for trunks, the logical trunk ports can be set to '0' in **Program 10-03-01 : PCB Setup**, but the physical trunk ports are still assigned to the PCB and cannot be used for any other PCB. If the trunk ports will not be used and the trunk port usage is a concern, plug the VOIPU PCBs into the system last. The system will allow extension ports to be assigned even if there are no trunk ports available. A maximum of 512 IP extensions or 200 IP trunks are possible with the Aspire. The VoIP PCBs can be plugged into any universal slot.

If a separate software hub is used (and not the 8SHUBU PCB), it should be a 100Base/full duplex hub. To avoid network problems and to ensure good voice quality, do not use a Repeater Hub/10Base.

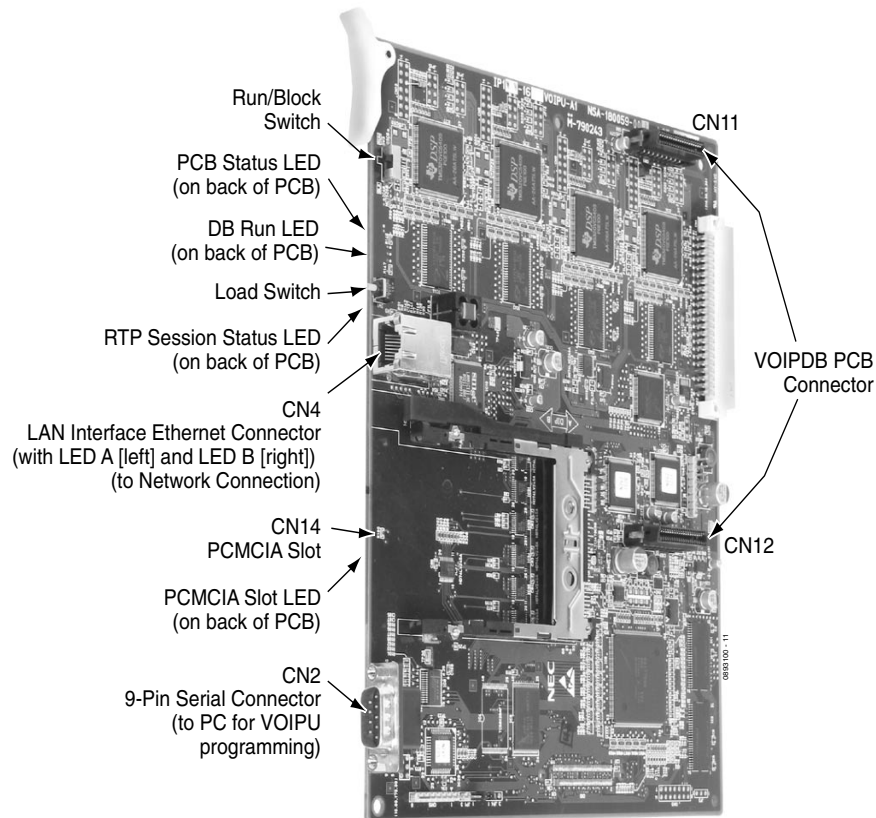
LED Indications

LED	Function	LED Status	Operation Status	Comments
DB Run	Status of VOIPDB	Red	VOIPDB is operating normally.	
		Off	VOIPDB is not functioning correctly.	
RTP Session Status	Status of RTP Session	Red	RTP session is established.	LED is on if one of the channels is established.
		Off	RTP session is not established.	
PCMCIA	Status of PCMCIA Slot	Red	PC-ATA card installed.	
		Off	PC-ATA card not installed.	
LED A (On CN4)	Data Transmission and Reception	On	Data is being transmitted or received.	
LED B (On CN4)	Status of Link	On	Link is established.	

Installing the VoIP PCB:

To avoid unexpected extension/trunk numbering if the VoIP PCB registers with the system first, install the VoIP PCB after the other types of extension/trunk PCBs have been installed.

1. Set the run/block switch **DOWN**.
If the VOIPDB is to be used, install this prior to inserting the VOIPU PCB into the cabinet. Refer to VoIP (VOIPDB) Daughter Board (Figure 2-22 - Figure 2-23) (page 2-55) for more details.
2. Install the VOIPU PCB into a slot.
Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.
3. Set the run/block switch **UP**.
With normal operation, the status LED will flash fast. If trouble was found during the self diagnostics routine, the status LED will flash slowly.
4. Connect the VOIPU PCB to the 8SHUBU PCB or to an external switching hub using an ethernet cable.
5. Refer to the **Aspire Software Manual (P/N 0893200)** for required programming.



The 16VOIPU PCB is shown here.

Figure 2-21: VOIPU PCB INSTALLATION

Upgrading Your VOIPU Firmware

1. Copy the updated firmware file (xxx.bin) to the compact flash card.
2. Remove the VOIPU PCB from the cabinet.
3. Insert the CF (compact flash) card into the VOIPU PCB.
4. Reinstall the VOIPU PCB into the system cabinet while holding the SW1 button down.
5. Continue holding the SW1 button for approximately 4 seconds.
6. Release the SW1 button.
While updating, the status LED1 will be lit steady green.
7. Remove the CF card once the status LED1 starts flashing green.

VoIP (VOIPDB) Daughter Board (Figure 2-22 - Figure 2-23)

The 4VOIPDB daughter board provides:

- 4 channels
- Connector for the 4VOIPU PCB (combination provides a maximum of 8 channels per slot)

The 16VOIPDB daughter board provides:

- 16 channels
- Connector for the 16VOIPU PCB (combination provides a maximum of 32 channels per slot)

The 4VOIPDB daughter board can also be installed on the 16VOIPU PCB to provide an additional 4 channels.

When installing a VoIP daughter board, the system allocates the maximum number of trunk ports for the PCB being installed. For instance, the 4VOIPU daughter board requires 4 ports, while the 16VOIPU daughter board requires 16 ports. If the PCB is not going to be used for trunks, the logical trunk ports can be set to '0' in **Program 10-03-01 : PCB Setup**, but the physical trunk ports are still assigned to the PCB and cannot be used for any other PCB. If the trunk ports will not be used and the trunk port usage is a concern, plug the VOIPU PCBs into the system last. The system will allow extension ports to be assigned even if there are no trunk ports available.

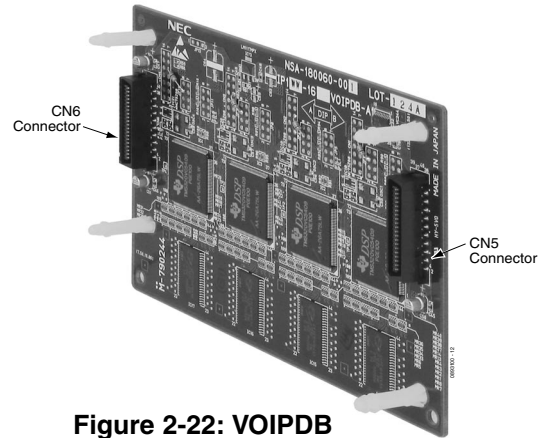


Figure 2-22: VOIPDB

	PCB Maximum's		
	Basic NTCPU	Basic NTCPU with Upgrade PAL	Enhanced NTCPU
4VOIPDB	7	14	15
16VOIPDB	-	4	15

Installing an VOIPDB Daughter Board:

1. Included with the VOIPDB are four plastic spacers. These are installed in each of the four corners of the daughter board. Make sure to attach the spacers on the front of the daughter board so when installed, the components are facing the VOIPU PCB.
2. Position the VOIPDB'S CN6 connector over the CN12 connector on the VOIPU PCB. The CN5 connector on the VOIPDB should then be over the CN11 connector on the VOIPU PCB. Press the boards together, ensuring the plastic spacers lock in place.
3. Install the VOIPU PCB into the slot.

Note that the white PCB Pull Tab should always be positioned closest to the top of the cabinet.

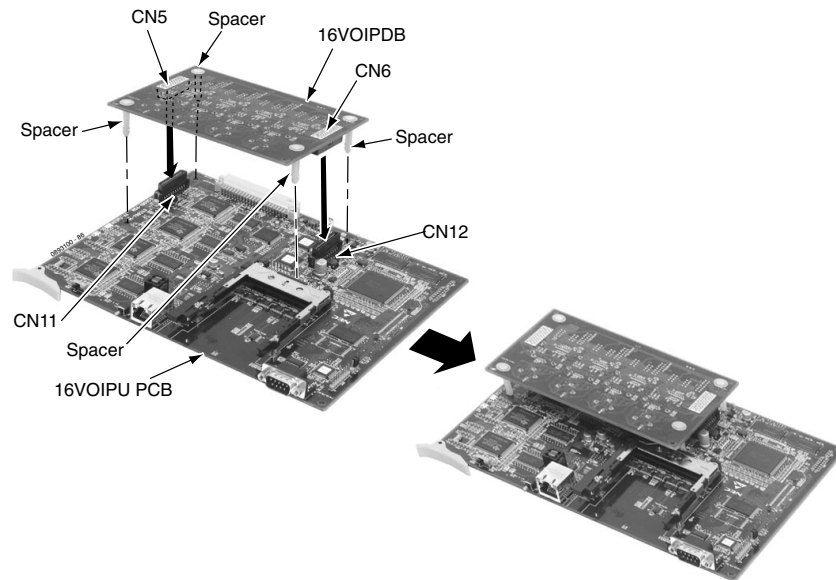


Figure 2-23: INSTALLING THE VOIPDB

4. Set the 16VOIPU's run/block switch **UP**.
5. Refer to **VoIP Feature Supplement (P/N 0893204)** for required programming.

SYSTEM STARTUP

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 earth ground and telco connections are installed correctly.
- PCBs are configured, equipped, and strapped correctly.

2

Powering Up the System

1. Install the NTCPU in the CPU slot and one ESIU in slot 1. PCBs for slots 2-16 are not installed at this time.
2. Plug in all system telephones. A display telephone should be plugged into port 001 (extension 301).
3. **When starting the system for the first time**, hold the LOAD button on the NTCPU and turn the AC power button ON. After approximately 3 seconds, release the LOAD button.

This performs a cold start on the Aspire system to make sure you're starting with a defaulted system.

When powering up any other time, simply press the power supply's AC power button.

Refer to *Switch Settings and LED Indications* on page 2-13 for NTCPU LED status.

With two power supplies in one cabinet, turn on the power supply in the PS2 slot, then the power supply in the PS1 slot. To power down (or back up) only the power supply in the PS1 slot needs to be pushed. With a 2-cabinet system, turn off the expansion cabinet's power supply, then the main cabinet's power supply.

4. Wait about three minutes for the system to boot. The telephone display at extension 301 will show the Time/Date and extension number when the boot sequence completes.
5. Plug in the remaining PCBs into each cabinet slot in numerical order (i.e.; slot 3, followed by slot 4, slot 5, etc.). This sets up the system port sequence.

Some PCBs (such as the voice mail and VoIP PCBs) may be recognized prior to the other PCBs. Make sure to install the PCBs one at a time, in order, to ensure the correct port sequence.

Note: Refer to **Basic Troubleshooting** (page 2-64) if the system does not boot.

The system will automatically recognize each PCB installed in the system. *If a PCB has previously been installed* in a slot and another type of PCB is to be installed in that same slot, the PCB must be first be removed from the cabinet and then the slot definition removed using Program 90-05 prior to installing the new PCB.

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 **Central Processing Unit (NTCPU) PCB (Figure 2-3)** (page 2-10).

PCB STARTUP

Initial PCB Installation

When first installing the system:

1. Insert the NTCPU PCB into the CPU slot.
2. Insert an ESIU PCB in slot 1 of the Main Cabinet.
PCBs for slots 2-16 are not installed at this time.
3. Plug in all system telephones. A display telephone should be plugged into port 001 (extension 301).
4. **When starting the system for the first time**, hold the LOAD button on the NTCPU and press the AC power button on the PS1 power supply. After approximately 3 seconds, release the LOAD button.
This performs a cold start on the Aspire system to make sure you're starting with a defaulted system.
When powering up any other time, simply press the AC power button on the PS1 power supply. Refer to *Switch Settings and LED Indications* on page 2-13 for NTCPU LED status.
5. Wait about three minutes for the system to boot. The telephone display at extension 301 will show the Time/Date and extension number when the boot sequence completes.
6. Plug in the remaining PCBs into each cabinet slot in numerical order (i.e.; slot 3, followed by slot 4, slot 5, etc.). This sets up the system port sequence.
7. Set the run/block switch **UP** on the ESIU in slot 1.
8. After setting the run/block switch **DOWN** for all SLIU/ESIU PCBs, insert SLIU/ESIU PCBs in the Main Cabinet in sequential order.

The order in which SLIU and ESIU PCBs are physically inserted determines the numbering plan. *The installer must install extension PCBs in order (i.e.; slot 1 first, slot 2 next, slot 3 next, etc.) for a sequential numbering plan.*

For example, with a 16ESIU in slot #1 (ext. 301-316), when 3 more 16ESIU PCBs are installed in the following order, the numbering plan below would apply:

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

Adding a daughter board to increase the available ports may require that you delete the slot and reinstall the PCB. In the following example, to add a daughter board to slot 2, the PCB 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 PCB - the initial ports (ports 17-24 using the example below) are not used.

Initial Setup			Updated Setup		
PCB Slot #	PCB	Extension Numbers	PCB Slot #	PCB	Extension Numbers
1	16ESIU	301-316	1	16ESIU	301-316
2	8SLIU (no daughter board)	317-324	2	---	
3	16ESIU	325-340	3	16ESIU	325-340
			4	8SLIU (with daughter board)	341 - 356

- Set the run/block switch **UP** on each PCB.

Initial Installation of Trunk PCBs

When first installing the system:

- Set the run/block switch **DOWN** on all COIU-LS1, COIU-LG1, 4TLIU, DIOPU, 1PRIU or BRIU PCBs.
- Insert all PCBs in sequential order. *The installer must install trunk PCBs in order (i.e.; slot 5 first, slot 6 next, slot 7 next, etc.) for a sequential numbering plan.*

Installing COIU-LS1/LG1, 4TLIU, DIOPU, or BRI PCB's:

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

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

Installing T1/PRI PCBs

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

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

- Set the run/block switch **UP** on each PCB.

Initial Programming (Figure 2-24)

The system can be programmed using three methods:

- Programming through a digital keyset
- PC Programming
Refer to the PCPro/WebPro Installation Manual, P/N 0893201, for complete installation details.
- Web Programming
Refer to the PCPro/WebPro Installation Manual, P/N 0893201, for complete installation details.

Refer to the Aspire Software Manual (P/N 083200) for complete details on programming.

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.

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

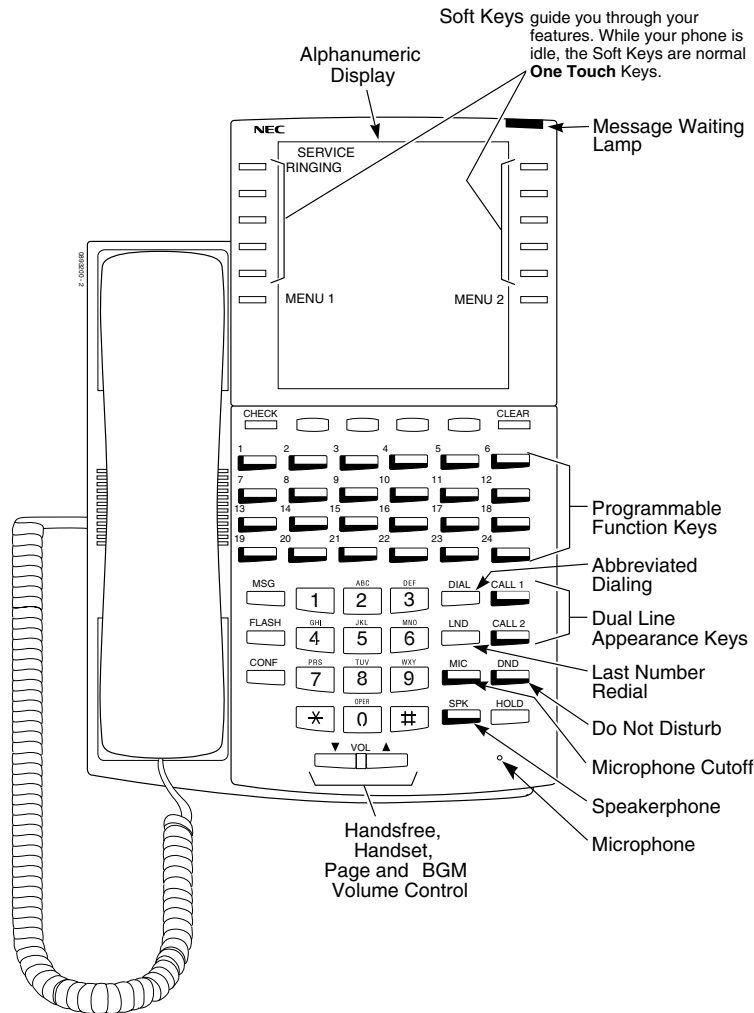


Figure 2-24: TELEPHONE KEY LAYOUT

Setting Up Extension Circuit Types

Run Program 10-03 to set up extension circuit types as required. The system will automatically detect and assign most circuit types when the device is connected. Refer to the Software Manual for programming information.

1. Dial 10-03-01.
2. Select the slot, port or channel (with ESIU PCBs) to be programmed by pressing FLASH.
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.

Saving Your Configuration

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

1. Press MSG key to exit the program's 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.

Backing Up/Restoring a Database

As a precaution, it is recommended that the customer database be saved prior to updating the system software. There are two methods of saving the database - either using the PCPro application or saving directly to a PC-ATA flash card. Using PCPro, download the the database and save the file on the PC's hard drive. To save the database using a blank 32 meg PC-ATA flash card (P/N 0891061), insert the card into the NTCPU and, using Program 90-03, save the software. Due to the file's naming structure, note that a PC-ATA card 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 card). Each database to be saved will require its own separate card (unless you choose to rename the directory after it is saved, then rename it back to DATA when you need to access the database).

If the customer data needs to be reloaded, the method for restoring the database is determined by how the database was saved. Using PCPro, the customer database is uploaded using the Upload option within the application. If the database is stored on a PC-ATA card, use Program 90-04, with the database to be restored installed in the NTCPU.

When restoring a database file, as the slot definitions may be different, remove all PCBs from the system except the NTCPU and the ESIU in slot 1. After the system has been reset, you can reinstall the PCBs. You can use Program 10-03 or Program 90-13-03 prior to updating to record the current slot definitions. If the PCBs are not removed, the trunk and extension port assignments may be reassigned, depending on which PCB 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. 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 PC-ATA card from possibly being over-written, remove the card after reloading the database.

Copying the System Software Files to the Flash Card

As the Aspire system uses a PC-ATA card 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 when this type of file is used.

Requirements

- Customer Provided: PC-ATA Flash Card Reader OR a PCMCIA Slot in a Laptop
- Customer Provided: 32MB PC-ATA Flash Card
- Aspire System Software Zip File
- WinZip application

This program can be downloaded from WinZip's web site: <http://www.winzip.com>

1. After receiving the compressed system software file, it must be unzipped using the WinZip application.
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 Aspire software can be kept (with a sub-directory for the version type - example: Aspire_Software/1_01). This allows you to keep the original source files for future use, if required.
6. Place the PC-ATA card to be used for the update into the Flash Card Reader.
7. Double-click on MY COMPUTER and then double-click on the flash card reader.
The contents of the flash card should be displayed.
8. If there are any existing files on the flash card, delete or move any files off the card 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 flash card.
This can be done as follows:
 - From the software directory window, click: Edit - Select All - Edit - Copy
 - From the flash card window, click Edit - Paste*The files are then copied from the PC to the flash card.*

Upgrading Your Software

! Important !

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 2-62).

1. Turn the system power off by pressing the power button on the power supply in the PS1 slot (this controls power to both power supplies if there are two installed in the cabinet). With a 2-cabinet system, turn off the expansion cabinet's power supply, then the main cabinet's power supply.
2. Once the system has completed its powering down cycle (all LEDs are off), insert the PC-ATA card containing the software upgrade (P/N 0891060) into the PCMCIA card slot on the NTCPU.
3. Push in and hold the Load button.
4. Turn the system power on by pressing the power button on the power supply in the PS1 slot.
With a 2-cabinet system, turn on the expansion cabinet's power supply, then the main cabinet's power supply.
5. Continue holding the Load button for approximately 10 seconds.
6. Release the Load button.
7. Wait until the Status LED on the NTCPU have the following indications (approximately 2 minutes): LED 1: Steady Green, LED 0: Flashing Red, LED 2: Flashing Red, LED 3: Flashing Red, LED 4: Steady Red.
8. Turn the system power off by pressing the power button on the power supply in the PS1 slot.
9. Once the system has completed its powering down cycle (all LEDs are off), remove the PC-ATA card.
10. Turn the system power back on.
11. When the system has completed reloading the software, the Status LED will begin flashing on the NTCPU. The remaining 4 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.

Making Test Calls

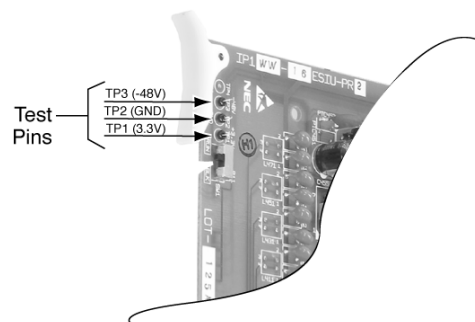
In the initial configuration:

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

Basic Troubleshooting

To troubleshoot extensions:

1. Verify the Run/Block switch is set in the RUN position for the PCB.
2. Check and verify extension. The ESIU PCB has test points located on the top edge of the PCB.



3. The voltages at the extension's modular jack should be:

Test Point	Voltages
TP3 - TP2	-54 - 50.85V DC
TP1 - TP2	+3.317 - +3.454

4. Check and verify the phone is working correctly by connecting it to another extension.
5. Check and verify programming. Refer to the Software Manual if necessary.
6. Check and verify extension wiring.
7. Check and verify cable connection of the EXIFU if two cabinets are used.
8. Check and verify the correct LED indication on the PCB.
9. Check and verify extension PCB installation.

To troubleshoot lines:

1. Verify the Run/Block switch is set in the RUN position for the PCB.
2. Check and verify each line before the system with a test set.
3. Measure loop current on each line with a digital voltmeter.
4. Check and verify programming. Refer to the Software Manual if necessary.
5. Check and verify trunk wiring.
6. Check and verify cable connection of the EXIFU if two cabinets are used.
7. Check and verify the correct LED indication on the PCB.
8. Check and verify trunk PCB installation.
9. Check and verify the proper earth grounding is made for the system.

Identifying Port Location

Port information such as PCB type, port numbers, PCB status, and individual port status can be obtained from the system. To obtain a System Report containing PCB information, the system must be connected to a PC or terminal using the serial, USB, or LAN port connector on the NTCPU, or CTA or CTU adapter.

Running program 90-13-03 in MAINTENANCE PROGRAMS prints a system PCB report. Refer to *Program 90-13-03 : System Information Output* in the Software Manual. The following is a typical report:

<<SYSTEM INFORMATION>>						01/03/03 09:49
slot	location	type	assign port	condition	note	
1	1-1	ESIU	1- 16	Running	****----- Connect:*	
2	1-2	ESIU	1- 8	Running		
3	1-3	SLIU	1- 8	Running		
4	1-4	COIU	1- 16	Running		
5	1-5	COIU	1- 16	Running		
6	1-6	DIOPU	1- 8	Not Install		
7	1-7	- none -				
8	1-8	- none -				
9	2-1	- none -				
10	2-2	- none -				
11	2-3	- none -				
12	2-4	- none -				
13	2-5	- none -				
14	2-6	- none -				
15	2-7	- none -				
16	2-8	- none -				



- For Your Notes -

Section 3: Installing Extensions and Trunks

3

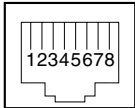
!! Important !!

Install telephones as on-premise extensions only. (Otherwise, the telephones are highly susceptible to lightning strikes.)

RJ-61 TO 66 BLOCK CONNECTIONS

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	

INSTALLING 25-PAIR CABLES

Routing Cables (Figure 3-1)

It is recommended to install extension blocks to the left of each cabinet. The trunk blocks can then be installed to the right of each cabinet. Run the 25-pair cable from the extension block and from the trunk block through the cable pass-throughs on either side or the back of the cabinet.

Installing Extension Cross-Connect Blocks

It is also 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:

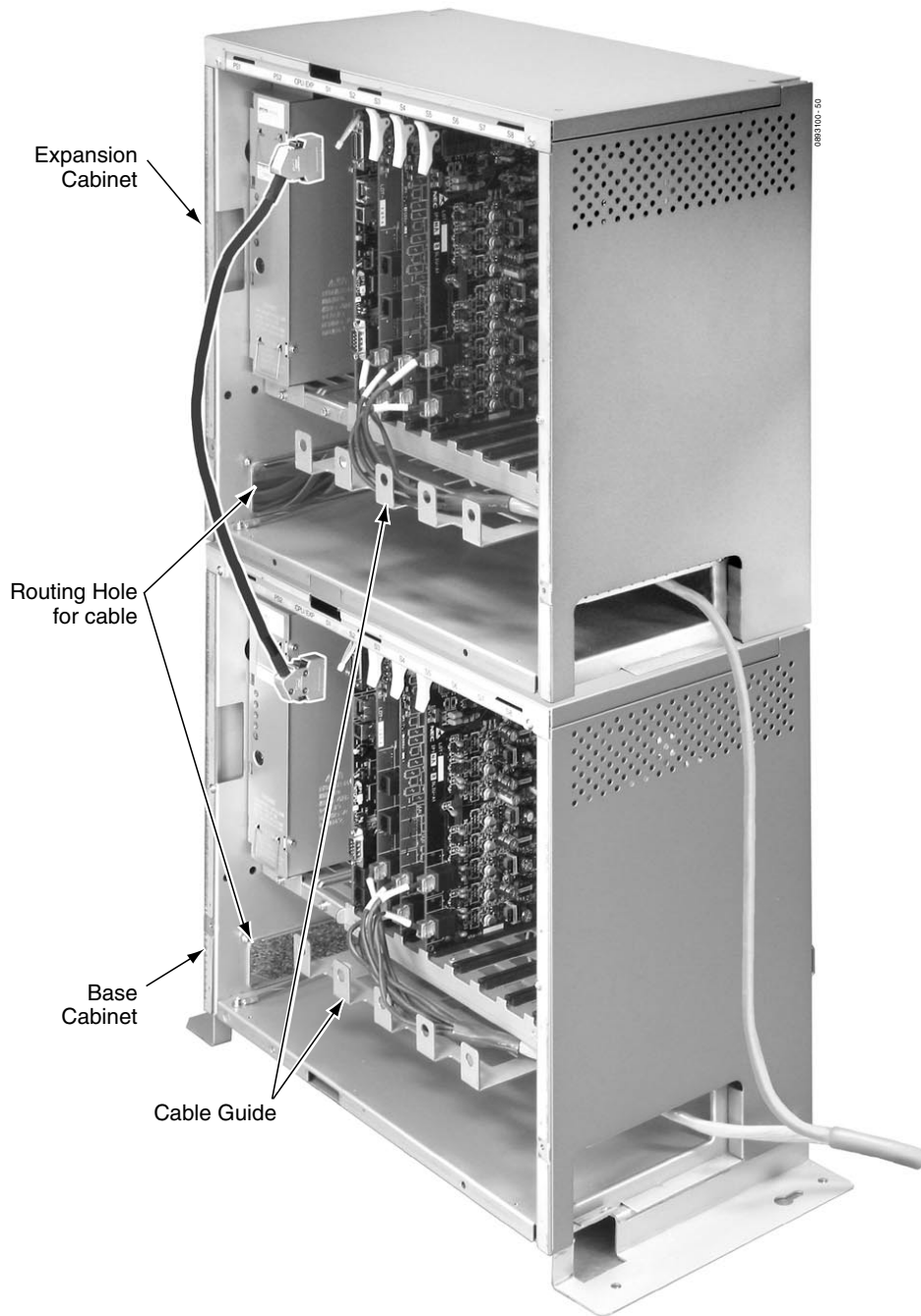
- All digital extension circuits
- NTCPU functions (i.e.; BGM, MOH, Night mode switch, relay 1)
- External page
- External alarms
- Data devices

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



3

Figure 3-1: TYPICAL TRUNK CABLING LAYOUT

INSTALLING EXTENSIONS

Key Extension Cabling (Figure 3-2)

Each key 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.

To connect key station cabling:

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 PCB.
4. Install bridging clips on the extension (B) block.

Installing a Key Telephone (Figure 3-2)

1. Install a modular jack for each extension. 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. Ground the unused pair.
3. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.

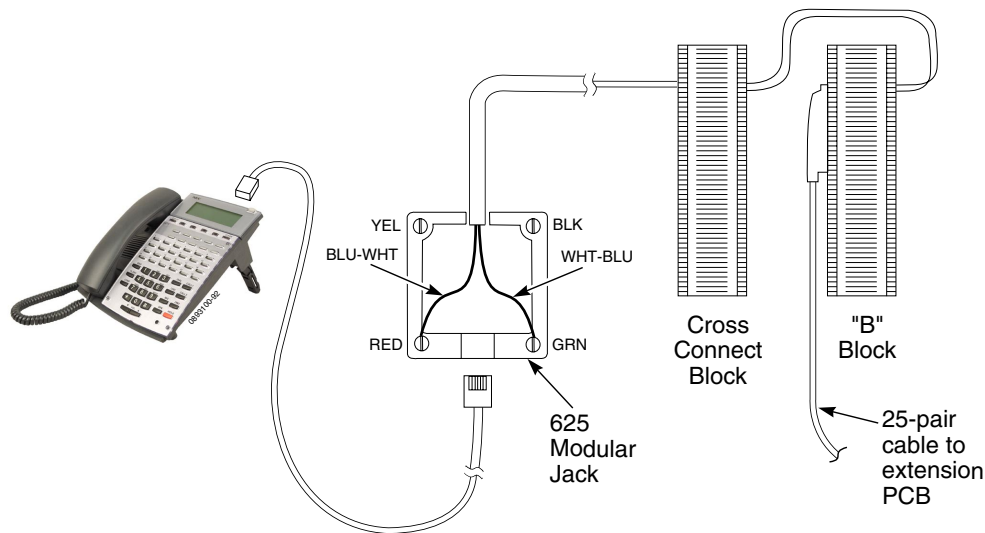
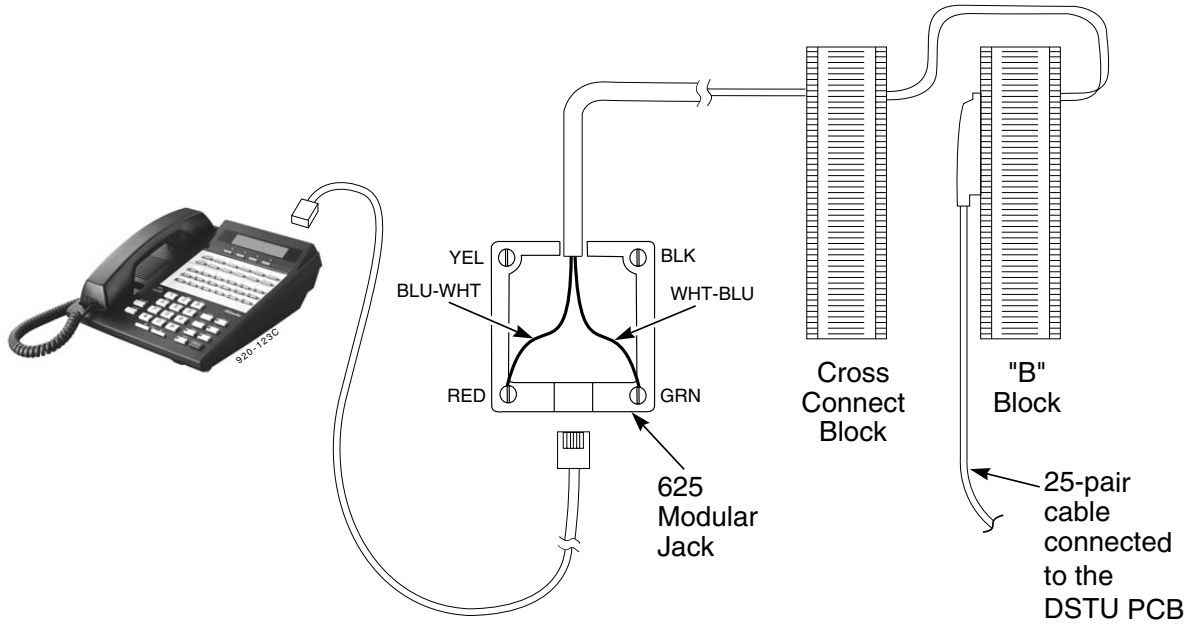


Figure 3-2: INSTALLING A KEY TELEPHONE



3

Figure 3-3: INSTALLING AN I-SERIES KEY TELEPHONE

INSTALLING SINGLE LINE TELEPHONES

Single Line Extension Cabling (Figure 3-4)

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 PCB.
4. Install bridging clips on the extension (B) block.

Installing a Single Line Telephone (Figure 3-4)

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.

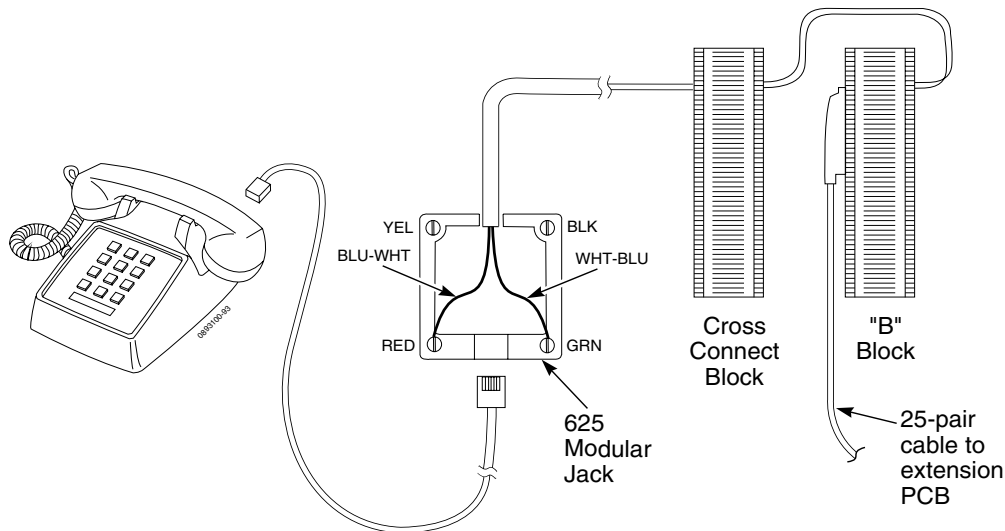


Figure 3-4: INSTALLING A SINGLE LINE TELEPHONE

INSTALLING CORDLESS TELEPHONES

The Cordless Lite II/Cordless II phone allows for the connection of an optional keyset phone. The base unit allows the user to switch between the Cordless Lite II/Cordless II phone and an Aspire keyset. Whichever phone is activated at the base unit is the telephone which will ring. This allows you to have a keyset phone to use while at your desk, and when you need to be away from your desk, you can carry the cordless phone with you. Refer to **Cordless Telephone — P/N 730088 and 730087** (page 4-48) for more details on setting up the phone and its optional equipment.

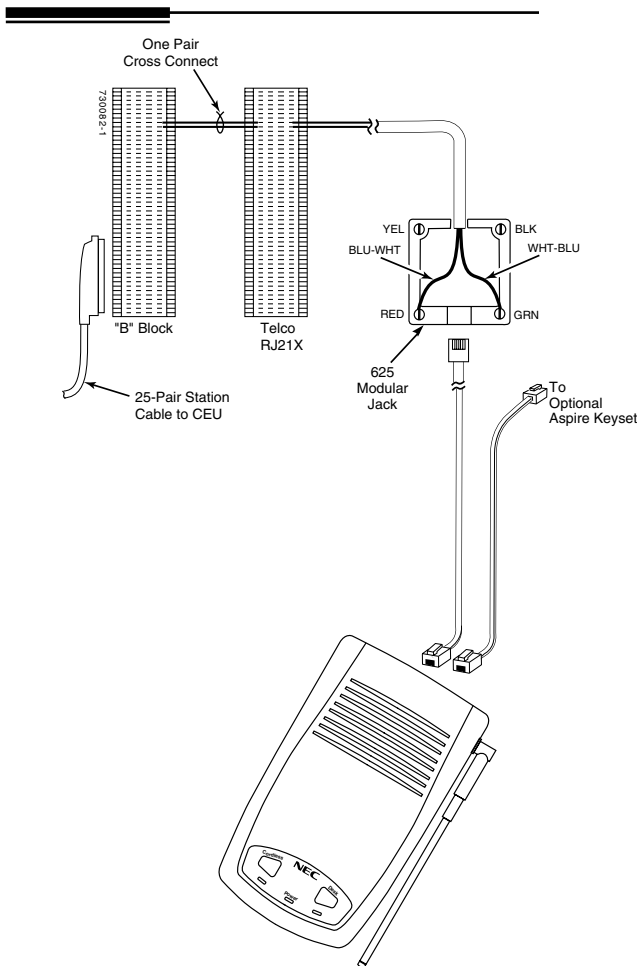
Cordless Phone Extension Cabling (Figure 3-5)

Each cordless phone extension requires one-pair twisted station cable from the MDF to the modular jack.

To connect station cabling:

1. Punch down one-pair 24 AWG station cable for each cordless 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 PCB.
4. Install bridging clips on the extension (B) block.

3



Installing a Cordless Telephone (Figure 3-5)

To install a cordless telephone:

1. Install a modular jack for each cordless telephone. The modular jack should be within six feet of the base unit.
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.

Figure 3-5: INSTALLING A CORDLESS PHONE

EXTENSION CUTDOWN SHEET

Extension Cutdown Sheet Configuration (Figure 3-6, Figure 3-7)

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

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

For example, given that a 16ESIU is installed in slot #1 and uses extension numbers 301-316, if three 16ESIU PCBs or 8SLIU with the 8SLIDB PCBs were installed in the Main Cabinet in the order below, the numbering plan would correspond as follows:

Order of Install	PCB 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
- Cabinet (Main, Expansion)
- Slot used
- PCB type (8ESIU, 16ESIU, 8SLIU, 8SLIDB)
- Amphenol connector

To determine where any group of eight extensions is installed, note the order of install, cabinet, slot, amphenol connector used, PCB connector and PCB type.

On the following page is the extension cutdown sheet (Figure 3-6). Make as many copies as you need. Be sure to keep careful records of your installation. Refer to the sample extension cutdown sheet (Figure 3-7) if you need help completing Figure 3-6.

To install VoIP extensions, refer to **LAN DEVICES** (page 6-1) for more details.

		MAIN		EXPANSION		
		CONN PIN	BLOCK TERM	COLOR CODE	FUNCTION	PCB ID
RJ-61 Connector 1	5	1	WHT-BLU			Order Of Install
	4	2	BLU-WHT			Slot #
	3	3	WHT-ORN			<input type="checkbox"/> 8ESIU
	6	4	ORN-WHT			<input type="checkbox"/> 16ESIU
	2	5	WHT GRN			<input type="checkbox"/> 8SLIU
	7	6	GRN-WHT			<input type="checkbox"/> 8SLIDB DAUGHTER BRD
	1	7	WHT-BRN			<input type="checkbox"/> 4DSIU
	8	8	BRN-WHT			<input type="checkbox"/> 8DSIU
RJ-61 Connector 2	5	9	WHT-SLT			<input type="checkbox"/> 12DSIU
	4	10	SLT-WHT			<input type="checkbox"/> 4VOIPU
	3	11	RED-BLU			<input type="checkbox"/> 4VOIPDB DAUGHTER BRD
	6	12	BLU-RED			<input type="checkbox"/> 16VOIPU
	2	13	RED-ORN			<input type="checkbox"/> 16VOIPDB DAUGHTER BOARD
	7	14	ORN-RED			
	1	15	RED-GRN			
	8	16	GRN-RED			
RJ-61 Connector 3	5	17	RED-BRN			Order Of Install
	4	18	BRN-RED			Slot #
	3	19	RED-SLT			<input type="checkbox"/> 8ESIU
	6	20	SLT-RED			<input type="checkbox"/> 16ESIU
	2	21	BLK-BLU			<input type="checkbox"/> 8SLIU
	7	22	BLU-BLK			<input type="checkbox"/> 8SLIDB DAUGHTER BRD
	1	23	BLK-ORN			<input type="checkbox"/> 4DSIU
	8	24	ORN-BLK			<input type="checkbox"/> 8DSIU
RJ-61 Connector 4	5	25	BLK-GRN			<input type="checkbox"/> 12DSIU
	4	26	GRN-BLK			<input type="checkbox"/> 4VOIPU
	3	27	BLK-BRN			<input type="checkbox"/> 4VOIPDB DAUGHTER BRD
	6	28	BRN-BLK			<input type="checkbox"/> 16VOIPU
	2	29	BLK-SLT			<input type="checkbox"/> 16VOIPDB DAUGHTER BOARD
	7	30	SLT-BLK			
	1	31	YEL-BLU			
	8	32	BLU-YEL			
RJ-61 Connector 5	5	33	YEL-ORN			Order Of Install
	4	34	ORN-YEL			Slot #
	3	35	YEL-GRN			<input type="checkbox"/> 8ESIU
	6	36	GRN-YEL			<input type="checkbox"/> 16ESIU
	2	37	YEL-BRN			<input type="checkbox"/> 8SLIU
	7	38	BRN-YEL			<input type="checkbox"/> 8SLIDB DAUGHTER BRD
	1	39	YEL-SLT			<input type="checkbox"/> 4DSIU
	8	40	SLT-YEL			<input type="checkbox"/> 8DSIU
RJ-61 Connector 6	5	41	VIO-BLU			<input type="checkbox"/> 12DSIU
	4	42	BLU-VIO			<input type="checkbox"/> 4VOIPU
	3	43	VIO-ORN			<input type="checkbox"/> 4VOIPDB DAUGHTER BRD
	6	44	ORN-VIO			<input type="checkbox"/> 16VOIPU
	2	45	VIO-GRN			<input type="checkbox"/> 16VOIPDB DAUGHTER BOARD
	7	46	GRN-VIO			
	1	47	VIO-BRN			
	8	48	BRN-VIO			
	50	49	VIO-SLT	NOT USED		
	25	50	SLT-VIO	NOT USED		

0893100-95

Figure 3-6: EXTENSION CUTDOWN SHEET

		<input checked="" type="checkbox"/> MAIN	<input type="checkbox"/> EXPANSION		
CONN PIN	BLOCK TERM	COLOR CODE	FUNCTION	PCB ID	
1 Order Of Install					
1 Slot #					
<input type="checkbox"/> 8ESIU					
<input checked="" type="checkbox"/> 16ESIU					
<input type="checkbox"/> 8SLIU					
<input type="checkbox"/> 8SLIDB DAUGHTER BRD					
<input type="checkbox"/> 4DSIU					
<input type="checkbox"/> 8DSIU					
<input type="checkbox"/> 12DSIU					
<input type="checkbox"/> 4VOIPU					
<input type="checkbox"/> 4VOIPDB DAUGHTER BRD					
<input type="checkbox"/> 16VOIPU					
<input type="checkbox"/> 16VOIPDB DAUGHTER BOARD					

CONN PIN	BLOCK TERM	COLOR CODE	FUNCTION
5	1	WHT-BLU	
4	2	BLU-WHT	
3	3	WHT-ORN	
6	4	ORN-WHT	
2	5	WHT GRN	
7	6	GRN-WHT	
1	7	WHT-BRN	
8	8	BRN-WHT	
5	9	WHT-SLT	
4	10	SLT-WHT	
3	11	RED-BLU	
6	12	BLU-RED	
2	13	RED-ORN	
7	14	ORN-RED	
1	15	RED-GRN	
8	16	GRN-RED	

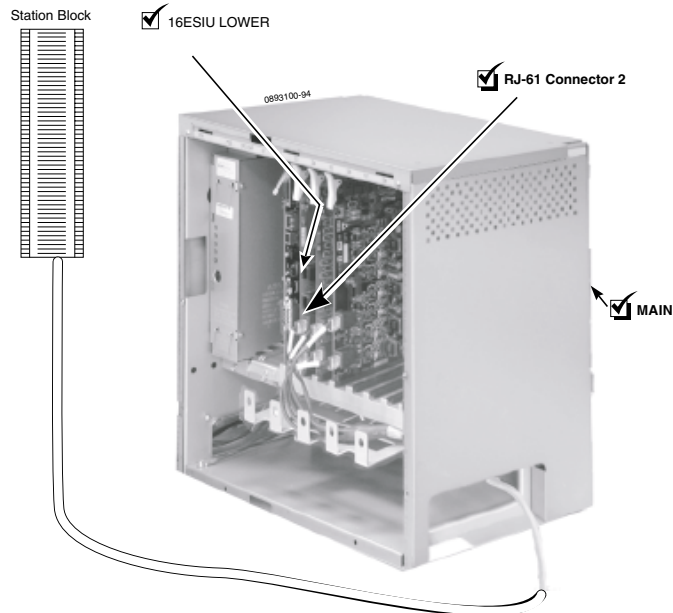


Figure 3-7: SAMPLE EXTENSION CUTDOWN SHEET

INSTALLING CO/PBX LINES

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 PCB 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 PCB slots.

4COIU-LS1	4 loop start lines
8COIU-LS1	8 loop start lines
4COIU-LG1	4 ground start trunks
8COIU-LG1	8 ground start trunks

3

The CN3 and CN5 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.

! Important !

- When using the COIU-LG1 PCB for ground start trunks, the PBX and Earth grounds ***must*** be connected as described on page 1-34 or the trunks will not function correctly.
- When connecting the RJ61 cables to the COIU PCB, note the position of the Power Failure connector. Do not confuse this connector as the trunk connector.

Installing Ground Start Trunks/Loop Start Lines (Figure 3-8, Figure 3-9)

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 3-8).
The CN3 and CN5 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 PCB connector (Figure 3-9).
5. Install bridging clips on the A block.

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

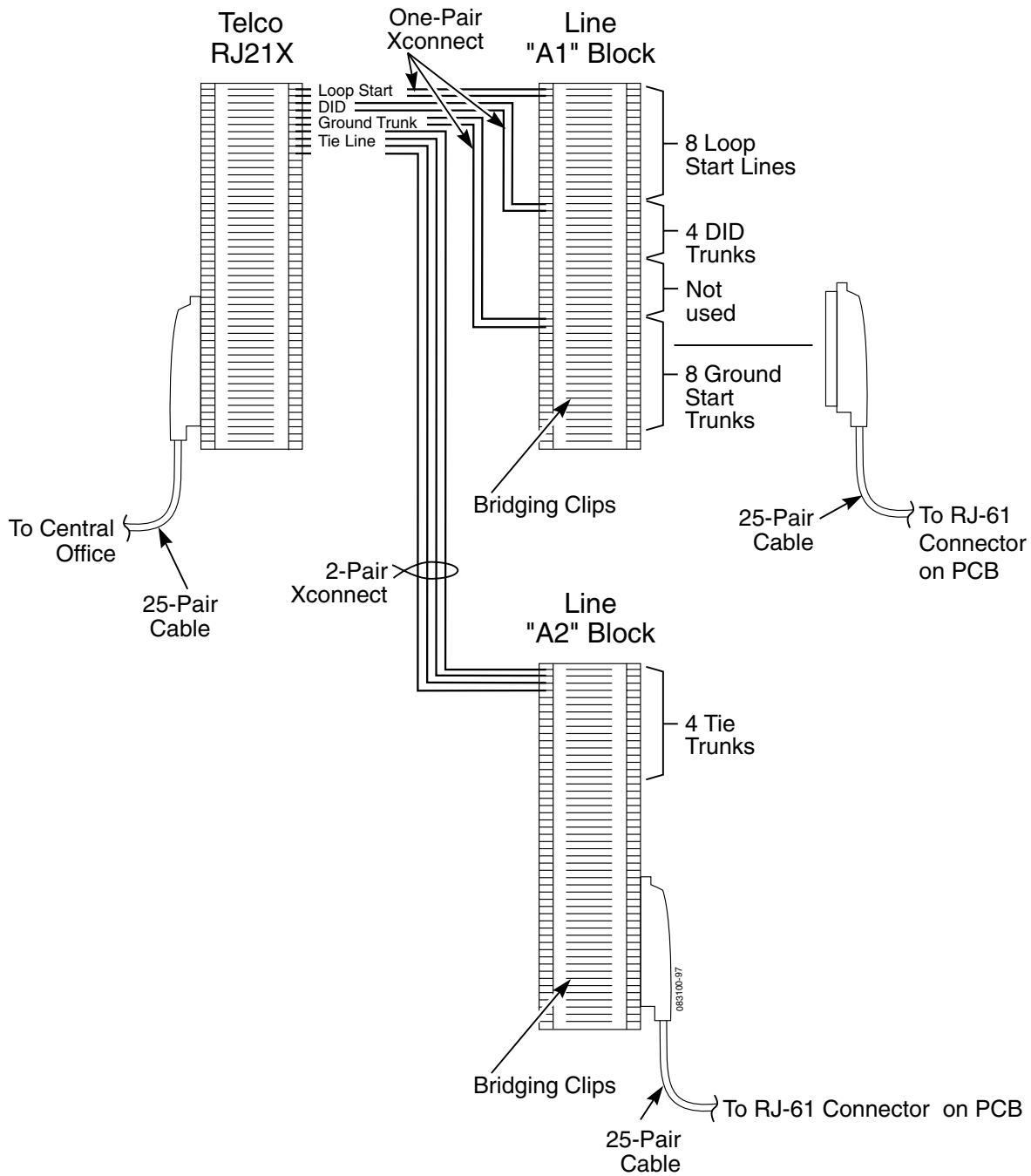


Figure 3-8: TYPICAL TRUNK/LINE INSTALLATION

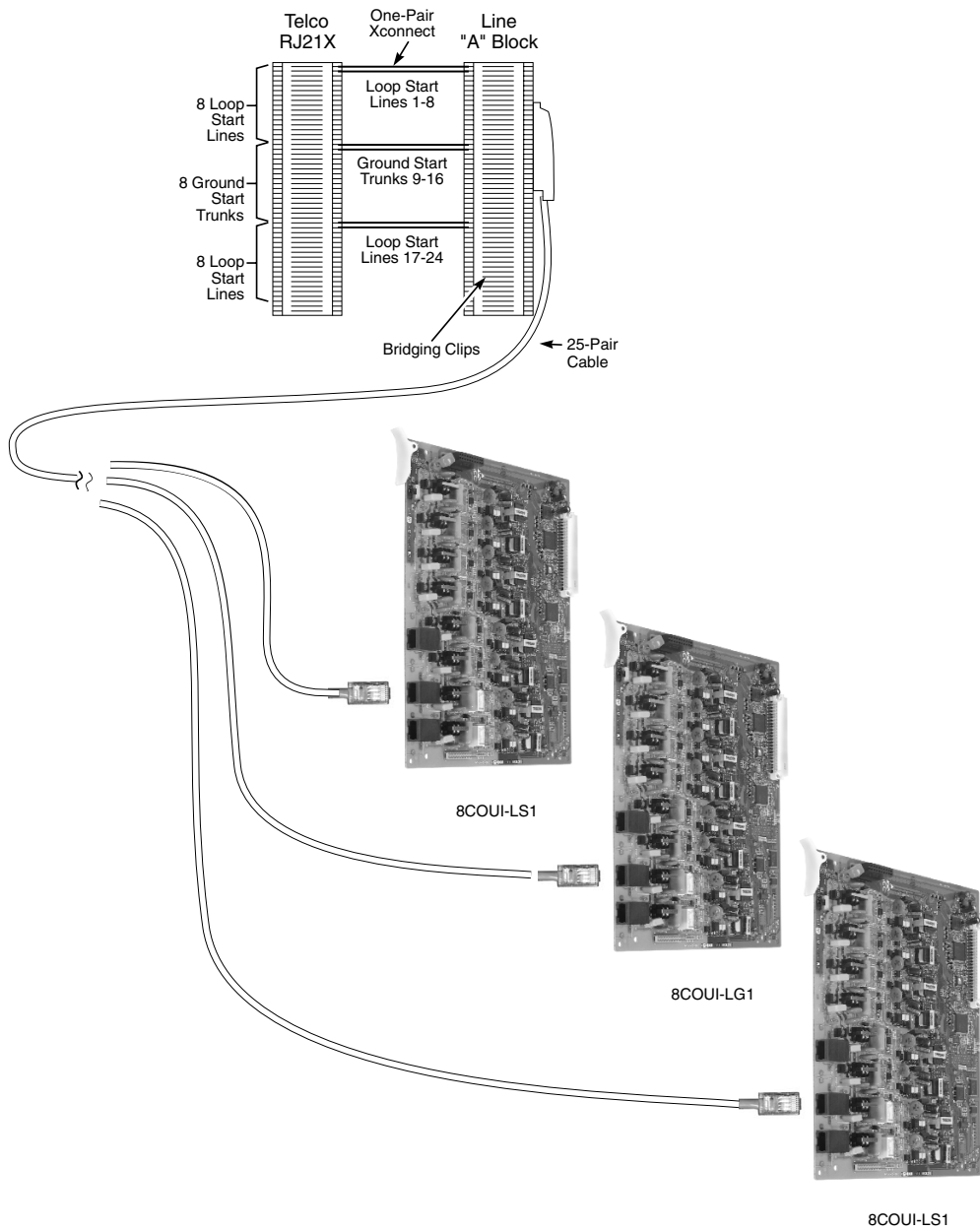


Figure 3-9: INSTALLING GROUND START TRUNK/LOOP START LINES

INSTALLING BRI TRUNKS

BRI Trunks (Figure 3-10)

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

The A block connects to the BRI PCB with a 25-pair cable and an RJ-45 jack. The line (A) block should be arranged in groups of 2 BRI trunks (4 pins), 4 BRI trunks (8 pins) or 8 BRI trunks (16 pins) to correspond with the cabinet slot equipped with a 2/4/8BRI PCB.

Installing BRI Trunks

1. For each T-Bus or S-Bus line, run cross-connect wires between the pins on the cross-connect block and the station block.
2. Install bridging clips as required.
3. From the cross-connect block, connect 2 pairs of wires.
 - For T-Bus:** The opposite end is an 8-pin modular connector which is plugged into the NT1 Termination. Connect a line cord from the NT1 Network Line Termination to the telco BRI line. Connect the power cord to the NT1 Network Termination unit.
 - For S-Bus:** The opposite end is an 8-pin modular connector which is plugged into an RJ45 jack. Connect your ISDN terminals to this jack, and daisy-chain the connection for additional ISDN terminals. For pin-out information for S-Bus connections, refer to **BRI (2/4/8BRIU) Interface PCB (Figure 2-18)** (page 2-42).
4. Plug in the corresponding RJ-45 connector to the BRI PCB connector.

Note: Repeat steps 1-4 for each BRI trunk. Label cross-connect blocks A2, A3, etc.

RJ45 Cable Connector - CN5, CN6, CN7, CN8 T-Bus Connection	
Pin No.	Connection
1	-
2	-
3	TA
4	RA
5	RB
6	TB
7	-
8	-

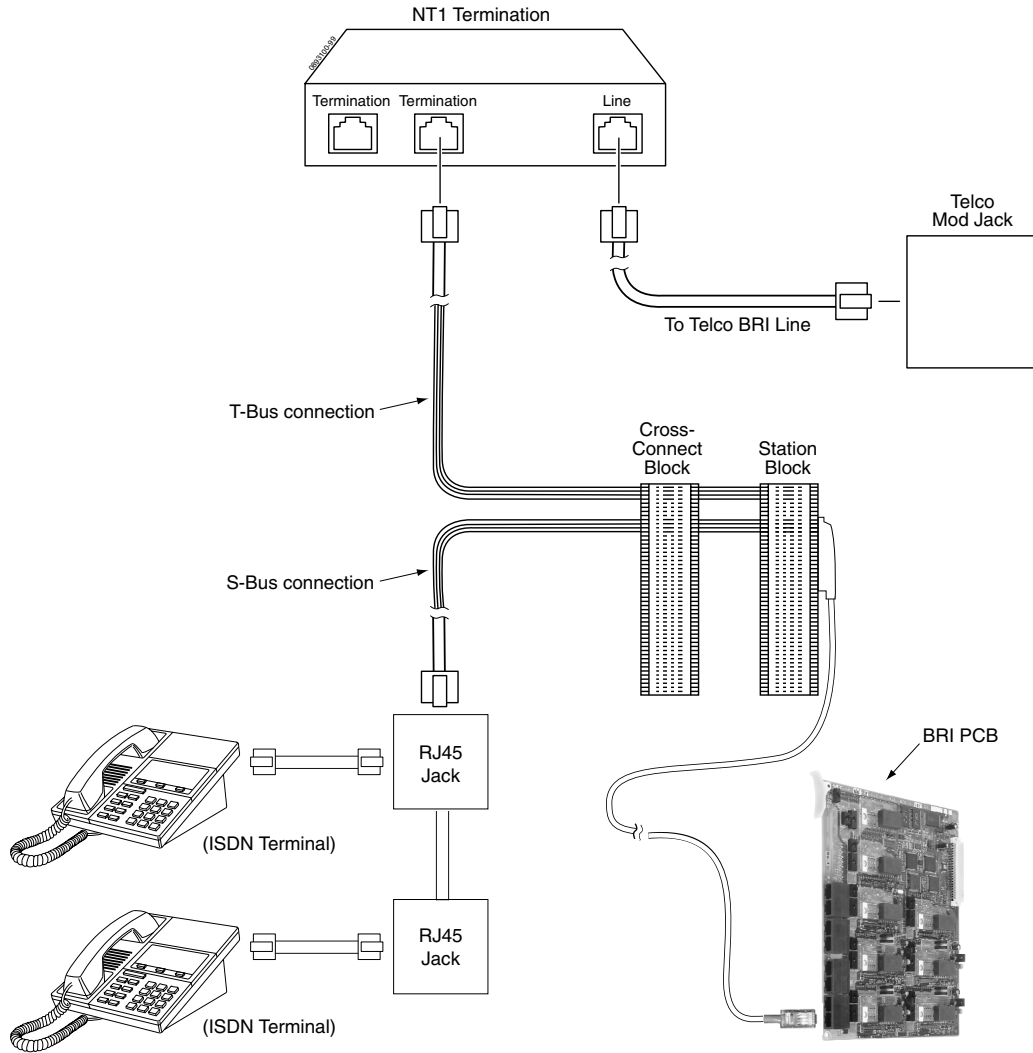


Figure 3-10: BRI Interface T-Bus Point-to-Point

INSTALLING DID TRUNKS

DID Trunks (Figure 3-11)

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 PCB 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 cabinet slot equipped with a DIOPU PCB.

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 PCB connector.
5. Install bridging clips on the A block.

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

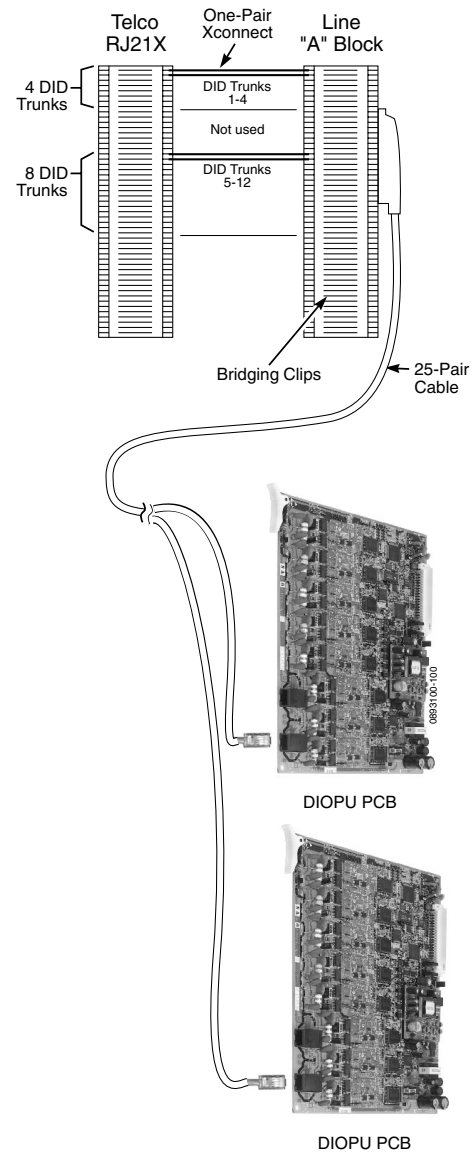


Figure 3-11: INSTALLING DID TRUNKS

INSTALLING A DID CHOKE

DID Choke (Figure 3-12)

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 Aspire 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.

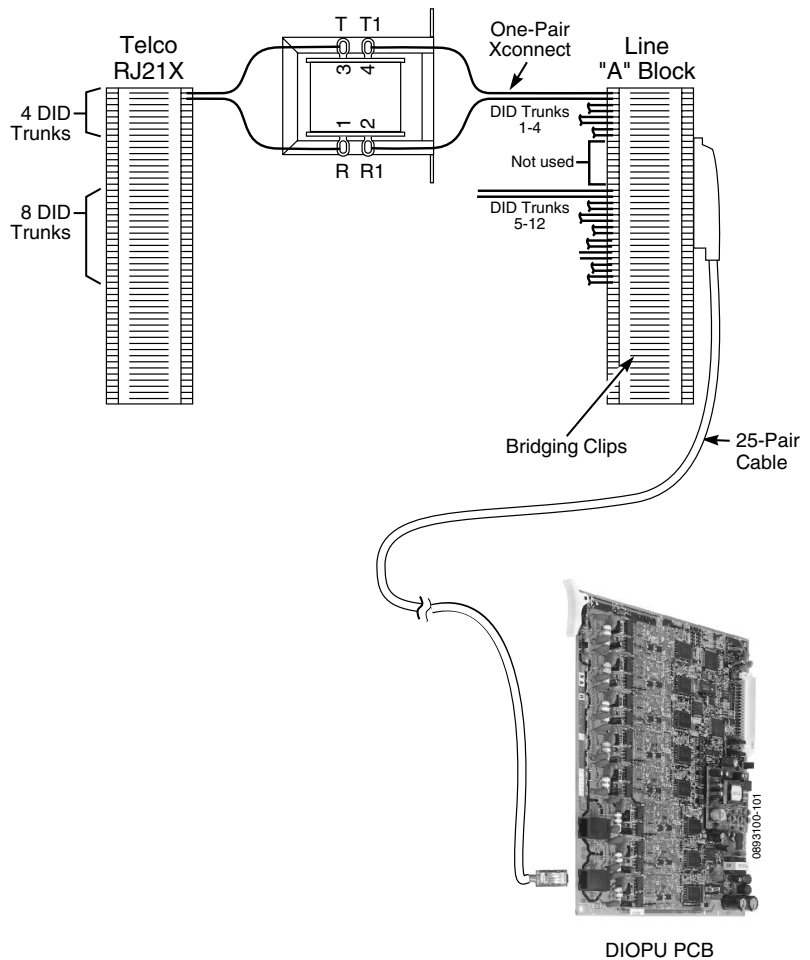


Figure 3-12: DID CHOKE INSTALLATION

INSTALLING TIE LINES

Tie Line: 4TLIU (Figure 3-13)

Tie lines must be bridged from the telco RJ21X to a line cross-connect (A) block. Each tie line requires two-pair or four-pair (depending on the type of tie line) cross-connect from the RJ21X to the line (A) block.

The A block connects to the 4TLIU PCB with a 25-pair cable. The line (A) block must be arranged in groups of 4 tie lines (32 pins) to correspond with the cabinet slot equipped with a 4TLIU PCB.

Installing 2-wire/4-lead Tie Lines:

1. Punch down two pair cross-connect on the tip, ring, E, M, SB and SG leads for each tie line on the CPE (customer) side of the RJ21X.
2. Punch down the other end of the cross-connect to the line (A) block tip, ring, E, M, SB and SG leads (in groups of 4 lines). Keep in mind that two pins of the RJ-61 connector are not used for 2-wire tie lines.

RJ61 Cable Connector - 2-Wire E&M, CN100 - CN400			
Pin No.	Connection	Description	
1	SB	Ground wire for control	
2	M	Control signal to trunk	
3	-		
4	R	Voice signal both ways	
5	T	Voice signal both ways	
6	-		
7	E	Control signal from trunk	
8	SG	Ground wire for control	

3. Make sure the strapping on the 4TLIU PCB is set to the proper type (2-wire or 4-wire and Type I, II, III, IV or Type V).
4. Punch down a 25-pair cable to the opposite side of the line (A) block.
5. Plug in the corresponding RJ-61 connector to the 4TLIU PCB connector.
6. Install bridging clips on the A block. Label cross-connect blocks A2, A3, etc.

Installing 4-wire/8-lead Tie Lines:

1. Punch down four pair cross-connect on the tip, ring, tip 1, ring 1, E, SB, M, and SG leads for each tie line on the CPE (customer) side of the RJ21X.
2. Punch down the other end of the cross-connect to the line (A) block tip, ring, tip 1, ring 1, E, SB, M, and SG leads (in groups of 4 tie lines).

RJ61 Cable Connector - 4-Wire E&M, CN100 - CN400			
Pin No.	Connection	Description	
1	SB	Ground wire for control	
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	SG	Ground wire for control	

3. Make sure the strapping on the 4TLIU PCB is set to the proper type (2-wire or 4-wire and Type I, II, III, IV or Type V). Refer to *Tie Line (4TLIU) PCB (Figure 2-17)* on page 2-37 for detail on strapping.
4. Punch down a 25-pair cable to the opposite side of the line (A) block.
5. Plug in the corresponding RJ-61 connector to the 4TLIU PCB connector.
6. Install bridging clips on the A block. Label cross-connect blocks A2, A3, etc.



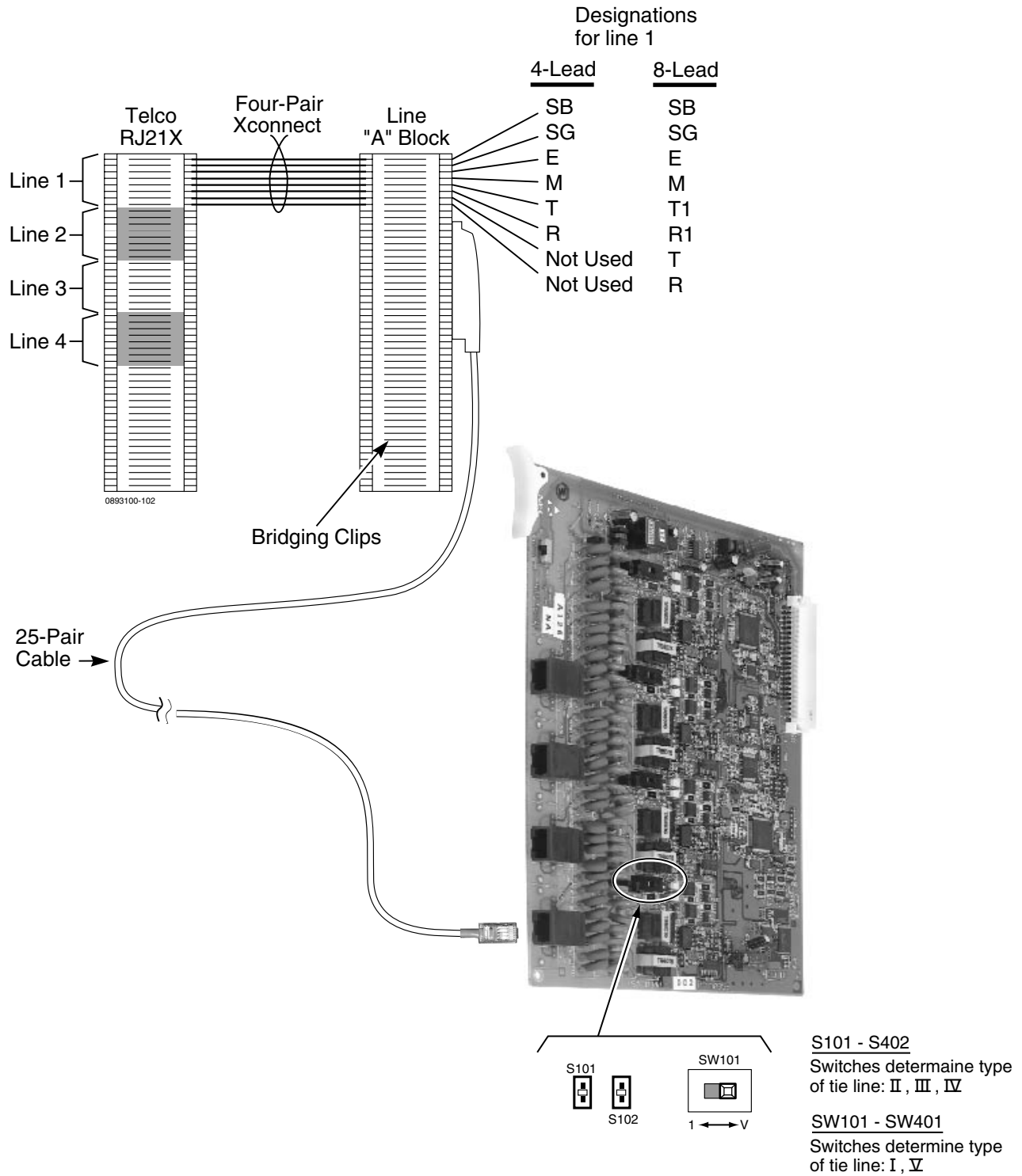


Figure 3-13: 4TLIU PCB INSTALLATION

LINE/TRUNK CUTDOWN SHEET

CO/PBX Line Cutdown Sheet Configuration (Figure 3-14, Figure 3-15)

Due to the flexibility of the system’s universal PCB slot configuration, standard cutdown sheets for CO/PBX line cabling do not apply.

Note: The order in which the trunk PCBs are installed determines the assigned line circuit number.

For example, if four 8COIU's are installed in the Main Cabinet in the following order, the following numbering plan would be in effect:

Order of Install	PCB Slot #	Line Circuits
1	4	1-8
2	5	9-16
3	7	17-24
4	6	25-32

3

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

- Order of installation
- Cabinet (Main, Expansion)
- Slot used
- PCB type (4COIU, 8COIU, 4TLIU, etc.)
- Amphenol connector

To determine where any group of lines are installed, note the order of install, cabinet, and slot.

On the following page is the line cutdown sheet (Figure 3-14). Make as many copies as you need. Be sure to keep careful records of your installation. Refer to the sample line cutdown sheet (Figure 3-15) if you need help completing Figure 3-14.

		MAIN			EXPANSION	
		CONN PIN	BLOCK TERM	COLOR CODE	FUNCTION	PCB ID
RJ-61 Connector 1	5	1	WHT-BLU			Order Of Install
	4	2	BLU-WHT			Slot #
	3	3	WHT-ORN			<input type="checkbox"/> 4COIU-LS1 <input type="checkbox"/> 4VOIPU
	6	4	ORN-WHT			<input type="checkbox"/> 8COIU-LS1 <input type="checkbox"/> 4VOIPDB
	2	5	WHT GRN			<input type="checkbox"/> 4COIU-LG1 <input type="checkbox"/> 16VOIPU
	7	6	GRN-WHT			<input type="checkbox"/> 8COIU-LG1 <input type="checkbox"/> 16VOIPDB
	1	7	WHT-BRN			<input type="checkbox"/> 4TLIU
	8	8	BRN-WHT			<input type="checkbox"/> 4DIOPU
RJ-61 Connector 2	5	9	WHT-SLT			<input type="checkbox"/> 8DIOPU
	4	10	SLT-WHT			<input type="checkbox"/> 2BRIU
	3	11	RED-BLU			<input type="checkbox"/> 4BRIU
	6	12	BLU-RED			<input type="checkbox"/> 8BRIU
	2	13	RED-ORN			<input type="checkbox"/> 1PRIU
	7	14	ORN-RED			
	1	15	RED-GRN			
	8	16	GRN-RED			
RJ-61 Connector 3	5	17	RED-BRN			Order Of Install
	4	18	BRN-RED			Slot #
	3	19	RED-SLT			<input type="checkbox"/> 4COIU-LS1 <input type="checkbox"/> 4VOIPU
	6	20	SLT-RED			<input type="checkbox"/> 8COIU-LS1 <input type="checkbox"/> 4VOIPDB
	2	21	BLK-BLU			<input type="checkbox"/> 4COIU-LG1 <input type="checkbox"/> 16VOIPU
	7	22	BLU-BLK			<input type="checkbox"/> 8COIU-LG1 <input type="checkbox"/> 16VOIPDB
	1	23	BLK-ORN			<input type="checkbox"/> 4TLIU
	8	24	ORN-BLK			<input type="checkbox"/> 4DIOPU
RJ-61 Connector 4	5	25	BLK-GRN			<input type="checkbox"/> 8DIOPU
	4	26	GRN-BLK			<input type="checkbox"/> 2BRIU
	3	27	BLK-BRN			<input type="checkbox"/> 4BRIU
	6	28	BRN-BLK			<input type="checkbox"/> 8BRIU
	2	29	BLK-SLT			<input type="checkbox"/> 1PRIU
	7	30	SLT-BLK			
	1	31	YEL-BLU			
	8	32	BLU-YEL			
RJ-61 Connector 5	5	33	YEL-ORN			Order Of Install
	4	34	ORN-YEL			Slot #
	3	35	YEL-GRN			<input type="checkbox"/> 4COIU-LS1 <input type="checkbox"/> 4VOIPU
	6	36	GRN-YEL			<input type="checkbox"/> 8COIU-LS1 <input type="checkbox"/> 4VOIPDB
	2	37	YEL-BRN			<input type="checkbox"/> 4COIU-LG1 <input type="checkbox"/> 16VOIPU
	7	38	BRN-YEL			<input type="checkbox"/> 8COIU-LG1 <input type="checkbox"/> 16VOIPDB
	1	39	YEL-SLT			<input type="checkbox"/> 4TLIU
	8	40	SLT-YEL			<input type="checkbox"/> 4DIOPU
RJ-61 Connector 6	5	41	VIO-BLU			<input type="checkbox"/> 8DIOPU
	4	42	BLU-VIO			<input type="checkbox"/> 2BRIU
	3	43	VIO-ORN			<input type="checkbox"/> 4BRIU
	6	44	ORN-VIO			<input type="checkbox"/> 8BRIU
	2	45	VIO-GRN			<input type="checkbox"/> 1PRIU
	7	46	GRN-VIO			
	1	47	VIO-BRN			
	8	48	BRN-VIO			
50	49	VIO-SLT				
25	50	SLT-VIO				NOT USED

0802100-103

Figure 3-14: LINE CUTDOWN SHEET

<input checked="" type="checkbox"/> MAIN				<input type="checkbox"/> EXPANSION
CONN PIN	BLOCK TERM	COLOR CODE	FUNCTION	PCB ID
				1 Order Of Install
				3 Slot #
<input checked="" type="checkbox"/>				<input type="checkbox"/> 4COIU-LS1
				<input type="checkbox"/> 8COIU-LS1
				<input type="checkbox"/> 4COIU-LG1
				<input checked="" type="checkbox"/> 8COIU-LG1
				<input type="checkbox"/> 4TLIU
				<input type="checkbox"/> 4DIOPU
				<input type="checkbox"/> 8DIOPU
				<input type="checkbox"/> 2BRIU
				<input type="checkbox"/> 4BRIU
				<input type="checkbox"/> 8BRIU
				<input type="checkbox"/> 1PRIU
				<input type="checkbox"/> 4VOIPU
				<input type="checkbox"/> 4VOIPDB
				<input type="checkbox"/> 16VOIPU
				<input type="checkbox"/> 16VOIPDB

CONN PIN	BLOCK TERM	COLOR CODE	FUNCTION
5	1	WHT-BLU	
4	2	BLU-WHT	
3	3	WHT-ORN	
6	4	ORN-WHT	
2	5	WHT GRN	
7	6	GRN-WHT	
1	7	WHT-BRN	
8	8	BRN-WHT	
5	9	WHT-SLT	
4	10	SLT-WHT	
3	11	RED-BLU	
6	12	BLU-RED	
2	13	RED-ORN	
7	14	ORN-RED	
1	15	RED-GRN	
8	16	GRN-RED	

3

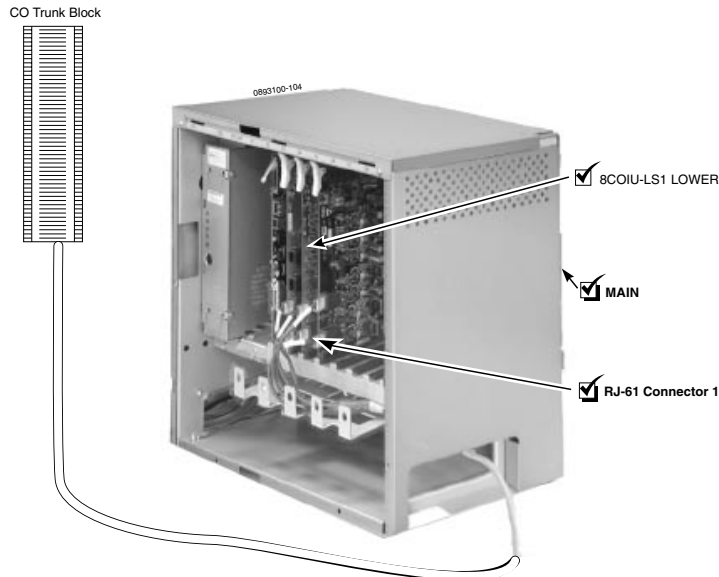


Figure 3-15: SAMPLE LINE CUTDOWN SHEET

TESTING TELEPHONE OPERATION

The following procedure will help you determine if a problem being experienced is due to the telephone or the system. Testing the operation of a keyset allows you to check the lamping of each key, the display, and tones. Follow the procedure below to determine if the phone is operating correctly.

Key Matrix and LED Test

1. Unplug the phone.
2. While holding down dial pad digits 1, 2 and 3, plug the phone back in.
3. Hold down the 1, 2 and 3 digits for approximately 10 seconds then release them.
If the phone doesn't show "TEST PUSH=" on the display, then repeat Steps 1-3 and hold the keys down a few seconds longer.
4. Press any key and its Logical Name should be displayed.
The following chart indicates the Logical Name for each key.

Logical Name Table			
Keys	Logical Name	Keys	Logical Name
KEYPAD 0 - 9	D 0 - D 9	CALL2	F 8
KEYPAD *	D *	MIC	F 9
KEYPAD #	D #	MSG	F 10
Line Keys 1 - 24 ¹	L 1 - L 24	DIAL	F 11
DSS Keys 1 - 10	O 1 - O 10	CLEAR	F 12
LND	F 1	CHECK	F 13
CONF	F 2	SOFT KEY 1-4	S 1 - S 4
HOLD	F 3	MENU1 ²	011
FLASH	F 4	MENU2 ²	012
DND	F 5	VOL. UP	
CALL1	F 6	VOL. DOWN	
SPK	F 7		

¹ Keys 1, 2 and 3 will also check tones.
² 34-Button Super Display telephone only.

Quitting Test Mode

1. Lift the handset and then replace it.
2. The phone returns to an idle condition.

Section 4: Telephones and Optional Equipment

4

2PGDAD MODULE

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 (8 maximum per system)
- External Speaker with Amplifier (8 maximum with 2PGDAD modules, 1 on the NTCPU)
- External Music Source (external MOH) (96 maximum per system)
- External Recording System (96 maximum per system)
- External Ringing

The system allows for a maximum of 56 2PGDAD modules to be installed (48 for ACI [external MOH or external recording system] ports, 4 for Door Boxes, and 4 for 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 system allows for up to 8 general purpose relays with the 2PGDAD modules and 1 on the NTCPU for a maximum of 9.

The 2PGDAD module connects to any available digital extension port. The terminal connections made within the PGDAD module and the jumper settings determine what features are used for each circuit.

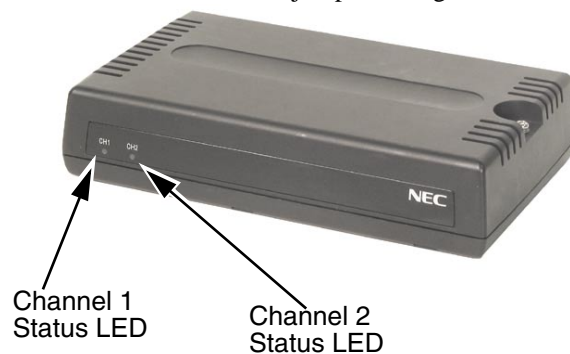


Figure 4-1: 2PGDAD MODULE

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.

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, 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.

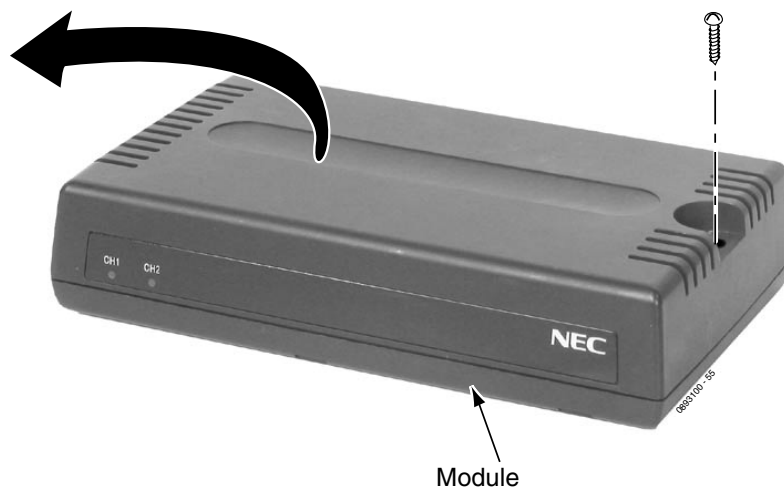


Figure 4-2: REMOVE COVER FROM 2PGDAD MODULE

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

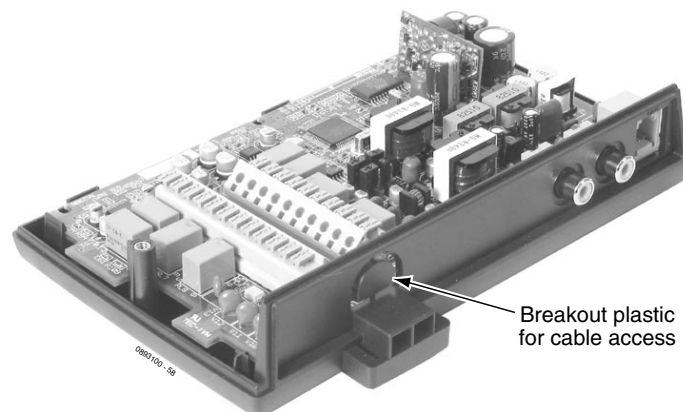


Figure 4-3: REMOVE PLASTIC COVER FROM CABLE HOLE

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

Channel 1	S3	S4	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.
Channel 2	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.

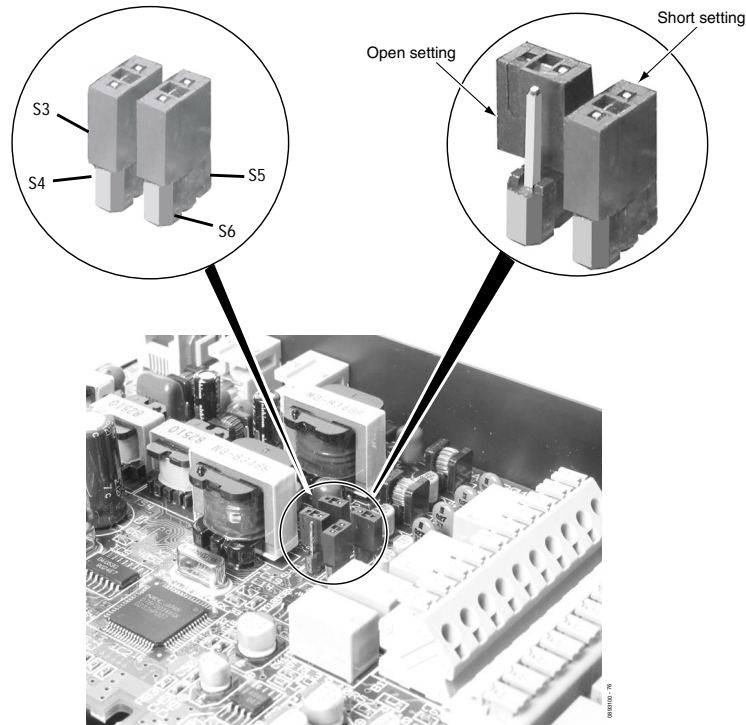
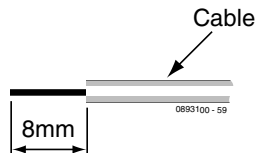


Figure 4-4: JUMPER SETTINGS

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.

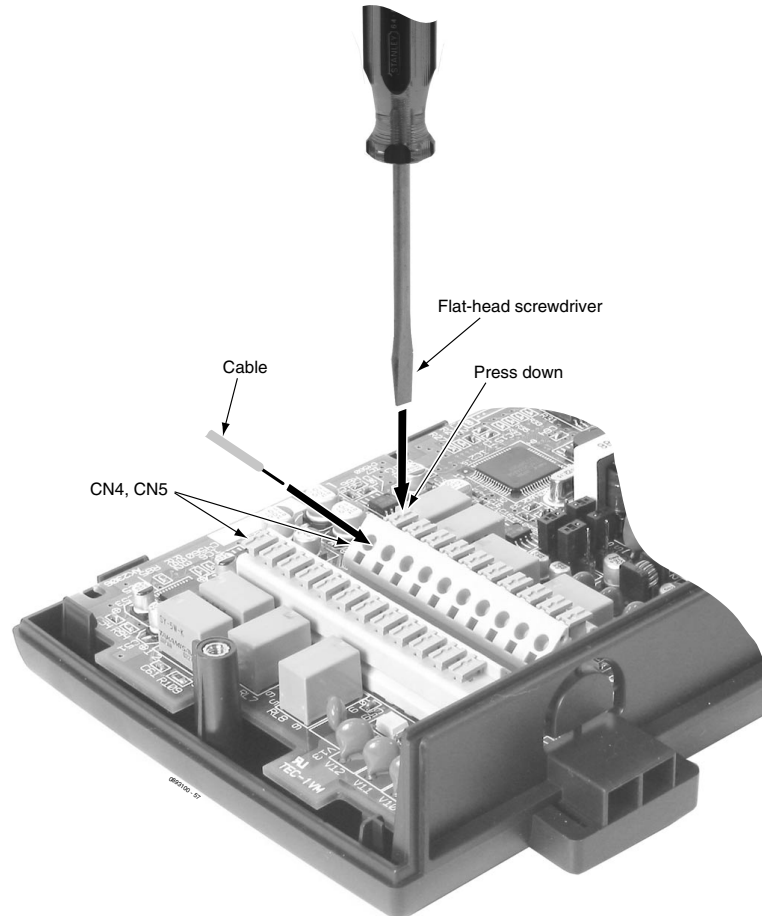


Figure 4-5: CONNECTING CABLE TO THE 2PGDAD MODULE

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 CN3 (Channel 1) and CN (Channel 2) connectors on the back of the 2PGDAD module.

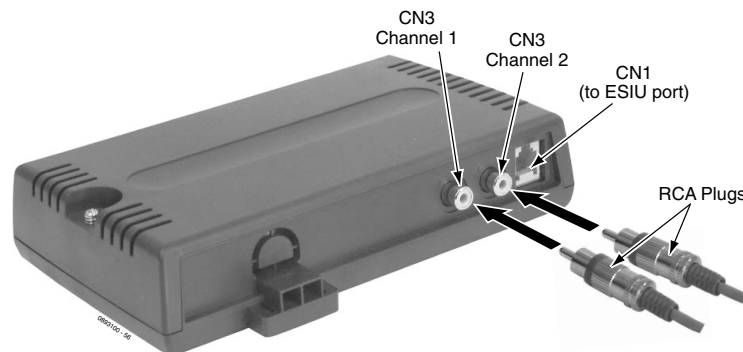


Figure 4-6: 2PGDAD MODULE CONNECTIONS

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, set the circuit type to "0" for the port in Program 10-03-01 prior to connecting the line cord.
12. Plug a modular line cord from the mod jack to the CN1 connector on the 2PGDAD module.

1. **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.

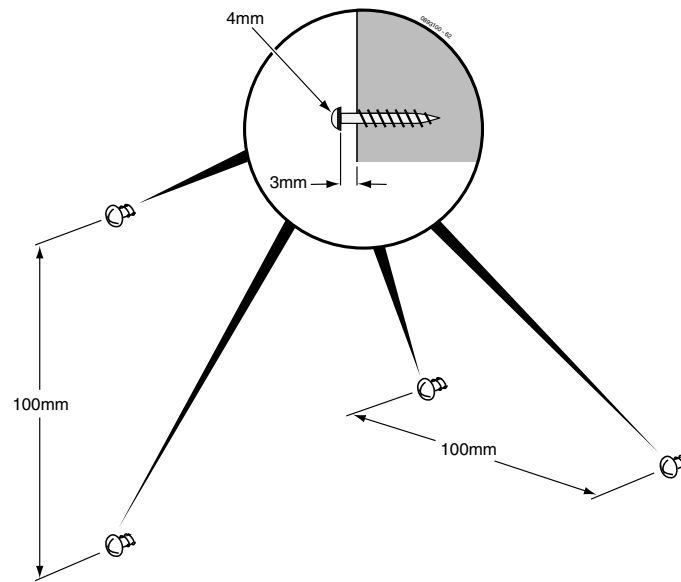


Figure 4-7: INSTALLING THE SCREWS

2. 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.

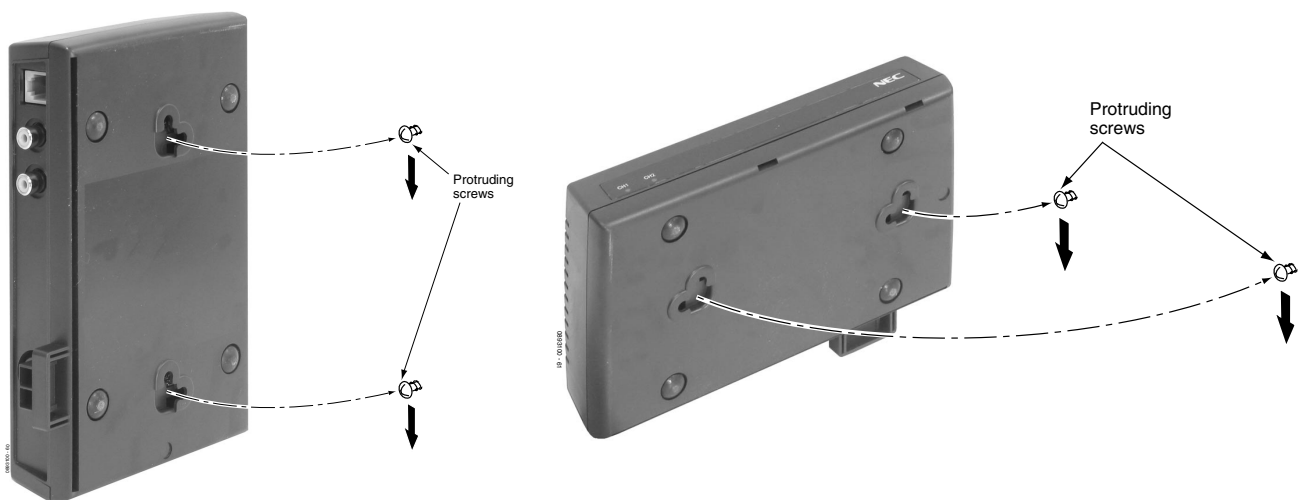


Figure 4-8: WALL MOUNTING THE 2PGDAD MODULE

BACKGROUND MUSIC

Installing Background Music (Figure 4-9)

Background Music (BGM) sends music from a customer-provided music source to speakers in keysets. If an extension user activates it, BGM plays whenever the user's extension is idle.

1. Connect an RJ61 modular line cord from the CN16 connector on the NTCPU to the appropriate location on the extension cross-connect block.
2. Connect the two-conductor station cable from the cross-connect block to the external music source.
3. Install bridging clips as required.

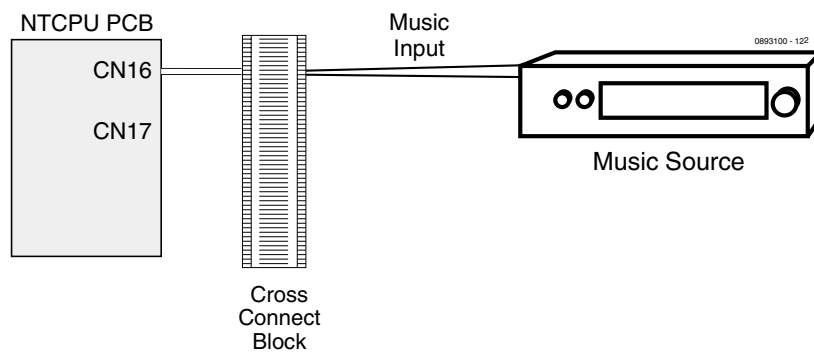


Figure 4-9: CPRU CONNECTIONS

Refer to *Background Music* in the software manual for additional information.

DOOR BOX

Installing a Door Box (Figure 4-10, Figure 4-11)

A 2PGDAD Module is required for this feature.

The Door Box is a self-contained 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.

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. The NTCPU also provides 1 relay. This relay is defined as relay '0' in programming. The relays on the 2PGDAD modules are numbered 1-8. The system can have up to eight Door Boxes.

NOTE: 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 4-3).
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. Refer to External Page Relay on **External Page Relays** (page 4-15) for information on connecting the Door Box to a relay.

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

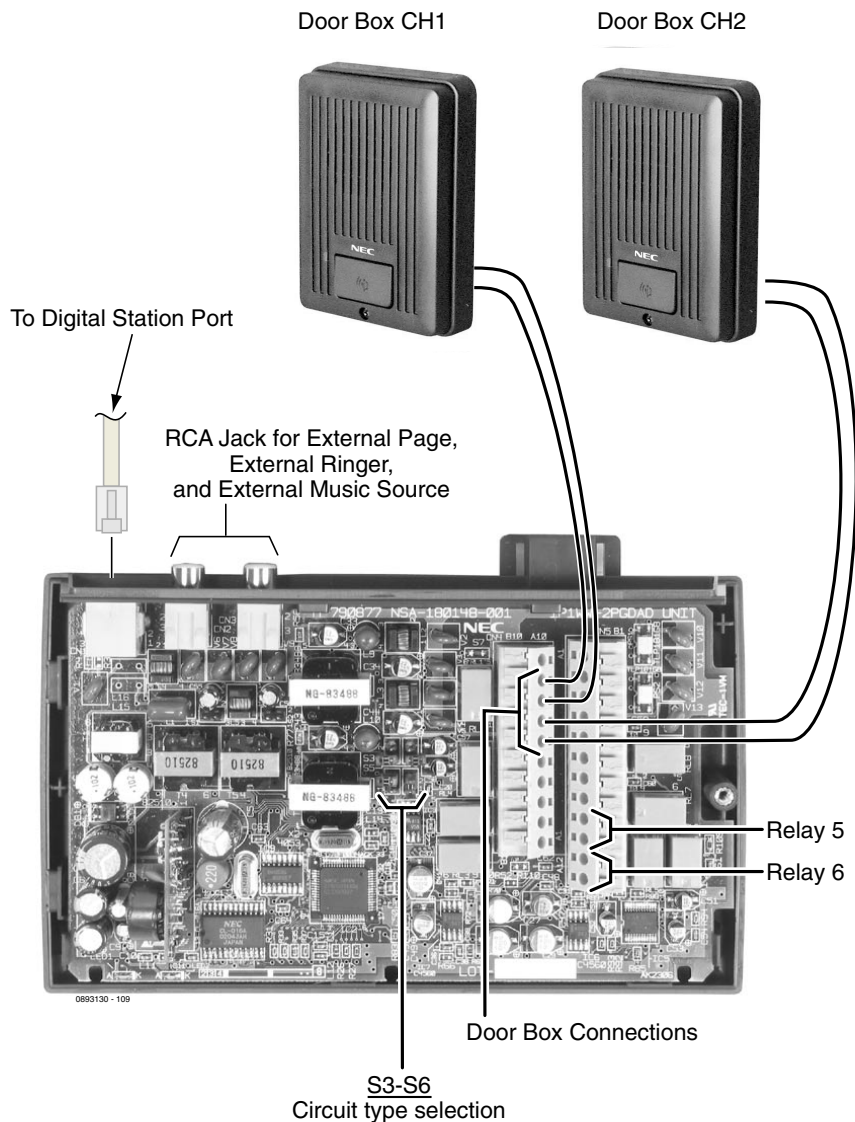
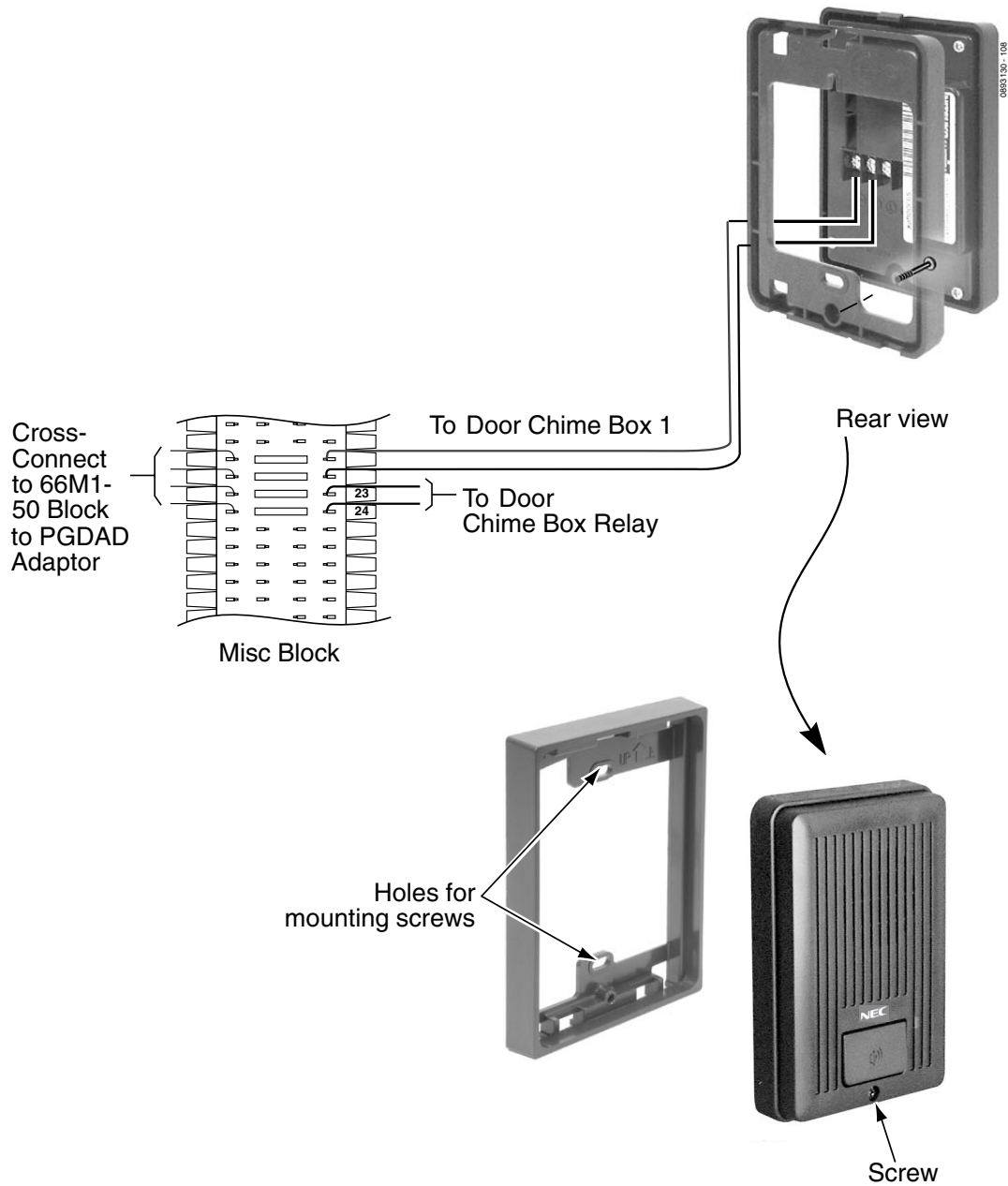


Figure 4-10: SETTING THE 2PGDAD FOR A DOOR BOX



4

Figure 4-11: INSTALLING A DOOR BOX

DSS CONSOLE

Using a DSS Console (Figure 4-12 - Figure 4-14)

The DSS Console gives a keyset user a Busy Lamp Field (BLF) and one-button access to extensions, trunks and system features. The 110-Button DSS Console provides an additional 100 programmable keys, while the 24-Button DLS Console provides 24 programmable keys. The 110-Button DSS also has 10 fixed feature keys for Paging, calling Door Boxes, activating Night Service and enabling DSS Console Alternate Answer. There are also two keys that allow “shifting” between the first and second set of 100 extensions.

Keep the following in mind when installing DSS Consoles:

- A 24-Button DLS Console does *not* require a separate digital station port.
- A 110-Button DSS Console requires a separate digital station port.
- The system allows for a maximum of 32 110-Button DSS Consoles. One extension can have a maximum of 4 110-Button DSS Consoles. As the 24-Button DLS Console is connected to the bottom of the phone, an extension can only have one 24-button DLS Console installed. An extension can have either a 24-Button DLS Console or 4 110-Button DSS Consoles installed/assigned.
- A 24-Button DLS Console cannot be installed on an iPhone.
- By default, the 24-Button DLS Console has no keys defined. These keys can be programmed as line keys, extension DSS keys, or programmable function keys using Program 15-07. To program the keys, use the extension number to which the DLS is installed and, regardless of the type of keyset connected, **start programming the DLS keys at key number 25**. Service codes 851 and 852 can also be used to program these keys if allowed by an extension’s Class of Service.
- By default, the 110-Button DSS Console has extension DSS keys defined. These keys can be programmed as line keys, extension DSS keys, or programmable function keys using Program 30-03-01. Service codes 851 and 852 can also be used to program these keys if allowed by an extension’s Class of Service.

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

Installing a 110-Button DSS Console

1. Install a modular jack for each 110-Button DSS Console. The modular jack should be within six feet of the phone.
2. For each 110-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. Connect a line cord from the modular jack to the connector on the bottom of the DSS console.

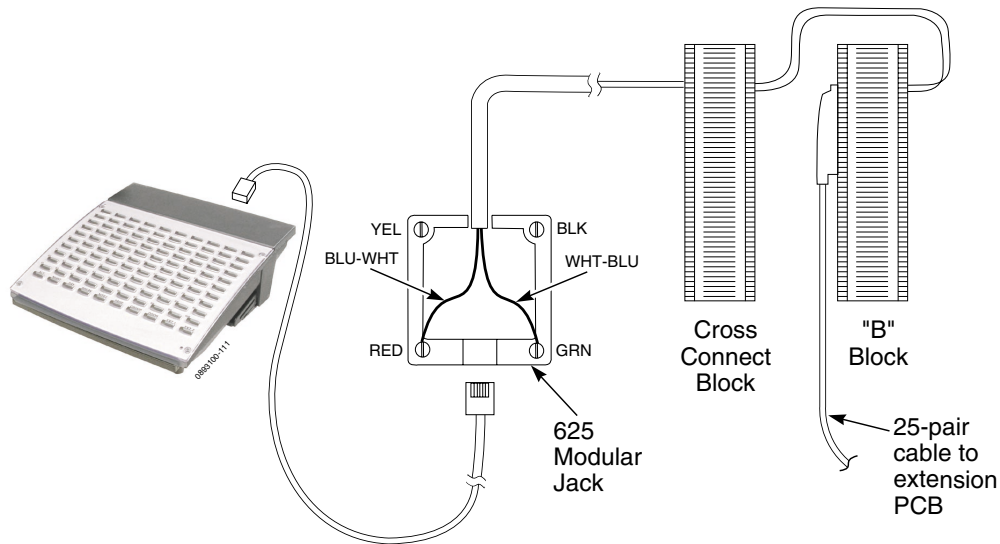


Figure 4-12: INSTALLING A DSS CONSOLE

5. **To program a DSS Console . . .**

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

10-03-01 : PCB 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.

30-02-01 : DSS Console Extension Assignment

Designate the extensions that have DSS Consoles connected to them.

30-03-01 : DSS Console Key Assignment

Customize the functions of the DSS Console keys.

30-04-01 : Alternate DSS Console Key Assignment

If the console should have Alternate Answering, use this program to assign the Alternate Answering Destination.

Installing a 24-Button DLS Console

1. Turn the keyset over which will have the 24-Button DLS Console installed.
2. If only one adapter is to be installed on the phone, the console should be installed on the right-hand side of the phone (beneath the handset). Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.

If a second adapter is required at a later time, the console connection will need to be moved to the left in order to accommodate the cable.

3. Plug the 24-Button DLS Console into the connector on the bottom of the keyset.
4. Push the cable from the console into the cable channel to allow the phone to rest flat.
5. Install the connector plate provided with the 24-Button DLS Console to the bottom of the console and phone to join the two sets together.

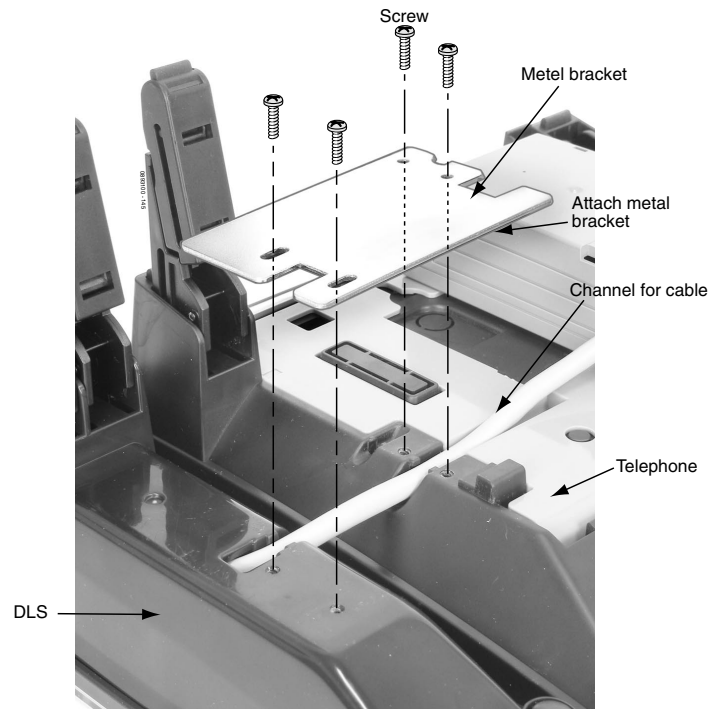


Figure 4-13: INSTALLING THE CONNECTOR PLATE

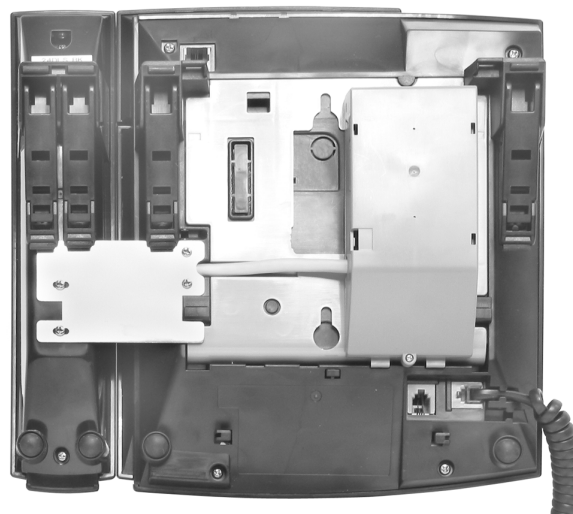


Figure 4-14: INSTALLED 24-BUTTON DSS CONSOLE

EXTERNAL PAGING

External Page (Figure 4-15, Figure 4-16)

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 NTCPU also provides a connection for external paging and a relay. The external page on the NTCPU is speaker number 9 - the relay is number 0. 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.

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

Installing an External Page System

1. **Connecting to the NTCPU:**
Connect an RJ61 modular line cord from the CN16 connector on the NTCPU to the appropriate location on the extension cross-connect block.
 2. Connect the two-conductor station cable from the cross-connect block to the external relay/external page.
 3. Install bridging clips as required.
- OR
1. **Connecting to the 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 4-3).
 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.

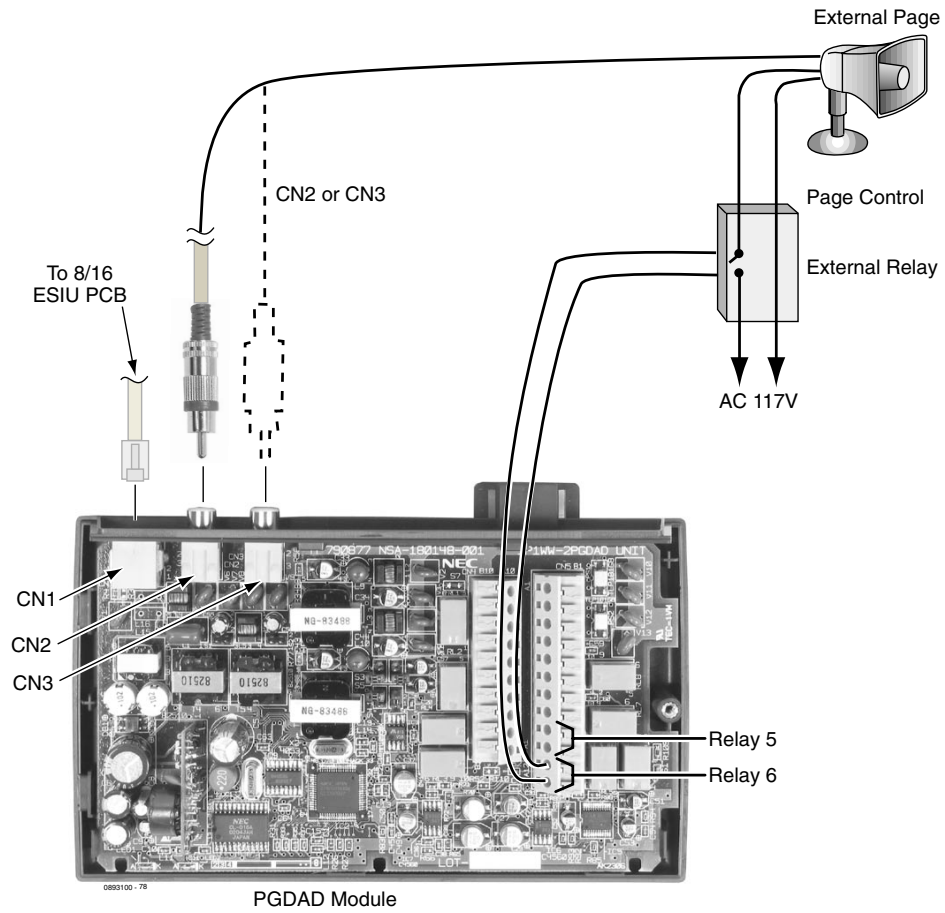


Figure 4-15: 2PGDAD CABLE CONNECTION

Note: Page amplification is not provided by the 2PGDAD module and must be accommodated by using an external page amplifier.

EXTERNAL PAGING AND PAGE RELAYS

External Page Relays

Two external dry contact relays are available when a 2PGDAD is installed which can be used to activate ancillary devices (i.e. door unlock devices). The NTCPU provides one relay - this relay is number 0 in programming. The relays on the 2PGDAD modules are numbered 1-8. Each Door Box/external page circuit provides a dry relay contact.

Door Box /External Page Relay Contacts (Figure 4-15, Figure 4-16)

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

1. **Connecting to the NTCPU:**
Connect an RJ61 modular line cord from the CN17 connector on the NTCPU to the appropriate location on the extension cross-connect block.
2. Connect the two-conductor station cable from the cross-connect block to the external relay.
3. Install bridging clips as required.

OR

1. **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 4-3).
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.

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

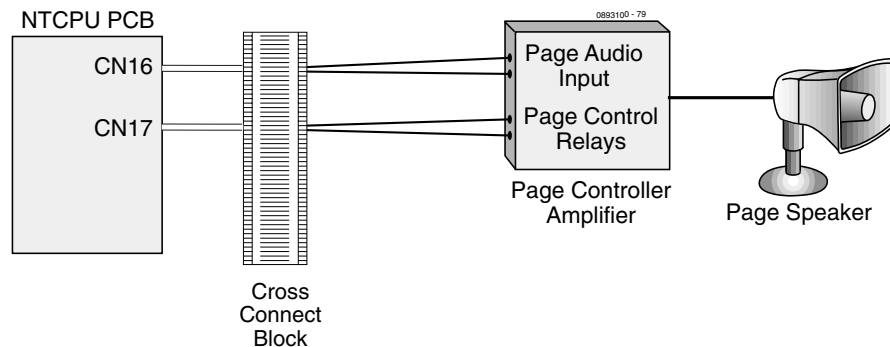


Figure 4-16: NTCPU PAGE CONNECTIONS

EXTERNAL RECORDING SYSTEM / EXTERNAL RINGER

External Recording System or External Ringer (Figure 4-17)

The 2PGDAD allows for the connection of an external recording system or external ringer.

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 4-3).
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.

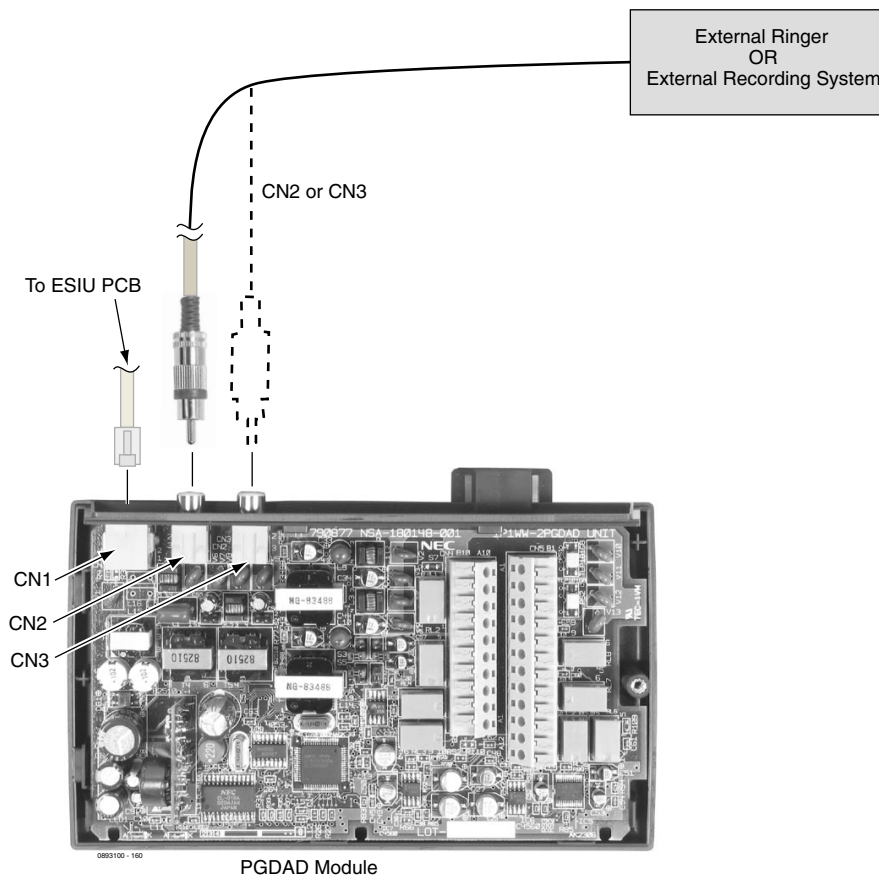


Figure 4-17: 2PGDAD CABLE CONNECTION

HEADSETS

Connecting a Headset

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 phone. 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 keyset. (This jack is located right next to the handset jack, so make sure to connect to the proper jack.)

Examples of compatible headsets are the:

- Polaris Supra Monaural Noise Cancelling, P/N 750036
- Polaris Supra Binaural Noise Cancelling, P/N 750033
- Polaris Encore Binaural Noise Cancelling, P/N 750035

KEYSET LABELING

Labeling Your Phone

The Aspire keysets can be easily labeled by removing the clear plastic faceplate on the keysets. These labels can be printed by hand, typewriter, or by using the Aspire 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.

Removing the Faceplate:

1. At the lower right-hand corner of the telephone, you'll notice a small notch in the faceplate plastic. Use this notch to help lift the faceplate up.

Each corner has a plastic locking pin which releases as the faceplate is lifted up.

If the faceplate is dropped, these pins may pop out of place. Be careful not to lose the pins.

Replacing the Faceplate:

1. Place the faceplate back on the phone.
2. At each corner, press the locking pin back into place.

MUSIC SOURCES

Music on Hold (Figure 4-18, Figure 4-19)

The system can provide Music on Hold from either an internally synthesized source on the NTCPU or from an external source. The external MOH can be a tuner, tape deck, CD player, etc. The settings in Program 10-04-01 and 14-08-01 determine whether the source for MOH is internal or external (refer to the Software Manual for further details).

In addition to a connector on the NTCPU, 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.

The CPRU provides a dry relay that activates when a call is placed on Hold. When an external MOH source is connected to the MOH relay and a call is placed on Hold, the MOH relay is activated. This allows an external relay sensor/power supply to turn on the MOH source.

This arrangement allows the MOH source (e.g., a tape deck) to run only when a call is placed on Hold. The *maximum* applied voltage for the relay is 24vDC at .5A (the relays are normally open and close when a call is put on hold).

Installing External Music on Hold

1. **Connecting to the NTCPU:**

Connect an RJ61 modular line cord from the CN16 connector on the NTCPU to the appropriate location on the extension cross-connect block.

OR

To use CPRU Music on Hold contacts, connect an RJ61 modular line cord from the CN17 connector on the NTCPU to the appropriate location on the extension cross-connect block.

2. Connect the two-conductor station cable from the cross-connect block to the external music source.
3. Install bridging clips as required.

OR

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 4-3).

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.

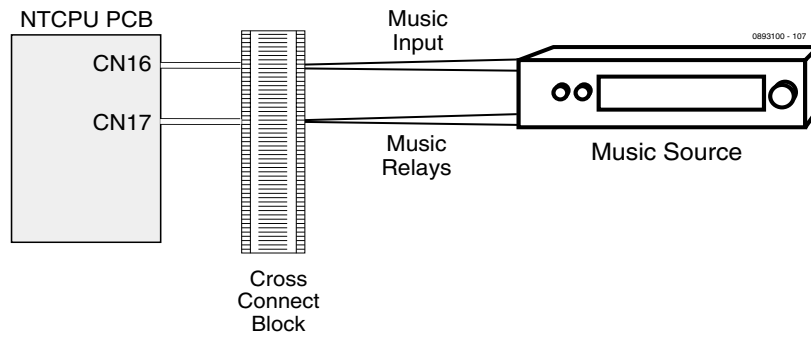


Figure 4-18: CPRU CONNECTIONS

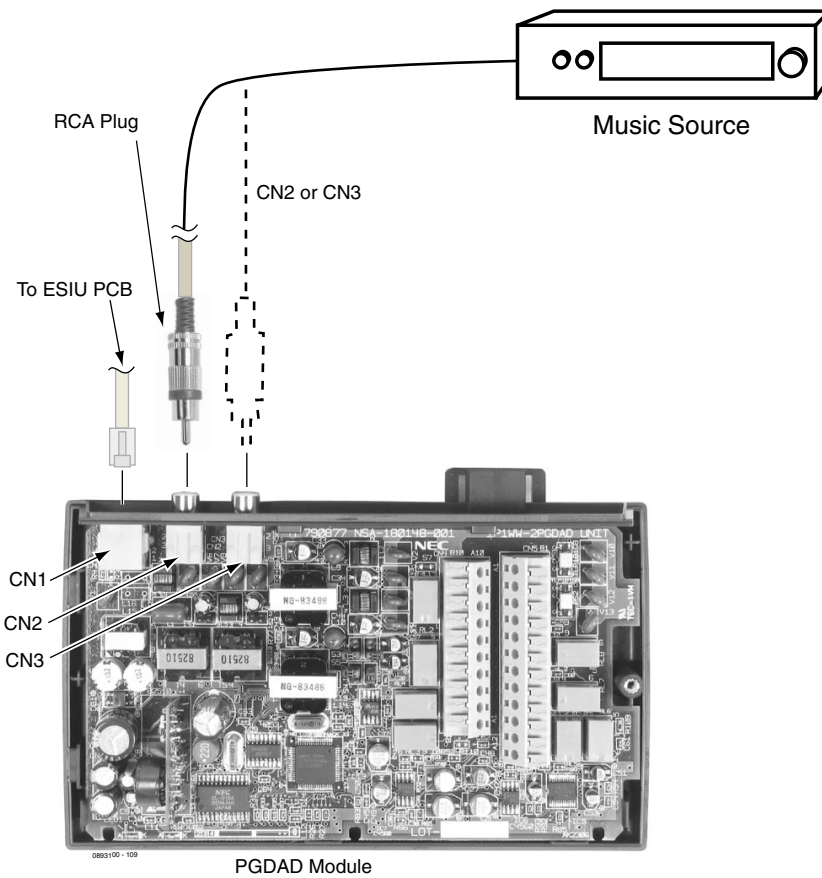


Figure 4-19: 2PGDAD CONNECTIONS

NIGHT MODE SELECTION

Night Mode Selector Switch

The Night Mode Switch relay closes when the system detects either an open or closure on the MISC block NIGHT SW terminals. Maximum 48v DC is output to the switch when open, and 7mA DC when shorted.

Refer to *Night Service* in the Software Manual for additional details.

Connecting a Night Mode Selector Switch

1. Connect an RJ61 modular line cord from the CN17 connector on the NTCPU to the appropriate location on the extension cross-connect block.
2. Connect the two-conductor station cable from the cross-connect block to the night switch mechanism output leads.
3. Install bridging clips as required.

OPTIONAL PHONE ADAPTERS

Using Adapters (Figure 4-20)

Each Aspire keyset can have two optional adapters installed (unless an IP adapter is used). These adapters provide the keyset different capabilities, depending on the adapters installed.

These optional adapters cannot be installed on an Aspire 2-button phone.

Only the ADA2 and PSA Adapters can be used on the Aspire iPhone.

- ADA - Conversation Recording
- ADA2 - Aspire iPhone Conversation Recording
- APA - Analog Port Adapter Without Ringer
- APR - Analog Port Adapter with Ringer
- CTA - Serial Interface (RS-232C)
- CTU - USB Interface
- PSA - Aspire iPhone Power Failure
- IP - VoIP Connection
- 24-Button DLS Console (refer to page 4-10 for complete details on connecting the DLS)

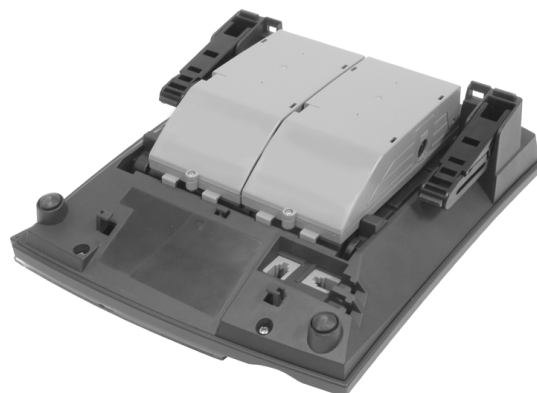


Figure 4-20: INSTALLING ADAPTERS

The following chart indicates if there are restrictions when combining certain adapters. Select the adapter in the column and then select the adapter in the row to see if there are any restrictions. For example, using an APA and APR adapter refers you to restriction 3 (only one voice path provided - adapters can not be used together).

	24DLS	IP	CTU	CTA	APR	APA	ADA	ADA2	HF-R	PSA
ADA	-	1	-	-	-	-	2	5	-	5
ADA2	5	5	5	5	5	5	5	5	5	5
APA	-	1	-	-	3	2	-	5	-	5
APR	-	1	6	-	2	3	-	5	6	5
CTA	-	1	4	2	-	-	-	5	-	5
CTU	-	1	2	4	6	-	-	5	6	5
IP	1	2	1	1	1	1	1	5	-	5
HF-R	-	1	6	-	6	-	-	5	2	5
PSA	5	5	5	5	5	5	5	5	5	5
24DLS	2	1	-	-	-	-	-	5	-	5

- 1 = The IP Adapter takes the full space provided for adapters on the keysets. Therefore, if an IP adapter is installed, no other adapters can be used.
- 2 = Only one adapter of the same type can be used on a keyset.
- 3 = As there is only one voice path provided for adapters, the APR and APA adapters can not both be used on the same keyset.
- 4 = Due to protocol collision, the CTU and CTA adapters can not both be used on the same keyset.
- 5 = The ADA2 and PSA Adapters can only be installed on the Aspire iPhone, which only has one adapter connection. Therefore, if either the ADA2 or PSA is installed, no other adapters can be used.
- 6 = As this adapter requires the AC power adapter, it can not be installed on a phone with an APR or Speakerphone adapter, which also require power. The placement of the AC power adapter plug will not allow the unit placed on the left of the phone to receive power.

When installing or removing the adapters, *the keyset should first be unplugged from the system*. Also note that the adapters may have an AC/DC power jack. Power is not required for all the adapters. You should refer to the information for the specific adapter to determine whether a power source is needed.

Telephones with any of these adapters installed cannot be wall-mounted. The bracket will not accommodate the adapter(s).

Removing the Adapter Cover (Figure 4-21)

1. With certain applications, it may be necessary to remove the cover from an adapter. First, remove the screw on the back of the adapter.
2. Using a small screwdriver, push in the ribs on the sides of the adapter.
Do not push the ribs in too much or they may break.
3. Remove the cover.

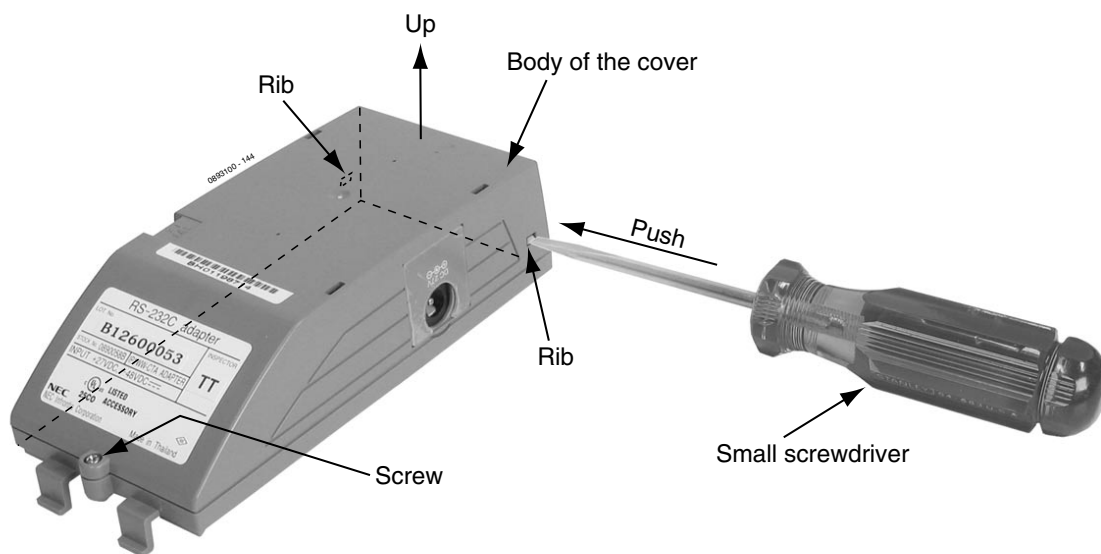


Figure 4-21: REMOVE THE ADAPTER COVER

ADA Adapter (Figure 4-22 - Figure 4-29)

Using the ADA Adapter provides a recording jack connection which provides a connection from a telephone to an external tape recorder or speaker. The adapter output is a 1/8" phono jack which you can connect directly to an AUX level input on a recorder or page amplifier. The recorder input can also be wired directly to the terminals on the inside of the adapter.

This optional adapter cannot be installed on an Aspire 2-button phone or iPhone.

CAUTION

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 is *always* recording, even when the handset is idle and in the cradle. This may result in recording undesired conversations.

Installing the ADA Adapter:

1. Unplug the line cord from the keyset.
2. If only one adapter is to be installed on the phone, the adapter should be installed on the right-hand side of the phone (beneath the handset). Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.
3. Set the dip switches on the ADA adapter to the required position. The SW1 and SW2 switches should be set to "1" for either application.

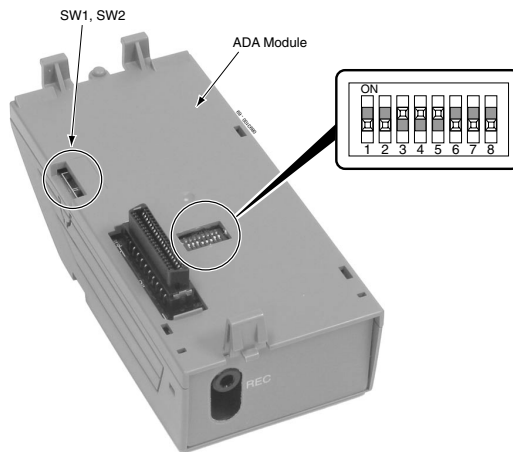


Figure 4-22: RECORDING DIP SWITCH SETTINGS

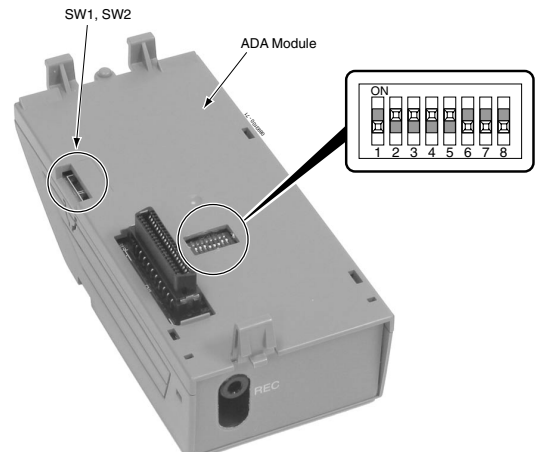


Figure 4-23: PLAYBACK DIP SWITCH SETTINGS

- If using the phono jack to connect to the recorder or audio output, plug the phono jack into the REC connector on the ADA and then skip to Step 9. If wiring directly to the terminals inside the adapter, remove the screw on the back of the adapter. Using a small screwdriver, push the ribs on the sides of the adapter in and remove the cover.

Do not push the ribs in too much or they may break.

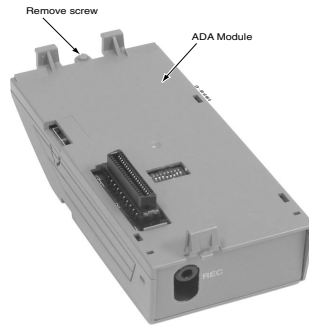


Figure 4-24: REMOVE THE SCREW FROM THE ADA ADAPTER

- Determine which terminals should be connected. Terminals T6 and T7 are used for wiring to a recorder. If using co-axial cable to connect to the ADA, connect the core wire to T3 and the shielding wire to T4.
- Run the cable to the ADA adapter through the opening near the phono jack.

4



Figure 4-25: RUNNING THE CABLE TO THE ADA

- Insert the cable into the terminal. Place the cap over the terminal and push down to secure the cable.

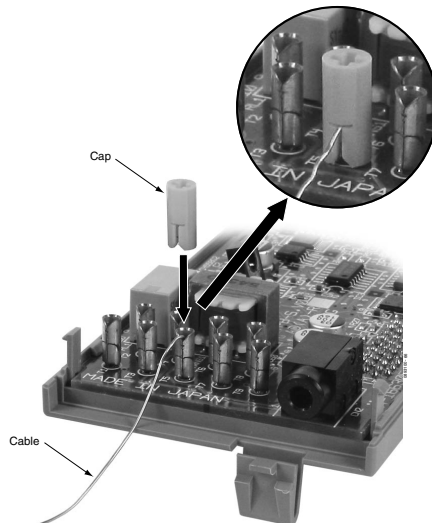


Figure 4-26: WIRING TO THE ADA TERMINAL

8. Replace the adapter cover and reattach the screw.
9. Connect the opposite end of the cable to the recording device or audio output.

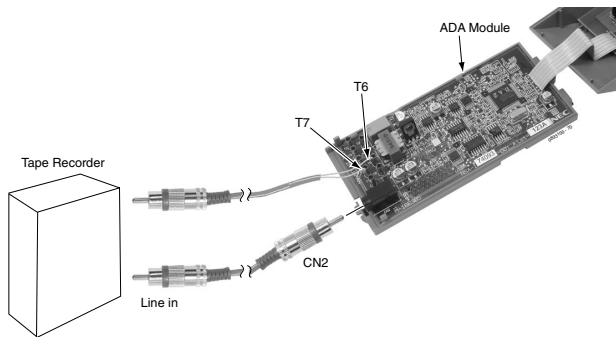


Figure 4-27: CONNECTION FOR RECORDING ONLY

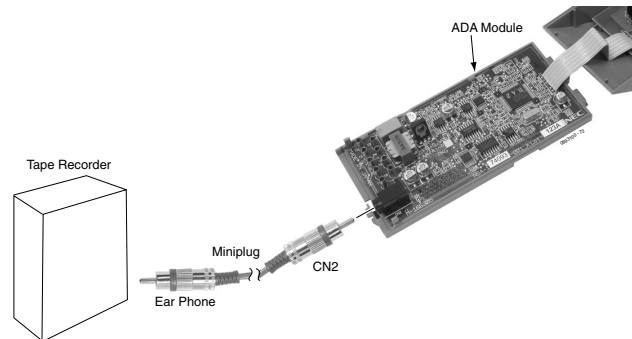


Figure 4-28: CONNECTION FOR PLAYBACK ONLY

10. Position the adapter with the connector positioned as shown below.

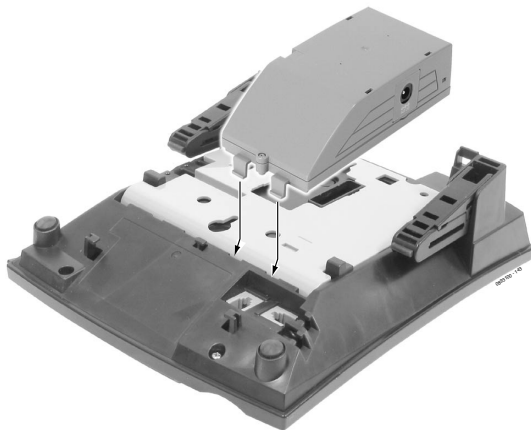


Figure 4-29: POSITIONING THE ADAPTER

11. Hook the two plastic prongs into the bottom of the phone.
12. Push the connector into place. The top latch on the top of the adapter should lock into place when it is properly positioned.
13. Plug the line cord back into the keyset.
To avoid any hardware problems, when removing the adapter, first unplug the line cord, then the power cord, then any other adapter cables.

ADA2 Adapter (Figure 4-30 - Figure 4-37)

Using the ADA2 Adapter provides a recording jack connection which provides a connection from an Aspire IPhone to an external tape recorder or speaker. The adapter output is a 1/8" phono jack which you can connect directly to an AUX level input on a recorder or page amplifier. The recorder input can also be wired directly to the terminals on the inside of the adapter. As the IPhone only has one connector available for additional adapters, if this adapter is connected, no other adapter can be installed on the phone.

CAUTION

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 is *always* recording, even when the handset is idle and in the cradle. This may result in recording undesired conversations.

Installing the ADA2 Adapter:

1. Unplug the LAN cable and AC adapter cable from the keyset if previously installed.
2. The adapter should be installed on the right-hand side of the phone (beneath the handset). Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.
3. Set the dip switches on the ADA2 adapter to the required position. The SW1 switch should be set to "2" and the SW2 switch should be set to "1".

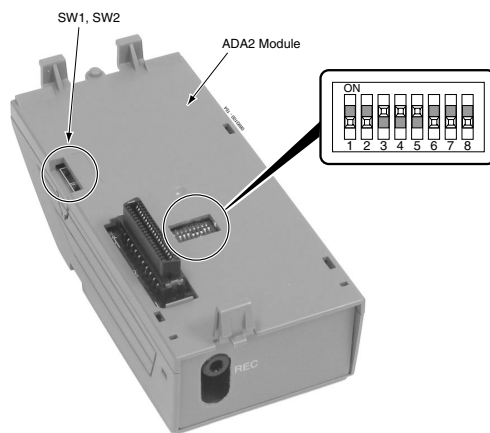


Figure 4-30: RECORDING DIP SWITCH SETTINGS

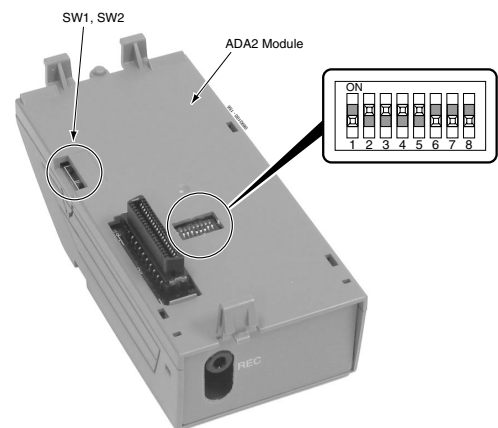


Figure 4-31: PLAYBACK DIP SWITCH SETTINGS

4. If using the phono jack to connect to the recorder or audio output, plug the phono jack into the REC connector on the ADA2 and then skip to Step 9. If wiring directly to the terminals inside the adapter, remove the screw on the back of the adapter. Using a small screwdriver, push the ribs on the sides of the adapter in and remove the cover.
Do not push the ribs in too much or they may break.

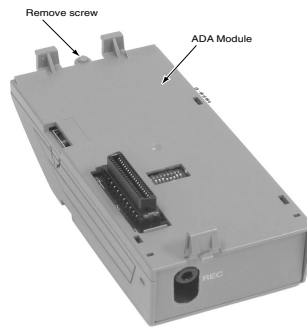


Figure 4-32: REMOVE THE SCREW FROM THE ADA2 ADAPTER

5. Determine which terminals should be connected. Terminals T6 and T7 are used for wiring to a recorder. If using co-axial cable to connect to the ADA2, connect the core wire to T3 and the shielding wire to T4.
6. Run the cable to the ADA2 adapter through the opening near the phono jack.



Figure 4-33: RUNNING THE CABLE TO THE ADA2

7. Insert the cable into the terminal. Place the cap over the terminal and push down to secure the cable.

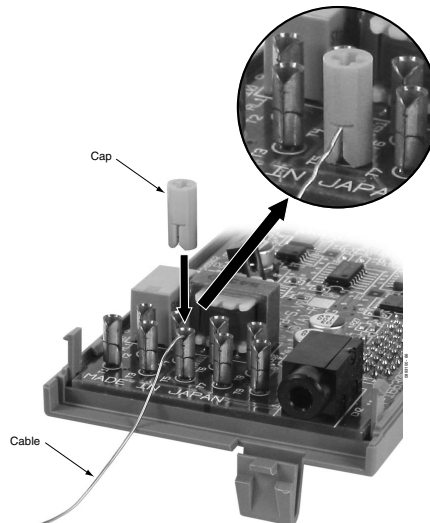


Figure 4-34: WIRING TO THE ADA2 TERMINAL

8. Replace the adapter cover and reattach the screw.
9. Connect the opposite end of the cable to the recording device or audio output.

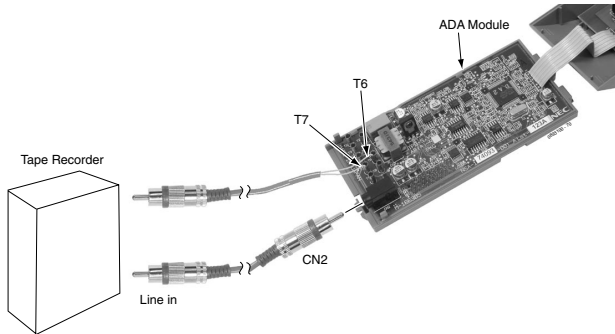


Figure 4-35: CONNECTION FOR RECORDING ONLY

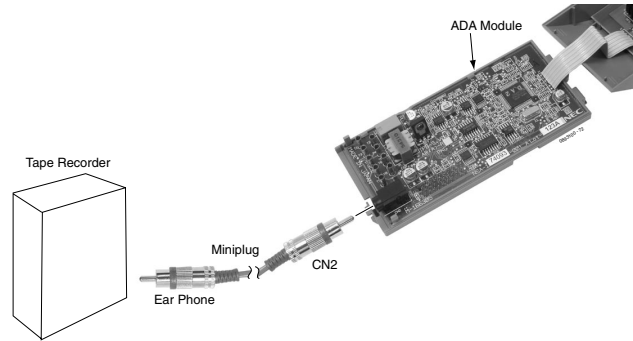


Figure 4-36: CONNECTION FOR PLAYBACK ONLY

10. Position the adapter with the connector positioned as shown below.

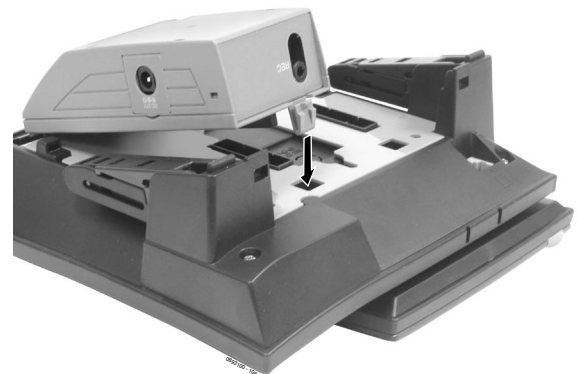
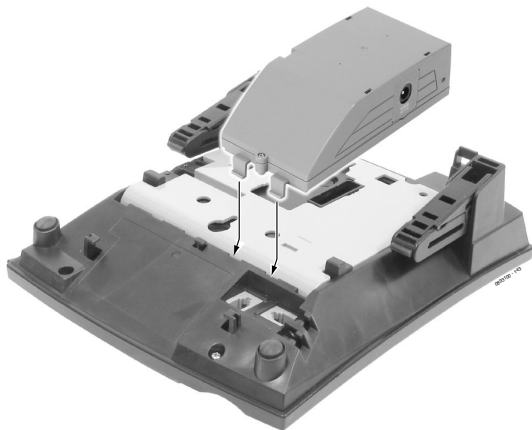


Figure 4-37: POSITIONING THE ADAPTER

11. Hook the two plastic prongs into the bottom of the phone.
12. Push the connector into place. The top latch on the top of the adapter should lock into place when it is properly positioned.
13. Plug the LAN cable and AC adapter cable into the keyset.

To avoid any hardware problems, when removing the adapter, first unplug the line cord, then the power cord, then any other adapter cables.

APA and APR Adapters (Figure 4-38 - Figure 4-39)

The APA and APR Adapters provide an analog interface for the keyset. The APR Adapter provides ringing which allows the connected device to be used for incoming and outgoing calls. The APA Adapter does not provide ringing, so the connected device is used for outgoing calls only (for example, when using a modem). One keyset can have either an APA or an APR Adapter. Both adapters *cannot* be installed on the same keyset as only one voice path is provided by the keyset for the adapters. **When installing the APR Adapter, an AC-RAC/DC adapter (P/N 780109) is required for power.** As this adapter requires the AC power adapter, it can not be installed on a phone with an CTU or Speakerphone adapter, which also require power. The placement of the AC power adapter plug will not allow the unit placed on the left of the phone to receive power. The maximum distance between the APA or APR Adapter and the analog terminal is 49'.

On a keyset with an APA Adapter installed, when the analog device is in use, it buses out the keyset as there is no separate port number assigned for this adapter. If both the analog device and keyset are picked up at the same time, the analog device takes priority. If the keyset user in on a call, picking up the analog device takes the call from the keyset.

Neither the APA or APR Adapter supports reverse-polarity, message waiting lamping, or Caller ID.

These optional adapters cannot be installed on an Aspire 2-button phone or IPhone.

Installing the APA or APR Adapter:

1. Unplug the line cord from the keyset.
2. If only one adapter is to be installed on the phone, the adapter should be installed on the right-hand side of the phone (beneath the handset). Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.
3. Set the dip switches on the APA/APR adapter to the required position.
 - The SW3 switch is used to set the terminating impedance. Setting to position "1" is for a pure resistance of 600 ohms; position "2" is used for complex impedance (factory setting is set to "1").
 - The SW1 switch should be left at its factory setting of "1". This also applies to the dip switch settings (1 and 5 = on; 2-4, 6-8 = off).

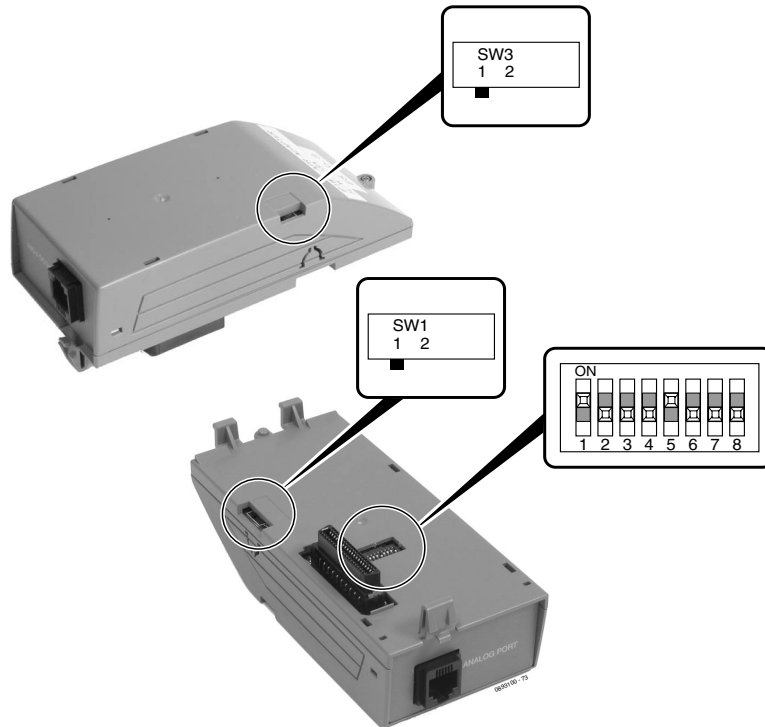


Figure 4-38: DIP SWITCH SETTINGS

4. If using an APR Adapter, plug the AC-R AC/DC adapter into the AC jack on the side of the adapter. *The AC/DC adapter is not required when using the APA Adapter.*
5. Position the adapter with the connector positioned as shown below.

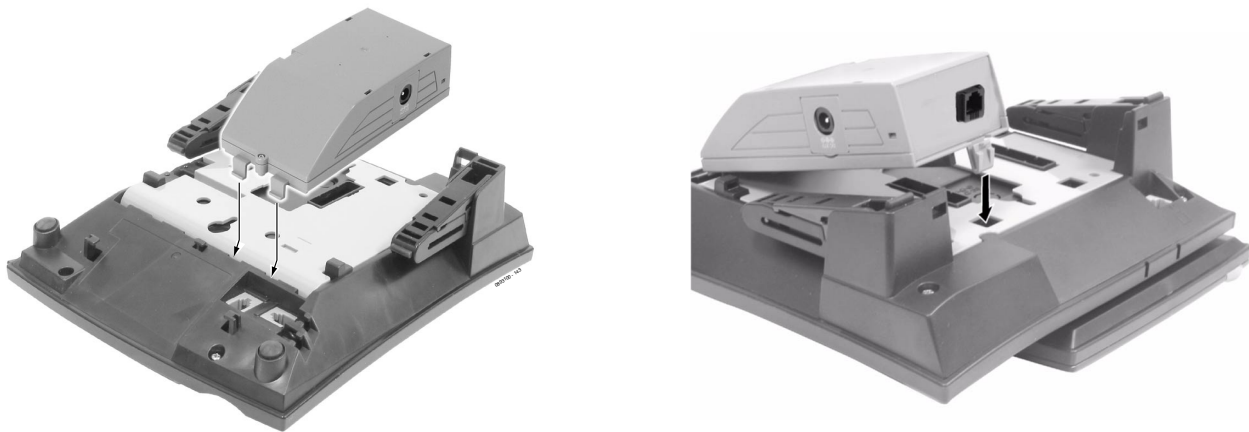
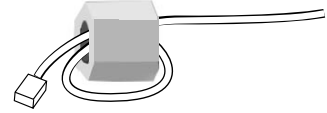


Figure 4-39: POSITIONING THE ADAPTER

6. Hook the two plastic prongs into the bottom of the phone.
7. Push the connector into place. The top latch on the top of the adapter should lock into place when it is properly positioned.
8. Plug the line cord back into the keyset.

9. Using the ferrite bead that was included with the APA/APR Adapter, wrap the line cord once through the ferrite bead and snap it shut.
10. Plug the end of the line cord for the analog device which has the ferrite bead closest to it into the jack on the adapter. 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.

11. **To determine the APR's analog extension number . . .**

10-03-04 : PCB Setup

The type of adapter recognized is displayed for the extension. Confirm that this indicated APR.

10-03-06 : PCB Setup

Assign the terminal type (12) for the keyset's channel which has the APR Adapter installed.

10-03-07 : PCB Setup

The port number of the APR Adapter is displayed for the extension (APR ports = 193-256).

11-02-01 : Extension Numbering

To determine the extension number assigned for the APR device, refer to the table below.

APR Extension Port Number	Extension Number
193	493
:	:
199	499
200	5000
:	:
256	5056

CTA Adapter (Figure 4-38 - Figure 4-39)

The CTA Adapter provides a serial interface (RS-232C) connector. This can be used for SMDR, TAPI (1.4), or system reporting (TAPI requires a CTA driver installation - refer to the CTI Installation Manual, P/N 0893102). A maximum of 128 CTA Adapters can be installed in a system. When using the adapter for printing, the following printers are recommended:

- Citizen CBM CBM1000-RJ100S Thermal Printer
- Star Precision SP2520MD-J1 Impact Dot Printer

This optional adapter cannot be installed on an Aspire 2-button phone or iPhone.

Installing the CTA Adapter:

1. Unplug the line cord from the keyset.
2. If only one adapter is to be installed on the phone, the adapter should be installed on the right-hand side of the phone (beneath the handset). Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.
3. Set the dip switches on the CTA adapter to the required position.
 - The DSW settings are 1 = on, 2-8 = off for a PC connection or 1 and 2 = on, 3-8 = off for a printer/SMDR connection (factory setting is for a PC connection).

PC Connection

Printer/SMDR Connection

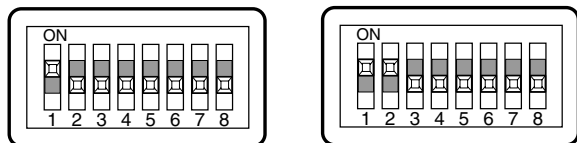


Figure 4-40: DIP SWITCH SETTINGS

4. Position the adapter with the connector positioned as shown below.

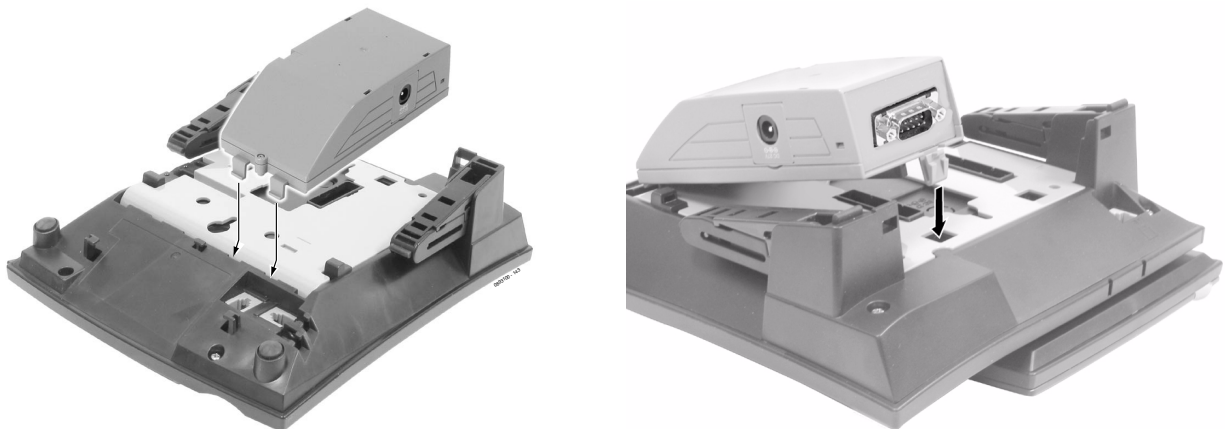


Figure 4-41: POSITIONING THE ADAPTER

5. Hook the two plastic prongs into the bottom of the phone.
6. Push the connector into place. The latch on the top of the adapter should lock into place when it is properly positioned.
7. Connect an RS-232C straight-thru cable from the adapter to the printer or PC.
8. Change system programming (15-02-19) to match the CTA module dip switch settings.
9. Change system programming (15-02-20) to the correct baud rate.
10. Plug the line cord back into the keyset.

To avoid any hardware problems, when removing the adapter, first unplug the line cord, then any other adapter cables.

11. Change system programming (35-01-01, 35-01-02, and 14-01-06) as required.

System Programming

- ◆▶ **Program 14-01-06 : Basic Trunk Data Setup - SMDR Print Out**
Use this option to have the system include/exclude the trunk you are programming from the SMDR printout. See Program 35-01 and 35-02 for SMDR printout options (0=No print out, 1=Prints out).
- ◆▶ **Program 15-02-19 : Multi-Line Telephone Basic Data Setup - CTA Data Communication Mode**
Select '0' if the dip switch settings are set to PC connection or select '1' if printer/SMDR connection is selected on the CTA adapter.
- ◆▶ **Program 15-02-20 : Multi-Line Telephone Basic Data Setup - Baud Rate for CTA Port**
Set the baud rate to be used by the CTA (0=4800, 1=9600, 2=19200).
- ◆▶ **Program 35-01-01 : SMDR Options - Output Port Type**
This option specifies the type of connection used for SMDR (0=No setting, 1=COM(NTCPU), 2=USB (NTCPU), 4=CTA/CTU).
- ◆▶ **Program 35-01-02 : SMDR Options - Output Destination Number**
This option specifies the extension number which has the CTA/CTU installed for the SMDR printer output.

CTU Adapter (Figure 4-42 - Figure 4-44)

The CTU Adapter provides a USB connector. This can be used for TAPI (1.4) applications, SMDR, or system reporting. TAPI requires a CTU driver installation - refer to the CTI Installation Manual, P/N 0893102. A maximum of 128 CTU Adapters can be installed in a system. **An AC-R AC/DC adapter (P/N 780109) is required for power for each CTU Adapter installed.** As this adapter requires the AC power adapter, it can not be installed on a phone with an CTU or Speakerphone adapter, which also require power. The placement of the AC power adapter plug will not allow the unit placed on the left of the phone to receive power.

This optional adapter cannot be installed on an Aspire 2-button phone or iPhone.

Installing the CTU Adapter:

1. Unplug the line cord from the keyset.
2. If only one adapter is to be installed on the phone, the adapter should be installed on the right-hand side of the phone (beneath the handset). Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.
3. Set the dip switches on the CTU adapter to the required position.
 - The DSW settings are 2, 3, 5, 6 = on / 1, 4, 7, 8 = off for a CTI connection or 2, 5, 6 = on / 1, 3, 4, 7, 8 = off for non-procedure (SMDR) mode (factory setting is for a CTI connection).

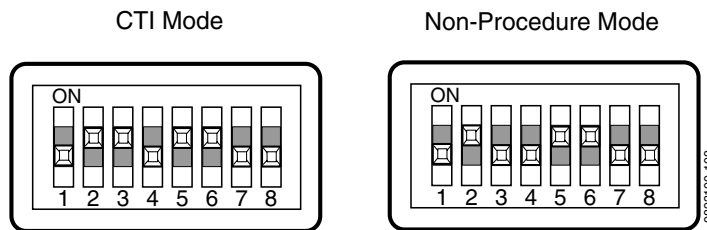


Figure 4-42: DIP SWITCH SETTINGS

4. On one end of the power cable for the adapter, make one loop around the provided ferrite bead. Repeat this step on the USB cable as well.

The USB cable is a USB Type B Male (to adapter) to Type A Male Cable (to USB device).



Figure 4-43: WRAPPING THE FERRITE BEADS

5. Plug the AC-R AC/DC adapter into the AC jack on the side of the adapter.

6. Position the adapter with the connector positioned as shown below.



Figure 4-44: POSITIONING THE ADAPTER

7. Hook the two plastic prongs into the bottom of the phone.
8. Push the connector into place. The top latch on the top of the adapter should lock into place when it is properly positioned.
9. Plug the line cord back into the keyset.
10. Plug the opposite end of the adapter's power cord into the USB device to be connected.

To avoid any hardware problems, when removing the adapter, first unplug the line cord, then the power cord, then any other adapter cables.

PSA-R Adapter (Figure 4-45 - Figure 4-46)

Using the PSA-R Adapter provides power failure capability for the iPhone IP keysets. This allows a user to make or receive an outside call using the central office if an IP keyset is unable to make or receive a call using the LAN, if for instance, there was a power failure. In this case, the connection of the 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. As the iPhone only has one connector available for additional adapters, if this adapter is connected, no other adapter can be installed on the phone.

The change from LAN to PSTN occurs in the following instances:

- No power supplied to the keyset
- PSTN is selected using the LAN/PSTN Change Switch on the adapter
With this switch set to PSTN, a call cannot be made using the LAN, even if the LAN is functioning correctly and power is available.
- If the initial software operation for the IP keyset has not yet been completed before the IP keyset is powered up

Installing the PSA-R Adapter:

1. Unplug the line cord from the keyset.
2. The adapter should be installed on the right-hand side of the phone (beneath the handset). Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.
3. Set the dip switches on the PSA-R adapter to the required position.



SW3 Setting	1 = DP (dial pulse)		2 = DTMF (dual tone multi-frequency)	
SW1 Pulse Rate Setting	1 = 20 pps	2 = 10 pps	N/A	N/A
SW2 Making Rate Setting	1 = 33%	2 = 40%	N/A	N/A

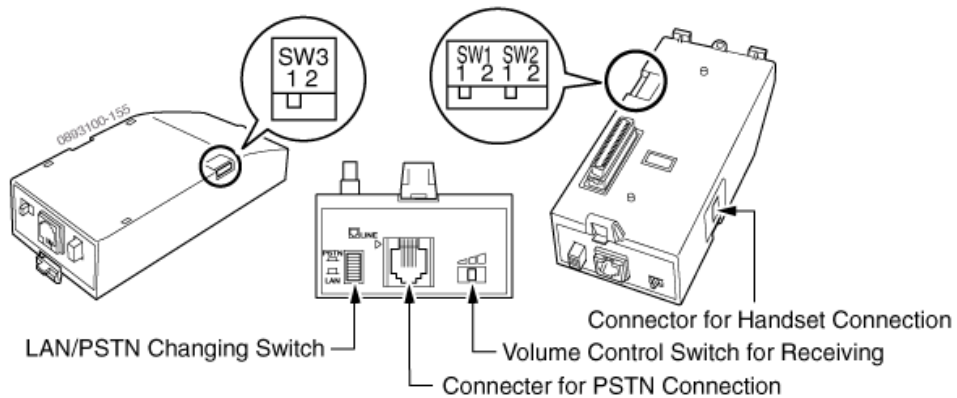


Figure 4-45: PSA-R SETTINGS

4. Position the adapter with the connector positioned as shown below.

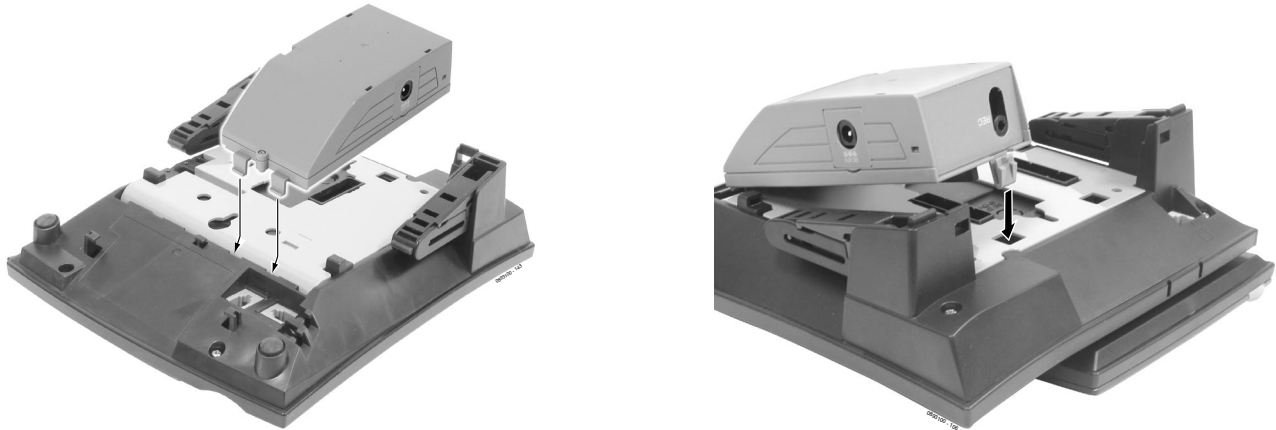


Figure 4-46: POSITIONING THE ADAPTER

5. Hook the two plastic prongs into the bottom of the phone.
6. Push the connector into place. The top latch on the top of the adapter should lock into place when it is properly positioned.
7. Connect the line cord to the adapter.
This should be a PSTN, dedicated CO trunk.
8. Plug the LAN cable into the keyset.
9. If used, connect the AC adapter into the keyset.
This should always be done after connecting the LAN cable.

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.

Using the PSA-R Adapter:

1. **Placing Calls:**
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.
2. **Answering Calls:**
When a call is received, the PSA-R adapter rings. If the LAN/PSTN Change Switch is set to PSTN, answer the call by picking up the handset. If the switch is set to the LAN position, answer the call by changing the switch to PSTN and then picking up the handset.
If you receive a call via PSTN during a conversation via LAN, answer the call by completing the LAN call and placing the handset back into the cradle. Change the LAN/PSTN Change Switch to PSTN and then lift the handset to answer the call. If you change the LAN/PSTN Change Switch to the PSTN position while talking via LAN, the LAN call is disconnected.
Other than receiving calls, no other keyset functions are available.
3. **Adjusting the Ring Volume**
Use the Volume Control Switch located on the PSA-R adapter to adjust through the three available volume levels.
Other than receiving calls, no other keyset functions are available.
4. **When Power is Restored**
The IP keyset restarts and reconnects to the network LAN. However, if you are on a PSTN call when the power is restored, your conversation will continue until the handset is placed into the cradle. Once this occurs, the IP keyset will restart and reconnect to the LAN.
Other than receiving calls, no other keyset functions are available.

VoIP Adapter (Figure 4-47 - Figure 4-49)

The VoIP Adapter provides the ability to communicate through a LAN which is connected to an 16VOIPU or 8SHUBU PCB. The 16VOIPU or 8SHUBU PCB is required in order to communicate with non-VoIP Aspire phones, as well as to place or receive outside calls.

This feature requires the use of a display keyset. As the VoIP Adapter is double the width of the other phone adapters, only the VoIP Adapter can be used on a keyset. No other space is available for any additional adapter.

This optional adapter cannot be installed on an Aspire 2-button phone or IPhone.

When installing the VoIP Adapter, an AC/DC adapter is required for local power or, for central power, one of the following must be used:

- 8SHUBU PCB
- Power Supply Patch Panel (SN1604 PWRMS - NEC standard product)
- Power Patch Panel (Cisco)
- Catalyst PWR Series (Cisco)

If a separate software hub is used (and not the 8SHUBU PCB), it should be a 100Base/full duplex hub. To avoid network problems and to ensure good voice quality, do not use a Repeater Hub/10Base.

Installing the VoIP Adapter:

1. Unplug the line cord from the keyset.
The line cord will not be needed with the VoIP Adapter as the system connection will be made through the LAN connection.
2. Using a flat-head screwdriver, remove the plastic punch-out piece covering the connector.
Note the position of the connector on the VoIP Adapter in order to remove the correct piece (the adapter uses the connection on the side of the phone which has the line cord connection).
3. Set the dip switches on the top of the VoIP adapter to the required position. The setting is dependent upon the type of power supply being used.
 - The SW1 settings are “1” when using an AC/DC adapter, 8SHUBU, or SN1604 PWRMS, “2” when using Cisco’s Power Patch Panel or Catalyst PWR panel.

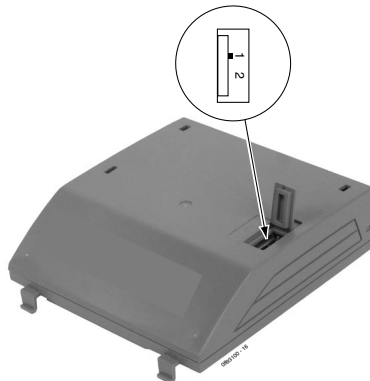


Figure 4-47: SETTING THE DIP SWITCHES

- Position the adapter with the connector positioned as shown below.

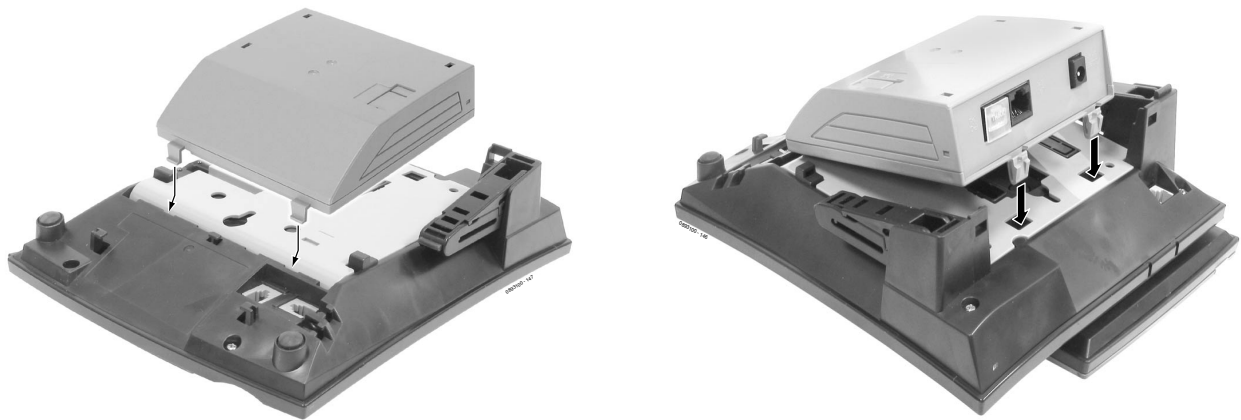


Figure 4-48: POSITIONING THE ADAPTER

- Hook the two plastic prongs into the bottom of the phone.
- Push the connector into place. The top latch on the top of the adapter should lock into place when it is properly positioned.
- Plug an AC/DC adapter into the AC jack on the adapter if power is not supplied by the LAN.
- Plug in the LAN straight-thru cable from the NTCPU LAN connector or 16VOIPU PCB LAN connector for the phone operation. If needed, connect the PC cross cable to the VoIP Adapter.
- Refer to the **Aspire Software Manual (P/N 0893200)** for required programming.

To avoid any hardware problems, when removing the adapter, first unplug the line cord, then the power cord, then any other adapter cables.

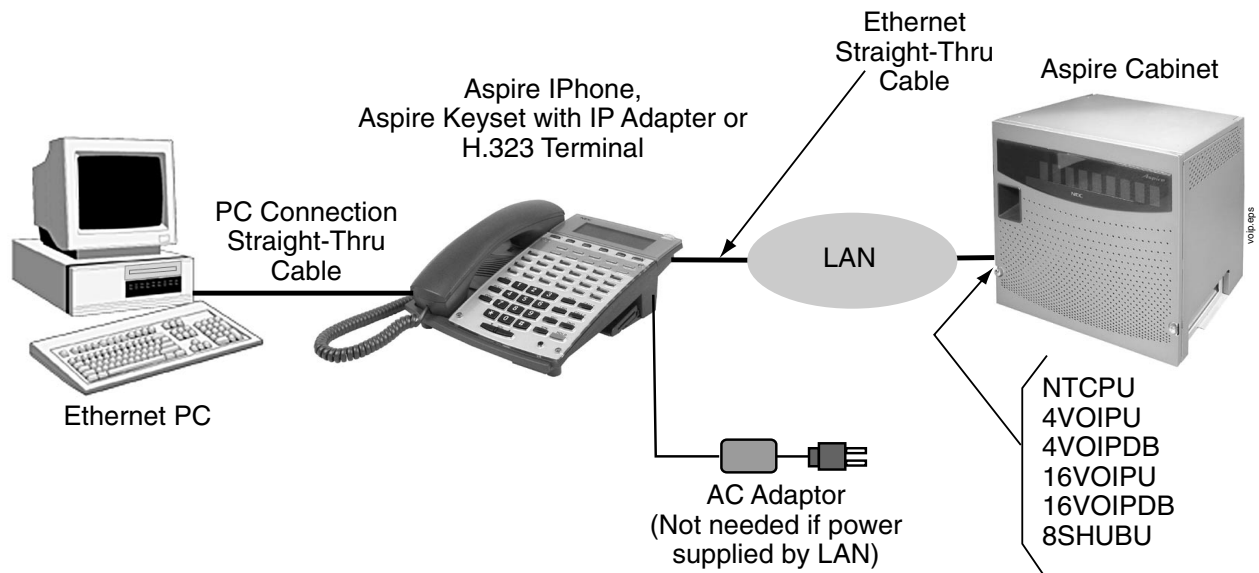


Figure 4-49: WIRING LAYOUT FOR VOIP

POWER FAILURE TELEPHONES

Power Failure (Figure 4-50)

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 PCB failure. Power Failure Transfer is provided by connecting to either the COIU-LS1 or COIU-LG1 PCB.

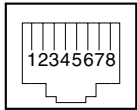
The 4COIU-LS1 or 4COIU-LG PCB provides 1 Power Failure Transfer circuit or using the 8COIU-LS1 or 8COIU-LG1 PCB, 2 circuits are provided.

The CN3 and CN5 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. A maximum of 15 4/8COIU-LS1 PCBs per system is allowed.

! Important !

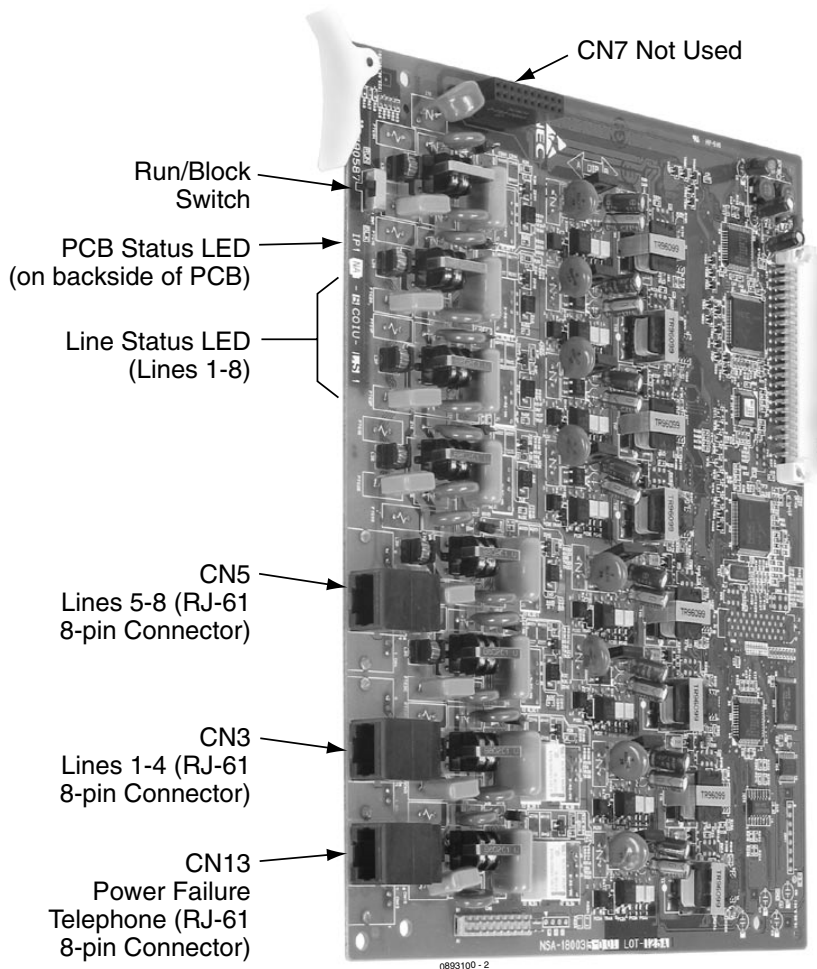
- When connecting the RJ61 cables to the COIU PCB, note the position of the Power Failure connector. Do not confuse this connector as the trunk connector.

Connector Pin-Outs on COIU PCB for Power Failure Circuits

RJ61 Cable Connector		
RJ61 Cable Connector - CN13, SLT Interface for Power Failure		
	Pin No.	Connection
	1	-
	2	-
	3	Circuit 2 - Tip
	4	Circuit 1 - Ring
	5	Circuit 1 - Tip
	6	Circuit 2 - Ring
	7	-
	8	-

Installing the Power Failure Telephones:

1. Connect an RJ-61 connector to the COIU PCB installed in the Aspire system.
2. Install a modular jack for each single line telephone supporting PF operation. The modular jack should be within six feet of the phone.
3. For each extension, run one-pair 24 AWG station cable from the cross-connect block to a modular jack.
4. Terminate the extension leads to GRN/RED of the modular jack. Terminate the unused leads to the jack.



The 8COIU PCB is shown here.

Figure 4-50: POWER FAILURE CIRCUIT INSTALLATION

SLT ADAPTER

Using the SLT Adapter (Figure 4-51 - Figure 4-53)

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

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 Telephones* in the Software Manual for more details.

Installing the SLT Adapter

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

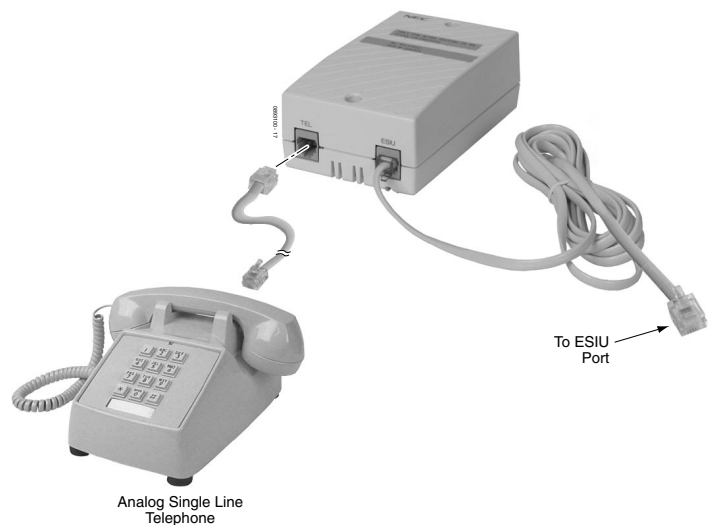


Figure 4-51: INSTALLING THE SLT ADAPTER

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

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

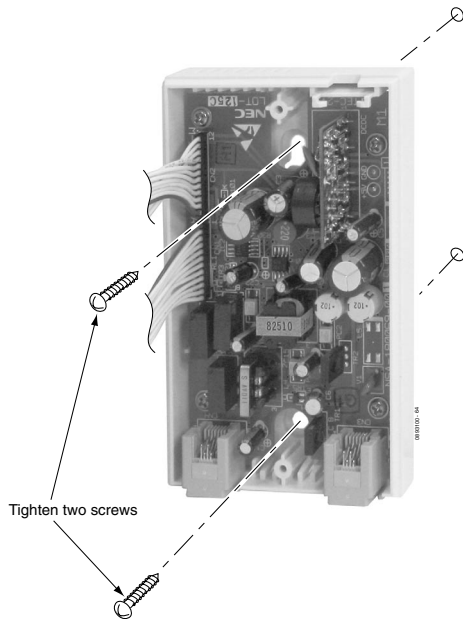


Figure 4-53: ATTACHING THE UNIT

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.

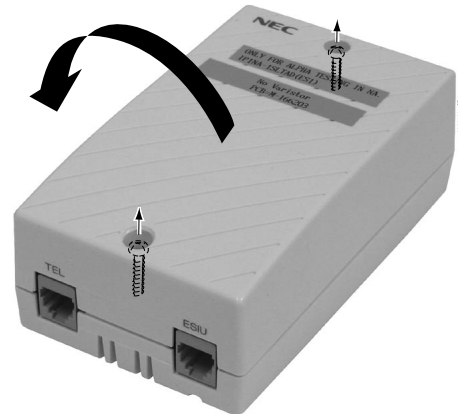


Figure 4-52: REMOVING THE COVER

Telephones

34-Button Super Display Telephone – P/Ns 0890049 & 0890050

The Super Display Telephone is the system's premier telephone instrument, featuring an interactive 9-line, 24-character display with 12 associated interactive keys. As the Super Display Telephone user processes calls, the interactive key functions change to provide intuitive access to the system's most sophisticated features. Every Super Display Telephone has a built-in speakerphone for full Handsfree operation. Handsfree Answerback and Intercom voice-announce capability is also standard.



The telephone's 24 programmable function keys can be customized by the user for one-button access to co-workers, features like Paging or Park or specific outside lines. The Dual LEDs in each programmable key help the user see which calls are for them and which features are active. Access to other commonly used features is simplified by 15 fixed feature keys.

In addition, the Super Display Telephone provides a built-in wall-mount bracket, as well as adjustable legs which allow each phone to be angled at a height which best suits the user.

Note that the three IP adapters (IP, ADA2, and PSA) do not work on the super display telephones.

At a glance

Super Display Telephone - Part Numbers 0890049 & 0890050

Function Keys:	✓	Accepts 110-Button DSS:	✓	Accepts 24-Button DLS:	✓
Handsfree (Speakerphone):	✓	Dual LEDs:	✓	ADA Adapter:	✓
ADA2 Adapter:	No	APA Adapter:	✓	APR Adapter:	✓
CTA Adapter:	✓	CTU Adapter:	✓	IP Adapter:	No
PSA Adapter:	No				

34-Button Display Telephone — P/Ns 0890045 & 0890046

The 34-Button Display Telephone has a 3-line, 24-character display with four interactive soft keys for intuitive feature access. In addition, the 34-Button Display Telephone has 24 user-programmable function keys (with Dual LEDs) for one-button access to co-workers, features and outside lines. The telephone also provides 10 user-programmable One-Touch (Personal Speed Dial) keys and 15 additional fixed feature keys.



The 34-Button Display Telephone has a built-in speakerphone and can accept optional adapters. You can also assign 110-Button DSS Consoles or connect 24-Button DLS Consoles to these phones. Like the Super Display, the 34-Button Display provides Handsfree Answerback, Intercom voice-announcements. In addition, the 34-Button Display provides a built-in wall-mount bracket, as well as adjustable legs which allow each phone to be angled at a height which best suits the user.

At a glance

34-Button Display Telephone - Part Numbers 0890045 & 0890046

Function Keys:	✓	Accepts 110-Button DSS:	✓	Accepts 24-Button DLS:	✓
Handsfree (Speakerphone):	✓	Dual LEDs:	✓	ADA Adapter:	✓
ADA2 Adapter:	No	APA Adapter:	✓	APR Adapter:	✓
CTA Adapter:	✓	CTU Adapter:	✓	IP Adapter:	✓
PSA Adapter:	No				

22-Button Display Telephone — P/Ns 0890043 & 0890044

The 22-Button Display Telephone features a 3-line, 24-character display with 4 interactive soft keys for intuitive feature access, in addition to 12 function keys with Dual LEDs. The function keys are user-programmable and can provide 1-button access to co-workers, features and outside lines. The telephone additionally provides 10 user-programmable One-Touch (Personal Speed Dial) keys and 15 additional fixed feature keys.



The 22-Button Display Telephone has a built-in speakerphone, provides Handsfree Answerback, Intercom voice-announcements. In addition, the 22-Button Display provides a built-in wall-mount bracket, as well as adjustable legs which allow each phone to be angled at a height which best suits the user.

At a glance

22-Button Display Telephone - Part Numbers 0890043 & 0890044

Function Keys:	✓	Accepts 110-Button DSS:	✓	Accepts 24-Button DLS:	✓
Handsfree (Speakerphone):	✓	Dual LEDs:	✓	ADA Adapter:	✓
ADA2 Adapter:	No	APA Adapter:	✓	APR Adapter:	✓
CTA Adapter:	✓	CTU Adapter:	✓	IP Adapter:	✓
PSA Adapter:	No				

22-Button Standard Telephone — P/Ns 0890041 & 0890042

The 22-Button Telephone offers similar capabilities as the 22-Button Display Telephone, but excludes the alphanumeric display and soft keys.



At a glance

22-Button Telephone - Part Numbers 0890041 & 0890042

Function Keys:	✓	Accepts 110-Button DSS:	✓	Accepts 24-Button DLS:	✓
Handsfree (Speakerphone):	✓	Dual LEDs:	✓	ADA Adapter:	✓
ADA2 Adapter:	No	APA Adapter:	✓	APR Adapter:	✓
CTA Adapter:	✓	CTU Adapter:	✓	IP Adapter:	✓
PSA Adapter:	No				

2-Button Telephone — P/Ns 0890047 & 0890048

The Digital 2-Button Telephone offers many keyset features and conveniences at an analog station set price. Handsfree Answer-back lets users answer Intercom calls without touching the phone. The 11 fixed feature keys provide quick access to many essential features, and the Message Waiting lamp always shows when there are unanswered messages.



At a glance

2-Button Telephone - Part Numbers 0890047 & 0890048

Function Keys:	✓	Accepts 110-Button DSS:	✓	Accepts 24-Button DLS:	No
Handsfree (Speakerphone):	✓	Dual LEDs:	✓	ADA Adapter:	No
ADA2 Adapter:	No	APA Adapter:	No	APR Adapter:	No
CTA Adapter:	No	CTU Adapter:	No	IP Adapter:	No
PSA Adapter:	No				

Cordless Telephone — P/N 730088 and 730087

The Aspire System supports a Cordless Telephone. The DTR-4R-1 Cordless II (P/N 730088) is a 900 MHz spread-spectrum digital cordless telephone that provides mobility, flexibility and convenience for those who spend much of the workday away from their desk. Fully integrated with the telephone system, the DTR-4R-2 Cordless II offers many standard features such as Park, Do Not Disturb, Hotline, Voice Over and Voice Mail. Normally paired with a companion keyset for improved 1-button call coverage capabilities, the DTR-4R-2 Cordless II will also work as a stand-alone telephone.

Complemented by 4 fully programmable function keys (with LEDs), the DTR-4R-2 Cordless II achieves a whole new level of convenience and mobility. An easy-to-read LCD display, volume controls, a rechargeable nickel-cadmium battery pack and a handy belt clip round out the elegant and affordable DTR-4R-2 Cordless II Phone.

A second Cordless Phone is also available: the Cordless Lite II. The Cordless Lite II offers the same features as the DTR-4R-2 Cordless II except that it uses a NiMH battery and has FM modulation (single channel) instead of the spread spectrum modulation.

Selecting the Installation Location

Select a location for the phone that avoids excessive heat or humidity. The base unit can be placed on a desk or tabletop near a standard 120V AC outlet and telephone line jack. The base unit can also be mounted on a standard AT&T or GTE wall plate using the Wall Mount Adaptor. If the phone is to be paired with a keyset, place both phones in the same area. Keep the base unit and handset away from sources of electrical noise (motors, fluorescent lighting, computers). Each Cordless Telephone unit should be at least 5 feet away from any other Cordless Telephone or Aspire keyset to avoid interference.

With multiple cordless phones installed, each handset should have its channel button changed to a different channel if possible (10 channels are available on the Cordless II, 30 channels on the Cordless Lite II). This will help avoid any problems with interference between handsets when going off hook.

Connecting the Telephone Line

There are two types of phone outlets:

1) *Modular Jack*

Plug the telephone line cord from the base unit into a standard modular telephone jack.

2) *Hardwired Jack*

A modular jack converter (not included) is required. You may need to rewire when connecting the converter (making color-coded connections).



Applying Power to the Base Unit

Use the supplied 10V adaptor.

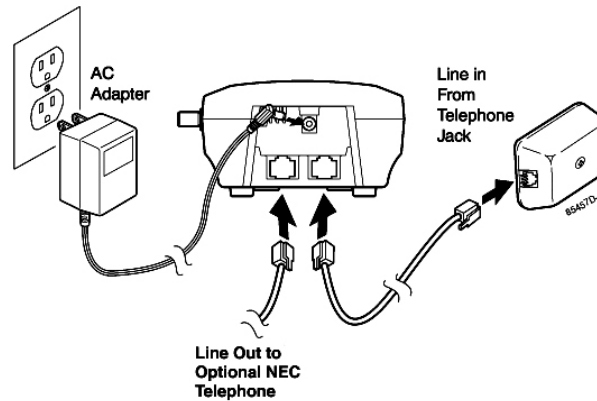


Figure 4-54: POWERING THE BASE UNIT

Applying Power to the Desktop Charger

Use the supplied 9V AC adaptor. Wrap the power cord around the convenient notch on the bottom.

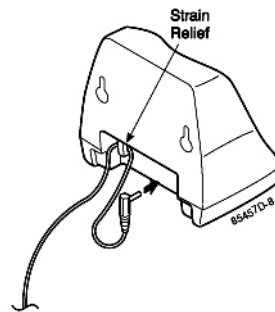


Figure 4-55: POWERING THE DESKTOP CHARGER



IMPORTANT! Route the power cord where it will not create a trip hazard, or where it could become chafed and create a fire or other electrical hazard.

Note: The AC adaptors furnished with this phone may be equipped with a polarized line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, try reversing the plug. Do not alter the shape of the blades of the polarized plug.

Note: If you cannot plug the AC adaptors into the outlet, contact someone about replacing the outlet.

Before using your phone, be sure to raise the antenna to the vertical position.

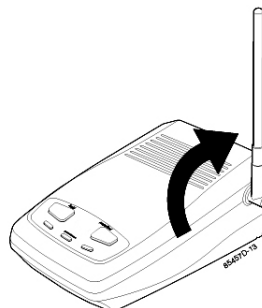


Figure 4-56: ANTENNA POSITION

Wall Installation

Standard Wall Plate Mounting

This phone is designed to be mounted on a standard wall plate. To attach the wall mount stand to the Base Unit:

1. Slide the Wall Mount stand into the notches at the top of the Base Unit, push the Wall Mount stand down and snap it into place.
2. Plug the AC Adapter into the Base Unit.
3. Place the AC Adapter cord inside the molded channel of the Wall Mount stand.
4. Plug one end of the short telephone cord into the LINE jack on the Base Unit. Optionally, plug one end of an NEC keyset desk phone into the phone jack. Then place the telephone cord(s) inside the molded channel(s) on the bottom of the Wall Mount stand
5. Plug the other end of the short telephone cord into the modular wall jack.
6. Place the Base Unit on the posts of the wall plate and push down until it's firmly seated.
7. Plug the AC Adapter into a standard 120V AC wall outlet.

Note: Do not use an outlet controlled by a wall switch.

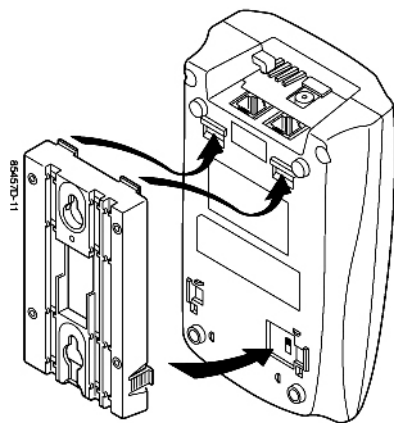


Figure 4-57: ATTACHING THE WALL MOUNT PLATE

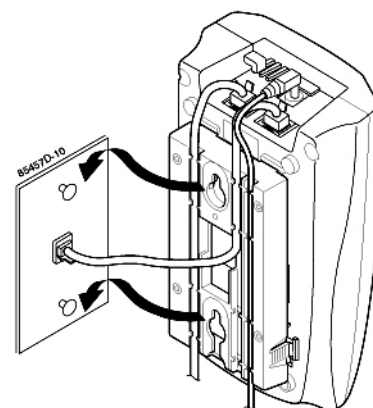


Figure 4-58: ATTACHING TO THE WALL PLATE

Direct Wall Mounting

If you do not have a standard wall plate, you can mount your phone directly on a wall. Before mounting your phone, consider the following:

- Select a location away from electrical cables, pipes, or other items behind the mounting location that could cause a hazard when inserting screws into the wall.
- Make sure the wall material is capable of supporting the weight of the Base Unit.
- Use #10 screws with anchoring devices suitable for the wall material where the Base Unit will be placed.

1. Insert two mounting screws into the wall 3-15/16 inches apart. Allow about 3/16 of an inch between the wall and screw heads for mounting the phone.
2. Plug and secure the AC Adapter cord by following steps 2 and 3 of the *Standard Wall Plate Mounting*.

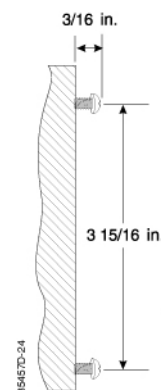


Figure 4-59: POSITIONING THE SCREWS

3. Plug one end of the telephone line cord into the LINE jack on the Base Unit. Optionally, plug one end of an Aspire keyset to be used as a desk phone into the PHONE jack. Then place the telephone cord(s) inside the molded channel(s) on the bottom of the Wall Mount stand.
4. Place the Base Unit on the posts of the wall screws and push down until it is firmly seated.
5. Plug the other end of the short telephone cord into a telephone wall jack.
6. Plug the AC Adapter into a standard 120V AC wall outlet.

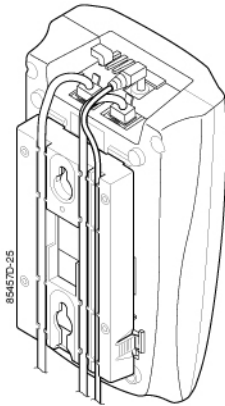


Figure 4-60: POSITIONING THE LINE CORDS

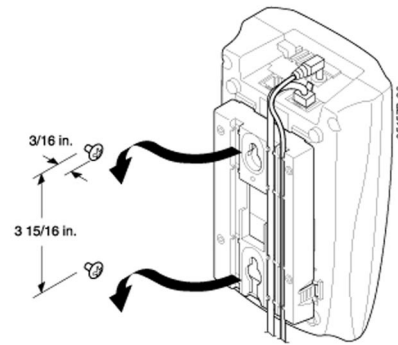


Figure 4-61: PLACING BASE UNIT ON WALL

Desktop Charger Wall Mounting

The Desktop Charger is also designed to be wall mounted. You can mount your phone directly on a wall. Before mounting your charging unit, consider the following:

- Select a location away from electrical cables, pipes, or other items behind the mounting location that could cause a hazard when inserting screws into the wall.
- Make sure the wall material is capable of supporting the weight of the Desktop Charger.
- Use #10 screws with anchoring devices suitable for the wall material where the Desktop Charger will be placed.

1. Insert two mounting screws into the wall 1-9/10 inches apart. Allow about 3/16 of an inch between the wall and screw heads for mounting the phone.
2. Plug the AC Adapter into the Desktop Charger as previously described. Wrap the AC Adapter cord around the strain relief.
3. Place the Desktop Charger on the posts of the wall screws and push down until it is firmly seated.
4. Plug the AC Adapter into a standard 120V AC wall outlet.

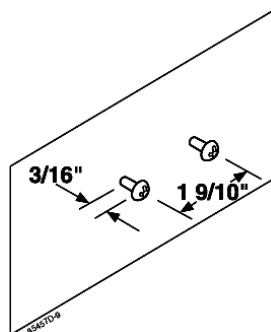


Figure 4-62: POSITIONING THE SCREWS

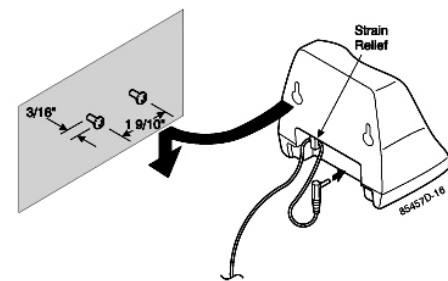


Figure 4-63: WALL MOUNTING THE CHARGER

Attaching the Belt Clip to the Handset

You can use the Belt Clip to attach the handset to your belt or pocket for convenient portability.

1. Slide the clip into the tab slot.
CAUTION: The Belt Clip is designed to fit snugly onto the handset.
2. Press firmly until it snaps into place.
3. To remove, simply press the retaining clip in toward the Belt Clip blade and slide the clip up at the same time.

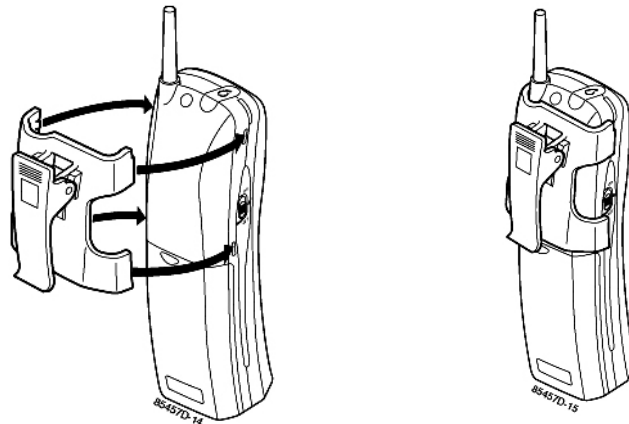


Figure 4-64: ATTACHING THE BELT CLIP

Installing the Handset Battery

1. Remove the battery cover from the handset by pressing the latch and sliding the cover down until it comes off the handset.
2. Slide the top of the battery into position, then lower the bottom portion into place. Note that the battery has positive and negative indications. *With the Cordless II phone*, make sure to place the battery in the handset so the negative is on the left and positive is on the right (the metal contacts should face down toward the phone). *With the Cordless Lite II phones*, the battery pack cable must be plugged into the handset.
3. Securely close the battery compartment cover by sliding it up until it snaps into place.

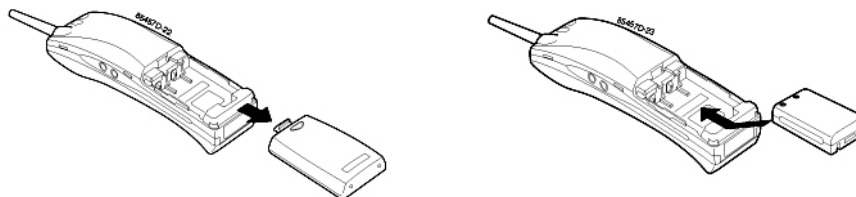


Figure 4-65: INSTALLING THE BATTERY

Charging the Handset Battery

The rechargeable battery pack must be fully charged before using your phone for the first time. Charge the battery without interruption for 5 hours. The unique design of the telephone and charger allows you to place the handset in the Desktop Charger with or without the Belt Clip attached.

1. Place the phone in the front slot of the desktop charger. The dial pad should be facing out in order for the battery contacts to connect.
2. Make sure the CHARGE 1 LED lights. If the LED doesn't light, check to see that the AC adapter is plugged in, and that the handset is making good contact with the battery contacts.

Charging the Spare Battery

The desktop charger of your phone is equipped with a Battery Charger for charging the optional spare battery. The battery pack can be charged either in or out of the handset.

1. Place the spare battery into the battery slot. In order for the battery to charge correctly, the metal contacts must face down into the charger.
If the battery is not positioned correctly, the CHARGE 2 LED will not light.
2. Slide the spare battery pack into the second slot in the charger until the retaining clip snaps over the top of the pack.

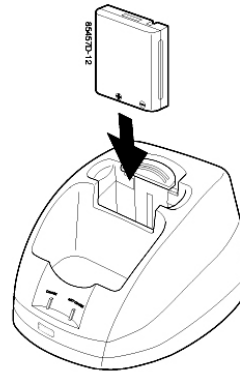


Figure 4-66: CHARGING THE SPARE BATTERY

Make sure the CHARGE 2 LED lights. If the LED does not light, check to see that the AC Adaptor is plugged in, and that the battery pack is seated into the Charging Compartment. Charge the battery pack without interruption for 12-15 hours.

When charging is complete, press the latch back slightly to remove the battery if it is needed. Otherwise, leave the battery in the Charging Compartment. It will not overcharge.

Low Battery Indicator

When the battery in the handset is low and needs to be charged, you will see a “LOW” warning icon on the display. While in standby mode, the phone will beep every 15 seconds for three minutes. In talk mode, the tone will beep every 3 seconds as long as the conversation continues. After the conversation is completed, the handset returns to the battery low condition in standby mode. Return the handset to the desktop charger for charging or replace the handset battery with the spare battery.

When the Low Battery Indicator Appears While	
On a Call	In Standby Mode
Only the TALK key operates	None of the buttons operate
Handset beeps once every 3 seconds	Handset beeps every 15 seconds for 3 minutes
Action: Complete your call as quickly as possible	Cannot make or receive a call
Replace the battery pack within 20 seconds to continue call	Replace battery pack before making a call

The battery can be hot swapped while a conversation is taking place. The battery must be changed within 20 seconds, otherwise, the connection will be lost.

Cleaning the Battery Contacts

To maintain a good charge, it is important to clean all charging contacts on the handset, desktop charger, and spare battery pack about once a month. Use a pencil eraser or soft dry cloth. Do not use any liquids or solvents.

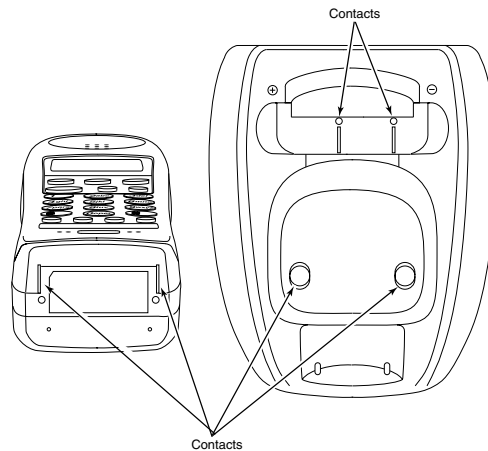


Figure 4-67: BATTERY CONTACTS

Desk Phone

The cordless phone allows for the connection of an optional Aspire keyset phone. The system can be programmed so that the keyset and/or the Cordless Telephone rings. If there is no answer, it can then transfer to voice mail. This allows you to have a keyset phone to use while at your desk, and when you need to be away from your desk, you can carry the cordless phone with you. Refer to **Installing a Cordless Telephone (Figure 3-5)** (page 3-7) for details on connecting the phones.

Headset

The optional headset provides a handsfree option for your convenience. With the headset installed, you can use the belt clip to carry the handset and conduct a conversation using the headset.

To install the optional headset, open the cover over the HEADSET jack and plug the headset in. (The headset jack should be 2.5mm.) No other settings are required.

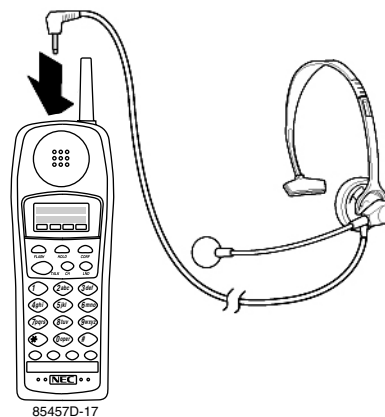


Figure 4-68: CONNECTING THE HEADSET

Operation of the phone is exactly the same as using the handset. However, you will hear through the headset earphone and talk through the headset microphone. The handset earpiece and microphone/mouthpiece are disconnected.

Troubleshooting Procedures

If your phone is not performing to your expectations, please try these simple steps. If you are still unable to resolve the problem, contact your communications manager.

Problem	Suggestion
Charge light won't come on when the handset is placed in the desktop charger.	<ul style="list-style-type: none"> • Make sure the AC Adaptor is plugged into the desktop charger and wall outlet. • Make sure the handset is properly seated in the desktop charger. • Make sure the battery pack is properly placed in the handset. • Make sure that the charging contacts on the handset and desktop charger are clean.
Conversation interrupted frequently.	<ul style="list-style-type: none"> • Make sure that the base unit's antenna is fully vertical. • Move closer to the base unit.
Warning tone and NO SERVICE message.	<ul style="list-style-type: none"> • Move closer to the base unit.
Handset doesn't ring.	<ul style="list-style-type: none"> • The battery pack may be weak. Charge the battery for 5-6 hours. • Make sure the base unit antenna is fully vertical. • The handset may be too far away from the base unit. • Ensure the Ringer ON/OFF switch is in the ON position.
Interference from other cordless phone users.	<ul style="list-style-type: none"> • Press the Channel (CH) key to switch channels. The channel can be changed while you are on an active call, but not when you are dialing a telephone number. There are 10 Cordless Lite or 30 Cordless Lite II channels from which you can select.
Interference or noise in the handset.	<ul style="list-style-type: none"> • Make sure the base unit is at least 3' away from any computer fax machine, printer, or TV (they generate radio waves) • Make sure the antenna is in the upright position



IP Station Equipment

34-Button Aspire iPhone - BK — P/N 0890065

This keyset provides a network connector which allows it to be used with the VoIP feature. The 34-Button Aspire iPhone has a 3-line, 24-character display with four interactive soft keys for intuitive feature access. In addition, it has 24 user-programmable function keys (with Dual LEDs) for one-button access to co-workers, features and outside lines. The telephone also provides 10 user-programmable One-Touch (Personal Speed Dial) keys and 15 additional fixed feature keys.



The 34-Button Aspire iPhone has a built-in speakerphone and can accept optional IP adapters (PSA, ADA2). You can also assign 110-Button DSS Consoles to these phones, but they must be on site (not networked). It provides Handsfree Answerback, Intercom voice-announcements. In addition, the telephone provides a built-in wall-mount bracket, as well as adjustable legs which allow each phone to be angled at a height which best suits the user.

H.323 IP Phone — P/N 780005

This UIP300 H.323 IP phone is a business IP phone in enterprise LAN environment and will be connected to IP PBX systems via RJ45 network cable.



Standard Telephone Features:

- Alphanumeric LCD display with 2 lines of 24 characters
- 10 LED indicators (Line 1 / Line 2¹ / Status / Mute / Speaker (Headset) / 5 Function keys)
- 12 Key Dial Pad
- 20 Specific Keys (5 Function keys, Menu, Select, Cancel/Del, Transfer, Mute, Redial, Hold, Conference, Speaker, Line 1 and 2 keys, Volume Up and Down keys, Menu Up and Down keys)
- Local Date and Time
- Call Duration Display
- Volume Control for Speaker, Handset, Headset, and Ringer
- Phone Book, Speed Dial, Dial from Call Logs (30 Outgoing Calls, 30 Incoming Calls and 15 Missed Calls)
- Redial, Hold², Mute
- Call Waiting, Call Forward, Call Transfer, 3-Way Conference, Do Not Disturb (DND)
- Display Caller ID (Name & Number)
- On-hook Dialing, Handsfree Talking (Full Duplex)
- DTMF Generation
- 8 Ringer Tones

1. Only one phone number will be assigned to this IP phone. Line 2 is not available for a gateway system.
2. Hold, Transfer, Call Forward and Conference will not be available in the IP address call mode but in the phone number dial mode only.

VoIP Specific Features:

- H.323 v1, 2 Standard Compliant
- Gatekeeper Routed and Direct Routed Call Models
- Voice Codec: G.711 (64kbit/s, u-Law and A-law), G723.1, G729AB
- E.164 Dialing
- Acoustic Echo Cancellation (G.167)
- Rapid Configuration with DHCP or Statically Configured IP Address
- Voice Activity Detection (VAD)
- QoS (IEEE 802.1 p/q Based and DiffServ)
- Jitter Compensation
- 10/100 Base-T Ethernet Interface

When installing an Aspire iPhone, an AC/DC adapter is required for local power or, for central power, one of the following must be used:

- 8SHUBU PCB
- 24-Port Power PoE-Managed Switch (BF200/24 - NEC standard product)
- 12-Port Power Supply Patch Panel (SN1604 PWRMS - NEC standard product)
- Power Patch Panel (Cisco)
- Catalyst PWR Series (Cisco)

If a separate software hub is used (and not the 8SHUBU PCB), it should be a 100Base/full duplex hub. To avoid network problems and to ensure good voice quality, do not use a Repeater Hub/10Base.

Connecting the iPhone

1. Set the dip switches on the bottom of the Aspire iPhone to the required position. The setting is dependent upon the type of power supply being used.
 - The SW1 settings are:
 - “1” when using an AC/DC adapter, 8SHUBU, or NEC Power Patch Panel (SN1604 PWRMS) or NEC PoE Switching hub (BF200/24PoE),
 - “2” when using Cisco’s Power Patch Panel or Catalyst PWR panel.

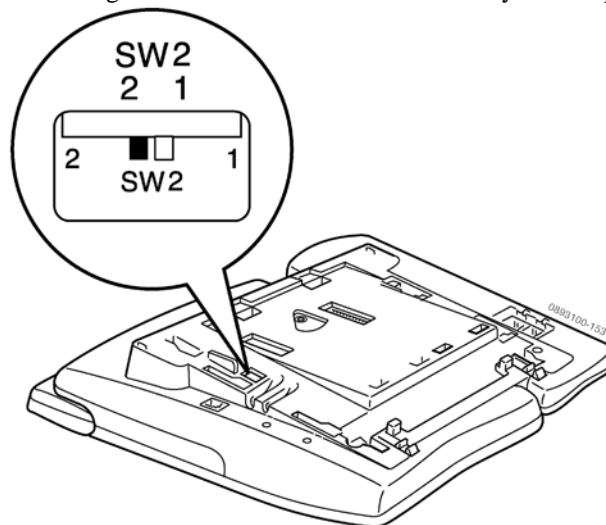


Figure 4-69: SETTING THE ASPIRE IPHONE DIP SWITCHES

2. Plug an AC/DC adapter into the AC jack on the adapter if power is not supplied by the LAN.
3. Plug in the LAN straight-thru cable from the NTCPU LAN connector or 16VOIPU PCB LAN connector for the phone operation. If needed, connect the PC cross cable to the VoIP Adapter.
4. Refer to **Section 6: LAN Connection** (page 6-1) for additional LAN and PoE information.

5. Refer to the **Aspire Software Manual (P/N 0893200)** for required programming.

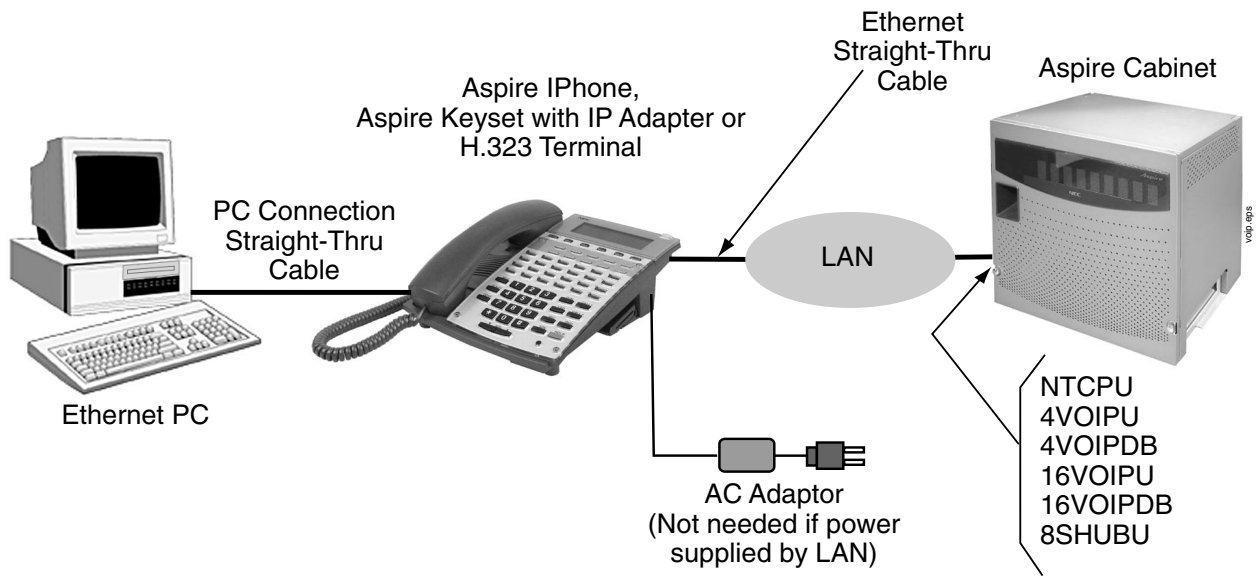


Figure 4-70: WIRING LAYOUT FOR VOIP

SUPER DISPLAY LCD

Positioning the Super Display LCD (Figure 4-71, Figure 4-72)

The LCD on a super display keyset has two angles which it can be positioned for the best viewing for the customer.

Raising the LCD

1. Gently lift the LCD display up from the top of the phone.
2. You'll hear a click when it locks into the first position. If you wish the display to be at a higher angle, continue to lift the LCD display until a second click is heard. This is the highest angle available for the display.



Figure 4-71: LIFTING THE LCD DISPLAY

Lowering the LCD

1. On the base of the phone, beneath the display, gently pull the lever out. *This allows the latch holding the display in place to be released.*
2. Slowly push the LCD display down.

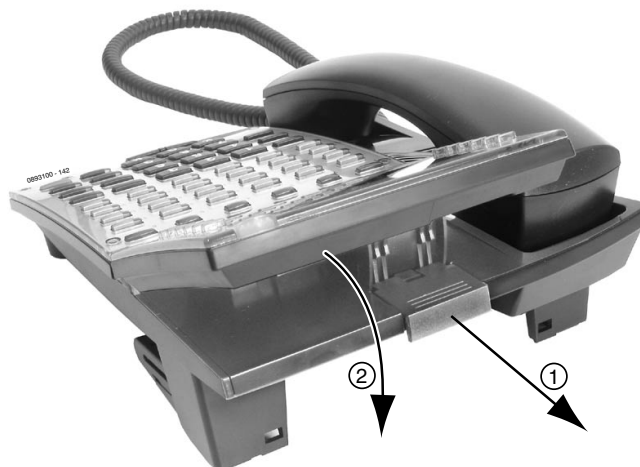


Figure 4-72: LOWERING THE LCD DISPLAY

TELEPHONE LEGS

Using the Telephone Legs (Figure 4-73 - Figure 4-77)

The Aspire keysets provide two legs for angling the phone to best suit each user (this is in addition to the display positioning provided by display keysets). The legs can be set for three different heights.

Adjusting the Leg Height

1. In the first position (flat), the legs are folded in.
2. To set to the second position, fold the leg down then push in slightly toward the phone to set the leg into position.
3. **To set to the third position starting when set at the first position:** Fold the leg down and slightly pull the extension out. Tip the extension down then slide it back until the slide reaches the opposite end of the extension. Pull the leg forward and then push the completely extended leg back into the phone to set it into position.

To set to the third position starting when set at the second position: Pull the extension of the leg out. Tip the extension down then slide it back until the slide reaches the opposite end of the extension. Pull the leg forward. Push the completely extended leg back toward the base of the phone to set it into position.

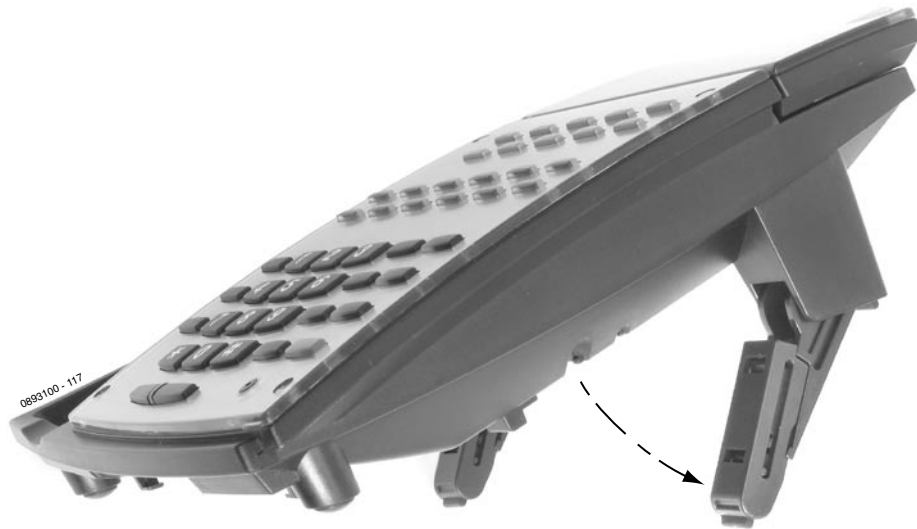


Figure 4-73: ADJUST THE LEG HEIGHT - POSITION 2



Figure 4-74: SETTING THE LEGS - POSITION 2



Figure 4-75: EXPANDING THE LEG HEIGHT - POSITION 3



Figure 4-76: EXTENDING THE LEGS - POSITION 3



Figure 4-77: SETTING THE LEG POSITION - POSITION 3

WALL-MOUNT BRACKET

Using the Wall-Mount Bracket

Each Aspire phone has an integrated wall-mounting bracket. This allows the phone to be mounted to a wall at a convenient location.

Telephones with any optional adapters installed cannot be wall-mounted. The bracket will not accommodate the adapter(s).

Installing the Wall-Mount Handset Bracket (Figure 4-78 - Figure 4-80)

1. Remove the integrated wall bracket from the bottom of the phone. Refer to Figure 4-78.
- From the center cut-out, pull the bracket up and out.
2. Remove the wall-mount hookswitch tab located on the bracket by gently pulling the locking lever down slightly while lifting the tab out (Figure 4-79).
3. Insert the wall-mount hookswitch tab in the slot below the hookswitch (Figure 4-80).

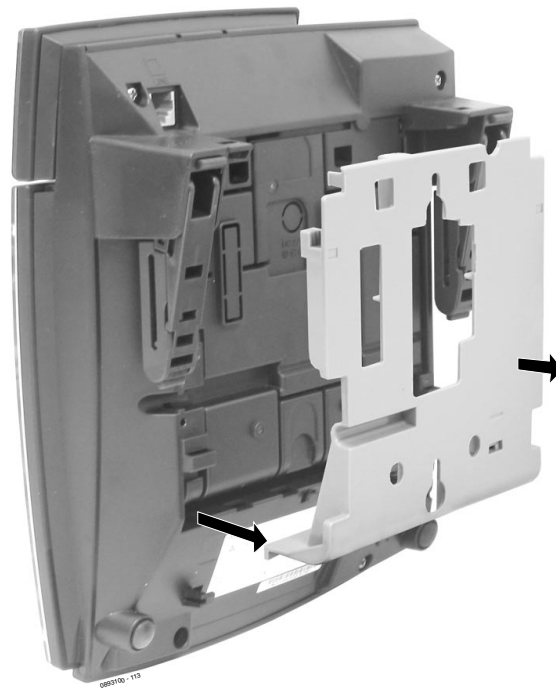


Figure 4-78: REMOVING THE WALL-MOUNT BRACKET

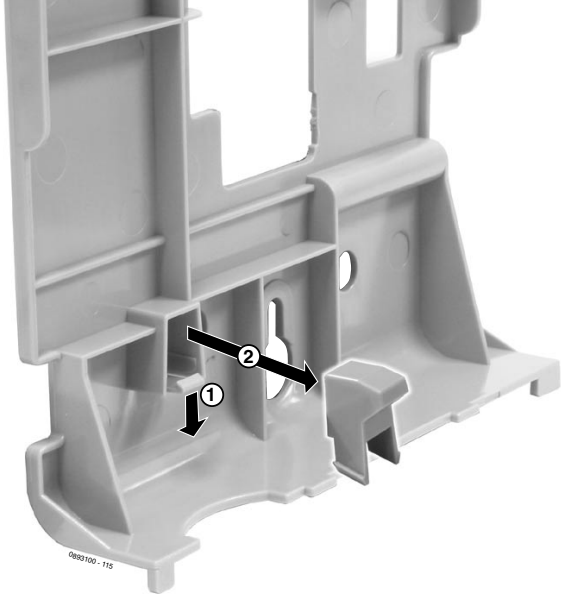


Figure 4-79: REMOVING THE HOOKSWITCH HANGER



Figure 4-80: INSTALLING THE HOOKSWITCH HANGER

Wall-Mounting the Phone (Figure 4-84 - Figure 4-84)

1. After removing the integrated wall bracket from the bottom of the phone. (Figure 4-78), attach the wall bracket to the wall using three screws (in the positions indicated below) to the desired wall location.

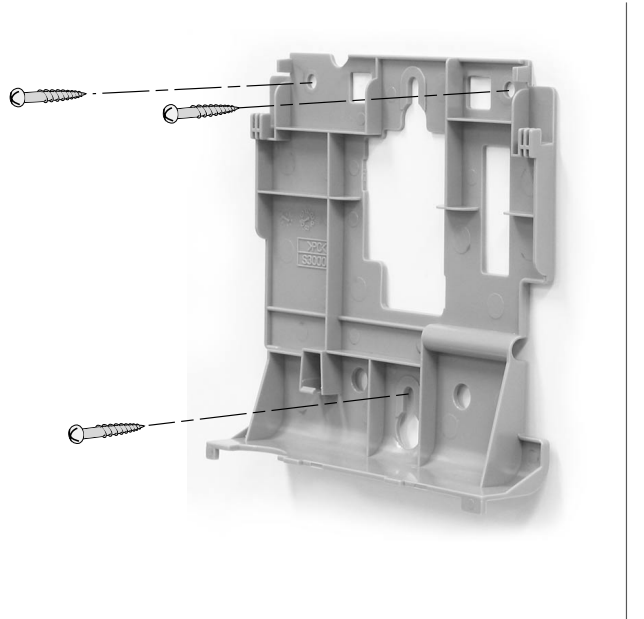


Figure 4-81: ATTACHING THE BRACKET

2. Attach the phone to the wall-mount bracket by inserting the bottom hooks (indicated by “A” in Figure 4-82 *BRACKET HOOKS* on page 4-66) on the bracket into the back of the phone (Figure 4-84).

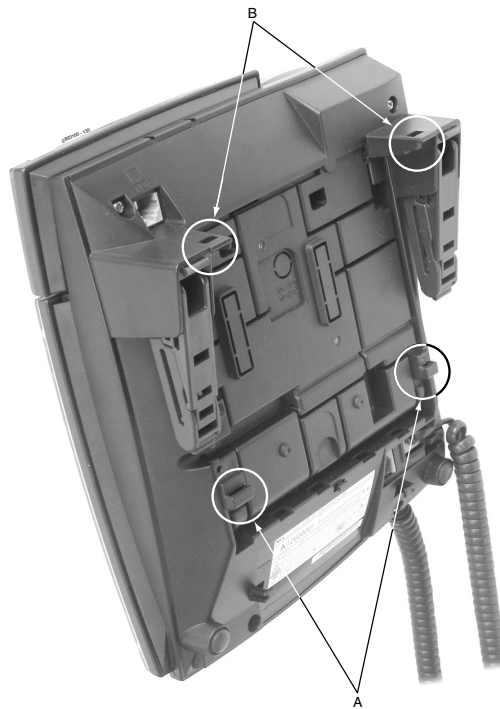


Figure 4-82: BRACKET HOOKS

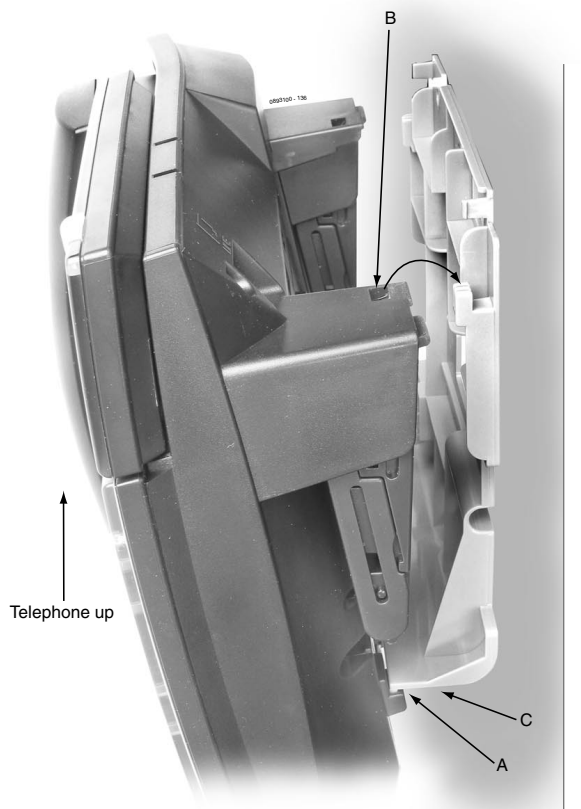


Figure 4-83: PLACING THE PHONE ON THE BRACKET

3. While lifting the bottom of the phone (the wall-mount bracket will bend) and then slightly pushing the top towards the wall, insert the top hooks into the back of the phone.

**4**

Figure 4-84: COMPLETED WALL-MOUNT BRACKET INSTALLATION

4. Insert the telephone's line cord from the 625 modular jack into the phone.
Note that the telephone legs must be completely folded in or the bracket will not reach the wall.

Removing the Phone From a Wall-Mounting Bracket (Figure 4-85 - Figure 4-86)

1. Grip the keyset on both sides in the location shown below by "A".

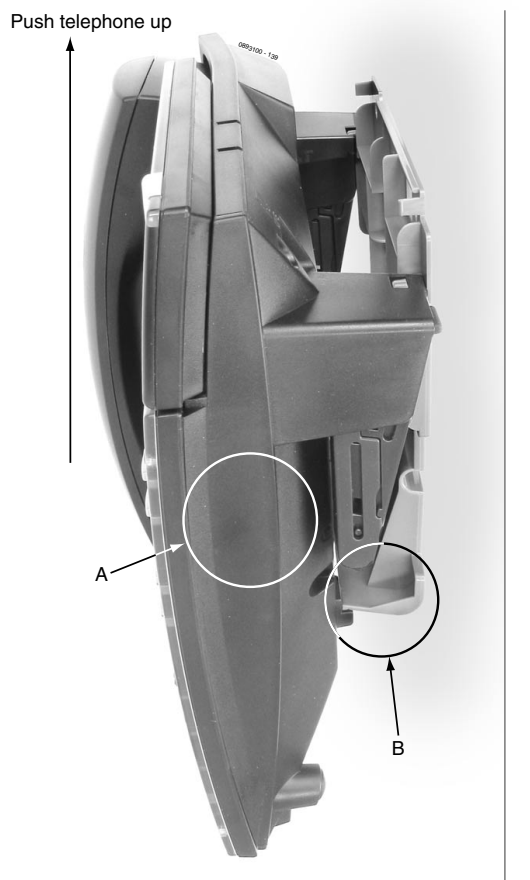
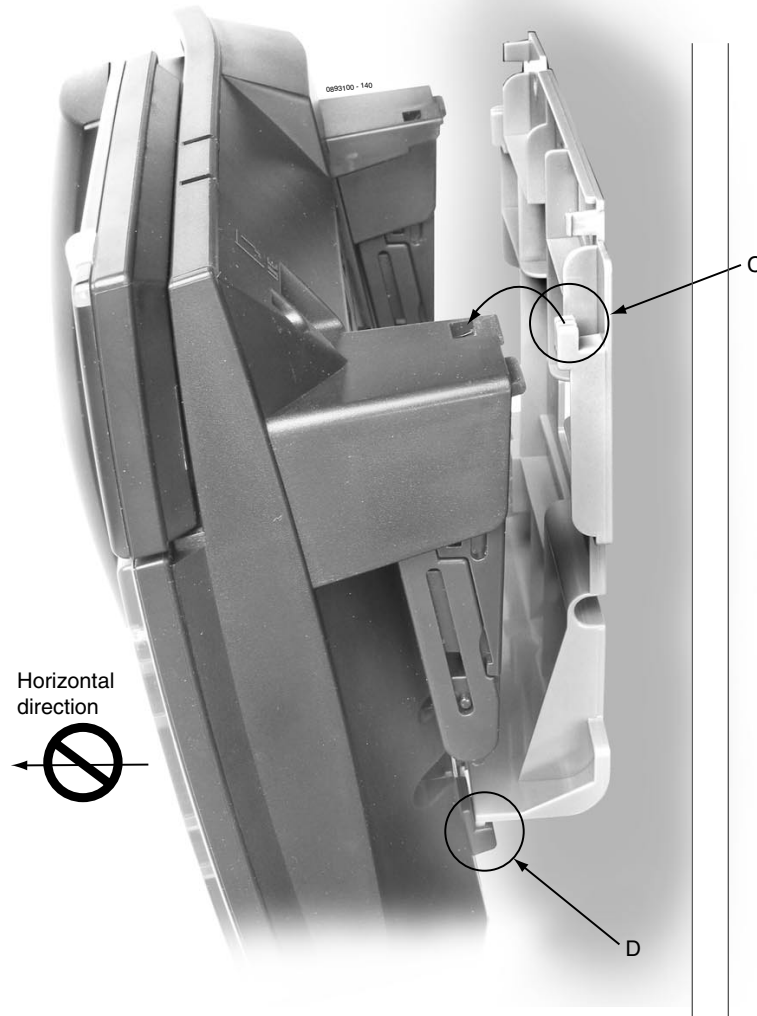


Figure 4-85: GRIP THE KEYSSET

2. Lift the phone up. The wall-mount bracket will bend slightly (at location "B").

3. Tilt the top of the keyset forward slightly to remove it from the top bracket hooks (“C”), then unhook the bottom hooks (“D”).



4

Figure 4-86: REMOVING THE KEYSSET FROM THE WALL-MOUNT BRACKET

4. Move the phone down to remove it from the bottom bracket hooks.
It is important to note that the phone should not be pulled out horizontally or the bottom bracket hooks may break.

- For Your Notes -

Section 5: Data and SMDR

DATA OVERVIEW

Data Communications

The system provides up to 192 data device interfaces for data communications. Using data devices allows a network to share a limited number of business resources such as modems, printers, and PC's. The system's data devices can switch asynchronous RS-232-C data at speeds from 300 to 19.2K.

In addition to the NTCPU's serial, USB, and ethernet connections, there are four types of data devices available: APA, APR, CTA and CTU.

APA Adapter

The APA Adapter provides an analog interface for the keyset. The APA Adapter does not provide ringing, so the connected device is used for outgoing calls only (for example, when using a modem). One keyset can have either an APA or an APR Adapter. Both adapters *cannot* be installed on the same keyset as only one voice path is provided by the keyset for the adapters. The maximum distance between the APA Adapter and the analog terminal is 49'.

The APA Adapter does not support reverse-polarity, message waiting lamping, or Caller ID.

APR Adapter

The APR Adapter provides an analog interface for the keyset. The APR Adapter provides ringing which allows the connected device to be used for incoming and outgoing calls. One keyset can have either an APA or an APR Adapter. Both adapters *cannot* be installed on the same keyset as only one voice path is provided by the keyset for the adapters. When installing the APR Adapter, an AC-R AC/DC adapter (P/N 780109) is required for power. The maximum distance between the APR Adapter and the analog terminal is 49'.

The APR Adapter does not support reverse-polarity, message waiting lamping, or Caller ID.

CTA Adapter

The CTA Adapter provides a serial interface (9-pin male RS-232C) connector. This can be used for SMDR or TAPI (1.4) or system reporting. When using the adapter for printing, the following printers are recommended:

- Citizen CBM CBM1000-RJ100S Thermal Printer
- Star Precision SP2520MD-J1 Impact Dot Printer

CTU Adapter

The CTU Adapter provides a USB connector. This can be used for either SMDR, TAPI (1.4), system reporting, or PC Programming.

Data Communication Availability With Hardware

Functions	NTCPU Port			CTA	CTU
	Serial	USB	Ethernet		
Windows PC Programming	Yes	Yes	Yes	No	No
Web Programming for Installer	Yes	Yes	Yes	No	No
Web Programming for User	No	No	Yes	No	No
SMDR Output to Printer	Yes	Yes	No	Yes	Yes
SMDR Output to PC	Yes	Yes	Yes	No	No
SMDR	Yes	Yes	No	Yes	Yes
ACD MIS	Yes	Yes	Yes	No	No
Hotel PMS	No	No	No	Yes	Yes
Traffic Report	Yes	Yes	No	Yes	Yes
System Information Print Output	Yes	Yes	No	Yes	Yes
Alarm Information	Yes	Yes	No	Yes	Yes
First Party CTI (via serial)	No	No	No	Yes	No
First Party CTI (via USB)	No	No	No	No	Yes
Third Party CTI (via LAN)	No	No	Yes	No	No

Ports for APR Adapter

The APR Adapter’s extension number is determined when the adapter is connected to the keyset. After assigning the APR Adapter a circuit type of ‘12’ in Program 10-03-06, the system automatically selects the next available port within the APR’s range (193-256). The system assigns the ports numbers from highest to lowest (256, 255, 254, etc.). Program 10-03-07 indicates which port is assigned for the APR Adapter. You can reassign the extension number for the port using Program 11-02-01.

Use the table below to determine the extension number associated with the port number.

APR Extension Port Number	Extension Number
193	493
:	:
199	499
200	5000
:	:
256	5056

Programming for System and Alarm Reports

- ➔ **90-13-01 : System Information Output - Output Port Type**
Indicate the type of connection used for the SMDR (0=No setting, 1=COM port (NTCPU), 2=USB port (NTCPU), 4= CTA/CTU).
- ➔ **90-13-02 : System Information Output - Destination Extension Number**
If the output port type (item 1) is set to CTA, enter the extension number with the CTA connection.
- ➔ **90-13-03 : System Information Output - Output Command**
Dialing 1 from this program sends the system report to the connected device.
- ➔ **90-12-01 : System Alarm Output - Output Port Type**
Indicate the type of connection used for the System Alarms. The baud rate for the COM port should be set in Program 10-21-02 (0=No setting, 1=COM port (NTCPU), 2=USB port (NTCPU), 4=CTA/CTU).
- ➔ **90-12-02 : System Alarm Output - Destination Extension Number**
If the output port type (item 1) is set to CTA, enter the extension number with the CTA connection.
- ➔ **90-12-06 : System Alarm Output - Output Mode**
Indicate if the output for the alarms should be manual (0) or automatic (1).

Use the following programs for outputting or clearing the alarm reports:

- ➔ **90-12-03 : System Alarm Output - Output All Alarm Reports**
- ➔ **90-12-04 : System Alarm Output - Printout New Alarm Reports**
- ➔ **90-12-06 : System Alarm Output - Clear All Alarm Reports**

Refer to *Data Communications* in the Software Manual for additional details.



SMDR

Using SMDR (Figure 5-1)

Station Message Detail Recording (SMDR) provides a record of the system's outside calls. Typically, the record outputs to a customer-provided printer, terminal or SMDR data collection device. Use SMDR when you need to monitor the usage at each extension and trunk.

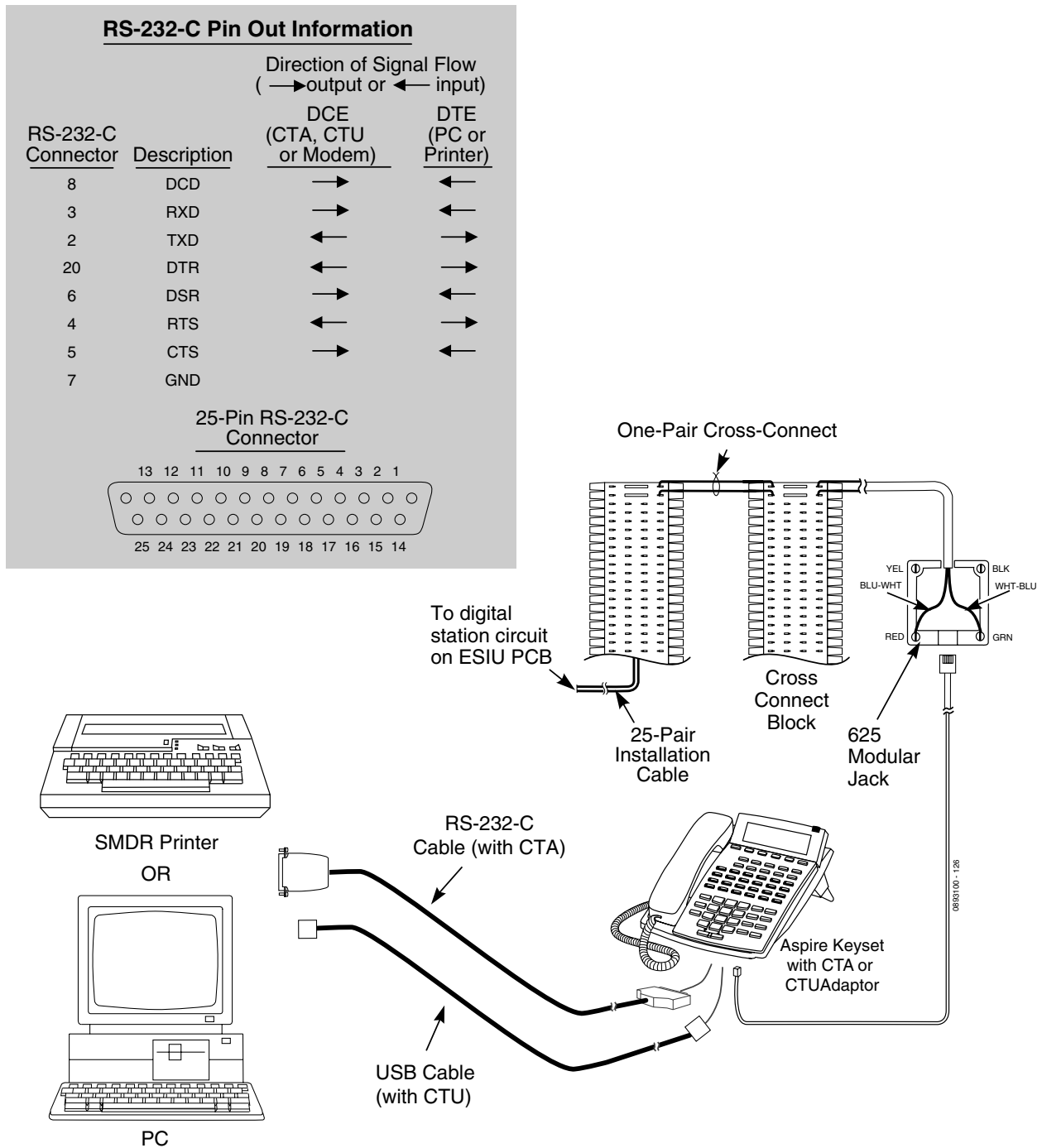
Installing SMDR

1. Install the DCI device to be used (refer to the specific CTA/CTU information described previously).
2. Install the SMDR recording device according to the manufacturer's instructions.
3. Connect the SMDR recording device to the telephone's CTA/CTU.

Note: When using a CTA, a straight through RS-232C cable terminated with a 9-pin female connector is required.

Note: When using a CTU, a standard USB cable is required.

Note: When using the NTCPU serial connector, a null modem cable is required.



Programming SMDR

- **10-21-02 : NTCPU Hardware Setup - Baud Rate for COM Port**
If the SMDR connection is made using the COM port on the NTCPU, define the baud rate (0=4800, 1=9600, 2=19200, 3=38400).
- **14-01-06 : Basic Trunk Data Setup - SMDR Print Out**
For each trunk, enter 1 if trunk's calls should appear on SMDR report. Enter 0 if trunk's calls should not appear on SMDR report.
- **15-01-03 : Basic Extension Data Setup - SMDR Printout**
For each extension, enter 1 if extension's calls should appear on SMDR report. Enter 0 if extension's calls should not appear on SMDR report.
- **35-01-01 : SMDR Options - Output Port Type**
Specify the type of connection used for SMDR (0=No setting, 1=COM(NTCPU), 2=USB (NTCPU), 4=CTA/CTU). The baud rate for the COM port should be set in Program 10-21-02 or 15-02-20.
- **35-01-02 : SMDR Options - Output Destination Number**
Specify the SMDR printer output port (CTA/CTU port number).
- **35-01-03 : SMDR Options - Header Language**
Specify the language in which the SMDR header should be printed (0=English, 1=German, 2=French, 3=Italian, 4=Spanish).
- **35-01-04 : SMDR Options - Omit (Mask) Digits**
Enter the number of digits (1-24) you want SMDR to block (i.e., "X" out). Enter 0 not to block any digits.
- **35-01-05 : SMDR Options - Minimum Number of SMDR Digits**
Enter the minimum number of digits a user must dial (1-24) before the system includes a call on the SMDR report. Enter 0 to include all outgoing calls, regardless of the number of digits dialed.
- **35-01-06 : SMDR Options - Minimum Call Duration**
Enter the minimum duration of a call (1-65535) that will print on the SMDR report. Enter 0 to have calls of any duration print.
- **35-01-07 : SMDR Options - Minimum Ringing Time**
Enter how long an unanswered call must ring (1-65535) before SMDR logs it as "No Answer". Enter 0 to allow all "No Answer" calls to print.
- **35-02-01 : SMDR Output Options - Toll Restricted Call**
Enter 1 if you want the SMDR report to include calls blocked by Toll Restriction. Enter 0 to exclude blocked calls.
- **35-02-02 : SMDR Output Options - PBX Calls**
If system is behind a PBX, enter 1 to have SMDR include all calls to the PBX. Enter 0 to have SMDR include only calls dialed using PBX trunk access code.
- **35-02-03 : SMDR Output Options - Display Trunk Name or Number**
Select whether the system should display the trunk name (0) or the number (1) on SMDR reports. *If this option is set to "1", Program 35-02-14 must be set to "0".*
- **35-02-04 : SMDR Output Options - Daily Summary**
35-02-05 : Weekly Summary and
35-02-06 : Monthly Summary
Enter 1 to enable a summary report. Enter 0 to disable a summary report. The daily report prints every day at midnight. The weekly report prints every Sunday night at midnight. The monthly report prints at midnight on the last day of the month.
- **35-02-08 : SMDR Output Options - Incoming Calls**
Enter 0 if you want the SMDR report to include incoming calls. Enter 1 if you want the SMDR report to exclude incoming calls.

- ➔ **35-02-09 : SMDR Output Options - Print Name or Number**
Enter 0 if you want the SMDR report to include the extension's name. Enter 1 if you want the SMDR report to include the extension's number.
- ➔ **35-02-14 : SMDR Output Options - Date**
Determine whether the date should be displayed on SMDR reports (0=not displayed, 1=displayed).
This option must be set to "0" if the trunk name is set to be displayed in Program 35-02-03.
- ➔ **35-02-16 : SMDR Output Options - Print Trunk Name or Received Dialed Number**
Enter 0 if you want the SMDR report to print the trunk port name (as assigned in Program 14-01-01).
Enter 1 if you want the SMDR report to print the received dialed number. For DID trunks, if the received number is not defined in Program 22-11-01, then no number will be printed.
- ➔ **35-03-01 : SMDR Port Assignment for Trunks**
For each trunk group, select the SMDR port to which the incoming information should be sent.
- ➔ **35-04-01 : SMDR Port Assignment for Department Groups**
For each Department Group, select the SMDR port to which the incoming information should be sent.
- ➔ **80-05-01 : Date Format for SMDR and System Reports**
Set the date format for SMDR (0=American, 1=Japanese or 2=European).
- ➔ **80-05-01 : Date Format for SMDR and System Reports**
Set the date format for SMDR (0=American, 1=Japanese or 2=European).
- ➔ **90-12-01 : System Alarm Output - Output Port Type**
Indicate the type of connection used for the SMDR (0=No setting, 1=COM port (NTCPU), 2=USB port (NTCPU), 4=CTA/CTU).
- ➔ **90-12-02 : System Alarm Output - Destination Extension Number**
If the output port type (90-12-01) is set to CTA, enter the extension number with the CTA connection.
- ➔ **90-13-01 : System Information Output - Output Port Type**
Indicate the type of connection used for the SMDR (0=No setting, 1=COM port (NTCPU), 2=USB port (NTCPU), 4=CTA/CTU).
- ➔ **90-13-02 : System Information Output - Destination Extension Number**
If the output port type (90-13-01) is set to CTA, enter the extension number with the CTA connection.

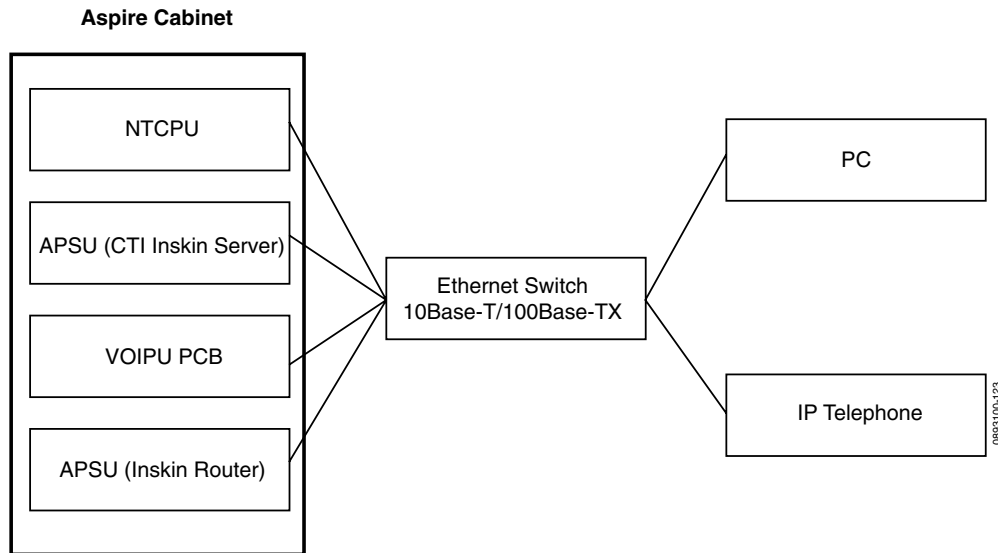
Refer to *Station Message Detail Recording* in the Software Manual for additional details.

Section 6: LAN Connection

LAN DEVICES

Using LANs

Using a LAN setup (local area network) with the Aspire system complies with the ethernet standard (10Base-T/100Base-TX).



6

To connect a telephone to a LAN connection, the system allows the use of an Aspire digital IP 34-button keyset (referred to as Aspire IPPhone), an Aspire digital keyset with an IP Adapter installed or an H.323 IP digital telephone. For details on installing the IP Adapter, refer to **VoIP Adapter (Figure 4-47 - Figure 4-49)** (page 4-39).

If connecting a LAN to a WAN (wide area network), follow the instructions included with the ADSL modem or gateway device.

IP Address

Equipment/devices used in the Aspire 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.

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.

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 Aspire 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 NTCPU must always have a static IP address. This address is set in **Program 10-12-01 : NTCPU Network Setup - IP Address** (default: 172.16.0.10).

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.

With the Aspire system, a separate external gatekeeper is not required unless connecting to an outside H.323 endpoint/gateway which requires an outer gatekeeper or if over 50 outer addresses must be registered. Otherwise, the Aspire provides tables within the system programming for address resolution.

IP Hardware

PCBs:

- **NTCPU** - Signals the gateway with VoIP communication
- **4VOIPU** - The 4VOIPU PCB provides a 4-channel voice packet gateway unit and works as a media gateway for VoIP communication. This PCB 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 Aspire Software Manual for more detail on the Peer-to-Peer feature.
- **4VOIPDB** - The 4VOIPDB daughter board provides an additional 4 channels when attached to either the 4VOIPU or 16VOIPU PCB
- **16VOIPU** - The 16VOIPU PCB provides a 16-channel voice packet gateway unit and works as a media gateway for VoIP communication. This PCB 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 Aspire Software Manual for more detail on the Peer-to-Peer feature.
- **16VOIPDB** - The 16VOIPDB daughter board provides an additional 16 channels when attached to the 16VOIPU PCB
- **8SHUBU** - Provides an 8-port switching hub for use with the Aspire system

Terminals:

- **IPhone** - Aspire 34-button multi-line IP phone
- **IP Adapter** - IP adapter connects an Aspire keyset to the VoIP network
- **ITR-2D-1** - H.323 IP phone

Power must be supplied to the IPhone or the Aspire keyset with an IP adapter using either a local or central power supply. The ITR-2D1 phone requires local power. If there is a power outage, the VoIP phones will not work unless the phones are plugged into a UPS (uninterruptible power supply).

- **Local Power Supply**
The AC-R Unit is an AC adapter for Aspire IPPhone or the IP adapter. The ITR-2D1 has an AC adapter included that should be used for power. Terminals connected to the 8SHUBU PCB must provide local power unless the PoE jumper is enabled. Refer to **LAN 8-Port Switching Hub (8SHUBU) PCB (Figure 2-20)** (page 2-50) for jumper settings.

Using one Aspire power supply, the 8SHUBU can support 10 IP phones with no other Aspire phones connected).

! CAUTION !

If the 8SHUBU PCB is used to supply PoE, only Aspire IP phones and Aspire IP Adapters must be connected. The provided DC voltage provided through the spare pairs (4/5, 7/8) may damage any other equipment.

- **Central Power Supply:**
 - 24-port power supply PoE-managed switch (NEC BlueFire 200/24)
Power feeding through signal pair (1/2, 3/6) or spare pair (4/5, 7/8)
 - Cisco Data Switch - CDP Supported

Note that the Aspire IP phones are not IEEE 802.3AF compliant.

Other manufacturer central power supplies may be usable, but the above items have been tested for compatibility with the Aspire equipment.

Aspire VoIP Specifications

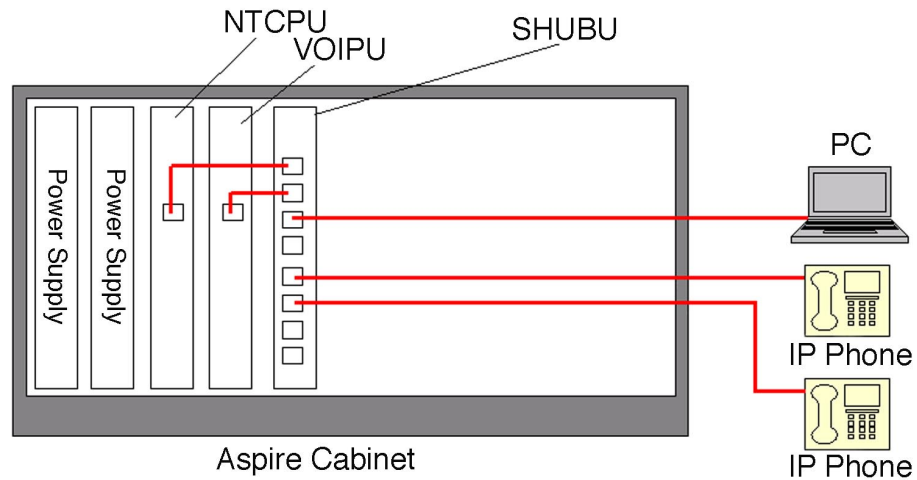
Category	Feature	Note
IP Address	DHCP Server	NTCPU
	DHCP Client	VOIPU PCB or IP Phone
QoS	802.1p/1q	
	L3 QoS (ToS)	Diffserv/IP Precedence
Maintenance	HTTP Server	NTCPU
Server	H.323 Gatekeeper	For H.323 Phone Registration and Routing
VLAN	Tag and port-based VLAN	
VoCoder	G.711 μ -law/A-law	
	G.729a	
	G.723.1	
	Fax Relay	
Jitter Buffer Size	Set by system programming	
RTP Length	Set by system programming	
Echo Canceller Tail Size	Set by system programming	
Level Adjustment	Set by system programming	
Protocol	H.323	
	NGT	
IP Phone	H.323 Phone	ITR-2D1 H.323 Phone
	NGT Phone	Maximum 512 Phones
IP Trunk	H.323 Trunk	Maximum 200 Trunks

LAN Connections

Hardware:

- 8SHUBU PCB - Provides 8-port switching hub and the ability to provide PoE for Aspire equipment
 - 802.1p/1q Support
- 24-Port Power Supply PoE-managed switch (NEC BlueFire 200/24)
 - PoE (Power over Ethernet) to the Aspire IP/H.323 Phone
 - Spare Pair (4/5, 7/8) / Signal Pair (1/2, 3/6) Selection
- Cisco Data Switch - CDP Supported

Note: The Aspire IP phones are not IEEE 802.3AF compliant.



Installing a LAN Device or VoIP Telephone

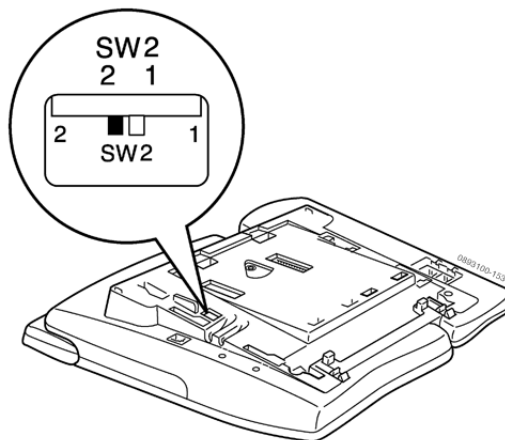
Actual installation will vary depending on each customer's installed Aspire and networking hardware.

1. Plug a cable with an RJ-45 modular jack into the system PCB (NTCPU, VoIP PCB, or 8SHUBU).
2. Connect the RJ-45 modular connector on the opposite end of the cable to the IP telephone or PC's network interface card (NIC).

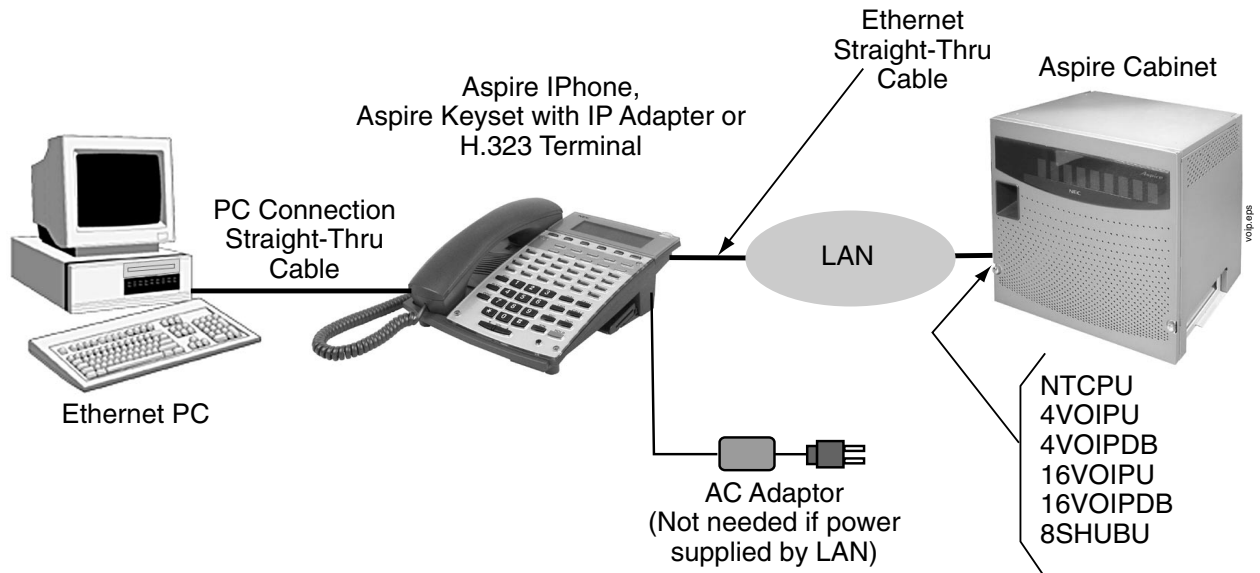
When connecting an IP telephone, a connection can then be made to a network PC using the PC connector on the back of the phone.

3. If local power is to be provided to the IP telephones, connect the AC adapter to the phone. When using the iPhone (P/N 0890065), set the SW2 dip switch on the bottom of the phone to the appropriate setting shown below:

Feeding Method	Power Source	Setting of SW2
Local Feeding	AC Adapter	1 (48 volts to phone)
Center Feeding	NEC Power Patch Panel (12 port NEC SN1604 PWRMS - 24-port NEC BlueFire 200/24)	
Center Feeding	Cisco Catalyst Power Patch Panel	2 (data pairs)
	Cisco Catalyst PRW Series	



4. Plug the AC adapter into an outlet.



For complete programming information, refer to the Aspire Software Manual (P/N 0893200).

Section 7: Specifications and Parts List

SYSTEM SPECIFICATIONS

Aspire System Capacities				
	NTCPU-A with Basic PAL Chip	NTCPU-A with Feature Upgrade PAL Chip	NTCPU-B	
Cabinets	1	2 (Main and 1 Expansion Cabinet)	2 (Main and 1 Expansion Cabinet)	
Power Supplies	2	4 (2 per cabinet)	4 (2 per cabinet)	
Analog Trunks (CO/PBX lines)	64 *	64 *	200	* combined trunk and extension total of 64
Digital Key Telephones	64*	64*	256**	* combined trunk and extension total of 64 ** combined total to 256 *** in addition to the digital or analog ports
Analog Single Line Telephones	64*	64*	256**	
IP/Aspire Wireless 2.4 GHz Telephones	64 ***	64 ***	256 ***	
24-Button DLS Consoles	64	64	256	1 maximum per extension 4 maximum per extension.
110-Button DSS Consoles	32	32	32	



Aspire System Capacities				
	NTCPU-A with Basic PAL Chip	NTCPU-A with Feature Upgrade PAL Chip	NTCPU-B	
Conference Circuits	64 (32-parties max per Conference)	64 (32-parties max per Conference)	64 (32-parties max per Conference)	
ADA Adapter	64	64	192	installs on a keyset
ADA2 Adapter	64	64	192	installs on a keyset
APA Adapter	64	64	192	installs on a keyset
APR Adapter	64	64	192	installs on a keyset
CTA Adapter	64	64	128	installs on a keyset
CTU Adapter	64	64	128	installs on a keyset
IP Adapter	64	64	256	installs on a keyset
PSA Adapter	64	64	256	installs on a keyset
Power Failure Telephones	14	28	28	provided by COIU PCBs
2PGDAD Modules	56 (48 for ACI ports, 4 for Door Boxes, 4 for Pages)	56 (48 for ACI ports, 4 for Door Boxes, 4 for Pages)	56 (48 for ACI ports, 4 for Door Boxes, 4 for Pages)	
Door Box/Door Unlock Contacts	8	8	8	
Internal Page Zones	64	64	64	
External Page Zones	9	9	9	
Dial Tone Detector Circuits	32*	64**	64**	* combined total to 32 ** combined total to 64
DTMF Receiver Circuits	32*	64**	64**	
Universal PCB slots Main Cabinet Expansion Cabinet	1-8 (Not includ- ing NTCPU slot)	1-8 (Not including NTCPU slot) 8-16 (Not includ- ing EXIFU slot)	1-8 (Not including NTCPU slot) 8-16 (Not includ- ing EXIFU slot)	
<p>* NOTE: Maximum capacities above are determined by maximum PCB configuration allowed. When installing single line sets, DISA, or tie lines, NTCPU circuits must be allocated for DTMF receivers. To install single line sets with CO/PBX line access, or when installing immediate-start tie lines, NTCPU circuits must be allocated for dial tone detection.</p>				

Aspire PCB Capacities			
	NTCPU-A with Basic PAL Chip	NTCPU-A with Feature Upgrade PAL Chip	NTCPU-B
NTCPU Central Processing Unit	1	1	1
EXIFU Expansion PCB	-	1	1
DSPDB Resource/VRS Daughter Board (installs on NTCPU)	-	1	1
8ESIU 8 Digital Stations	8	8	16
16ESIU16 Digital Stations	4	4	16
8SLIU 8 Analog Stations	7	7	15
8SLIDB 8 Analog Stations Daughter Board (installs on 8SLIU)	3	3	15
16DSTU 16 i-Series Keypad Interface	3	3	15
4COIU-LS1 4 Analog/Loop Start Trunks (no ground start)	7	14	15
8COIU-LS1 8 Analog/Loop Start Trunks (no ground start)	7	7	15
4COIU-LG1 4 Analog/Loop Start Trunks (with ground start)	7	14	15
8COIU-LG1 8 Analog/Loop Start Trunks (with ground start)	7	7	15
8DSIU Aspire Wireless Interface	1	1	1
12DSIU Aspire Wireless Interface	1	1	1
2BRIU 2 Two-Channel BRI Circuits	-	14	15
4BRIU 4 Two-Channel BRI Circuits	-	7	15
8BRIU 8 Two-Channel BRI Circuits	-	3	As T-Bus: 12 As S-Bus: 15
1PRIU 24 T1/PRI Trunks / Channels	-	2	8
4TLIU 4 E&M Tie Line Trunks	-	14	15
4DIOPU 4 DID/OPX Trunks	7	14	15
8DIOPU 8 DID/OPX Trunks	7	7	15
2FMSU 2 Flash Memory Voice Mail	1	1	1
4FMSU 4 Flash Memory Voice Mail	1	1	1
4VMSU 4 HDD Voice Mail	1	1	1

Aspire PCB Capacities			
	NTCPU-A with Basic PAL Chip	NTCPU-A with Feature Upgrade PAL Chip	NTCPU-B
4VMDB 4 HDD Voice Mail - Daughter Board	1	1	1
8SHUBU 8 Switch Hub	4	8 (4 per cabinet)	8 (4 per cabinet)
4VOIPU 4 VoIP Media Gateway	7 *	15 *	15 *
4VOIPDB 4 VoIP Media Gateway Daughter Board (installs on 4VOIPU or 16VOIPU)	7 *	15 *	15 *
16VOIPU 16 VoIP Media Gateway	-	7 *	15 *
16VOIPDB 16 VoIP Media Gate- way Daughter Board (installs on 16VOIPU)	-	4 *	15 *
* In addition to the load factor, additional factors may limit these quantities further (such as 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

Cabinets, PCBs and Key Telephones

Temperature: 0°C - 40°C (32 - 104°F)

Humidity: 10-90% RH

CAUTION: The VMSU-A1 exceptions.

They are limited to: +5°C - 40°C (41-104°F).

Door Box

Temperature: -20°C - 60°C (-4 - 140°F)

Humidity: 20-80% (non-condensing)

Power Supply

Operating:

Temperature: 0°C - 40°C (32 - 104°F)

Humidity: 20-90% RH

Storage:

Temperature: -40°C - 75°C (-4 - 167°F)

Humidity: 10-95% RH

VMSU-A1 PCBs

Temperature: +5°C - 40°C (41-104°F)

Humidity: 10-90% RH

Power Requirements

A dedicated 110 VAC 60 Hz circuit located within seven feet of the cabinet is required. You should install a separate dedicated outlet for each cabinet.

Caution

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



Site Requirements

The system can be floor-, wall- or rack-mounted. Brackets secure each cabinet to a wall.

Electrical Specifications

Power Supply

AC Power Supply
 Dedicated 15 Amp circuit
 Power Requirements: 120 VAC @ 15A Main Cabinet
 Power Consumption: Base Cabinet=360W (493 VA), Expansion Cabinet=360W (493 VA), total 720W (986 VA)
 Input Voltage: 85VAC to 135VAC
 Frequency: 47 Hz - 63Hz (Rated frequency: 50/60 Hz)
 Phase and Wire: Single, 2-Wire
 Grounding Requirements: No. 14 AWG copper wire
With input voltage of 120 VAC and with full load conditions:
 Output Power: One Power Supply: Base Cabinet=100.5W
 Two Power Supplies: Base Cabinet=200.9W, Expansion Cabinet=200.9, total 401.8W
 AC Input I: One Power Supply: Base Cabinet=2.06A
 Two Power Supplies: Base Cabinet=4.11A, Expansion Cabinet=4.11A, total 8.22A
 VA @ 120V: One Power Supply: Base Cabinet=246.6VA
 Two Power Supplies: Base Cabinet=493.2 VA, Expansion Cabinet=4.93.2 VA, total 986.4 VA
 KWh @ AC Input I x 120V/1000: One Power Supply: Base Cabinet=0.247 KWh
 Two Power Supplies: Base Cabinet=0.493 KWh, Expansion Cabinet=0.493 KWh, total 0.986 KWh
 BTU (KWh x 3413): One Power Supply: Base Cabinet=842 btu
 Two Power Supplies: Base Cabinet=1683 btu, Expansion Cabinet=1683 btu, total 3366 btu

Caution

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

Output Voltage Types:	+3.42VDC (-3%, +1%)	+5VDC (+/ - 2%)	-48VDC (+/- 5%)
Output Current 1	0.0A - 6.0A	0.0A - 5.0A	0.0A - 1.0A
Output Current 2	0.0A - 3.2A	0.0A - 1.0A	0.0A - 2.0A
Ripple/Noise	50mV p-p	100mV p-p	200mV p-p
Overvoltage Protection	3.7 - 8.0V	5.6 - 13.0V	-55.0 - 64.8V
Overcurrent Protection	6.6 - 7.7A	5.5 - 6.5A	2.2 - 2.6A

Mechanical Specifications				
Equipment	Width	Depth	Height	Weight
KSU Cabinet	16 1/2"	10"	15 1/2"	55 lbs 11 oz. fully equipped
2 Button Telephone	6 3/8"	8 3/4"	2 3/4"	2 lbs 1 oz
22 Button Non-Display Keypad	7 3/4"	9 2/8"	3 7/8" no leg extension 5 7/8" legs fully extended	2 lbs 4 oz
22 Button Display Keypad	7 3/4"	9 2/8"	3 7/8" no leg extension 5 7/8" legs fully extended	2 lbs 4 oz
34 Button Display Keypad	7 3/4"	9 2/8"	3 7/8" no leg extension 5 7/8" legs fully extended	2 lbs 5 oz
110-Button DSS	7 3/4"	9 2/8"	3 3/16"	1 lb 12 oz
24-Button DLS	2"	9 2/8"	2 15/16"	12 oz

2PGDAD Module/NTCPU Input/Output	
Audio/Music Input	
Input Impedance:	47 KOhm @ 1Khz
Audio/Paging Output	
Output Impedance:	600 Ohms @ 1 KHz
Maximum Output:	+3 dBm
Relay Contacts	
Configuration:	Normally Open
Maximum Contact Ratings:	24 VDC, 0.5A 120 VAC, 0.25A
Night Mode Relay Connection, Input	
Break:	48 VDC
Make:	7 mA

BGM/MOH Music Source Input	
Input Impedance:	600K Ohm
Input Level:	Nominal 250 mV (-10 dBm)
Maximum Input:	1V RMS
Inputs for MOH and BGM are located on the NTCPU PCB. The 2PGDAD also provides MOH inputs.	

Door Box/External Paging	
Output Impedance:	600 Ohm
Output Level:	Nominal 250 mV (-10 dBm)
Maximum Output:	400 mV RMS
Configuration:	Normally open

LAN Specifications

Standard	10Base-T and 100Base-TX (Not IEEE802.3 Compliant)
Access	CSMA/CD
Capacity	10Base-T/100Base-TX; 8 Ports for LAN Terminal
I/F (Layer 1)	- Speed; 10Mbps/100Mbps Auto Negotiation - Cable; Category 5 or better, Straight/Cross Cable Auto Crossover

SLT Adapter

Constant Current Circuit: Current fixed at 47 mA
Signal Method
On-Hook Condition: 48VDC
Ringer Signal: 180 Vp-p, 16Hz

SLIU PCB / SLIDB

Signal Method
On-Hook Condition: -46VDC +- 3VDC
Message Waiting Signal: -112VDC +- 3VDC
Ringer Signal: 75Vrms +-1Vrms (no load condition), 20Hz +-1%

Cordless Lite II	
General	
Frequency Control Modulation	Phase Lock Loop 900 MHz Narrow Band FM with ADPMC (digital)
Operating Temperature	0°C - +50°C (+32°F to +122°F)
Bandwith	50 kHz
Data Transmission Speed	688 bps
Channels	30 Channels
Base Unit	
Receive/Transmit Frequency	902 MHz - 928 MHz
Power Requirements	10V DC from supplied AC adapter
Size	4 1/4" W x 7 5/8" D x 2 1/4" H
Weight	Approximately 13.7 oz.
Handset	
Receive/Transmit Frequency	902 MHz - 928 MHz
Power Requirements	NiMH Battery
Size	2" W x 1 1/4" D x 5 1/2" H (with antenna)
Weight	8.7 oz. with battery
Battery	Capacity 700 mAh, 3.6V
Talk Mode	5 hours (typical)
Standby Mode	40 hours (typical)
Specifications shown are typical and subject to change without notice.	
Battery Charger	
Power Requirements	9V DC from supplied AC adapter
Size	1 3/8" W x 1 1/2" D x 2 1/4" H

Cordless II	
General	
Frequency Control	Phase Lock Loop
Modulation	Digital Spread Spectrum
Operating Temperature	0°C - +50°C (+32°F to +122°F)
Output Power	60 mW
Occupied Bandwidth	± 500 KHz
Data Transmission Speed	688 bps
Channels	10 Channels
Base Unit	
Receive/Transmit Frequency	902 MHz - 928 MHz
Power Requirements	10V DC from supplied AC adapter
Size	4 1/4" W x 7 5/8" D x 2 1/4" H
Weight	11.8 oz.
Handset	
Receive/Transmit Frequency	902 MHz - 928 MHz
Power Requirements	Nickel-Cadmium Battery Pack
Size	2 1/4" W x 1 1/2" D x 6 5/16" H
Weight	8.6 oz.
Battery	Capacity 800 mAh, 3.6V
Charging Time	5-6 hours max. to full charge
Talk Mode	6 hours (typical)
Standby Mode	4 days (typical)
Specifications shown are typical and subject to change without notice.	
Battery Charger	
Power Requirements	9V DC from supplied AC adapter
Size	4 3/4" W x 4 1/2" D x 3 1/2" H
Weight	6.5 oz.
Range	
Range	Up to 350' (depending on environmental conditions)

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.

FCC Registration Information					
Manufacturer:		NEC Infrontia, Inc.			
FCC Part 15 Registration:		Class A			
Model:		Aspire			
FCC Registration Number:		KF: US:NIFKF07BASPIRE			
(Refer to the label on the Main Cabinet for the FCC Registration Number.		MF: US:NIFMF07BASPIRE			
		PF: US:NIFPF07BASPIRE			
Reg. Status	Facility Interface Code (FIC)	Mfrs. Port Identifier	Ringer Eq. Number	Service Order Code (SOC)	Network Jacks
Original	02LS2	4COIU-LS1	0.7B	9.0F	RJ21X
Original	02LS2	8COIU-LS1	0.7B	9.0F	RJ21X
Original	02GS2	4COIU-LG1	0.7B	9.0F	RJ21X
Original	02GS2	8COIU-LG1	0.7B	9.0F	RJ21X
Original	02RV2-T	4DIOPU	---	AS.2	RJ21X
Original	02RV2-T	8DIOPU	---	AS.2	RJ21X
Reg. Status	Analog Private Line Interfaces	Mfrs. Port Identifier		Service Order Code (SOC)	Network Jacks
Original	TL11M	4TLIU	---	9.0F	RJ2EX

FCC DID Requirements	
Federal Communications Commission DID Requirements	
<p>This equipment must operate in a manner that is not in violation of Part 68 rules. This equipment returns answer supervision to the Public Switched Network when the DID trunk is: (1) answered by the called station; (2) answered by the attendant; (3) routed to a recorded announcement that can be administered by the CPE user; (4) routed to a dial prompt.</p> <p>The equipment returns answer supervision on all DID calls forwarded back to the Public Switched Telephone Network except when: (1) a call is unanswered; (2) a busy tone is received; (3) a reorder tone is received.</p> <p>When ordering DID Service, provide the telco with the following information:</p>	
FCC Registration Number:	
KF	US:NIFKF07BASPIRE
MF	US:NIFMF07BASPIRE
PF	US:NIFPF07BASPIRE
DID Facility Interface Code:	02RV2-T
DID Service Order Code:	9.0F
DID Answer Supervision Code	A S.2
DID USOC Jack Type:	RJ21X
Please note the following:	
<ol style="list-style-type: none"> 1. DID services must be purchased from the local telephone company. 2. Refer to the Software Manual for detailed DID description, conditions, and programming instructions. 	



Cabling Requirements	
<ol style="list-style-type: none"> 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 telephones, single line telephones, Door Boxes, CTA or CTU adapters, 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 Main Cabinet. Extension blocks and cross-connect blocks should be installed to the left of the Main Cabinet. 	

Cable Requirements			
Device	Cable Type	Cable Run Length (ft)	Notes
Key Telephone, DSS Console:	2-wire 26 AWG	1312	Maximum distance when power only received from KSU.
	2-wire 24 AWG	1968	
	2-wire 22 AWG	2624	
Single Line Telephone, Analog Terminals:	2-wire 26 AWG	13,123	
	2-wire 24 AWG	20,997	
	2-wire 22 AWG	34,776	
20mA Setting:	1,500 ohm loop resistance		Includes resistance of telephone
35mA Setting:	900 ohm loop resistance		
SLT Adapter:	2-wire 26 AWG	1312	
	2-wire 24 AWG	1968	
	2-wire 22 AWG	2624	
SLTAD to SLT:		500 ohm (including phone's DC termination)	
2PGDAD Adapter:	2-wire 26 AWG	1968	
	2-wire 24 AWG	1968	
	2-wire 22 AWG	2624	
Door Box to 2PGDAD:	2-wire 26 AWG	200	
	2-wire 24 AWG	328	
	2-wire 22 AWG	550	
APA or APR Adapter to Terminal		49'	
Using Under Carpet Cable: The cable is not twisted, but flat parallel wire. Good impedance balance cannot be expected and reduces the cable length to no more than 300m when using the flat cable.			
NTCPU to PC:	Serial cross cable	49.21 (15 meters)	
	Ethernet cross cable	328.08 (100 meters)	
	USB cable (USB1.1)	16.40 (5 meters)	
NTCPU to Hub:	Ethernet straight cable	328.08 (100 meters)	
NTCPU to Printer:	Serial cross cable	49.21 (15 meters)	
IP Telephone	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.

Cable Requirements			
Device	Cable Type	Cable Run Length (ft)	Notes
PC to CTA	Serial Straight Thru Cable	4.92	
16VOIPU PCB to IP Telephone and Router	Standard Ethernet Cable	328	
DID Trunks:		DTMF = 1,500 ohm DP = 3,000 ohm	Includes SLT or exchange
8SLIU/8SLIDB to Analog Terminals:		Loop resistance 900 ohm @35mA, 1500 ohm @20 mA	
2/4/8BRIU to ISDN Terminals:	4-wire 24 AWG	100m with Point-Multi-point short connection 300m with Point-Multi-point long connection 500m with Point-Point connection	
1PRIU to ISDN Terminal:	4-wire 24 AWG	164.02 (50 meters)	

PARTS LIST

Station Equipment	
Description	Part Number
2-Button Telephone - Black	0890047
2-Button Telephone - White	0890048
22-Button Handsfree Non-Display Telephone - Black	0890041
22-Button Handsfree Non-Display Telephone - White	0890042
22-Button Handsfree Display Telephone - Black	0890043
22-Button Handsfree Display Telephone - White	0890044
34-Button Handsfree Display Telephone - Black	0890045
34-Button Handsfree Display Telephone - White	0890046
34-Button Super Display Telephone - Black	0890049
34-Button Super Display Telephone - White	0890050
34-Button Aspire iPhone - Black	0890065
Full Duplex Speakerphone - Black	0890062
Full Duplex Speakerphone - White	0890063
24-Button DLS Console - Black	0890053
24-Button DLS Console - White	0890054
110-Button DSS Console - Black	0890051
110-Button DSS Console - White	0890052
NEC Cordless II Telephone	730088
NEC Cordless Lite II Telephone	730087
NEC H.323 Telephone	780005

Peripheral Station Equipment	
Description	Part Number
AC Adapter (AC-R)	780109
Analog Interface with Ringing Adapter (APR)	0890056
Analog Interface without Ringing Adapter (APA)	0890057
Call Recording Adapter (ADA)	0890055
Door Box	92245
Handsfree Adapter	0890062/0890063
Headsets:	
Polaris™ Supra® Monaural, Noise Cancelling	750636
Polaris™ Supra® Binaural, Noise Cancelling	750633
Polaris™ Encore® Binaural, Noise Cancelling	750635
IP Adapter (IP)	0890060
Power Failure Adapter for IP Telephone (PSA)	0890067
Recording Adapter for IP Telephone (ADA2)	0890066
RS-232C Adapter (CTA)	0890058
USB Adapter (CTU)	0890059
SLT Adapter	0891026
2PGDAD Module (for Door Box/Page/ACI)	0891027

Common Equipment	
Description	Part Number
Aspire 8 Slot KSU	0890000
Power Supply	0891000
19" Rack Mount Bracket	0891300
KSU Expansion Set	0891001
Mod 8 to 25 Pair (Unterminated) Installation Cable	80892
32 MB PCMCIA ATA Flash Card with System Software	0891060
32 MB PCMCIA ATA Flash Card, Blank	0891061

PCBs	
Description	Part Number
Common Cards	
KSU Expansion Set	0891001
64 Port Basic CPU	0891002
256 Port Enhanced CPU	0891038
Feature Upgrade for 0891002	0891039
DSP Resource Daughter Board	0891003
VRS Compact Flash Card	0891040
2 Port AspireMail PCB	0891032
4 Port AspireMail PCB	0891037
4 Port AspireMail Plus PCB	0891033
4 Port AspireMail Plus Expansion Daughter Board (only used on 0891033)	0891034
4 Port AspireMail UMS PCB	0891035
4 Port AspireMail Expansion Daughter Board (only used on 0891037)	0891045
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4 CO Loop Start Trunk PCB	0891005
8 CO Loop Start Trunk PCB	0891004
4 CO Loop Start/Ground Start Trunk PCB	0891029
8 CO Loop Start/Ground Start Trunk PCB	0891028
8 DID/OPX PCB	0891012
4 DID/OPX PCB	0891013
4 E&M Tie Line PCB	0891011
2 BRI PCB	0891006
4 BRI PCB	0891007
8 BRI PCB	0891008
PRI/T1 PCB	0891009



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Description	Part Number
Station Interfaces	
8 Aspire Digital Station PCB	0891015
16 Aspire Digital Station PCB	0891014
16 i-Series Digital Station PCB	0891016
8 Analog Station PCB	0891017
8 Analog Station Expansion Daughter Board	0891018
4 Aspire Wireless PCB	0891090
8 Aspire Wireless PCB	0891091
12 Aspire Wireless PCB PCB	0891092
10/100Base-T 8-Port Switching Hub (8SHUBU) PCB	0891021
4 Channel VoIP Media Gateway PCB	0891042
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16 Channel VoIP Media Gateway Expansion Daughter Board	0891023

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NEC

NEC Unified Solutions, Inc.
4 Forest Parkway, Shelton, CT 06484
Tel: 800-365-1928 Fax: 203-926-5458
www.necunifiedsolutions.com

Other Important Telephone Numbers

Sales:203-926-5450
Customer Service:203-926-5444
Customer Service FAX:203-926-5454
Technical Service:203-925-8801
Discontinued Product Service:900-990-2541
Technical Training:203-926-5430
Emergency Technical Service (After Hours)203-929-7920

(Excludes discontinued products)

NEC

NEC Unified Solutions, Inc.
4 Forest Parkway, Shelton, CT 06484
TEL: 203-926-5400 FAX: 203-929-0535
www.necunifiedsolutions.com



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