

Upgrading from DS2000 to DSX-80/160

If upgrading from DS2000 to DSX-80/160, be sure to carefully review *Upgrading DS2000 to DSX-80/160* (P/N 1093077) prior to the upgrade.

DSX

**DSX-80/160 Hardware
Manual**

P/N 1093096

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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
www.necunifiedsolutions.com

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Components

DSX Telephones

22-Button Display Telephone with Speakerphone

At a Glance	P/Ns 1090020 (Black) and 1090025 (White)	
	Display: 3 line x 24 character	Speakerphone: Built-in, half-duplex
	Soft Keys: 4	Wall Mount: Built-in
	Feature Keys: 12	Angle Adjustment: 2 position built-in
	Fixed Function Keys: 12	Backlit: No
	Speed Dial Bin Keys: 10	Dual LEDs: Yes
	Headset jack: RJ-10 built-in	



The 22-Button Display Telephone features a large 3 line-by-24 character alphanumeric display with 4 Interactive Soft Keys for intuitive feature access. It also provides 10 Personal Speed Dial bin keys, 12 programmable Feature Keys and 12 fixed function keys for streamlined operation. Additionally, this telephone offers a headset jack and built-in speakerphone. Unique features include dual LEDs, a Ring/Message Lamp (to show ringing, Caller ID, and voice mail messages), built-in wall mounting, and an innovative two position angle adjustment.

34-Button Backlit Display Telephone with Speakerphone

At a Glance	P/Ns 1090021 (Black) and 1090026 (White)	
	Display: 3 line x 24 character	Speakerphone: Built-in, half-duplex
	Soft Keys: 4	Wall Mount: Built-in
	Feature Keys: 24	Angle Adjustment: 2 position built-in
	Fixed Function Keys: 12	Backlit: Yes
	Speed Dial Bin Keys: 10	Dual LEDs: Yes
	Headset jack: RJ-10 built-in	



The 34-Button Display Telephone features a large 3 line-by-24 character backlit alphanumeric display with 4 Interactive Soft Keys for intuitive feature access. It also provides 10 Personal Speed Dial bin keys, 24 programmable Feature Keys and 12 fixed function keys for streamlined operation. Additionally, this telephone offers a backlit keypad, a headset jack, and built-in speakerphone. Unique features include dual LEDs, a Ring/Message Lamp (to show ringing, Caller ID, and voice mail messages), built-in wall mounting, and an innovative two position angle adjustment.

34-Button Backlit Display Telephone with Full-Duplex Speakerphone

At a Glance	P/Ns 1090022 (Black) and 1090027 (White)	
	Display: 3 line x 24 character	Speakerphone: Built-in, full-duplex
	Soft Keys: 4	Wall Mount: Built-in
	Feature Keys: 24	Angle Adjustment: 2 position built-in
	Fixed Function Keys: 12	Backlit: Yes
	Speed Dial Bin Keys: 10	Dual LEDs: Yes
	Headset jack: RJ-10 built-in	



This feature-rich 34-Button Display Telephone features a large 3 line-by-24 character backlit alphanumeric display with 4 Interactive Soft Keys for intuitive feature access. It also provides 10 Personal Speed Dial bin keys, 24 programmable Feature Keys and 12 fixed function keys for streamlined operation. Additionally, this telephone offers a built-in full duplex speakerphone (with no external speaker or microphone required), a backlit keypad, and a headset jack. Unique features include dual LEDs, a Ring/Message Lamp (to show ringing, Caller ID, and voice mail messages), built-in wall mounting, and an innovative two position angle adjustment.

34-Button Backlit Super Display Telephone with Full-Duplex Speakerphone

At a Glance	P/Ns 1090023 (Black) and 1090028 (White)	
	Display: 9 line x 24 character	Speakerphone: Built-in, full-duplex
	Soft Keys: 12	Wall Mount: Built-in
	Feature Keys: 24	Angle Adjustment: 2 position built-in
	Fixed Function Keys: 12	Backlit: Yes
	Speed Dial Bin Keys: 10	Dual LEDs: Yes
	Headset jack: RJ-10 built-in	



The Super Display Telephone is the system's most sophisticated telephone instrument. It features a large 9 line-by-24 character backlit alphanumeric display with 12 Interactive Soft Keys for intuitive feature access. It also provides 10 Personal Speed Dial bin keys, 24 programmable Feature Keys and 12 fixed function keys for streamlined operation. Additionally, this telephone offers a built-in full duplex speakerphone (with no external speaker or microphone required), a backlit keypad, and a headset jack. Unique features include dual LEDs, a Ring/Message Lamp (to show ringing, Caller ID, and voice mail messages), built-in wall mounting, and an innovative two position angle adjustment.

60-Button DSS Console

At a Glance	P/Ns 1090024 (Black) and 1090029 (White)	
	Feature Keys: 60	Wall Mount: Built-in
	Fixed Function Keys: 3	Angle Adjustment: 2 position built-in
	Dual LEDs: No	



The 60-Button DSS Console provides a display keyset with a 60-button Busy Lamp Field (BLF) and one-button access to extensions, trunks, and selected system features. Enhanced by Answer, Release, and Transfer fixed function keys, the 60-Button DSS Console is a great time saver for users that do a lot of call processing (such as operators or dispatchers). By default, the DSS Console is set up with Hotline keys to extensions and 14 feature keys for quick access to Page, Park and the system Night Mode

Note: DSX80/160 supports DS1000/2000 telephones if the system has a DSTU Card (P/N 80021A) installed.

DTH-1-1 Single Line Telephone

At a Glance	P/N 780034 (Black)	
	Fixed Function Keys: 5	Message Waiting: Yes
	Speed Dial Bin Keys: 4	Ring/Message Waiting Lamp: Yes
	Selectable Ring Tones: Yes	Wall Mount: Built-in



The DTH-1-1 is a cost-effective analog single line telephone that offers 5 fixed feature keys, 4 Speed Dial bin keys and Message Waiting. The built-in Message Waiting lamp will flash for incoming calls or when the user has a message. To simplify working in groups, The DTH-1-1 provides 3 selectable ring tones.

DTR-1-1 Single Line Telephone

At a Glance	P/Ns 780020 (Black) and 780021 (White)	
	Fixed Function Keys: 5	Message Waiting: Yes
	Speed Dial Bin Keys: None	Ring/Message Waiting Lamp: No
	Selectable Ring Tones: Yes	Wall Mount: Built-in
	Handsfree Monitor: No	



The DTR-1-1 is a stylish yet rugged analog single line telephone with 5 fixed feature keys and Message Waiting. Similar to the DTH-1-1, the DTR-1-1 has a built in Message Waiting lamp that will flash for incoming calls or when the user has a message. The DTR-1-1 offers programmable ring pitch and volume. Built-in wall mounting and a bridged data jack for connecting a modem or answering machine are standard.

DTR-1HM-1 Single Line Telephone

At a Glance	P/Ns 780025 (Black) and 780026 (White)	
	Fixed Function Keys: 7	Message Waiting: Yes
	Speed Dial Bin Keys: 8	Ring/Message Waiting Lamp: Yes
	Selectable Ring Tones: Yes	Wall Mount: Built-in
	Handsfree Monitor: Yes	



The DTR-1HM-1 provides all the features of the DTR-1-1 in addition to two additional fixed function keys (for Hold and Speaker/Monitor) and 8 Speed Dial bin keys. For convenient on-hook dialing and call monitor, the DTR-1HM-1 also offers Handsfree Monitor.

DSX Cordless Lite II

At a Glance	P/N 730087	
	Display: 2 line x 16 character	Transmission: 900 MHz Narrow Band FM
	Status Icons: 4	Range: 350 feet (site dependent)
	Feature Keys: 4	Max Units Per Site: 30 (12 in close proximity)
	Fixed Function Keys: 8	Battery Life: Up to 7 hours talk time
	Channels: 30	



The DSX Cordless Lite II Telephone (P/N 730087) is a 900 Mhz digital narrow band FM cordless telephone that provides mobility, flexibility and convenience for those who spend much of the workday away from their desk. Fully integrated with the DSX system, the DSX Cordless Lite II Telephone offers many standard features such as Call Forwarding, Call Coverage, Hotline, and Voice Mail. Complemented by 4 fully programmable function keys (with LEDs), the DSX Cordless Lite II Telephone achieves a whole new level of convenience and mobility. An easy-to-read 16-character by 2-line LCD display (with four status icons), volume controls, a rechargeable Nickel Metal Hydride Battery Pack, and a handy belt clip round out the elegant and affordable DSX Cordless Lite II Telephone.

The Cordless II Lite Telephone includes the following:

- Base Unit
- Base Unit AC Adaptor (P/N 630618)
- Base Wall Mount Bracket (P/N 730608)
- Base Line Cord
- Handset
- Handset Charger (P/N 730632)
- Handset Charger AC Adaptor (P/N 730619)
- Handset Charger Wall Mount Bracket (P/N 730633)
- Handset Battery (P/N 730631)
- Belt Clip (P/N 730634)

Corded Headsets for DSX Keysets and DTR/DTH SLTs

The following corded headsets are compatible with DSX keysets and the DTR/DTH single line telephones. Check with your supplier for their latest offerings.

NEC / Plantronics Headsets

NEC / Plantronics Amplified Headsets				
NEC P/N	Description	Style	Microphone Type	Plantronics Model Number
-	Polaris Starset	In-the-Ear	Voice Tube	P31
-			Noise Canceling	P31N
750631	Polaris Mirage	On-the-Ear	Voice Tube	P41
-			Noise Canceling	P41N
750632	Polaris Supra Monaural	Over-the-Head	Voice Tube	P51
750636			Noise Canceling	P51N
-	Polaris Supra Binaural	Over-the-Head	Voice Tube	P61
750633			Noise Canceling	P61N
750630	Polaris TriStar	In-the-Ear	Voice Tube	P81
-			Noise Canceling	P81N
750634	Polaris Encore Monaural	Over-the-Head	Voice Tube	P91
-			Noise Canceling	P91N
-	Polaris Encore Binaural	Over-the-Head	Voice Tube	P101
760635			Noise Canceling	P101N
-	DuoSet Convertible	Over-the-Head, On-the-Ear	Voice Tube	P141
-			Noise Canceling	P141N
-	DuoPro	On-the-Ear	Voice Tube	P151
-			Noise Canceling	P151N
-	DuoPro	Over-the-Head	Voice Tube	P161
-			Noise Canceling	P161N
-	DuoPro Convertible	Over-the-Head,	Voice Tube	P171
-	DuoPro Convertible	Over-the-Head,	Noise Canceling	P171N
-	DuoPro	Behind-the-Head	Voice Tube	P181
-	DuoPro	Behind-the-Head	Noise Canceling	P181N
750643	Polaris/SupraPlus Monaural	Over-the-Head	Voice Tube	P251
750644	Polaris/SupraPlus NC Monaural		Noise Canceling	P251N
-	Polaris/SupraPlus NC Binaural	Over-the-Head	Voice Tube	P261
750645	Polaris/SupraPlus NC Binaural		Noise Canceling	P261N
-	SupraPlus SL Monaural	Over-the-Head	Voice Tube	P351
-			Noise Canceling	P351N
-	SupraPlus SL Binaural	Over-the-Head	Voice Tube	P361
-			Noise Canceling	P361N

Headsets

NEC / Plantronics Non-Amplified Headsets ¹				
NEC P/N	Description	Style	Microphone Type	Plantronics Model Number
-	StarSet	In-the-Ear	Voice Tube	H31
			Noise Canceling	H31N
-	Mirage	On-the-Ear	Voice Tube	H41
			Noise Canceling	H41N
-	Supra Monaural	Over-the-Head	Voice Tube	H51
			Noise Canceling	H51N
-	Supra Binaural	Over-the-Head	Voice Tube	H61
			Noise Canceling	H61N
-	TriStar	In-the-Ear	Voice Tube	H81
			Noise Canceling	H81N
-	Encore Monaural	Over-the-Head	Voice Tube	H91
			Noise Canceling	H91N
-	Encore Binaural	Over-the-Head	Voice Tube	H101
			Noise Canceling	H101N
-	Freehand Monaural	In-the-Ear	Voice Tube	H131
			Noise Canceling	H131N
-	DuoSet Convertible	Over-the-Head, On-the-Ear	Voice Tube	H141
			Noise Canceling	H141N
-	DuoPro	On-the-Ear	Voice Tube	H151
			Noise Canceling	H151N
-	DuoPro	Over-the-Head	Voice Tube	H161
			Noise Canceling	H161N
-	DuoPro Convertible	Over-the-Head, On-the-Ear	Voice Tube	H171
			Noise Canceling	H171N
-	DuoPro	Behind-the-Head	Voice Tube	H181
			Noise Canceling	H181N
-	SupraPlus Monaural	Over-the-Head	Voice Tube	H251
			Noise Canceling	H251N
-	SupraPlus Binaural	Over-the-Head	Voice Tube	H261
			Noise Canceling	H261N
-	SupraPlus SL Monaural	Over-the-Head	Voice Tube	H351
			Noise Canceling	H351N
-	SuproPlus SL Binaural	Over-the-Head	Voice Tube	H361
			Noise Canceling	H361N

¹ Requires Vista M12 Amplifier and Handset/Headset Switch



GN Netcom Headsets

GN Netcom Non-Amplified Headsets ¹			
Model Number	Description	Microphone Type	Style
GN 2110 STD01	2100 Sound Tube Monaural	Sound-Tube	Over-the-Head
GN 2120 NCD01	2100 Flex Monaural	Noise-Canceling	Over-the-Head
GN 2115 STD01	2100 SoundTube Binaural	Sound-Tube	Over-the-Head
GN 2125 NCD01	2100 Flex Binaural	Noise-Canceling	Over-the-Head
GN 2117 STD01	2100 SoundTube Monaural	Sound-Tube	On-the-Ear
GN 2127 NCD01	2100 Flex Monaural	Noise-Canceling	On-the-Ear
GN 2110 ST	2100 SoundTube Monaural	Sound-Tube	Over-the-Head
GN 2120 NC	2100 Flex Monaural	Noise-Canceling	Over-the-Head
GN 2115 ST	2100 SoundTube Binaural	Sound-Tube	Over-the-Head
GN 2125 NC	2100 Flex Binaural	Noise-Canceling	Over-the-Head
GN 2127 ST	2100 SoundTube Monaural	Sound-Tube	On-the-Ear
GN 2127 NC	2100 Flex Monaural	Noise-Canceling	On-the-Ear
405-SF	Surefit Monaural	Voice-Tube	3-Way Convertible: Over-the-Head, Ear- hook, Earloops
405-FLEX-SF	Surefit Monaural	Noise-Canceling	
405-UNC-SF	Surefit Monaural	Noise-canceling	
ADP-I	ADDvantage Plus Monaural	Noise-Canceling	Over-the-Head
ADP-II	ADDvantage Plus Binaural	Noise-Canceling	Over-the-Head
GN 2200	2200 Omega Monaural	Noise-Canceling	Over-the-Head
GN 2225	2200 Omega Binaural	Noise-Canceling	Over-the-Head
OG-I	Orator-G Monaural	Noise-Canceling	Over-the-Head
OG-II	Orator-G Binaural	Noise-Canceling	Over-the-Head
Contour LX-G	Contour LX-G Monaural	Noise-Canceling	On-the-Ear
Stratus Ultra-G	Stratus Ultra-G Monaural	Noise-Canceling	On-the-Ear
805-Flex	805-Flex Binaural	Noise-Canceling	Under-the-Chin or Behind-the-Neck

¹ Requires GN8000 MPA Amplifier and Headset Switch.

Headsets

Headsets for DSX Cordless Lite II Telephone

At a Glance	P/N 750637 (M175)	P/N 750642 (MX150)
	 A black headband-style headset with a boom microphone and a flexible earpiece. The boom microphone is on the left side, and the earpiece is on the right. A coiled cable connects the headset to a telephone base.	 A black earloop-style headset with a boom microphone and a hook-style earpiece. The boom microphone is on the left side, and the earpiece is on the right. A coiled cable connects the headset to a telephone base.

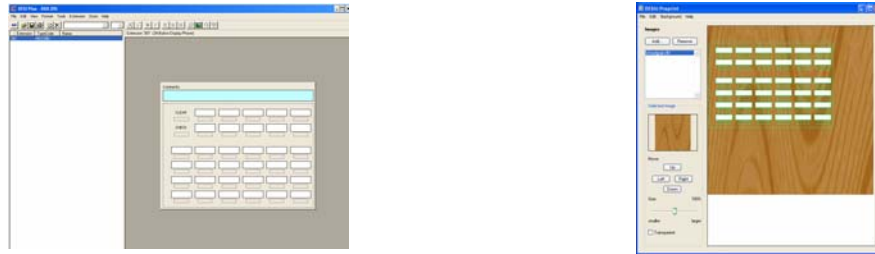
The following headsets are available for the DSX Cordless Lite II Telephone:

- M175 Headband Style (P/N 750637)
- MX150 Earloop Style (P/N 750642)

DESI Labeling Software

At a Glance

DESI Labeling Software



Components

DESI Labeling Software is a Windows-compatible application for printing customized key data on specially designed DESI telephone labels. Use DESI Labeling Software to create quick, professional custom labels that can be printed on virtually any office ink jet or laser printer. DESI Labeling Software features:

- Automatic extension numbering
- Label templates that can be saved for later use
- Copy and paste functions
- Perforated and die cut labels for a perfect fit
- Choice of fonts and font colors
- Space for incorporating company logo
- User-printable background graphics (using DESI Preprint)

DESI labeling software is provided on the DSX System Document CD included with each telephone system.

DESI Telephone Labels

At a Glance

Labels for DSX Telephones



Labels for NEC Single Line Telephones



The following DESI labels are available for DSX telephones.

- For standard “replacement” applications:
 - 22-Button Display Standard
 - 34-Button Display Standard
 - 34-Button Super Display Standard
 - 60-Button DSS Console Standard

The following DESI labels are available for the NEC analog single line telephones.

- For DTR-1-1
 - Black (P/N 780400)
 - Metallic green (P/N 780401)
 - Metallic silver (P/N 780402)
 - Lime green (P/N 780403)
 - Preprint (blank) (P/N 780459)

DESI Telephone Label System

- For DTR-1HM-1
 - Black (P/N 780404)
 - Metallic green (P/N 780405)
 - Metallic silver (P/N 780406)
 - Lime green (P/N 780407)
 - Preprint (blank) (P/N 780460)
- For DTH-1-1
 - Metallic silver (P/N 780450)

DSX-80 4-Slot KSU

At a Glance

P/N 1090002	
Slots: 4	Analog extensions (max.): 48
Ports: 80	Analog lines (max): 48
Digital extensions (max.): 32	Digital (T1) lines (max.): 64
<ul style="list-style-type: none"> • Capacities determined by System Load Factor. • Always install a 16ESIU Card in the first universal slot. 	



Components

The DSX-80 4-Slot KSU contains the CPU, 4 universal card slots and the system's power supply. It provides 80 ports. It is wall-mountable, has a flip off cover and removable side panel for easy access. The cabinet has a handy translucent panel in the cover that allows you to get essential system status and troubleshooting information at a glance, without removing the cover.

DSX-160 8-Slot KSU

At a Glance

P/N 1090003	
Slots: 8	Analog extensions (max.): 112
Ports: 160	Analog lines (max): 64
Digital extensions (max.): 96	Digital (T1) lines (max.): 64
<ul style="list-style-type: none"> • Capacities determined by System Load Factor. • Always install a 16ESIU Card in the first universal slot. • Install one power supply for every two 16ESIU Cards. 	



The DSX-160 8-Slot KSU contains the CPU slot, 8 universal card slots and up to 3 system power supplies (depending on Load Factor requirements). It provides 160 ports. Just like the DSX-80 4-Slot KSU, the DSX-160 is wall-mountable, has a flip off cover and removable side panel for easy access. The DSX-160 also has a translucent panel in the cover for getting essential system status and troubleshooting at a glance.

DSX-80/160 Power Supply

At a Glance

P/N 1091008	
DSX-80 Qty: 1	DSX-160 Qty: 3 (max.)
<ul style="list-style-type: none"> • Quantity required in DSX-160 determined by System Load Factor. • In DSX-160, Install one power supply for every two 16ESIU Cards. 	



The power supply provides the various DC voltages required to power the DSX-80/160 Cards. The DSX-80 4-Slot KSU requires a single power supply. The DSX-160 8-Slot KSU requires up to 3 power supplies, depending on system configuration.

DSX-80/160 CPU Card

At a Glance

P/N 1090010

Audio Inputs: 2

RS 232 connector: Yes (for SMDR)

Audio outputs: 1

Ethernet port: Yes

USB connector: Yes

CompactFlash interface: Yes



The CPU Card is the system's control center. It provides the system's Linux operating system, central processing, stored program, and memory for the customer's site-specific data. Every system requires a CPU Card. In addition, it also provides:

- CompactFlash card interface (for IntraMail, software loading, and database backup)
- Conference circuits, DTMF receivers and DTMF generators
- Real Time Clock
- NAND Flash for storing the system database
- Battery for short term (14 day) backup of the Real Time Clock and station parameters
- Two audio inputs for Background Music and Music on Hold (1/8" mono minijacks)
- One audio output for External Paging (1/8" mono minijack)
- Ethernet and USB ports for local and remote PC Programming
- RS-232 serial port for Station Message Detail Recording
- Built-in V.32BIS 14.4K BPS modem for remote maintenance

The CPU also has a reset switch that provides the following three functions:

1. System reset (when momentarily pressed).
2. System initialization (when held down as power is turned on).
3. Software update (when held down for six seconds while software update CompactFlash card is installed).

Tips to remember:

- When connecting to the CPU audio inputs or outputs, make sure the connected device is compatible with the CPU audio specifications. See *Specifications and Parts* (page 71) for more.

DSX-80/160 16 Port Digital Station (16ESIU) Card

At a Glance	P/N 1091004	
	Digital station ports: 16	Status LED: Yes
	Mode switch: Yes	Activity LED: Yes
	Max. installed in DSX-80: 2 (32 station ports)	Max. installed in DSX-160: 6 (96 station ports)



Each 16ESIU Card connects 16 digital extensions (i.e., DSX keysets). The 16ESIU has a Mode Switch (for taking the card out of service). It also has a status LED that indicates proper card operation — as well as a port activity LED that flashes faster as traffic on the card increases. You can install up to two 16ESIU Cards in a DSX-80. You can install up to six 16ESIU Cards in a DSX-160. See *System Configuration* (page 19) for more.

Tips to remember:

- In DSX-160, you must install a separate power supply for every two 16ESIU Cards installed.
- In both DSX-80 and DSX-160, you must install a 16ESIU Card in slot 1.
- You can install additional 16ESIU Cards in any slot.

DSX-80/160 16 Port Analog Station (16SLIU) Card with HV Message Waiting

At a Glance	P/N 1091007	
	Analog station ports: 16	Activity LED: Yes
	High Voltage Message Waiting: Yes	Mode switch: Yes
	Max. installed in DSX-80: 3 (48 station ports)	Status LED: Yes
	Max. installed in DSX-160: 5 (80 station ports)	



The 16SLIU Card connects 16 analog extensions which are typically used for single line telephones and fax machines. Just like the 16ESIU Card, the 16SLIU Card has a Mode Switch (for taking the card out of service), a status LED indicating proper card operation, and a port activity LED to indicate traffic on the card. See *System Configuration* (page 19) for more.

Tips to remember:

- The 16SLIU Card provides high voltage message waiting for single line sets with high voltage message waiting lamps.
- The 16SLIU Card also provides Caller ID to single line sets.
- You can install a 16SLIU Card in any slot except slot 1.

DSX-80/160 8 Port Analog Station (8SLIU) Card with HV Message Waiting

At a Glance	P/N 1091010	
	Analog station ports: 8	Activity LED: Yes
	High Voltage Message Waiting: Yes	Mode switch: Yes
	Max. installed in DSX-80: 3 (24 station ports)	Status LED: Yes
	Max. installed in DSX-160: 7 (56 station ports)	

The 8SLIU Card connects 8 analog extensions which are typically used for single line telephones and fax machines. The 8SLIU Card has a Mode Switch (for taking the card out of service), a status LED indicating proper card operation, and a port activity LED to indicate traffic on the card. See *System Configuration* (page 19) for more.

Tips to remember:

- The 8SLIU Card provides high voltage message waiting for single line sets with high voltage message waiting lamps.
- The 8SLIU Card also provides Caller ID to single line sets.
- You can install a 8SLIU Card in any slot except slot 1.

DSX-80/160 T1/E1/PRI Line Card

At a Glance	P/N 1091006	
	Line ports: 24	Activity LED: Yes
	Mode switch: Yes	Diagnostic LEDs: Yes
	Status LED: Yes	CSU required: Yes
	Max. installed in DSX-80: 3 (64 line ports in 3 T1/E1/PRI Cards, with 8 T1 circuits disabled in programming)	Max. installed in DSX-160: 3 (64 line ports in 3 T1/E1/PRI Cards, with 8 T1 circuits disabled in programming)



The T1/E1/PRI Line Card provides T1 advanced digital calling and gives the DSX-80/160 a maximum of 24 trunks in a single card slot. The available T1 line types include:

- Loop Start (DTMF and Dial Pulse)
- Ground Start (DTMF and Dial Pulse)
- Direct Inward Dialing (DID) Wink Start (DTMF and Dial Pulse)
- Direct Inward Dialing (DID) Immediate Start (DTMF and Dial Pulse)
- E&M Tie Line Wink Start (DTMF and Dial Pulse)
- E&M Tie Line Immediate Start (DTMF and Dial Pulse)

Tips to remember:

- Normally you connect the T1/E1/PRI Card to a separately-purchased Channel Service Unit (CSU). Use a standard straight-through CAT 5 cable to connect the T1/E1/PRI Card to the CSU. The CSU in turn connects to the telco smart jack.
- The T1/E1/PRI Card also provides 32E1 support. E1 is not used in North America.
- PRI is currently not available.
- You can install a T1/E1/PRI Card in any slot except slot 1.

DSX-80/160 16 Port CO Line (16COIU) Card with Caller ID

At a Glance	P/N 1091005	
	Line ports: 16	Status LED: Yes
	Mode switch: Yes	Activity LED: Yes
	Power Failure ports: 2	Caller ID: Built in
	Max. installed in DSX-80: 3 (48 lines in 3 16COIU Cards)	Max. installed in DSX-160: 4 (64 line ports in 4 16COIU Cards)



The 16COIU Card supports 16 analog loop start CO lines. The card has a Mode Switch (for taking the card out of service), a status LED indicating proper card operation, and a port activity LED that indicates traffic on the card. Each 16COIU Card also provides two power failure cut-through circuits. When commercial AC power fails, the Card automatically cuts through two line circuits to two power failure single line telephones. See *System Configuration* (page 19) for more.

Tips to remember:

- The 16COIU provides built-in Caller ID.
- You can install a 16COIU Card in any slot except for slot 1.

DSX-80/160 8 Port CO Line (8COIU) Card with Caller ID

At a Glance	P/N 1091009	
	Line ports: 8	Status LED: Yes
	Mode switch: Yes	Activity LED: Yes
	Power Failure ports: 2	Caller ID: Built in
	Max. installed in DSX-80: 3 (24 line ports in 3 8COIU Cards)	Max. installed in DSX-160: 7 (56 line ports in 7 8COIU Cards)

The 8COIU Card supports 8 analog loop start CO lines. The card has a Mode Switch (for taking the card out of service), a status LED indicating proper card operation, and a port activity LED that indicates traffic on the card. Each 8COIU Card also provides two power failure cut-through circuits. When commercial AC power fails, the card automatically cuts through two line circuits to two power failure single line telephones. See *System Configuration* (page 19) for more.

Tips to remember:

- The 8COIU provides built-in Caller ID.
- You can install a 8COIU Card in any slot except for slot 1.

DSX IntraMail 8 x 16

At a Glance	P/N 1091013	
	Ports: 8	Storage Hours: 16
	Routing Mailboxes: 16	Subscriber Mailboxes: 128
	Ring Group Mailboxes: 8	UCD Group Mailboxes: 8
	Total Mailboxes: 160	



DSX IntraMail 4 x 8

At a Glance	P/N 1091011	
	Ports: 4	Storage Hours: 8
	Routing Mailboxes: 16	Subscriber Mailboxes: 128
	Ring Group Mailboxes: 8	UCD Group Mailboxes: 8
	Total Mailboxes: 160	



IntraMail is a plug-in “in-skin” full-featured, DSP-based integrated Voice Mail with Automated Attendant for DSX. It is available in two models:

- P/N 1091013 with 8 Voice Mail ports, 16 hours of message storage, and up to 160 mailboxes.
- P/N 1091011 with 4 Voice Mail ports, 8 hours of message storage, and up to 160 mailboxes.

The IntraMail Automated Attendant answers incoming calls and routes them quickly and efficiently. Integrated Voice Mail features include Conversation Record, Answering Machine Emulation, and Caller ID with Return Call. Interactive Soft Keys guide the display telephone user through the extensive IntraMail feature set.

Tips to remember:

- After plugging in the IntraMail CompactFlash card, IntraMail automatically installs on power-up.

Miscellaneous Cards and Optional Equipment

DSX Analog Door Box

At a Glance	P/N 922450
	Requires 2PGDAD Module connected to DSX Digital Station (16ESIU) PCB. DSX-80/160: No built-in Door Box ports.



The Analog 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. To answer the chime, the called extension user just lifts the hand-set. This lets the extension user talk to the visitor at the Door Box. The Door Box is convenient to have at a delivery entrance, for example. It is not necessary to have company personnel monitor the delivery entrance; they just answer the Door Box chimes instead.

Tips to remember:

- The Analog Door Box is a weather-tight unit and can be mounted outside.
- The maximum number of DSX Analog Door Boxes you can install is determined by the number of 2PGDAD Modules, which in turn is limited only by the availability of 16ESIU station ports.

DSX 2PGDAD Module

At a Glance	P/N 0891027
	Provides connection and relays for two DSX Analog Door Boxes. Connects to port on DSX Digital Station (16ESIU) PCB.



The DSX 2PGDAD Module provides connection and relays for two DSX Analog Door Boxes. This module connects to an available port on a DSX Digital Station (16ESIU) PCB.

Tips to remember:

- The maximum number of DSX Analog Door Boxes you can install is determined by the number of 2PGDAD Modules, which in turn is limited only by the availability of 16ESIU station ports.

DSX-80/160 System Load Factor

The combination of lines and extensions you can connect to your DSX system may be limited by the System Load Factor. Use the *DSX-80/160 System Load Factor Worksheet* on the next page to verify your system's configuration. When entering data on the worksheet, for each installed card make entries for each *Load Type*. There are two *Load Types* to consider: 5 VDC and 40 VDC.

To check your system configuration:

1. Indicate the quantity for each card installed in the **Qty** column.
 - The number of keysets, single line sets, and DSS Consoles does not affect the load factor.
2. For each item and for each Load Type, multiply the **Qty** times the **Load** and enter the value in the **Total** column.
 - For example, two 16ESIU Cards have a load of 16 for 5 VDC and 40 for 40 VDC.
3. Add up the entries in each **Total** column and enter the values in **Item 1: Load Type Totals**.
4. Review **Item 2: Power Supply Capacity** and determine the capacity of the power supplies installed in your system.
5. Compare the capacities in **Item 2** to your entries in **Item 1**. **Item 1** must always be equal to or less than the entry in **Item 2**.

Important
Do not operate your system if the total for either Load Type exceeds the Power Supply Capacity of your installation.

System Configuration

DSX-80/160 System Load Factor Worksheet					
Description	Qty	Load Type			
		5 VDC		40 VDC	
		Load	Total	Load	Total
CPU Card	1	12	12	0	0
16ESIU Card		8		20	
8SLIU Card		5		8	
16SLIU Card		10		16	
8COIU Card		3		0	
16COIU Card		6		0	
T1/E1/PRI Card		8		0	
Item 1: Load Type Totals (Cannot exceed Item 2: Power Supply Capacity.)					
Item 2: Power Supply Capacity					
If you have <u>one</u> power supply installed, the capacity is: 5 VDC = 40 40 VDC = 48					
If you have <u>two</u> power supplies installed, the capacity is: 5 VDC = 80 40 VDC = 80					
If you have <u>three</u> power supplies installed, the capacity is: 5 VDC = 120 40 VDC = 120					
Notes:					
<ul style="list-style-type: none"> • DSX-80 can only have 1 power supply. • DSX-160 can have up to 3 power supplies. You <i>cannot</i> have more than two 16ESIU Cards per power supply, regardless of System Load Factor calculations. • Exceeding the allowed Load Type Total (Item 1) will cause the system's power supplies to automatically shut down and/or cause erratic system operation. • The total of all station, line, DSS Console, and voice mail ports cannot exceed 160. 					

System Preparation

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 *Components* (page 1). Contact your Sales Representative if you have additional questions.

Have the appropriate tools for the job on hand, including: a test set, a punch down tool and a digital voltmeter.

Before Installing

Make sure you have a building plan showing the location of the common equipment, extensions, the telco demarcation and earth ground. In addition, the installation site must meet the requirements outlined in the Standard Practices Manual.

Site Requirements

The common equipment is contained in the wall-mounted Main Equipment Cabinet. Choose a central location for the cabinet that allows enough space for the equipment — and provides enough room for you to comfortably work. *Figure 1: Installation Layout, DSX-80* (page 22) and *Figure 2: Installation Layout, DSX-160* (page 23) show you *about* how much space your system requires.

Installing the Main Equipment Cabinet

Planning the Installation

Before installing the common equipment, you should mount a Main Distribution Frame (MDF) plywood backboard in a centrally located spot. A 1/2 sheet of plywood (4' x 4') should be adequate for a DSX-80 4-Slot KSU. A full sheet of plywood (8' x 4') should be adequate for a DSX160 cabinet. Be sure to mount the backboard using suitable fasteners, taking care to adhere to standard installation practices and local codes. See *Figure 1: Installation Layout, DSX-80* below and *Figure 2: Installation Layout, DSX-160* (page 23) for more.

The Main Equipment Cabinet requires a three-prong, dedicated 110 VAC 60 Hz circuit (NEMA 5-15 receptacle). The AC receptacle must be within 7 feet of the cabinet's lower left corner.

Normally, you install the extension and line blocks to the right of the cabinet. Telco should also install the RJ21X to the right of the cabinet

Important
Local codes may prohibit you from installing extensions, trunks and optional equipment in the same blocks.

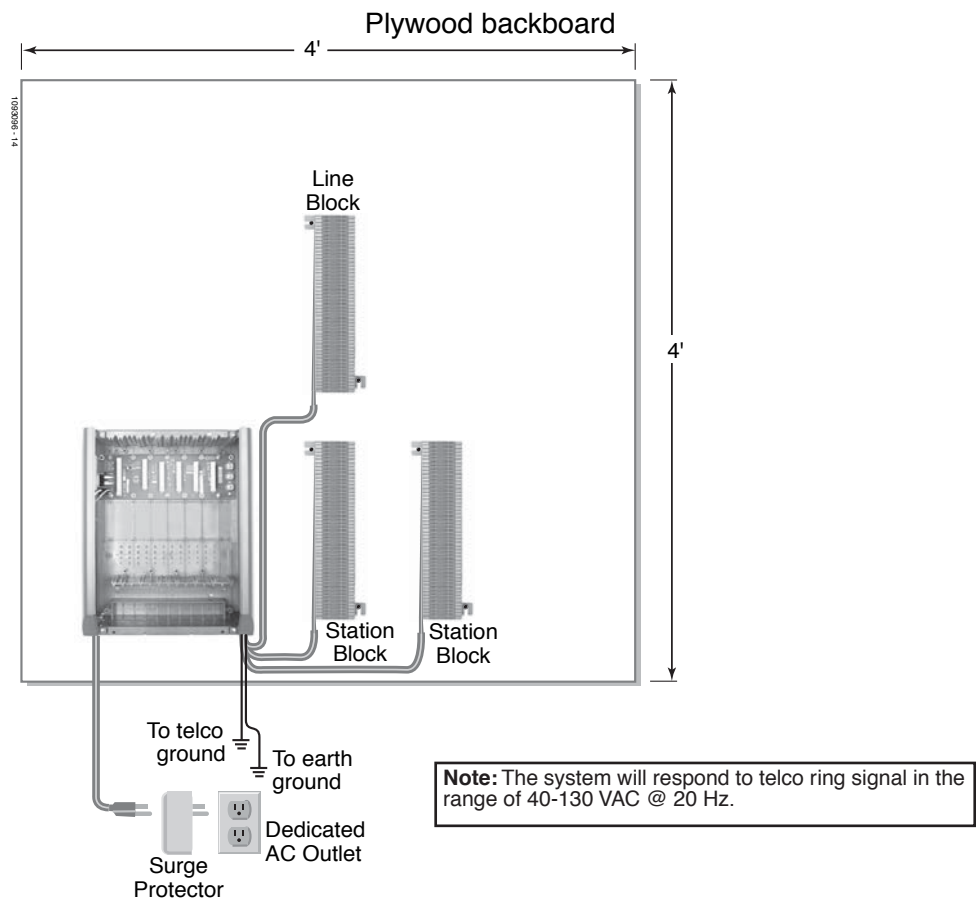


Figure 1: Installation Layout, DSX-80

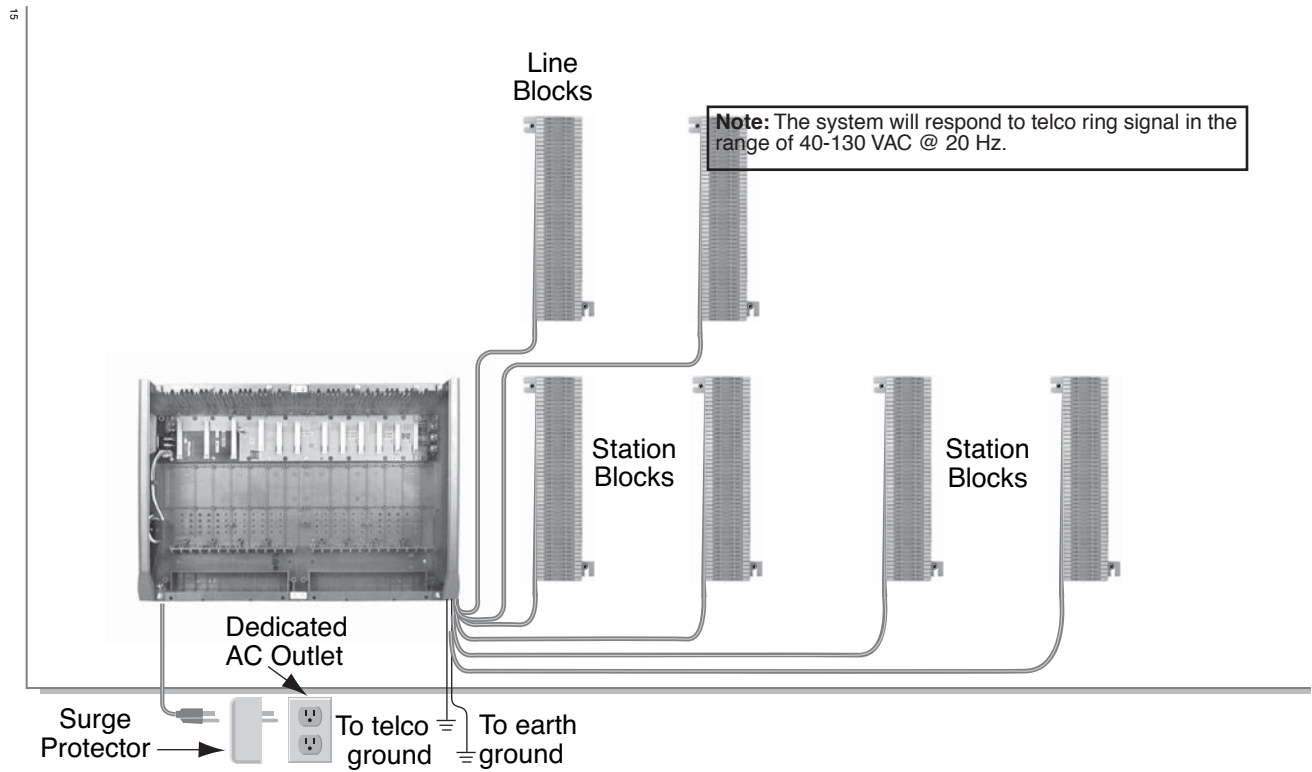


Figure 2: Installation Layout, DSX-160

Removing the Cover

Before wall-mounting, remove the cover on the Main Equipment Cabinet.

To remove the cover:

1. Unscrew the two captive screws on the front of the cabinet cover.
2. Lift up slightly on the front of the cover — then gently slide the cover back to remove it.

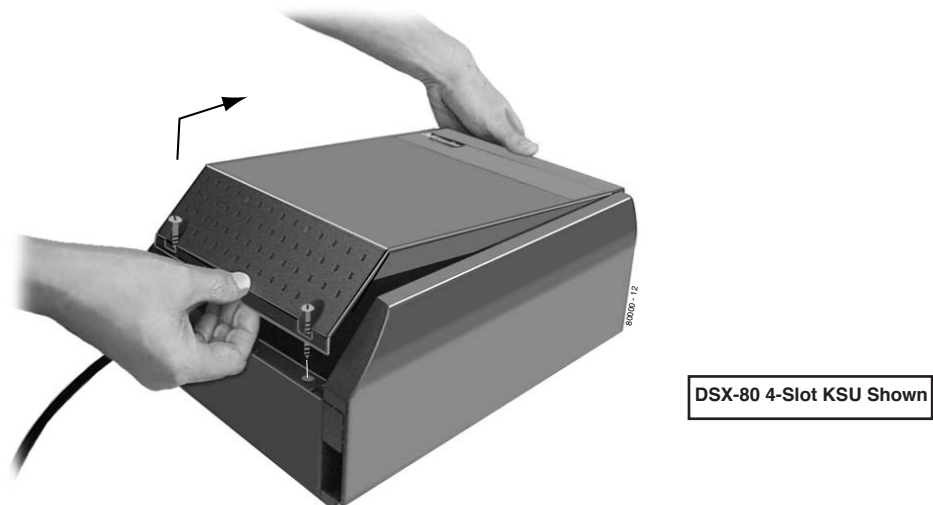


Figure 3: Removing the Cover

Installing the Main Equipment Cabinet

Unpacking the Wall Mount Bracket

The wall mount bracket and screws are taped to the packing material in the Main Equipment Cabinet box. Unpack the wall mount bracket and mounting screws.

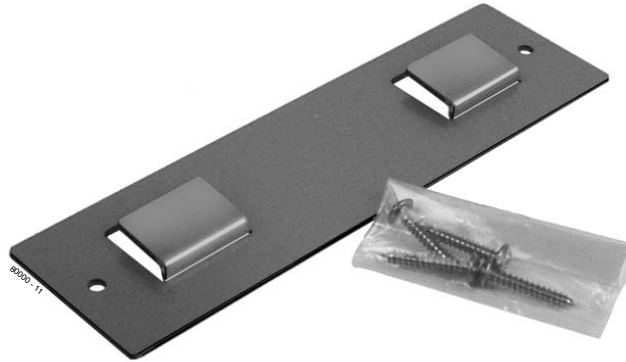


Figure 4: Wall Mount Bracket

Mounting the Wall Mount Bracket

Mount the wall mount bracket on the MDF in a convenient location, about 12" higher than where you want the bottom of the cabinet to line up.

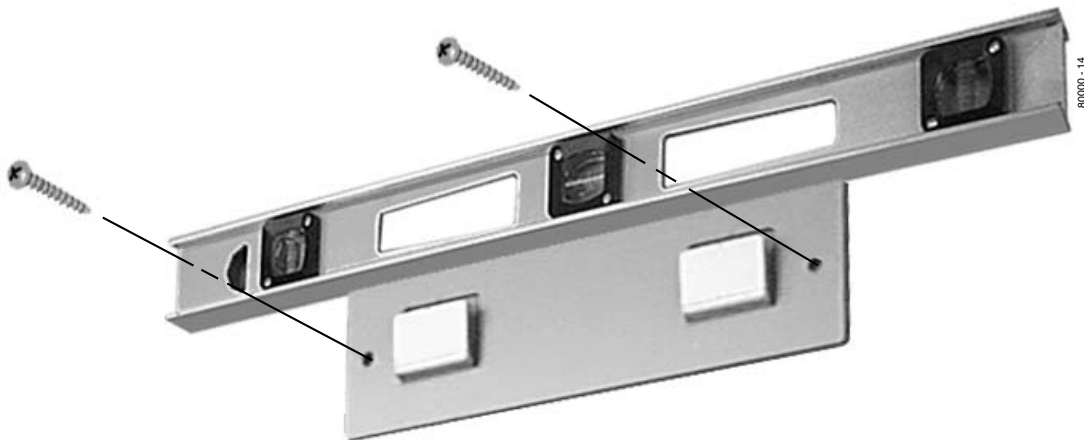


Figure 5: Mounting the Wall Mount Bracket

Hanging the Cabinet

To hang the cabinet:

1. Hang the Main Equipment Cabinet on the wall mount hanger(s) as shown:
 - See *Figure 6: Hanging the DSX-80 4-Slot KSU* below when hanging a DSX-80 4-Slot KSU.
 - See *Figure 7: Hanging the DSX-160 8-Slot KSU* below when hanging an DSX-160 slot cabinet.
2. Using the remaining screws packed with the hanger, secure the cabinet to the plywood backboard.

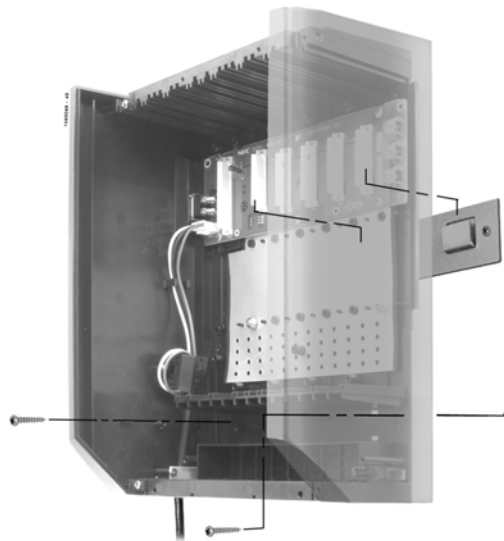


Figure 6: Hanging the DSX-80 4-Slot KSU

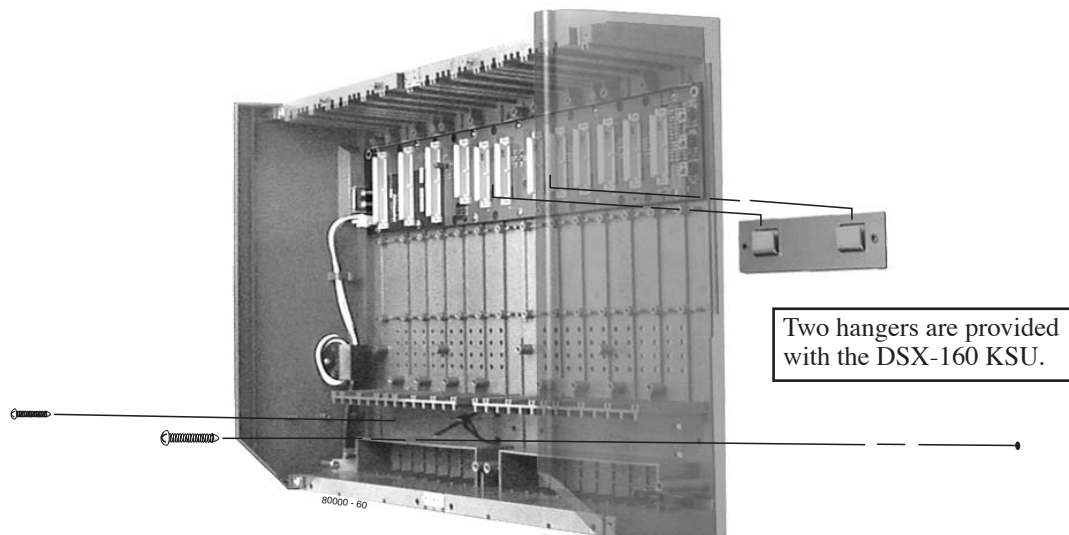


Figure 7: Hanging the DSX-160 8-Slot KSU

Grounding the Cabinet

Removing the Right Side Panel

Remove the cabinet right side panel to gain easy access to the ground lugs and system cabling. The cabinet has two ground connections: ETH (Earth Ground) and PBXG (PBX Ground).

To remove the right side panel:

1. Remove the two screws that secure the right side panel to the cabinet.
2. Carefully slide the right side panel down until it swings clear of the cabinet.

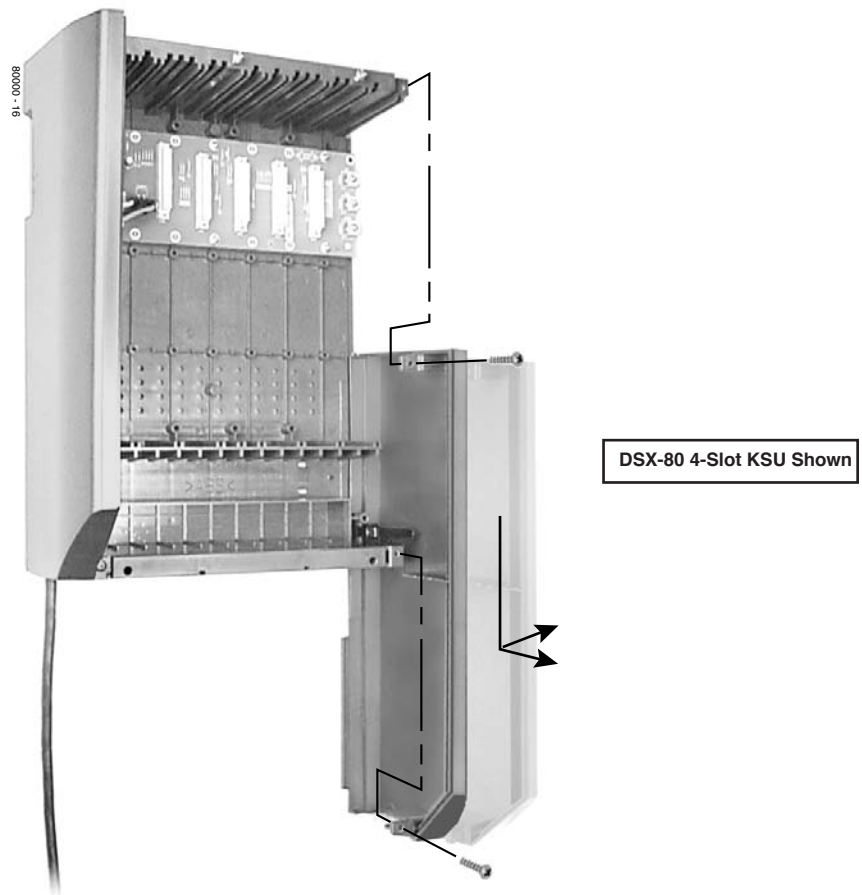


Figure 8: Removing the Right Side Panel

Attaching the Ground Wire

Important
You must connect your system to a known earth ground.

There are three ground terminations on the KSU: *signal*, *earth*, and *PBX*. You *must* connect all three terminations to a known good earth ground using 12 AWG stranded copper wire.

To attach the ground wires:

1. Remove the lugs on the *earth* and *PBX* ground terminations.
2. Crimp ring terminals as required onto two 12 AWG stranded copper ground wires.
3. Install the ring terminals onto the *earth* and *PBX* ground terminations and firmly tighten.
4. Connect the other end of the ground wires to a known good earth ground.

Important
Do not plug in the power cord or reinstall the right side panel until all card installation and cabling are complete.

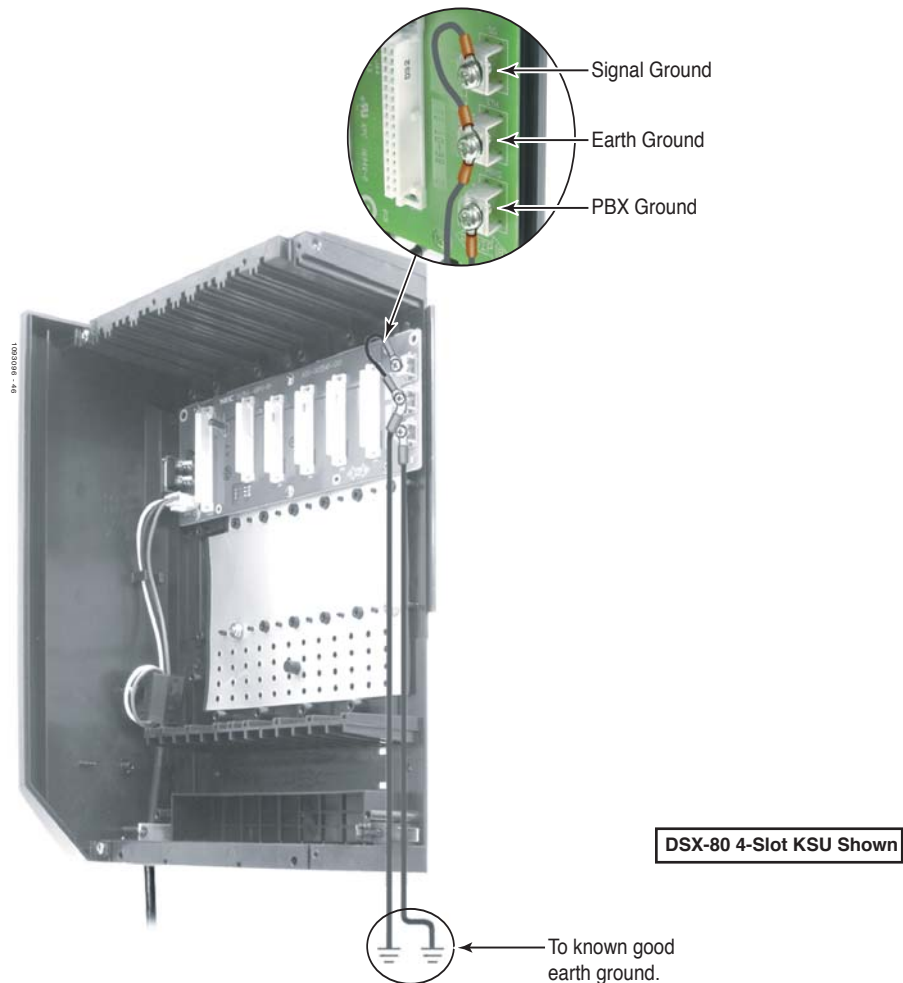


Figure 9: Attaching the Ground Wires

Grounding the Cabinet

Installing the RFI Suppressor Assembly

You must install an RFI Suppressor Assembly for the CPU audio and ethernet cables. The suppressor *must* be mounted inside the cabinet and as close the CPU Card as possible.



Figure 10: Installing the RFI Suppressor Assembly

Power Supply Installation

The power supply provides the DC power sources required to operate the system.

To install a power supply:

1. Slide the power supply into the CN101 slot.
2. Using a long-shaft phillips head screwdriver, *tighten the two screws that secure the power supply.*

A DSX-160 may require up to 3 power supplies (depending on system configuration), using slots CN101, CN102 and CN103. Refer to *System Preparation* (page 21) for more.

When installing multiple power supplies in DSX-160:

1. Install the first supply in slot *CN101*.
2. Install the second supply in slot *CN103*.
3. Install the third supply in slot *CN102*.

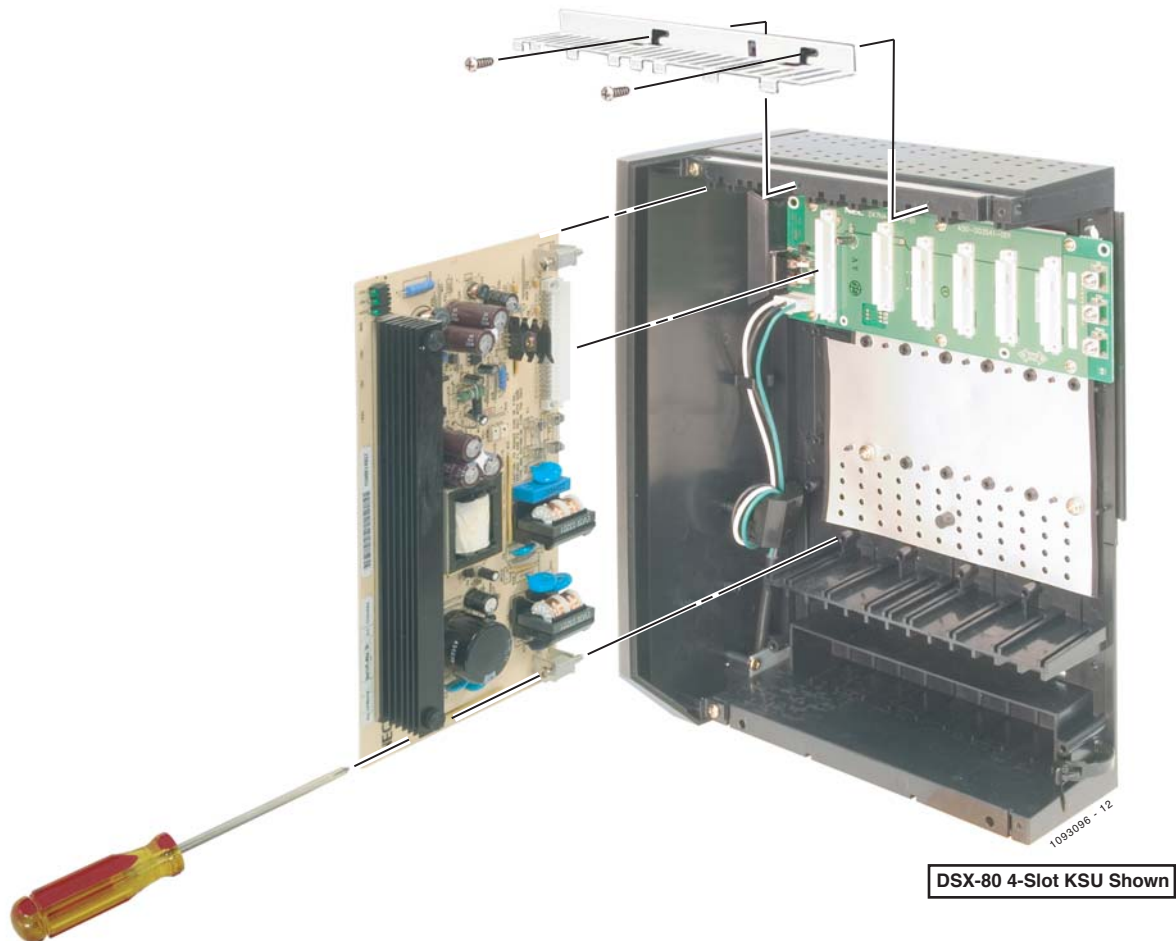


Figure 11: Installing the Power Supply

Important
In case of fire, disconnect the power cord from the AC outlet.

Installing Cards

On-Premises Extensions

Important

Install station equipment connected to ESIU and SLIU Cards as on-premises extensions only.

Hot Insertion of Cards

Caution

- *Do not* plug in the CPU Card hot (i.e., with the system power applied).
- You can plug in SLIU and COIU Cards hot as required.
- You can plug in ESIU Cards hot provided you first disconnect the station cabling from the card.

Installing the CPU

The CPU Card installs in the CN0 slot in the Main Equipment Cabinet.

To install the CPU Card:

1. Insert the battery (Sony CR2032 or NEC P/N EX0254-0040) into the battery clips.
2. Plug the CPU into slot **CN0**.
 - Refer to *Installing Optional Equipment* (page 57) when connecting the audio inputs and outputs to the CPU Card.

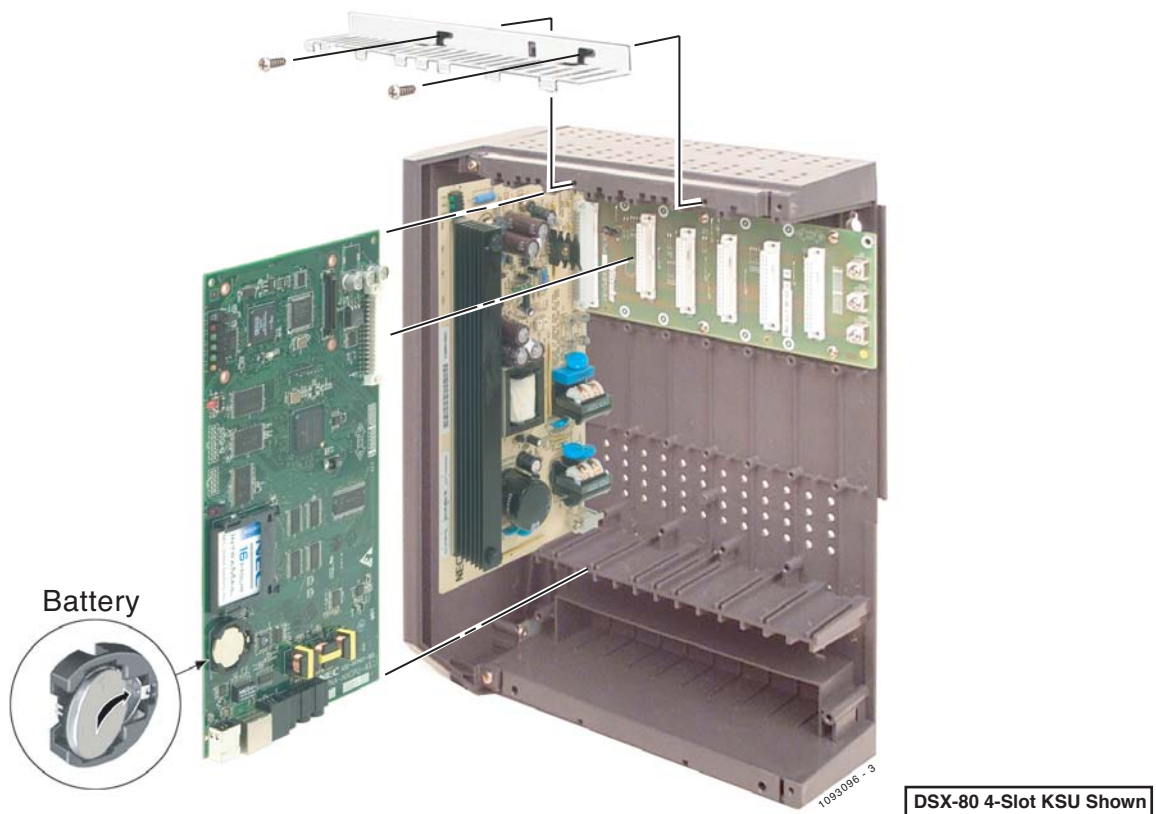


Figure 12: Installing the CPU

Installing the 16ESIU Digital Station Cards

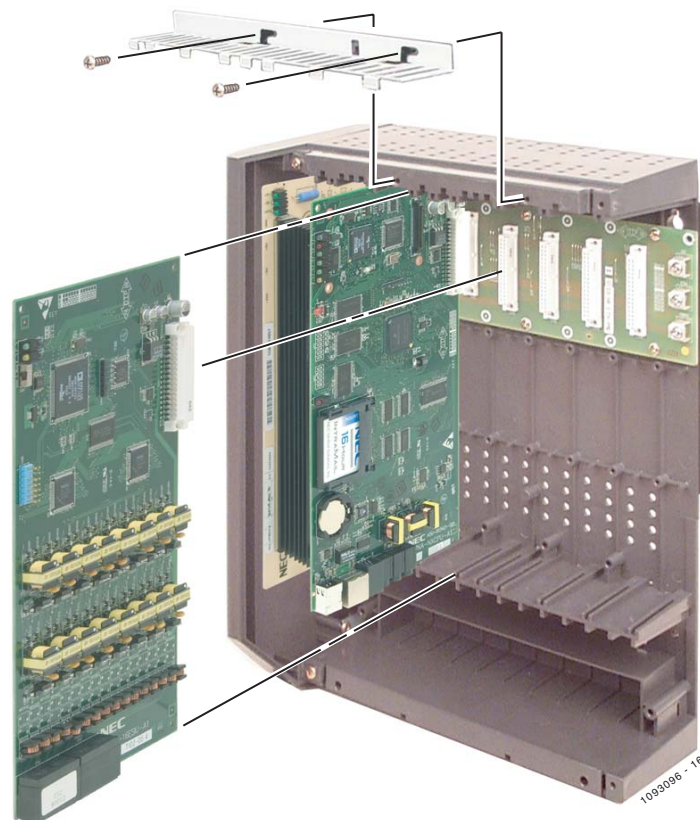
The 16ESIU provides the connection for 16 digital telephones. It also provides connection for DSS Consoles (four max per system).

To install 16ESIU Cards:

1. Plug the 16ESIU Card for extensions 300-315 into slot **CN1**.
2. Plug in additional ESIU Cards as required. See *System Preparation* (page 21) for more.
3. Set the mode switch on each installed 16ESIU Card to **RUN**.

Important

- In DSX-80, you cannot install more than two 16ESIU Cards.
- In DSX-160, you cannot install more than two 16ESIU Cards per power supply.



DSX-80 4-Slot KSU Shown

Figure 13: Installing the 16ESIU Digital Station Card

Installing Cards

Connecting 16ESIU Cards

The 16ESIU Card, just like the COI and SLI Cards, uses 8-pin mod jacks to connect extensions. Using the Installation Cable (P/N 808920) makes it easy to connect the cards to standard 66M1-50 connecting blocks. These cables have six 8-pin modular jacks on one end and are unterminated on the other. Each jack connects four extensions. At minimum, the installation site needs:

- ▶ One 66M1-50 block and Installation Cable (P/N 808920) for extensions and optional equipment.
- ▶ One 66M1-50 block and Installation Cable (P/N 808920) for analog lines.
- ▶ Depending on your card configuration and local codes, you may need an additional 66M1-50 block and Installation Cable (P/N 808920) for optional equipment.

To punch down the cables:

1. For each 66M1-50 block, punch down the Installation Cable in standard color-code order.

PCB Location

4 Slot Cabinet shown

16ESIU PCB

To make your own cables, see *Making Your Own Cables* (page 39).

DSX-80 4-Slot KSU Shown

RJ61X Plug

Extensions 300-323 Shown

RJ61X	25-PAIR CABLE				RJ61X
	BLOCK TERM	COLOR CODE	FUNCTION		
1	1	WHT-BLU	300 T	5	
	2	BLU-WHT	300 R	4	
	3	WHT-ORN	301 T	3	
	4	ORN-WHT	301 R	6	
	5	WHT-GRN	302 T	2	
	6	GRN-WHT	302 R	7	
	7	WHT-BRN	303 T	1	
	8	BRN-WHT	303 R	8	
2	9	WHT-SLT	304 T	5	
	10	SLT-WHT	304 R	4	
	11	RED-BLU	305 T	3	
	12	BLU-RED	305 R	6	
	13	RED-ORN	306 T	2	
	14	ORN-RED	306 R	7	
	15	RED-GRN	307 T	1	
	16	GRN-RED	307 R	8	
3	17	RED-BRN	308 T	5	
	18	BRN-RED	308 R	4	
	19	RED-SLT	309 T	3	
	20	SLT-RED	309 R	6	
	21	BLK-BLU	310 T	2	
	22	BLU-BLK	310 R	7	
	23	BLK-ORN	311 T	1	
	24	ORN-BLK	311 R	8	
4	25	BLK-GRN	312 T	5	
	26	GRN-BLK	312 R	4	
	27	BLK-BRN	313 T	3	
	28	BRN-BLK	313 R	6	
	29	BLK-SLT	314 T	2	
	30	SLT-BLK	314 R	7	
	31	YEL-BLU	315 T	1	
	32	BLU-YEL	315 R	8	
5	33	YEL-ORN	316 T	5	
	34	ORN-YEL	316 R	4	
	35	YEL-GRN	317 T	3	
	36	GRN-YEL	317 R	6	
	37	YEL-BRN	318 T	2	
	38	BRN-YEL	318 R	7	
	39	YEL-SLT	319 T	1	
	40	SLT-YEL	319 R	8	
6	41	VIO-BLU	320 T	5	
	42	BLU-VIO	320 R	4	
	43	VIO-ORN	321 T	3	
	44	ORN-VIO	321 R	6	
	45	VIO-GRN	322 T	2	
	46	GRN-VIO	322 R	7	
	47	VIO-BRN	323 T	1	
	48	BRN-VIO	323 R	8	
49	VIO-SLT	NC			
50	SLT-VIO	NC			

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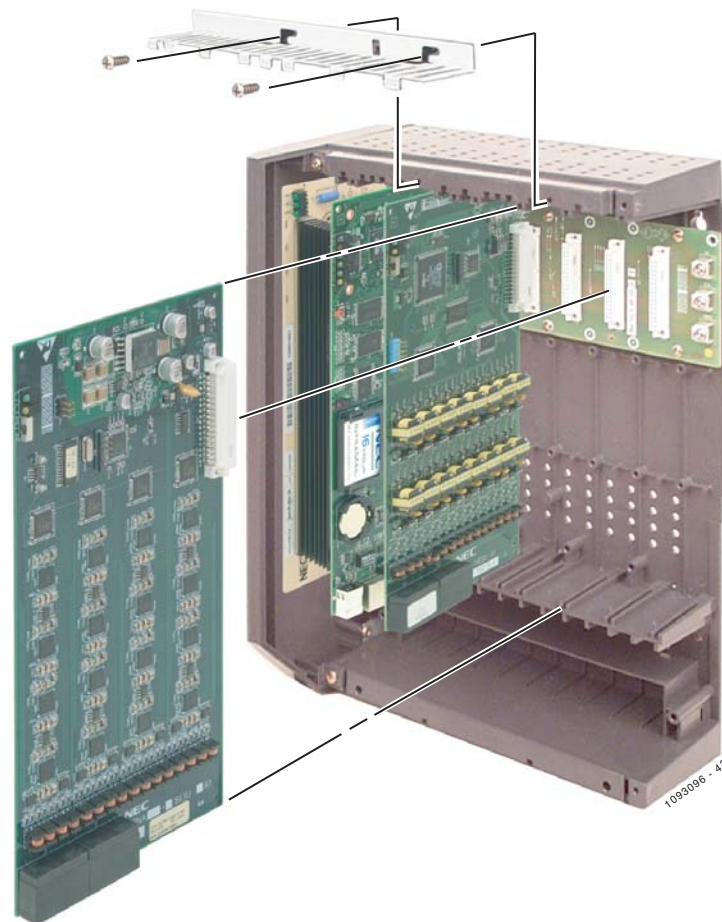
Figure 14: Connecting 16ESIU Digital Station Cards

Installing 16SLIU and 8SLIU Analog Station Cards

The 16SLIU connects 16 analog telephones. The 8SLIU connects for 8 analog telephones.

To install a SLIU Card:

1. Turn to *System Preparation* (page 21) to be sure you haven't exceeded the allowable system load factor.
2. Plug a SLIU Card into any available slot from **CN2-CN8**.
 - You should reserve **CN1** for a 16ESIU Card.
3. Set the mode switch on each installed SLIU Card to **RUN**



DSX-80 4-Slot KSU Shown

Figure 15: Installing a 16SLIU or 8SLIU Analog Station Card

Installing Cards

Connecting 16SLIU and 8SLIU Cards

The SLIU Card, just like the COI and 16ESIU Cards, uses 8-pin mod jacks to connect extensions. Using the Installation Cable (P/N 808920) makes it easy to connect the cards to standard 66M1-50 connecting blocks. These cables have six 8-pin modular jacks on one end and are unterminated on the other. Each jack connects four extensions. At minimum, the installation site needs:

- One 66M1-50 block and Installation Cable (P/N 808920) for extensions and optional equipment.
- One 66M1-50 block and Installation Cable (P/N 808920) for analog lines.
- Depending on your card configuration and local codes, you may need an additional 66M1-50 block and Installation Cable (P/N 808920) for optional equipment.

To punch down the cables:

For each 66M1-50 block, punch down the Installation Cable in standard color-code order.

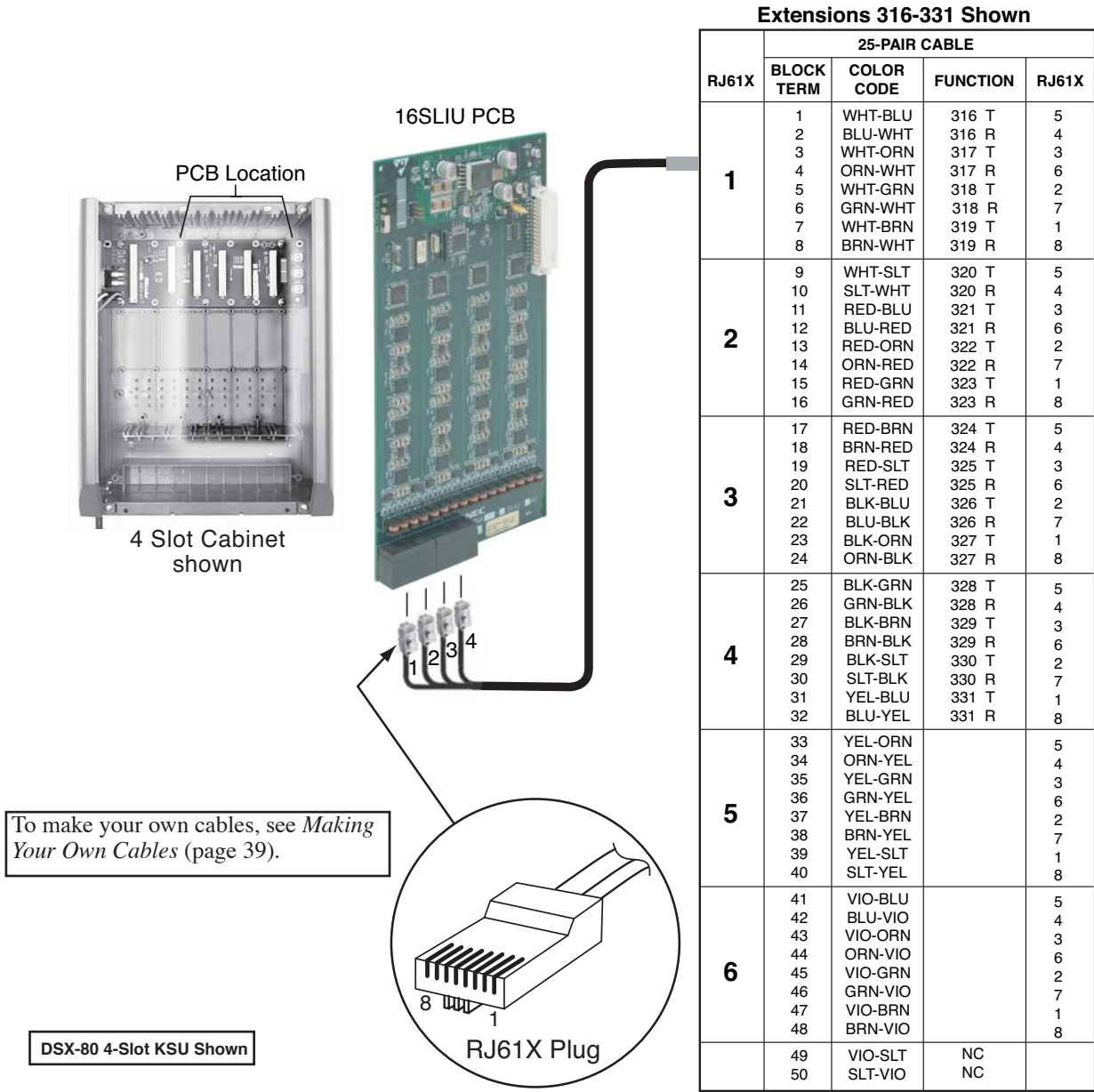


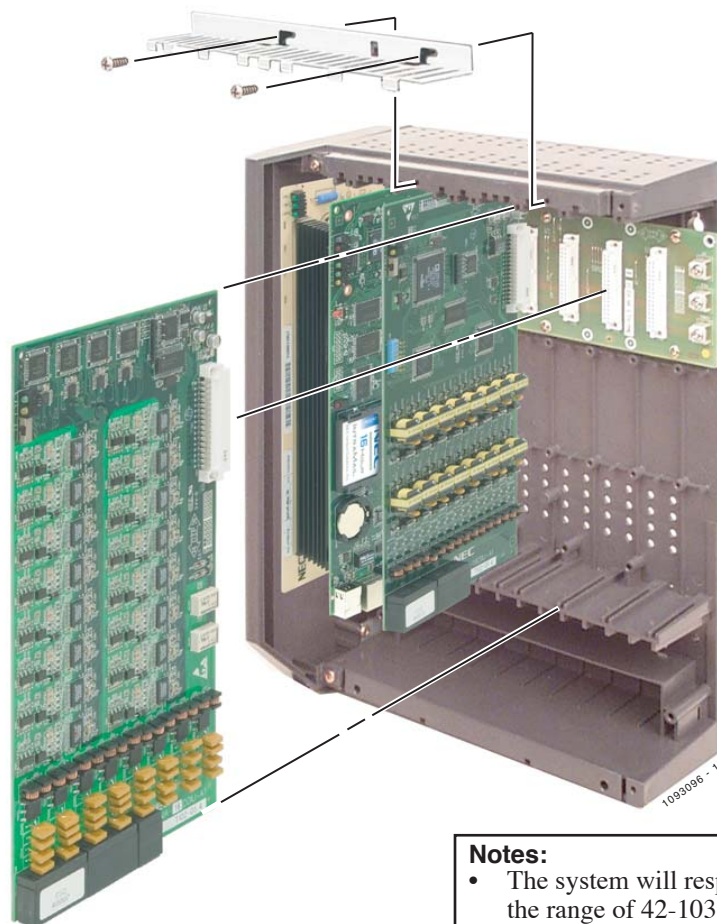
Figure 16: Connecting 16SLIU and 8SLIU Cards

Installing 16COIU and 8COIU Analog Line Cards

The 16COIU connects 16 analog loop start lines. The 8SCOIU connects 8 analog loop start lines.

To install a COIU Card:

1. Turn to *System Preparation* (page 21) to be sure you haven't exceeded the allowable system load factor.
2. Plug a COIU Card into any available slot from **CN2-CN8**.
 - You should reserve **CN1** for a 16ESIU Card.
3. Set the mode switch on each installed COIU Card to **Run**.



Notes:

- The system will respond to telco ring signal in the range of 42-103 VAC @ 20 Hz.
- Telco battery must be 44-56 VDC.

DSX-80 4-Slot KSU Shown

Figure 17: Installing a 16COIU or 8COIU Analog Line Card

Installing Cards

Connecting 16COIU and 8COIU Cards

The COIU Card, just like the SLI and 16ESIU Cards, uses 8-pin mod jacks to connect extensions. Using the Installation Cable (P/N 808920) makes it easy to connect the cards to standard 66M1-50 connecting blocks. These cables have six 8-pin modular jacks on one end and are unterminated on the other. Each jack connects four lines. At minimum, the installation site needs:

- One 66M1-50 block and Installation Cable (P/N 808920) for extensions and optional equipment.
- One 66M1-50 block and Installation Cable (P/N 808920) for analog lines.
- Depending on your card configuration and local codes, you may need an additional 66M1-50 block and Installation Cable (P/N 808920) for optional equipment.

To punch down the cables:

For each 66M1-50 block, punch down the Installation Cable in standard color-code order.

PCB Location

4 Slot Cabinet shown

16COIU PCB

25-PAIR CABLE

RJ61X	25-PAIR CABLE			RJ61X
	BLOCK TERM	COLOR CODE	FUNCTION	
1	1	WHT-BLU	1 T	5
	2	BLU-WHT	1 R	4
	3	WHT-ORN	2 T	3
	4	ORN-WHT	2 R	6
	5	WHT-GRN	3 T	2
	6	GRN-WHT	3 R	7
	7	WHT-BRN	4 T	1
	8	BRN-WHT	4 R	8
2	9	WHT-SLT	5 T	5
	10	SLT-WHT	5 R	4
	11	RED-BLU	6 T	3
	12	BLU-RED	6 R	6
	13	RED-ORN	7 T	2
	14	ORN-RED	7 R	7
	15	RED-GRN	8 T	1
	16	GRN-RED	8 R	8
3	17	RED-BRN	9 T	5
	18	BRN-RED	9 R	4
	19	RED-SLT	10 T	3
	20	SLT-RED	10 R	6
	21	BLK-BLU	11 T	2
	22	BLU-BLK	11 R	7
	23	BLK-ORN	12 T	1
	24	ORN-BLK	12 R	8
4	25	BLK-GRN	13 T	5
	26	GRN-BLK	13 R	4
	27	BLK-BRN	14 T	3
	28	BRN-BLK	14 R	6
	29	BLK-SLT	15 T	2
	30	SLT-BLK	15 R	7
	31	YEL-BLU	16 T	1
	32	BLU-YEL	16 R	8
NC	33	YEL-ORN		5
	34	ORN-YEL		4
	35	YEL-GRN		3
	36	GRN-YEL		6
	37	YEL-BRN		2
	38	BRN-YEL		7
	39	YEL-SLT		1
	40	SLT-YEL		8
	41	VIO-BLU		5
	42	BLU-VIO		4
	43	VIO-ORN		3
	44	ORN-VIO		6
	45	VIO-GRN		2
	46	GRN-VIO		7
	47	VIO-BRN		1
	48	BRN-VIO		8
	49	VIO-SLT		
	50	SLT-VIO		

DSX-80 4-Slot KSU Shown

RJ61X Plug

To make your own cables, see *Making Your Own Cables* (page 39).

Figure 18: Connecting 16COIU and 8COIU Cards

Installing T1/E1/PRI Cards

Normally you connect the T1/E1/PRI Card to a separately-purchased Channel Service Unit (CSU). Use a standard straight-through CAT 5 cable to connect the T1/E1/PRI Card to the CSU. The CSU in turn connects to the telco smart jack.

- The T1/E1/PRI Card also provides 32E1 support. E1 is not used in North America.
- You can install a T1/E1/PRI Card in any slot except slot 1.
- A commercially available T1 Tester is recommended.

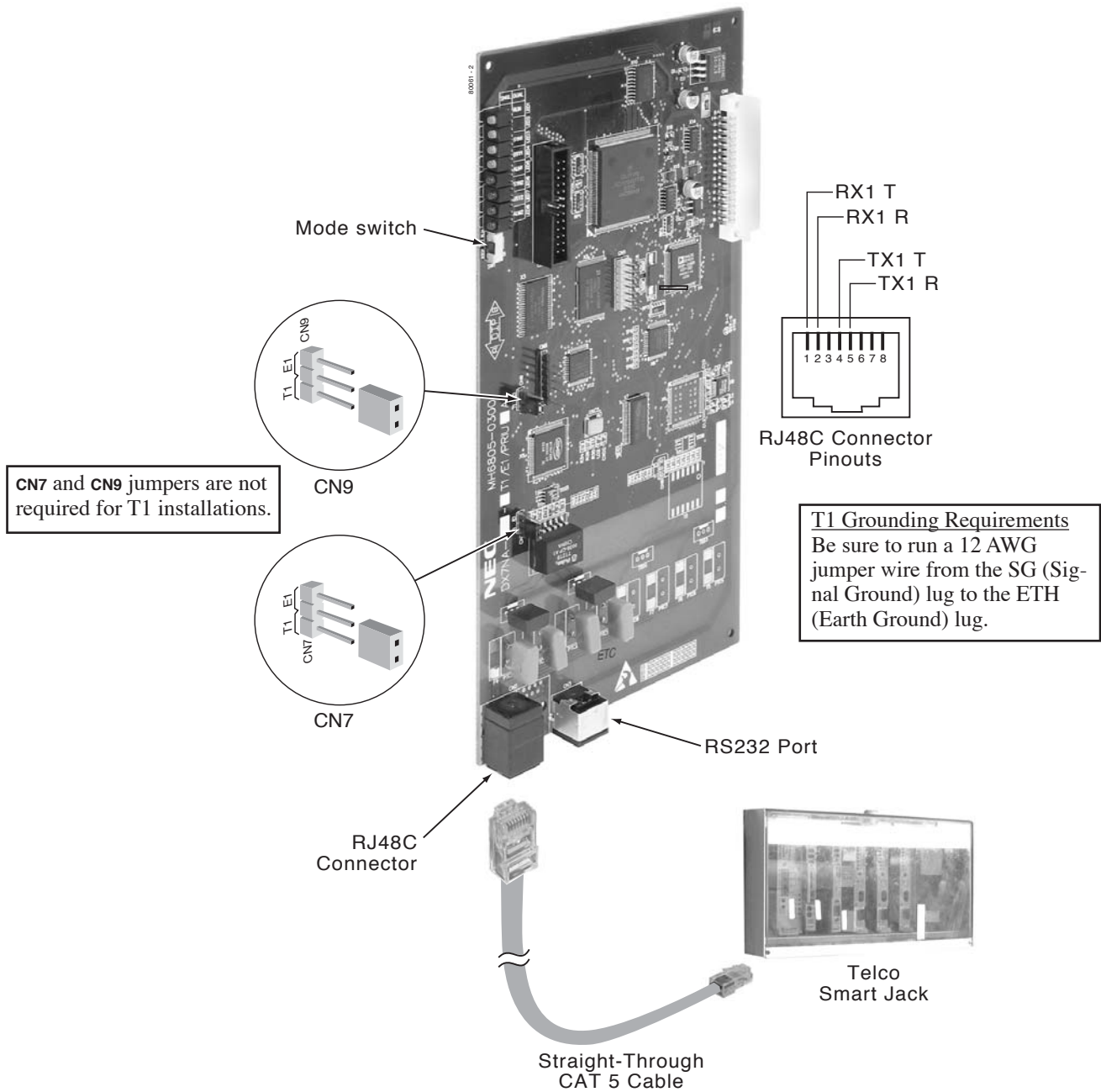


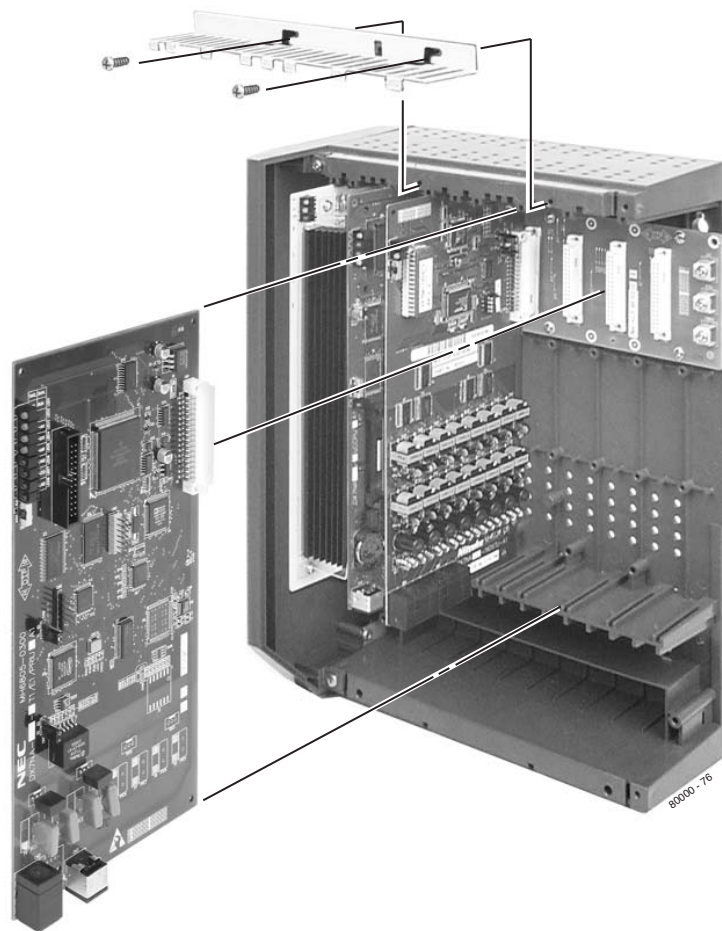
Figure 19: Setting Up the T1/E1/PRI Card

Installing Cards

Connecting the T1/E1/PRI Card

To install the T1/E1/PRI Card:

1. Turn to *System Preparation* (page 21) to be sure you haven't exceeded the allowable system load factor.
2. Set jumpers **CN7** and **CN9** to the **T1** position.
 - CN7 and CN9 are not required for T1 installations. You can optionally leave them off.
3. Plug in T1/E1/PRI Trunk Cards as required.
4. Set the mode switch on each T1/E1/PRI Card to **RUN**.
5. Using a standard straight-through CAT 5 cable, connect the T1/E1/PRI Card RJ48C connector to your CSU.



DSX-80 4-Slot KSU Shown

Figure 20: Connecting the T1/E1/PRI Card

Securing the Cables

After you have punched down your cables, route them through the side of the cabinet and secure them with the strain relief.

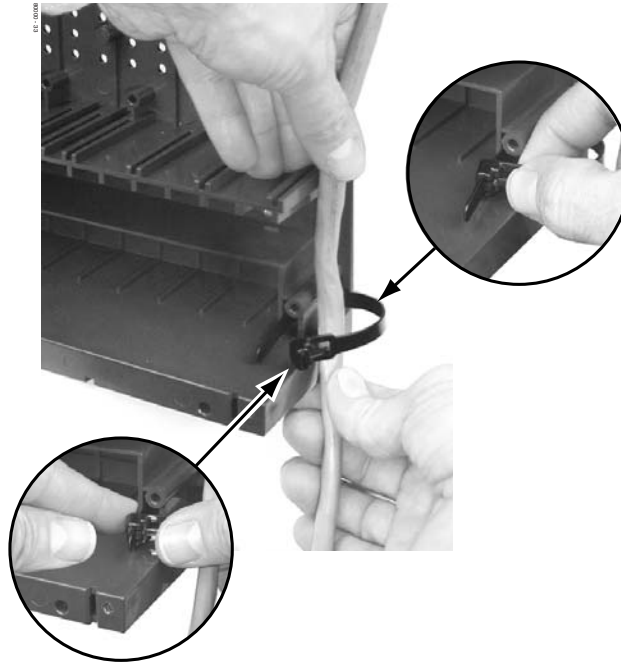


Figure 21: Securing the Cables

Making Your Own Cables

Making Your Own Installation Cables

The following products should help if you make your own cables. *The connector is generally referred to as a RJ45 connector wired in an RJ61X configuration.* Check with your local supplier for other comparable products.

- *Suttle SE-266-8K* 8 Position Modular Plug (requires an SE-166 or SE-166-6 modular crimping tool).
- *Hubbell BRFT4P* Snap-On 8 Position Modular Plug (does not require a special crimping tool).

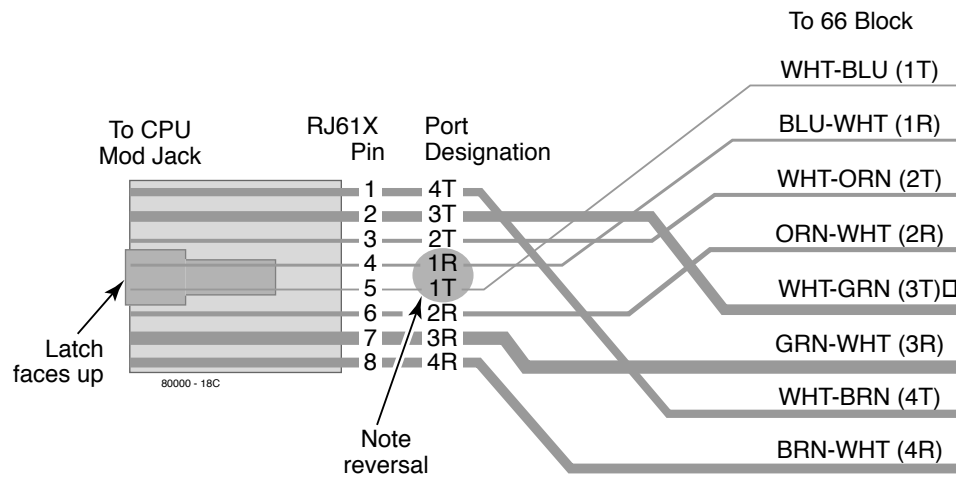
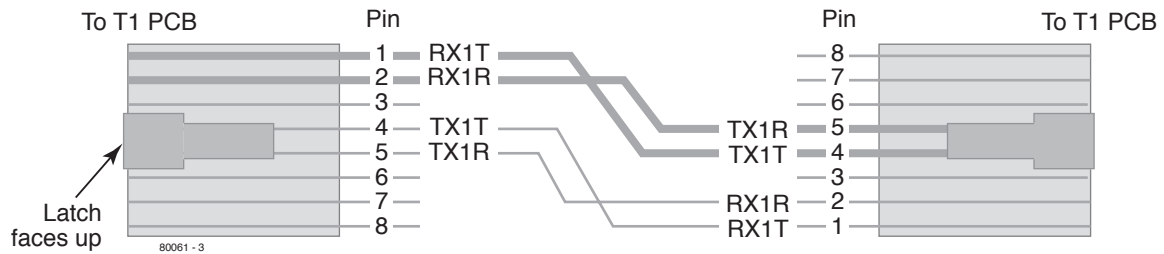


Figure 22: 8-Pin (RJ61X) Jack Pinouts

Installing Cards

Making a T1/E1/PRI Crossover Cable

If you don't have a T1 Tester, you can alternately test Tie Line operation between two T1/E1/PRI Cards in the same cabinet or facility using the cable shown below. Using this same setup, you can loop a Tie Line to a DID Line to test your DID routing before connecting to the CSU.



Connecting Two T1 PCBs Together without a Telco T1 Circuit
(For Tie Line Testing)

Figure 23: Making a T1/E1/PRI Crossover Cable

Connecting Extensions

Each 16ESIU Card connects 16 digital extensions. Each 16SLIU Card connects 16 analog extensions, and each 8SLIU Card connects 8 analog extensions.

To connect extensions:

1. Using *Figure 14: Connecting 16ESIU Digital Station Cards* (page 32) and *Figure 16: Connecting 16SLIU and 8SLIU Cards* (page 34) as a guide, plug the installation cable mod jacks into the appropriate connectors on the station cards.
2. Install a modular jack for each extension within 6 feet of the telephone's location.
3. For each extension, run one-pair 24 AWG station cable from the station block to the modular jack.
 - To make adds, moves, and changes easier, be sure to leave a service loop in your station cable.
4. Terminate the station cable **WHT/BLU** - **BLU/WHT** leads to the **RED** and **GRN** lugs in the modular jack.
5. Install bridging clips as required.

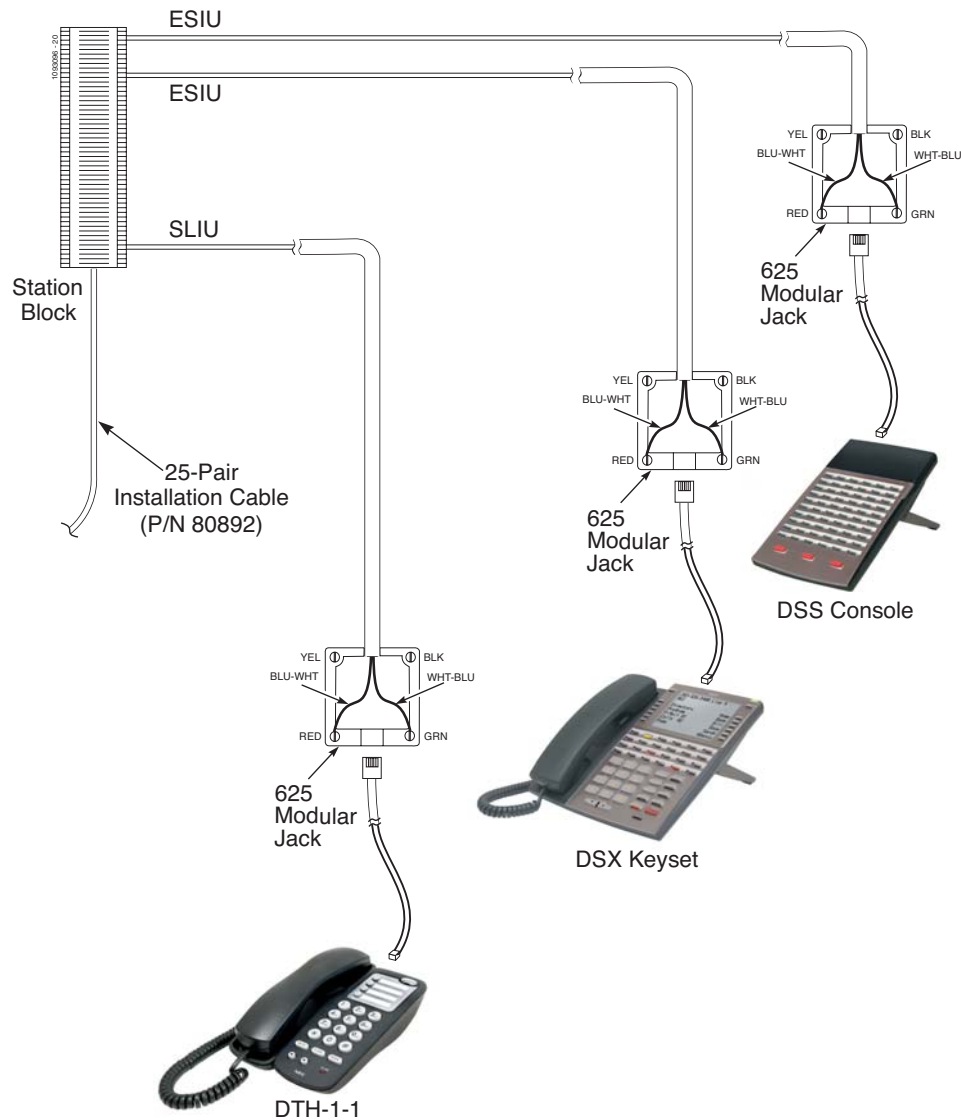


Figure 24: Connecting Extensions

Connecting Extensions and Setting Up the Telephone

Installing the DSX Keypad Handset and Line Cord.

When installing the handset, plug the handset cord into the handset jack on the bottom of the telephone. The handset cord routes through the lower channel on the right side of the telephone base. The line cord does not use a channel and drapes down from the telephone line cord jack or connects to the telephone legs.

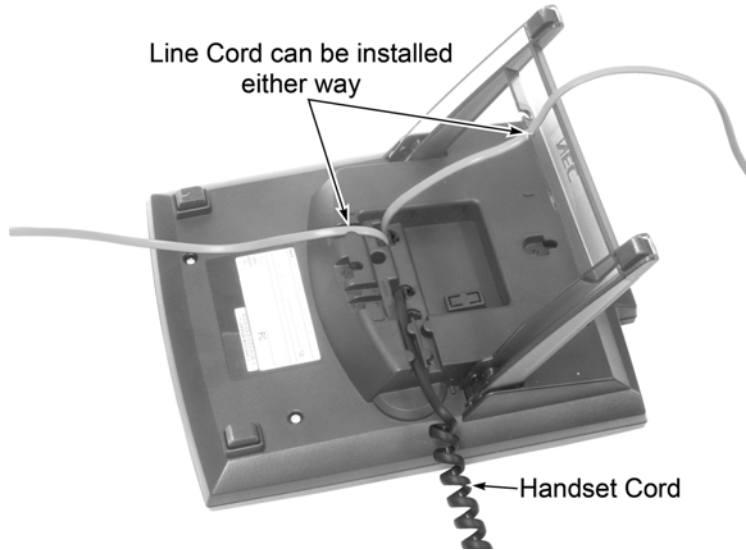


Figure 25: Installing the Handset and Line Cord

Installing the DSX Keypad Optional Headset

When installing an optional headset, plug the headset cord in the headset jack on the bottom of the telephone. The headset cord routes through the upper channel on the right side of the telephone base.



Figure 26: Installing the Optional Headset

Connecting Extensions and Setting Up the Telephone

Installing the DSS Console Line Cord

The DSS Console connects to an available port on an 16ESIU Card, just like a keyset. You can install four maximum per system. The DSS Console line cord does not use a channel and drapes down from the telephone line cord jack or connects to the telephone legs.

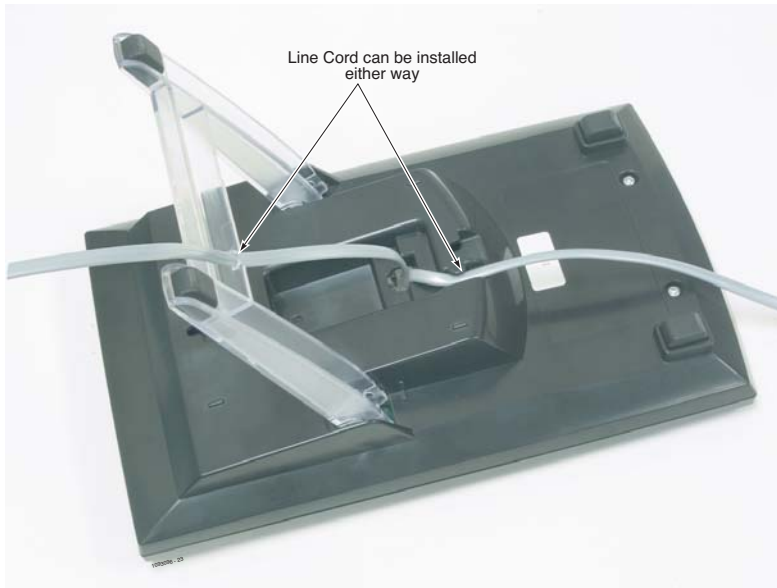


Figure 27: Installing the DSS Console Line Cord

Connecting Extensions and Setting Up the Telephone

Keyset and DSS Console Two Position Angle Adjustment

To set the low viewing angle position:

1. Fold the legs all the way back.



Figure 28: Setting the Low Viewing Angle

To set the high viewing angle position:

1. Flip up the two leg supports.
2. Fold the legs back until the leg supports contact the base.



Figure 29: Setting the High Viewing Angle

Removing the Faceplate

You'll need to remove the telephone faceplate to write on the label or install a DESI custom label.

To remove the faceplate:

1. Put your finger in the recessed area under the faceplate and lift off the faceplate.



Figure 30: Removing the Telephone Faceplate

Connecting Extensions and Setting Up the Telephone

To reinstall the faceplate:

1. Snap back into place as shown.



Figure 31: Reinstalling the Telephone Faceplate

Connecting Analog Lines

Each 16COIU Card connects 16 loop start CO trunks. Each 8COIU Card connects 8 loop start CO trunks.

To connect analog trunks:

1. Using *Figure 18: Connecting 16COIU and 8COIU Cards* (page 36) as a guide, plug the installation cable mod jacks into the appropriate connectors on the COIU Cards.
2. For each line, run one pair cross-connect wire between the line block and the CPE (customer side) of the telco's RJ21X.
3. Install bridging clips as required.

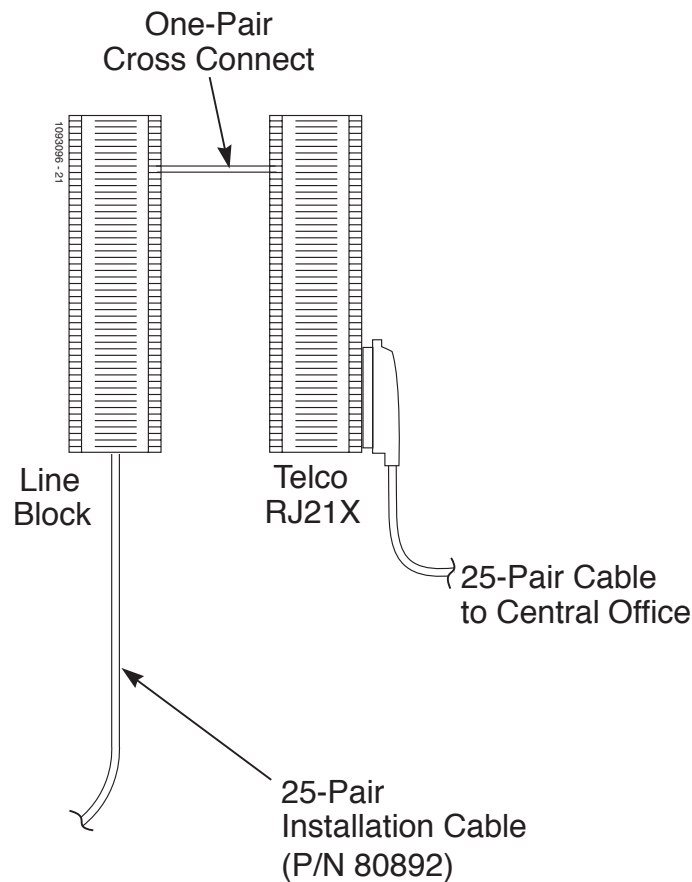


Figure 32: Installing Analog Lines

Connecting T1 Lines

Turn to *Installing T1/E1/PRI Cards* (page 37).

Powering Up the System

Before Powering Up

The system's built-in Automatic Slot Configuration automatically sets up station and line cards when you initially power up the system. On power up, the system scans the cards from left to right and sets up the station and line numbering as follows:

- ▶ Extension numbers will begin with 300 in the first slot and increment from left to right.
- ▶ Line numbers will begin with 101 (starting from the first installed COIU or T1/E1/PRI Card) and will also increment from left to right.
- ▶ For example, in a 16x32, the numbering will be:
1st 16ESIU Card = Extensions 300-315.
2nd 16ESIU Card = Extensions 316-331.
16COIU Card = Lines 101-116.
- ▶ In addition, the system will also automatically set up a station or line card when you plug it in hot.

To power up the system:

- You do not need to reattach the right side panel before powering up the system. Leaving the right side panel removed makes the station and line cabling more accessible.
1. Make sure the system is properly grounded and the card bracket is reinstalled and secured.
 2. Install a surge protector in the AC outlet you intend to use for system power.
 3. Plug the main cabinet's AC power cord into its surge protector.
 4. Turn on the main cabinet power switch. After about 30 seconds, verify the system LEDs.

LED	Normal Power-On Status
Power Supply	<ul style="list-style-type: none">• All three LEDs on (green)
CPU Card	<ul style="list-style-type: none">• Top LED winks on (blue)
ESIU, SLIU, and COIU Cards	<ul style="list-style-type: none">• Top LED flashing (slowly green)• Bottom LED flashes (yellow) when ports on the card are busy. The faster the flash, the more ports are busy.

System LEDs

Power Supply LEDs

- + 5 V DC (Green)**
On: +5 V DC power present.
Off: +5 V DC power not present.
- 5 V DC (Green)**
On: -5 V DC power present.
Off: -5 V DC power not present.
- 40 V DC (Green)**
On: -40 V DC power present.
Off: -40 V DC power not present.

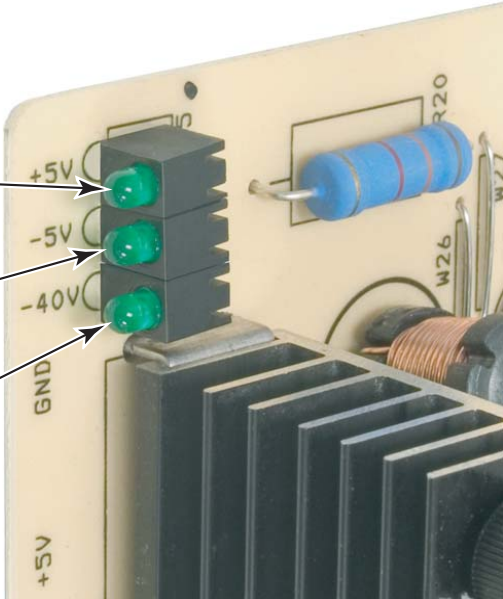


Figure 33: Power Supply LEDs

CPU Card LEDs

- CPU Running (blue)**
Off: CPU is not functioning.
On: System is starting up.
Wink On: System is running.
- Error (red)**
Off: No errors present.
On: System has an error.
- USB Port (green)**
Off: USB port idle.
Flashing: Activity on the USB port.
- Serial Port (green)**
Off: Serial port idle.
Flashing: Activity on serial port.
- Ethernet Port (green)**
Off: Ethernet port idle.
Flashing: Activity on Ethernet port.
- Not Used (yellow)**
- CompactFlash (red)**
Off: CompactFlash card idle or not installed.
On: System is accessing the CompactFlash card.



Figure 34: CPU LEDs

Powering Up the System

Digital Station (ESIU), Analog Station (SLIU), and Analog Line (COIU) Card LEDs

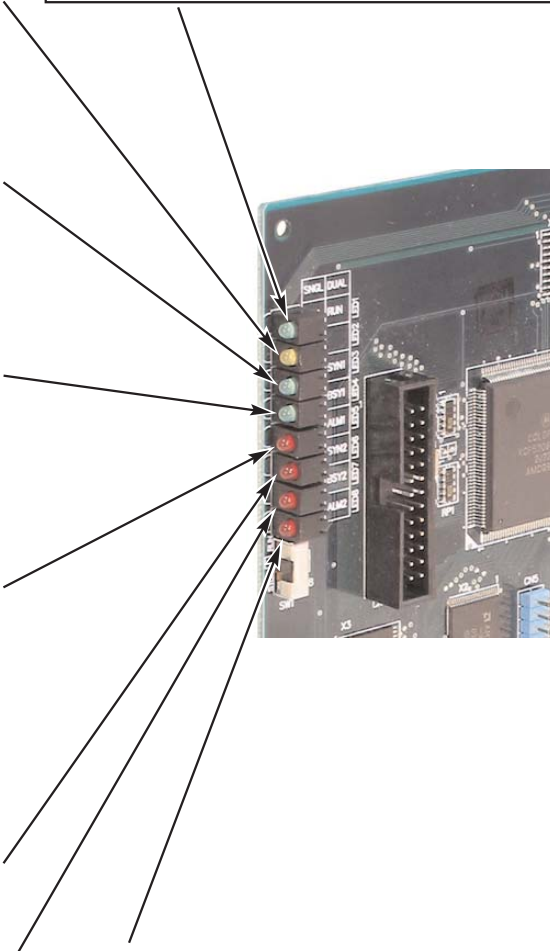
Sync Status (green)
Fast Flash: PCB running, waiting for sync. Same as having the mode switch set to stop. System has an error.
Slow Flash: PCB running, in sync.

Port Activity (yellow)
Off: All ports on PCB idle.
Flash: Ports are busy. The faster the flash, the more ports are busy.



Figure 35: Digital Station (ESIU), Analog Station (SLIU), and Analog Line (COIU) Card LEDs

T1/E1/PRI Card LEDs

<p>Port Activity (Yellow) Off: All ports on PCB idle. Flash: Port(s) busy. The faster the flash, the more ports are busy.</p>	<p>PCB Running (Green) Slow flash: T1 PCB running. On: T1 PCB starting.</p>
<p>Sync (Master) (Green) Off: T1 PCB is in the slave mode (i.e., getting the clock from the connected T1 circuit). On: T1 PCB <u>is</u> providing the master clock to the telco and is in sync. Flash: T1 PCB <u>is</u> providing the master clock but is not in sync.</p>	
<p>Loop (Slave) (Green) Off: T1 PCB is in the master mode (i.e., providing the clock to the connected T1 circuit). On: T1 PCB <u>is</u> in sync with the external clock source (and <u>is not</u> providing the master clock). Flash: T1 PCB <u>is not</u> in sync with the external clock source (and <u>is not</u> providing the master clock).</p>	
<p>LOS (Loss of Signal) or Red Alarm (Red) Off: Signal from the connected telco T1 Circuit <u>is</u> present. On: Signal from the connected telco T1 circuit <u>is not</u> present. An LOS alarm means there is a problem <i>upstream</i> from the T1 PCB.</p>	
<p>BPV (Bi-Polar Violation) Alarm (Red) This alarm indicates that consecutive “one” pulses have been received in the T1 signal in error. Off: The telco’s T1 signal <u>does not contain</u> Bi-Polar Violations. On: The telco’s T1 signal is in error. It <u>contains</u> Bi-Polar Violations. A BPV alarm means there is a problem <i>upstream</i> from the T1 PCB.</p>	
<p>AIS (Alarm Indication Signal) or Blue Alarm (Red) The telco sends an AIS alarm signal to the T1 PCB if the telco receives faulty data from another device on its network (i.e., upstream). It sends the AIS alarm signal to the PCB instead of the faulty data it received. Off: AIS signal <u>not received</u> from telco. On: AIS <u>received</u> from telco. An AIS alarm means there is a problem <i>upstream</i> from the telco (and upstream from the T1 PCB).</p>	
<p>Yellow (RAI or Remote Alarm Indication) Alarm (Red) The telco sends an RAI alarm to the T1 PCB if it detects a problem with the T1 signal received from the installation site. The problem can come from the T1 PCB, the CSU (if any), or be caused by faulty cabling. Off: RAI signal <u>not received</u> from telco. On: RAI <u>received</u> from telco. An RAI alarm means there is a problem <i>downstream</i> from the telco (i.e., in the T1 PCB, CSU, or cabling).</p>	

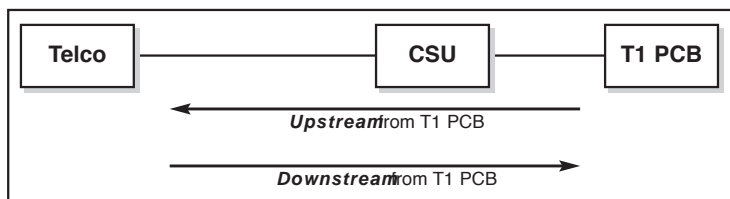


Figure 36: T1/E1/PRI Card LEDs

Finishing the Installation

Reinstalling the Side Panel

To reinstall the side panel:

1. Carefully realign the right side panel and slide it into position.
2. Reattach the two screws that secure the right side panel to the cabinet.

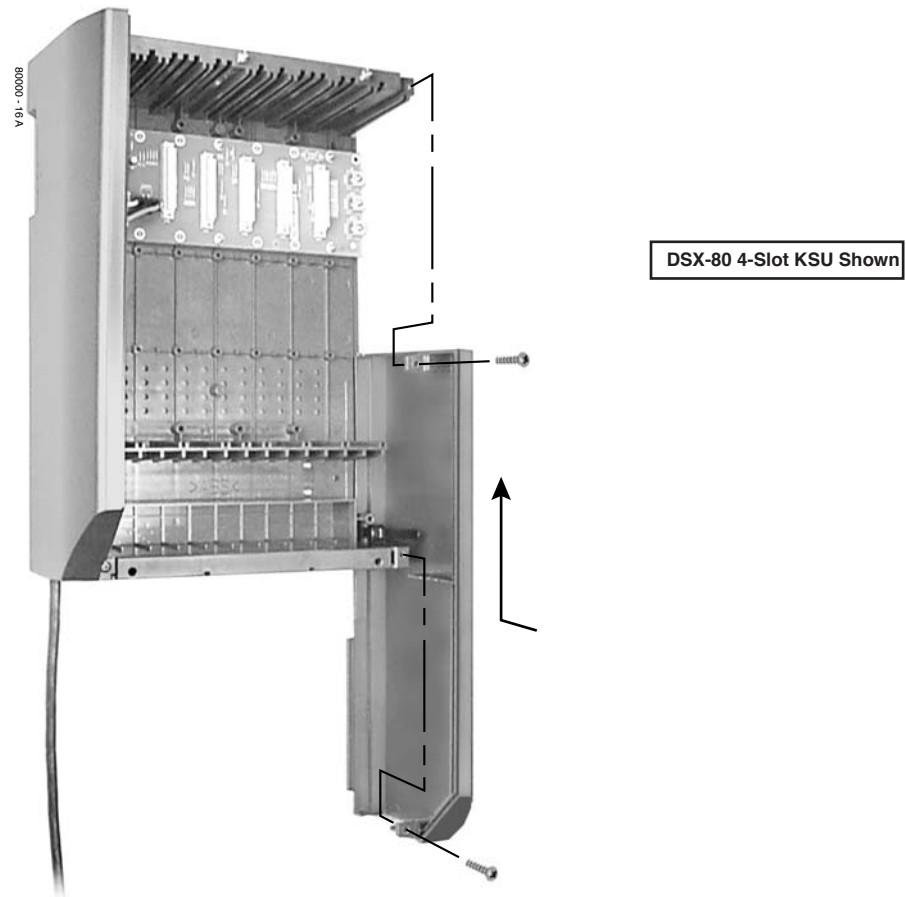


Figure 37: Reinstalling the Side Panel

Reinstalling the Front Cover

To reinstall the front cover:

1. Hook the tabs on the rear of the cover into their associated slots.
2. Push the front of the cover into place.
3. Screw in the two captive screws that secure the cover to the cabinet.



Figure 38: Reinstalling the Front Cover

Resetting and Initializing the System

Resetting the System

To reset the system:

Important

If the system's RS-232 connection uses twisted pair cable, *before resetting* do one of the following:

- Make sure the RS-232 cable is connected at both ends (i.e., PC and CPU).
- If the RS-232 cable is disconnected from the PC, be sure the cable is also disconnected from the CPU.

1. Briefly press (tap) the **Reset Switch** on the CPU.

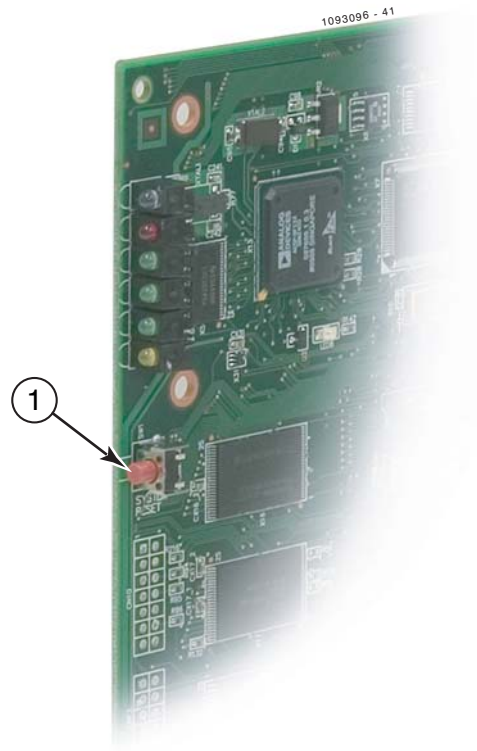


Figure 39: Resetting the System

Initializing the System

To initialize (cold start) the system:

- This erases all your stored programming and returns the system to its default settings.
1. Turn off the system.
 2. Press and hold the **Reset Switch** on the CPU while turning on the system power.
 3. When all the LEDs on the CPU light and then go out, release the **Reset Switch**.
 - The system will restart with the default settings.

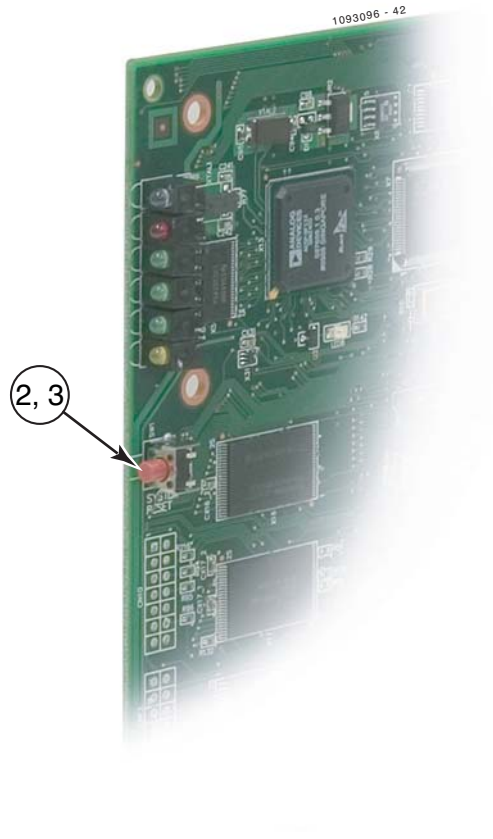


Figure 40: Initializing the System

Upgrading the System Software

Upgrade System Software

To upgrade system software from a CompactFlash card:

1. Remove the IntraMail CompactFlash card (if installed), then insert the CompactFlash card containing the system software into the CPU.
 - Although advisable, backing up the site programming is not required.
2. Press and hold the **Reset Switch** on the CPU.
3. When all the LEDs on the CPU light and then go out, release the **Reset Switch**.
 - The new system software will automatically load. The system restarts after the load completes with all the initial site programming intact.
4. Once the system restarts:
 - Remove the software upgrade CompactFlash card.
 - Insert the IntraMail CompactFlash card.
 - Reset the system.

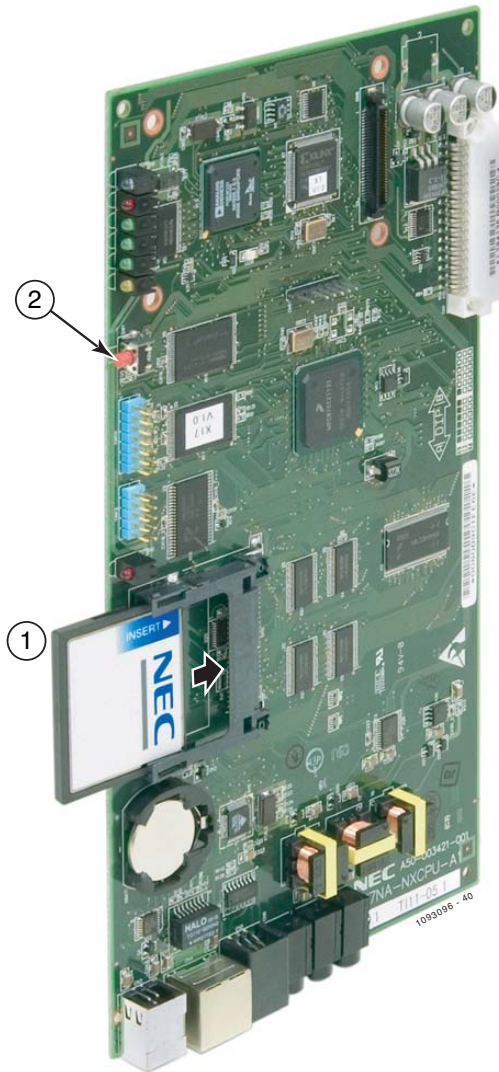


Figure 41: Loading System Software from a CompactFlash Card

Installing Optional Equipment

Installing IntraMail

Setting Up IntraMail for the First Time

- A default system (with no voice mail installed) provides the Built-In Automated Attendant. See *Automated Attendant, Built-In* in the *IntraMail* section of the System Guide for more.
- If you have another (external) voice mail installed, you must disconnect and unprogram it before installing IntraMail.

To set up IntraMail:

1. Plug the IntraMail CompactFlash card into the CPU.
2. Reset the system. The IntraMail automatically installs.
 - If updating from the Built-In Automated Attendant, just rerecord your Instruction Menu Messages. Your Answer Schedule and Dial Action Table programming remain intact.
 - By default, the first 16 (300-315) mailboxes are active/enabled and the IntraMail Automated Attendant does not answer outside calls.
 - See *Start-up IntraMail Programming* in the front of the *IntraMail* section of the System Guide for more.



Figure 42: Installing IntraMail

Installing a DSX Analog Door Box and 2PGDAD Module

Connecting a DSX Analog Door Box to the 2PGDAD Module

The DSX Analog Door Box (P/N 922450) is a self-contained, weather-tight Intercom unit typically used to monitor an entrance door. The Door Box connects to a 2PGDAD Module (P/N 0891027), which in turn connects to an available port on a DSX Station (16ESIU) PCB. Each 2PGDAD Module provides connection and relays for two door boxes. The maximum number of DSX Analog Door Boxes you can install is determined by the number of 2PGDAD Modules, which in turn is limited only by the availability of 16ESIU station ports.

Preparation

To prepare the 2PGDAD Module for installation:

1. Find a suitable indoor location for the 2PGDAD Module.
 - The 2PGDAD Module has the same environmental requirements as a DSX keyset.
 - When choosing a location, keep in mind that the front side of the module contains the status LEDs (important for troubleshooting) while the back of the unit has the cabling access.
2. Remove the screw securing the module cover and lift off the cover.
3. Using a flat blade screwdriver, pry off the plastic disc covering the cable knockout.
4. Following standard station cabling procedures, install a modular jack connected to an ESIU station port at the 2PGDAD Module location.
5. At this point in the installation, *do not connect the 2PGDAD Module to a 16ESIU station port.*

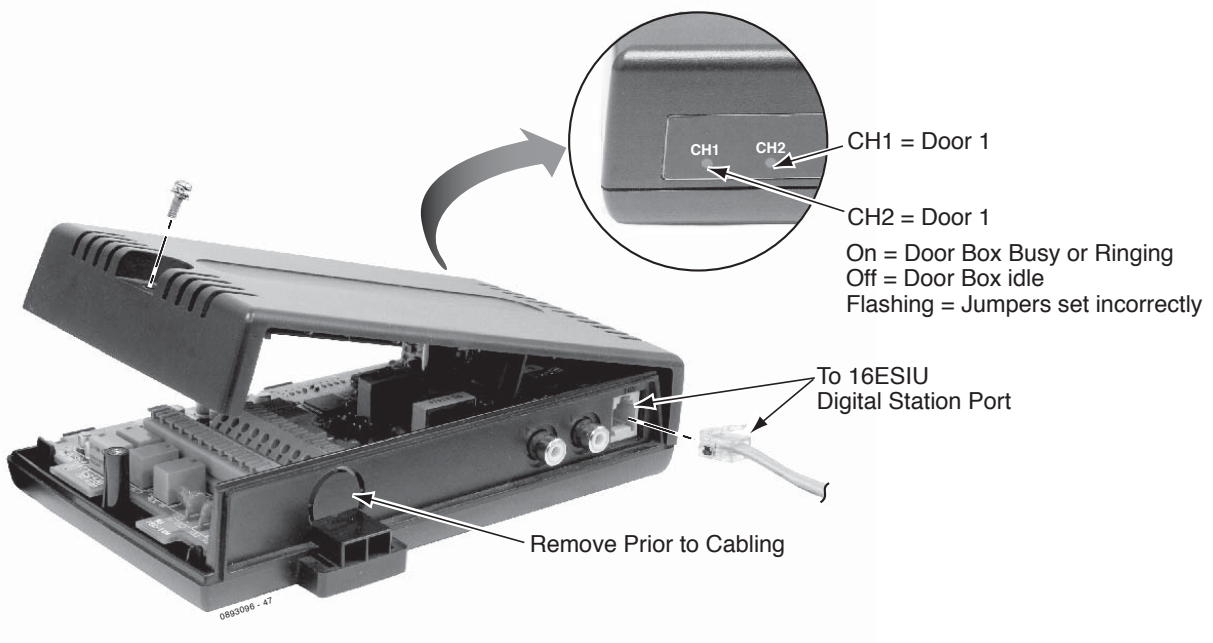


Figure 43: Removing the 2PGDAD Module Cover

Installing a DSX Analog Door Box and 2PGDAD Module

Connecting Door Boxes and Relays

To connect a Door Box:

1. Find a suitable location for the DSX Analog Door Box.
 - The door box is a weather-tight unit and can be installed outdoors.
2. Run one-pair 24 AWG station cable from the door box to the 2PGDAD Module.
3. At the door box, strip each conductor about 3/8", connect as shown, then mount the door box.
4. At the 2PGDAD Module, strip each conductor about 1/4" and connect to the block as shown.
 - To make a connection, use a small flat-blade screwdriver to push down on tab, insert the wire, then release the tab.
5. *Be sure all module jumpers are in the open position.*

To connect a relay:

1. Run one-pair 24 AWG station cable from the relay location to the 2PGDAD Module.
2. At the relay, connect the station cable following the instructions provided with the relay.
3. At the 2PGDAD Module, strip the wires about 1/4" and connect to the block as shown.
 - To make a connection, use a small flat-blade screwdriver to push down on tab, insert the wire, then release the tab.
4. *Be sure the relay you choose is compatible with the 2PGDAD Module relay contact specifications.*

Optional
Equipment

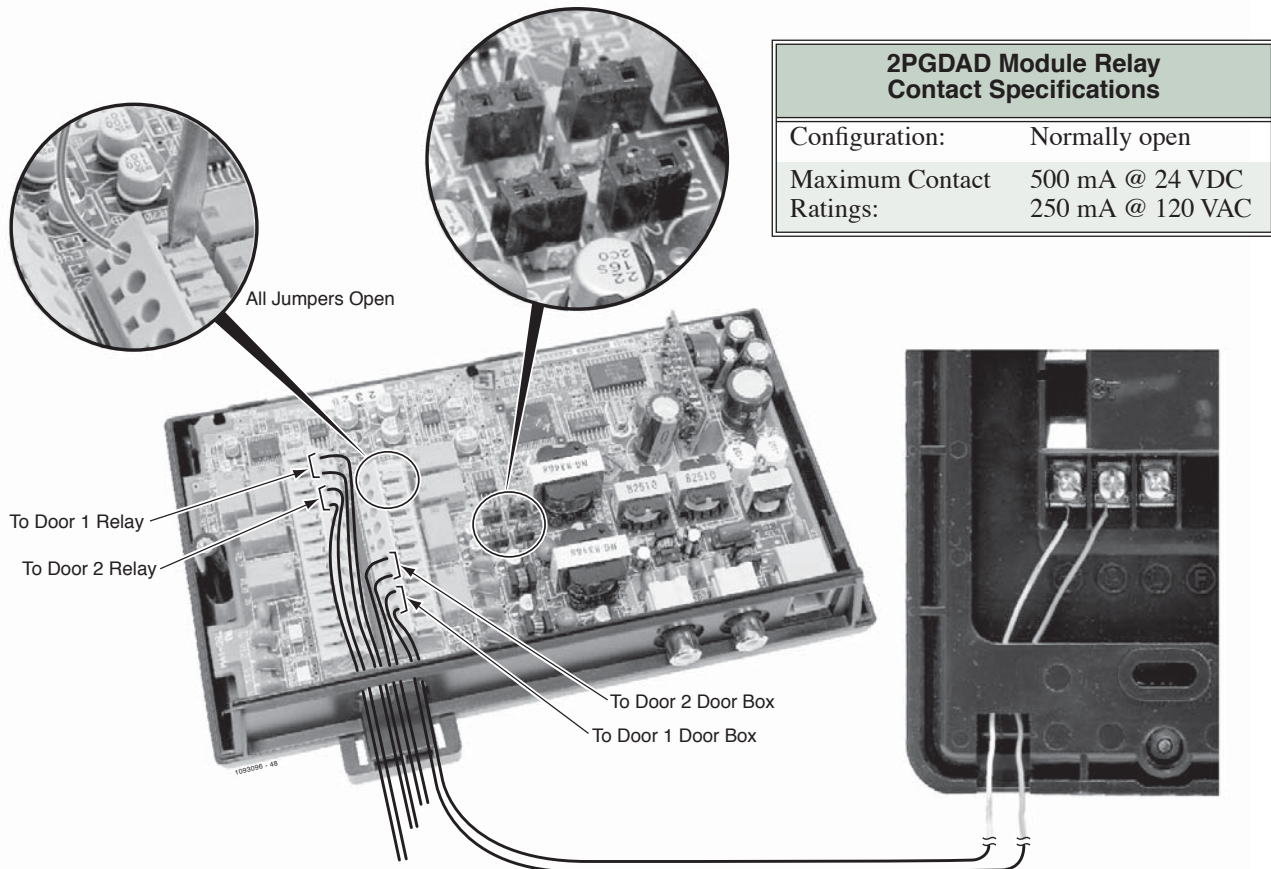


Figure 44: Connecting Door Boxes and Relays

Installing a DSX Analog Door Box and 2PGDAD Module

Mounting the 2PGDAD Module and Connecting to the System

To mount and connect the 2PGDAD Module:

1. Mount two suitable fasteners (such as #8 sheet metal screws) about 3 15/16" apart either horizontally (for horizontal mounting) or vertically (for vertical mounting).
 - Leave the heads exposed about 1/4"
2. Place the 2PGDAD Module over the screws and slide down into place.
3. Program the Door Box and 2PGDAD Module **before connecting to the 2PGDAD modular jack**.
 - In *1203-01: Secondary Station Port Assignment*, for the 16ESIU port selected enter an available station port for the secondary port (96-127 by default).
 - In *2113-02: Ring Group*, assign the extensions associated with the 2PGDAD Module and all telephones that should receive door chimes to the same Ring Group.
 - Refer to the *Door Box* feature in the *DSX Software Manual* for additional programming.
4. Using a standard line cord, plug the 2PGDAD Module into its modular jack and verify the LEDs.

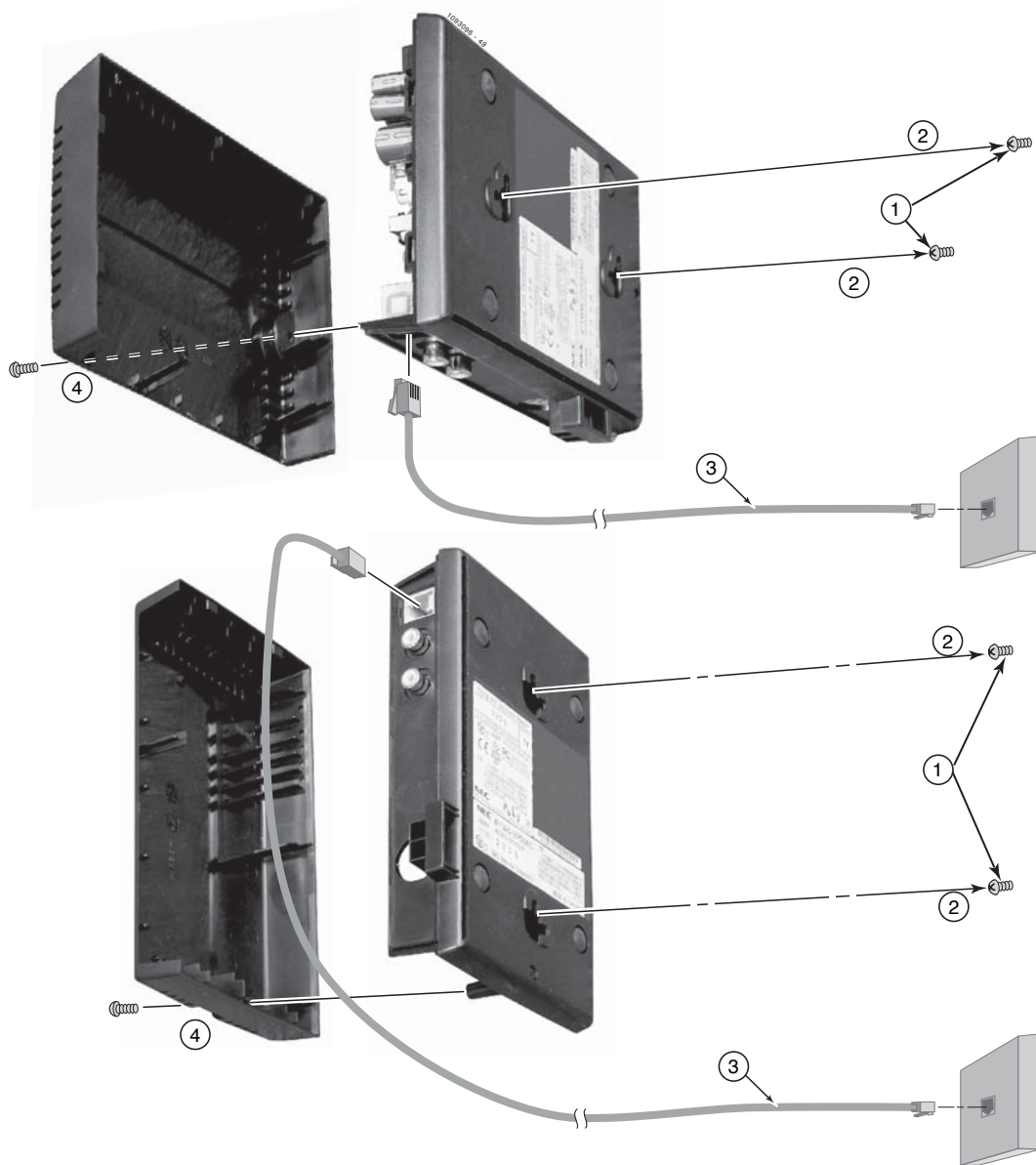


Figure 45: Mounting and Connecting the 2PGDAD Module

Installing External Paging

The CPU provides an External Paging output. You connect the CPU Paging output to an audio input on a customer provided Paging system. Be sure the connected Paging equipment is compatible with the following page output specifications:

External Paging Output Specifications	
Output Impedance:	600 Ohms
Output Level:	0 dB @ 1.0 kHz

To connect to an External Paging Amplifier:

1. Obtain an audio cable that has a mono audio minijack (1/8") on one end and a connector compatible with the customer's paging amplifier on the other.
2. Plug the mono audio minijack into the **Audio Out** connector on the CPU.
3. Plug the other end of the audio cable into the paging amplifier.

Optional
Equipment

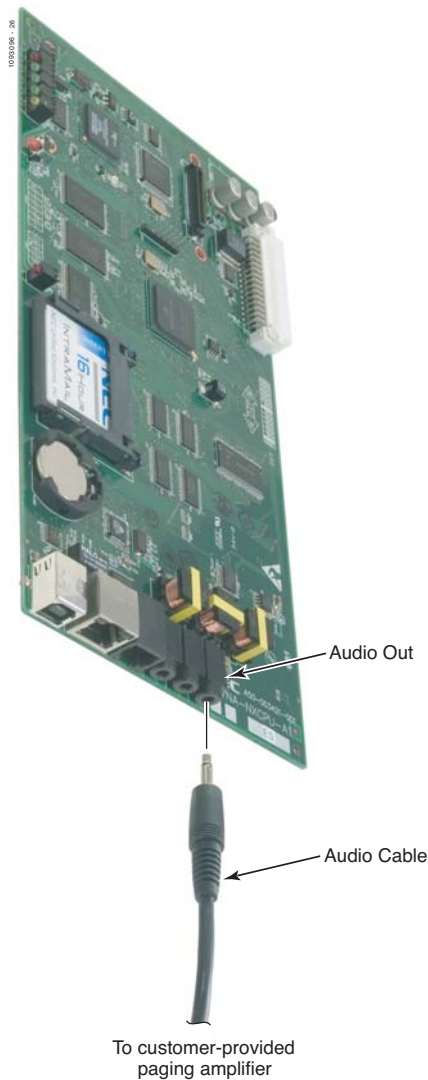


Figure 46: Connecting External Paging

Installing a Music Source

Your system provides two connections for customer provided music sources. Use these music sources for Background Music and Music on Hold. Be sure the connected music sources are compatible with the following music input specifications:

Music Input Specifications	
Input Impedance:	10K Ohms
Output Level:	+18 dBr (± 2 dBr) @ 1.0 KHz

To connect a music source (two maximum):

1. Obtain an audio cable that has a mono audio minijack (1/8") on one end and a connector compatible with the customer's music on the other.
2. Plug the mono audio minijack into one of the two **Audio In** connectors on the CPU.
3. Plug the other end of the audio cable into the music source.

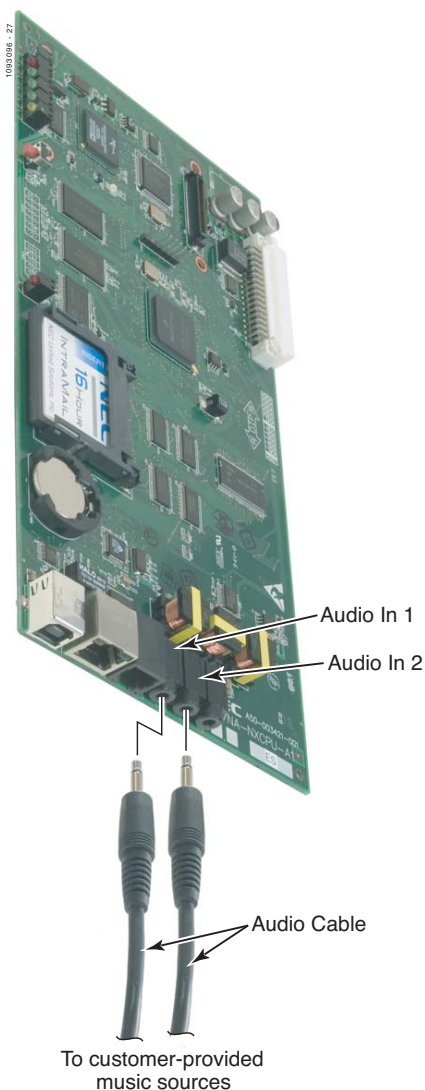


Figure 47: Connecting a Music Source

Power Failure Cut-Through

When AC power fails, the system can automatically cut through to a Power Failure Telephone connection. Each COIU Card has two power failure cut-through connections.

To install Power Failure Cut-Through:

1. Locate an available 8-pin jack in a line or station block.
 - Local codes may prevent you from using a connector on a line block for optional equipment.
2. For the 8-pin jack chosen, locate the first two circuits in the block. If your jack is the first jack in the block, for example:
 - The first power failure circuit is the **WHT/BLU - BLU/WHT** pair.
 - The second power failure circuit is the **WHT/ORN - ORN/WHT** pair.
3. Install a modular jack for each Power Failure Telephone within 6 feet of the telephone's location.
4. For each Power Failure Telephone, run one-pair of 24 AWG station cable from the appropriate circuit on the block to the telephone's modular jack.
5. Terminate the station cable leads to the **RED** and **GRN** lugs in the modular jack.
6. Install bridging clips as required.
7. Plug the 8-pin connector into the power failure jack on the COIU PCB.

To test the Power Failure Telephone:

1. Connect the power failure telephone.
2. Power down the system.
3. At the Power Failure Telephone, lift the handset.
 - You should hear dial tone on the line you connected.
4. Place a test call.

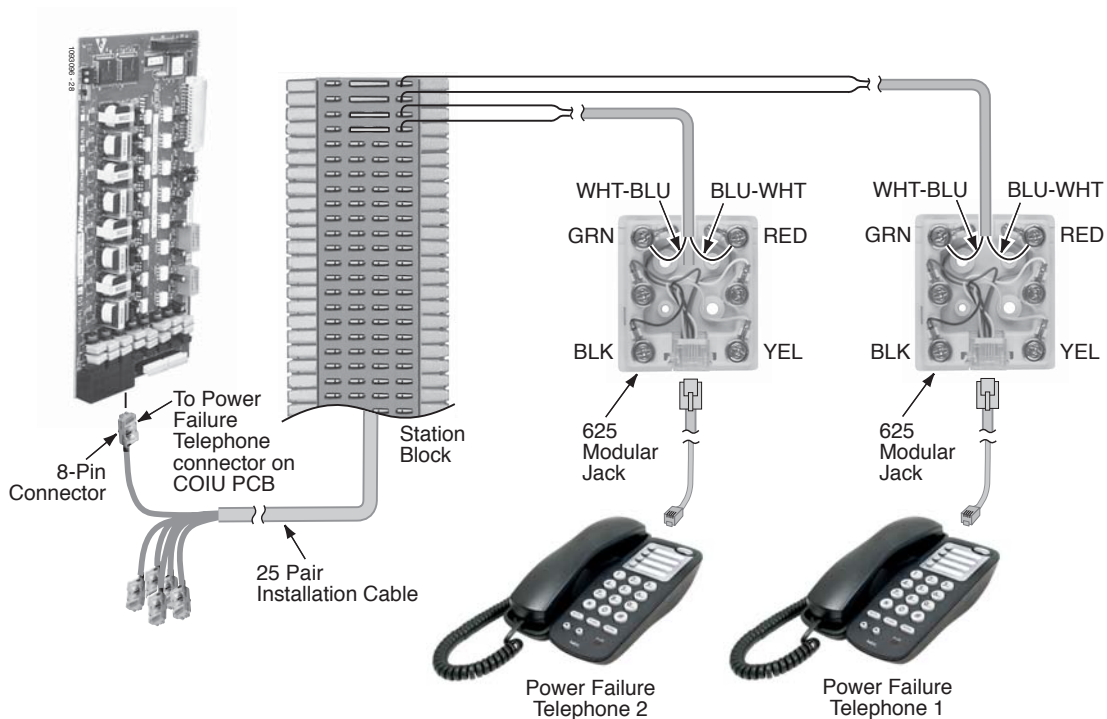


Figure 48: Connecting a Power Failure Telephone

Reversing the Handset Hanger

Before wall mounting your DSX telephone, you should reverse the handset hanger. The hanger holds the handset in place while the telephone is mounted on the wall.

To reverse the wall-mount handset hanger:

1. Slide out the handset hanger.
2. Reverse and re-insert the handset hanger.



Figure 49: Reversing the Handset Hanger

Wall Mounting a Keypad

Wall Mounting a Keypad on a Standard Wall Plate

To mount the telephone on the standard wall plate:

1. Locate and wire a standard wall plate in a convenient location.
2. Fold the telephone legs into the wall mount position.
3. Make sure the handset coil cord is routed through the lower channel in the base.
4. Fold the two leg supports down flush with the legs.
5. Plug a short line cord into the telephone base.
6. Plug the other end of the short line cord into the wall plate.
7. Place the telephone on top of the wall plate and slide into place.

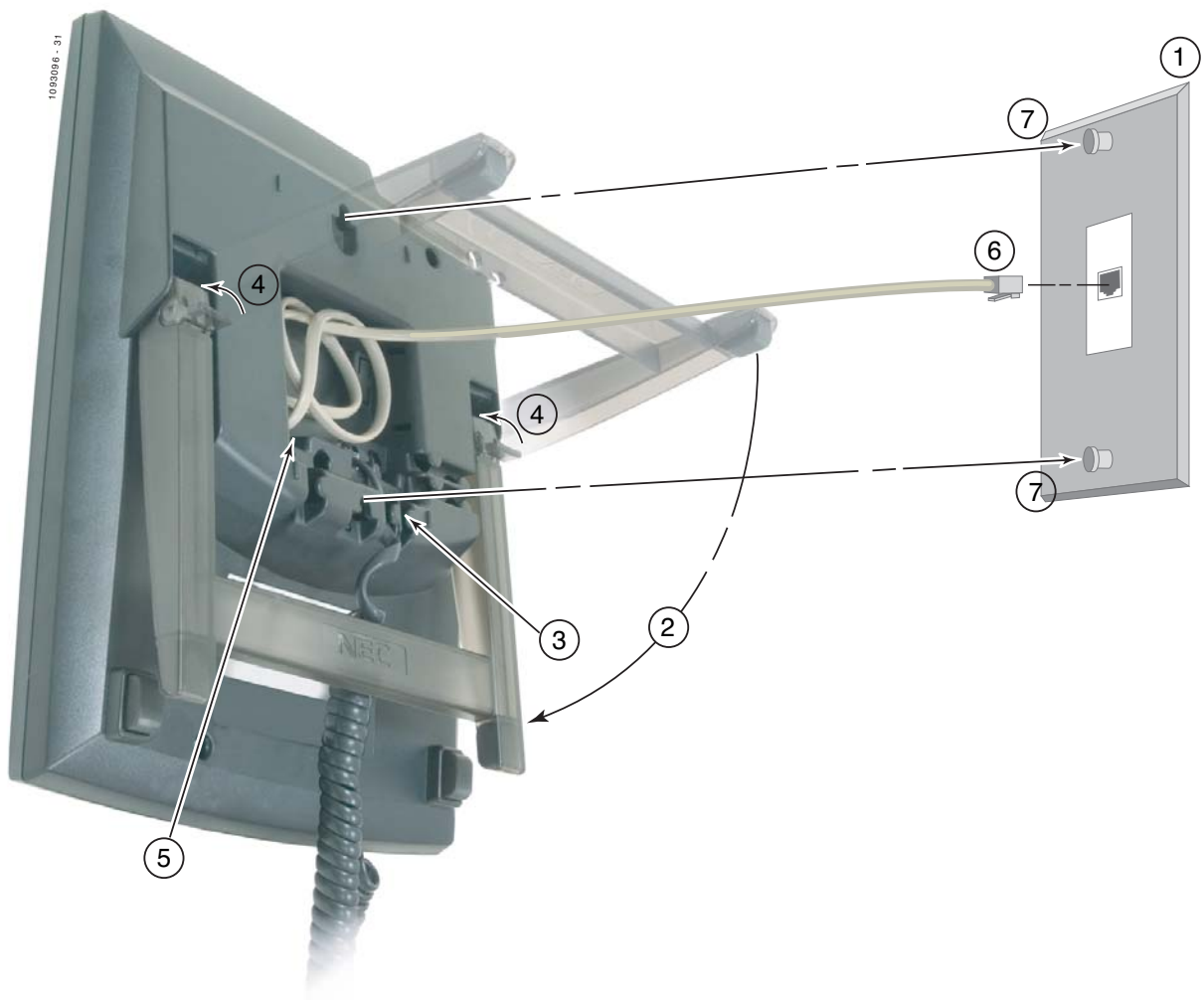


Figure 50: Mounting the Telephone to a Standard Wall Plate

Wall Mounting

Wall Mounting a Keypad Directly on the Wall

To mount the telephone directly on the wall:

1. Mount two suitable fasteners (such as #8 sheet metal screws) about 3 15/16" apart vertically.
 - Leave the heads exposed about 1/4".
2. Fold the telephone legs into the wall mount position.
3. Make sure the handset coil cord and line cord are routed through the lower channels in the base.
4. Fold the two leg supports down flush with the legs.
5. Place the telephone on top of the wall plate and slide into place.
6. Plug the line cord into the telephone's mod jack.

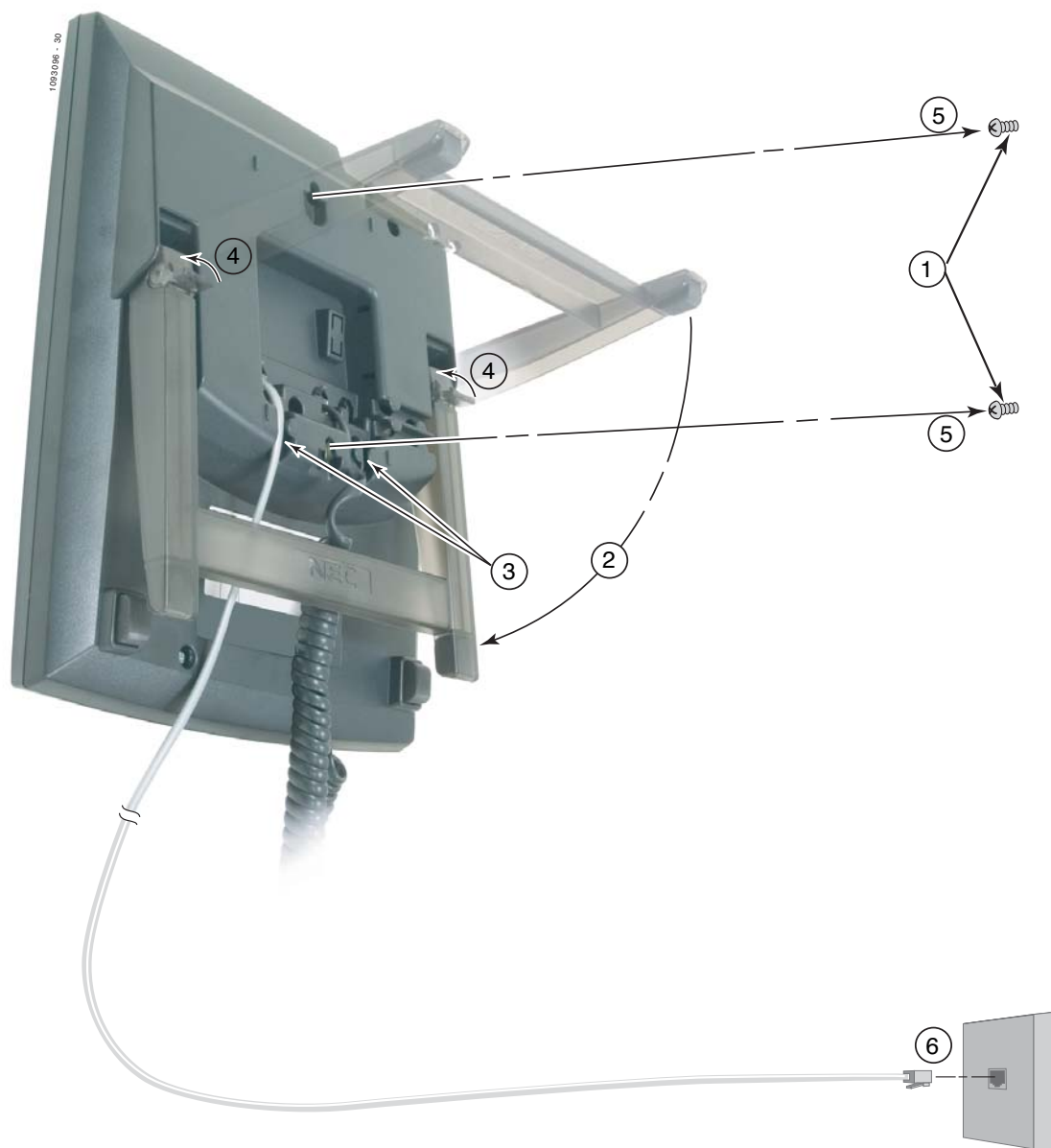


Figure 51: Mounting the Telephone Directly on the Wall

Wall Mounting a DSS Console

Wall Mounting a DSS Console on a Standard Wall Plate

To mount the DSS Console on the standard wall plate:

1. Locate and wire a standard wall plate in a convenient location.
2. Fold the DSS Console legs into the wall mount position.
3. Fold the two leg supports down flush with the legs.
4. Plug a short line cord into the DSS Console base.
5. Plug the other end of the short line cord into the wall plate.
6. Place the DSS Console on top of the wall plate and slide into place.

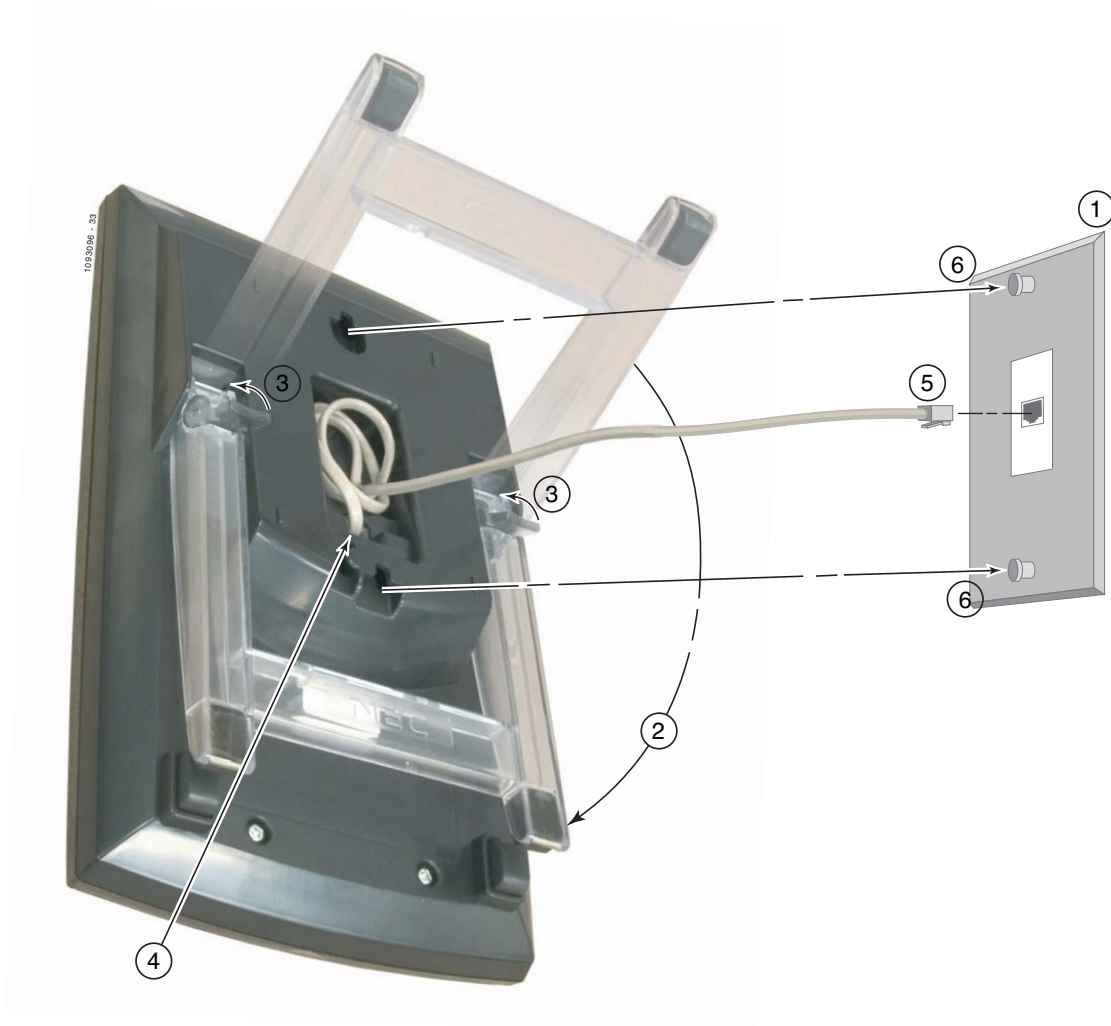


Figure 52: Mounting the DSS Console to a Standard Wall Plate

Wall Mounting

Wall Mounting a DSS Console Directly on the Wall

To mount the DSS Console directly on the wall:

1. Mount two suitable fasteners (such as #8 sheet metal screws) about 3 15/16" apart vertically.
 - Leave the heads exposed about 1/4".
2. Fold the DSS Console legs into the wall mount position.
3. Make sure the line cord is routed through the lower channel in the base.
4. Fold the two leg supports down flush with the legs.
5. Place the DSS Console on top of the wall plate and slide into place.
6. Plug the line cord into the DSS Console mod jack.

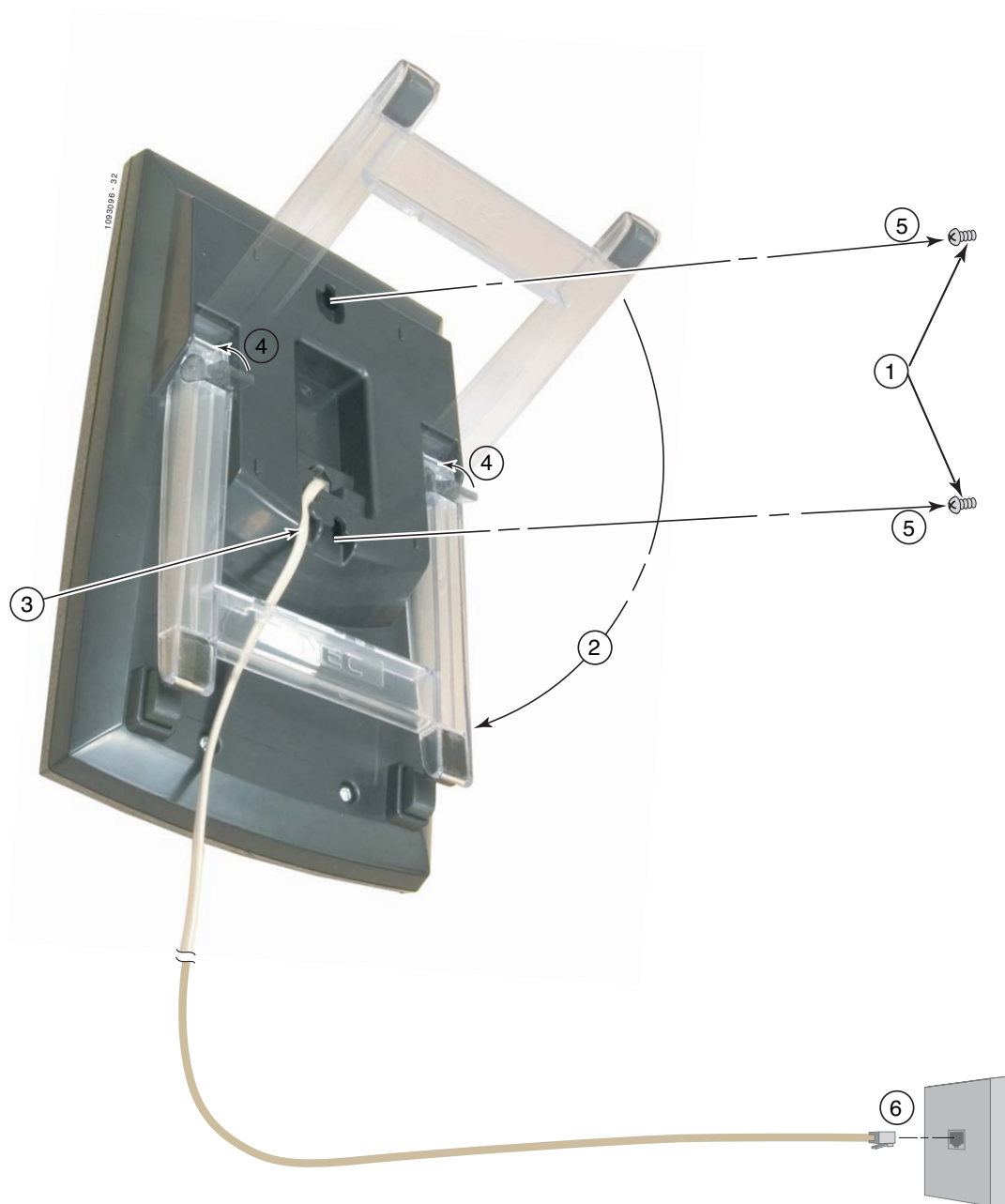


Figure 53: Mounting the DSS Console Directly on the Wall

Testing the Keyset

Each DSX keyset has a built-in Self Test Diagnostic. Use this diagnostic to verify that each key is working, check the lamps (LEDs) in each key, and play back some system tones.

To start the Self Test Diagnostic

1. Unplug the keyset's line cord.
2. While pressing keys **1**, **2**, and **3**, plug the line cord back in.
3. Continue pressing keys **1**, **2**, and **3** for about 10 seconds.
4. Release the keys. On the first line of the display you see: **TEST PUSH**
 - If you don't see this display, repeat the procedure and hold the keys down a little longer.

To test a key:

1. Press the key.
 - The code to the right of **PUSH** identifies the key (see the Key Name table below).
 - Example, for Feature Key 4 you see: **PUSH=L 4**

To test the key and Ring/Message Lamp LEDs:

1. Press **Volume Up**.
 - All the keys with lamps light green (except for **MUTE** which doesn't have a green LED).
2. Press **Volume Up** again.
 - All keys with lamps light red.
3. Press **Volume Up** a third time.
 - All keys with lamps light orange (except for **MUTE** which lights red).

To test the display:

1. Press **Volume Down**.
 - All the elements for each character show dark.

To test some keyset tones:

1. Press Feature Keys **1**, **2**, or **3**.

Key Names			
Key	Name	Key	Name
Dial pad 0-9, * and #	D 0 - D 9, D * and D #	Feature Keys 1-24	L 1 - L 24
Speed Dial bins 1-10	0 1 - 010	Keyset Soft Keys 1-4	S 1 - S 4
Super Display Soft Keys	0 1 - 0101	CHECK	F 13
CLEAR	F 12	TRANSFER	F 11
FLASH	F 4	REDIAL	F 1
MUTE	F 9	SPEAKER	F 7
INTERCOM	F 6	V-MAIL	F 8
DND	F 5	CONF	F 2
HOLD	F 3		

¹ Also displays # characters for each soft key display.

To exit the Self Test Diagnostic:

1. Lift and replace the handset.

Connecting a PC to the System

Connections for PC Programming (System Administrator) and SMDR

Use the USB or Ethernet port when connecting a PC locally for the System Administrator. Use the serial port only for SMDR. Adaptor, DB9 Female to Mod 6 Jack

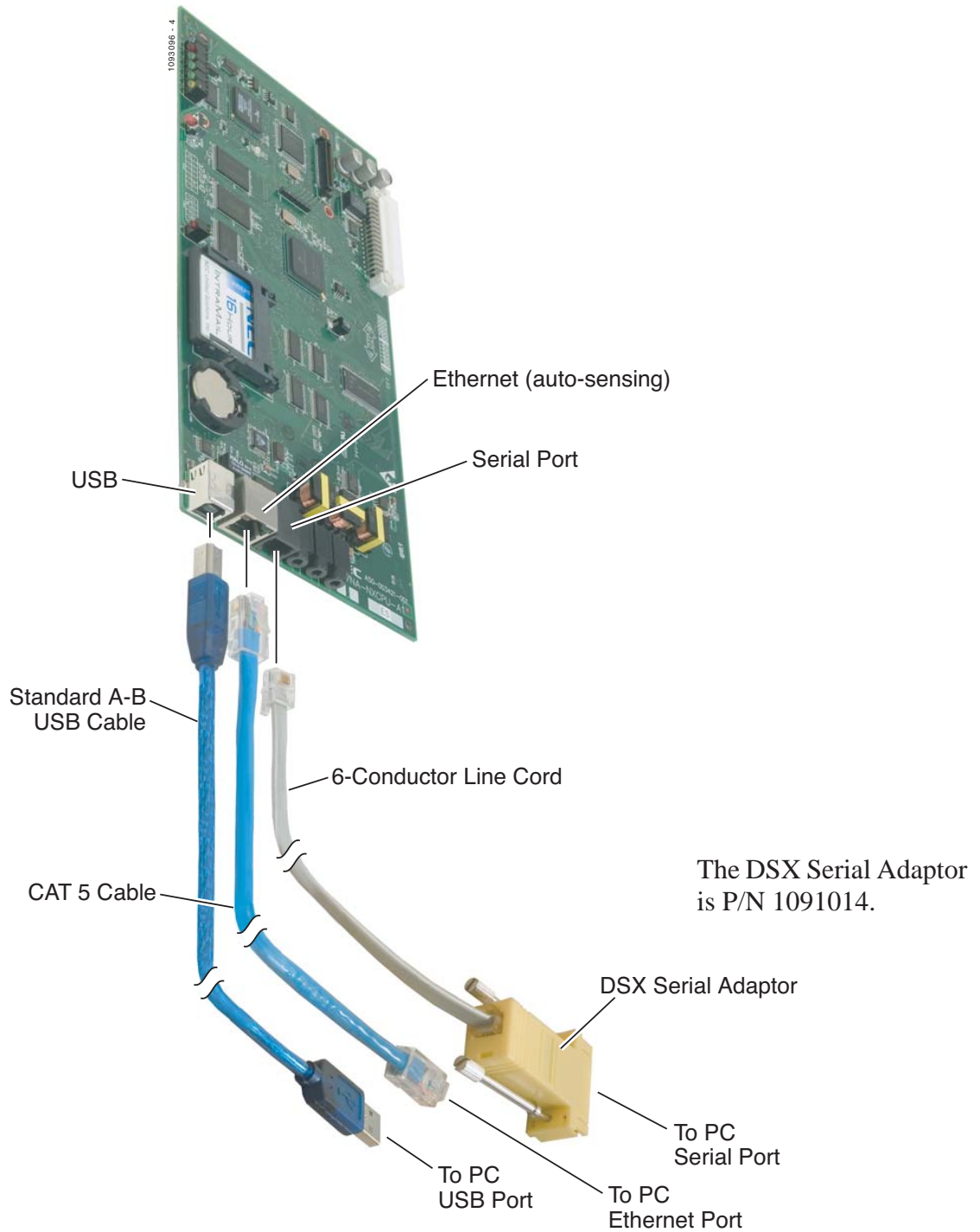


Figure 54: Connecting a PC to the System

Specifications and Parts

Specifications

System Capacities (Page 1 of 2)	
Cabinets:	1
Talk Timeslots (Intercom/line):	Non-blocking
Ports	160
Lines:	64
Digital Telephones:	DSX-80: 32 DSX-160: 96
Analog Telephones:	DSX-80: 48 DSX-160: 80
DSS Consoles:	4 max. per system Plugs into a digital station port
Power Failure Telephones:	2 per COIU Card
Internal Paging Zones:	8 (7 and All Call)
External Page Audio Output:	1 (on CPU)
Music Inputs:	2 (on CPU)
Conference Circuits:	32 Conference circuits dynamically allocated, with 8 parties max per Conference. Conference circuits provided on CPU.

Specifications

System Capacities (Page 2 of 2)	
16ESIU Digital Station Card 16SLIU Analog Station Card 8SLIU Analog Station Card 16COIU Analog CO Line Card 8COIU Analog CO Line Card T1/E1/PRI Card	Refer to <i>System Configuration</i> (page 19) for capacities.
CPU Card:	1

Environmental Requirements
Meeting established environmental standards maximizes the life of the system. Refer to the <i>Standard Practices Manual</i> for further information. Be sure that the site is not: <ol style="list-style-type: none"> 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 come 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).

Power Requirements
A dedicated 110 VAC 60 Hz circuit located within 7 feet of the cabinet is required.

Environmental Specifications	
Cabinet and Key Telephones	
Temperature:	0-40°C (32-104°F)
Humidity:	10-95% (non-condensing)

Electrical Specifications	
The following specifications apply to each power supply installed.	
Power Supply:	120 VAC ± 10% @ 50-60 Hz
Output Power:	91 Watts @ 100% full load
Input Current:	1.5A @ 110V
VA:	165 VA
Kwh:	.165 KwH
BTU:	563 BU
Grounding Requirements:	12 AWG copper wire

Telephone and Line Voltages	
Keypad Voltages	
DC voltage measured at the MDF (between tip and ring)	Minimum: 36 VDC Maximum: 44 VDC
Minimum operating DC voltage measured at station jack (between tip and ring)	24 VDC
8/16SLIU Card Single Line Telephone Voltages	
DC voltage measured at the MDF (between tip and ring)	On-Hook Idle State Minimum: 44 VDC On-Hook Idle State Maximum: 56 VDC Off-Hook Active State: 7.5 VDC typical, depending on the telephone type and loop length.
Ringing voltage	50-65 VAC, sinusoidal (sine wave)
High Voltage Message Waiting	95 VDC
REN (Ringer Equivalence) Per Port	2
Simultaneous Ringing	Ringling cycles through the ports, ringling four ports at a time.
Line Voltages	
Ringing voltage	42-103 VAC @ 20 Hz
Battery (from telco)	44-56 VDC
External Paging	
Output Impedance:	600 Ohm
Output Level:	0 dBr @ 1.0 KHz

Specifications

Mechanical Specifications				
Equipment	Width	Depth	Height	Weight
4 Slot KSU:	10 3/4"	5 7/8"	13 11/16"	4 lbs 5 oz
8 Slot KSU	19 1/2"	5 7/8"	13 11/16"	6 lbs 12 oz
Display Keyset:	7 5/8"	9 1/2"	4 3/4"	2 lb. 5.7 oz.
Super Display Keyset:	7 5/8"	9 1/2"	4 3/4"	2 lb. 5.7 oz.
60-Button DSS Console	5 5/8"	9 1/2"	4 3/4"	1 lb. 3.4 oz.

BGM/MOH Music Source Inputs	
Music inputs are located on the CPU Card.	
Input Impedance:	10K Ohms
Input Level:	+18 dBr (+ 2 dBr) @ 1.0 Khz

USB and Ethernet Specifications	
USB and ethernet connectors are located on the CPU Card.	
USB:	USB 2.0 full speed (12 Mbits/sec)
Ethernet	Auto Sensing

2PGDAD Module Specifications	
Relay Contacts	
Configuration:	Normally open
Maximum Contact Ratings:	500 mA @ 24 VDC 250 mA @ 120 VAC

FCC Registration Information				
Model:	DX7NA-80M and DSX7NA-160M			
Manufacturer:	NEC Infrontia			
FCC Part 15 Registration:	Class A			
FCC Registration Number:	US:NIFKF00BDSX US:NIFMF00BDSX US:NIFPF00BDSX			
Industry Canada Certificate (DOC) Number:	IC: 140k-DSX			
Reg. Status	FIC	Mfrs. Port ID	REN	Network Jacks
Original	02LS2	1091005 1091009	REN 0.6B	RJ11C RJ21X
T1/E1/PRI Card FCC Registration Information				
FIC	Description			
04DU9-BN	1.544 Mbps Superframe format (SF) without line power			
04DU9-ISN	1.544 Mbps ANSI ESF and B8ZS without line power			

Cabling Requirements			
<ol style="list-style-type: none"> Do not run station cable 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. When cables must be run on the floor, use cable protectors. Cable runs for key telephones and single line telephones Modules must be a dedicated, isolated cable pair. 			
Device	Cable Type	Cable Run (ft)	Notes
Key Telephone	2-wire 26 AWG	1300	
	2-wire 24 AWG	2000	
Single Line Telephone	2-wire 26 AWG	11,500	at constant 20 mA
		3150	at constant 35 mA
	2-wire 24 AWG	18,000	at constant 20 mA
		5050	at constant 35 mA
2PGDAD Module	2-wire 22 AWG	29,000	at constant 20 mA
		8000	at constant 35 mA
DSX Analog Door Box to 2PGDAD Module	2-wire 26 AWG	650	
	2-wire 24 AWG	980	
	2-wire 22 AWG	1640	

Parts List

Station Equipment	
Description	Part Number
22-Button Display Telephone with Speakerphone	1090020 (Black) 1090025 (White)
34-Button Backlit Display Telephone with Speakerphone	1090021 (Black) 1090026 (White)
34-Button Backlit Display Telephone with Full-Duplex Speakerphone	1090022 (Black) 1090027 (White)
34-Button Backlit Super Display Telephone with Full-Duplex Speakerphone	1090023 (Black) 1090028 (White)
60-Button DSS Console	1090024 (Black) 1090029 (White)
DTH-1-1 Single Line Telephone	780034
DTR-1-1 Single Line Telephone	780020 (Black) 780021 (White)
DTR-1HM-1 Single Line Telephone	780025 (Black) 780026 (White)
Analog Door Box	922450
2PGDAD Module	0891027

DSX Cordless Lite II Telephone	
Description	Part Number
Cordless Lite II Telephone	730087
Cordless Lite II Base Unit AC Adaptor	730618
Cordless Lite II Base Unit Wall Mount Bracket	730608
Cordless Lite II Handset Charger	730632
Cordless Lite II Handset Charger AC Adaptor	730619
Cordless Lite II Wall Mount Bracket for Handset Charger	730633
Cordless Lite II Handset Battery	730631
Cordless Lite II Belt Clip	730634
Cordless Lite II M175 Headset	750637
Cordless Lite II MX150 Headset	750642

DESI Labels	
Description	Part Number
DSX Telephone Labels	
DSX 22-Button Display Telephone (White)	1093086
DSX 22-Button Display Telephone (Black)	1093085
DSX 34-Button Display Telephone (White)	1093084
DSX 34-Button Display Telephone (Black)	1093083
DSX 34-Button Super Display Telephone (White)	1093082
DSX 34-Button Super Display Telephone (Black)	1093081
DSX 60-Button DSS (White)	1093080
DSX 60-Button DSS (Black)	1093079
DTR-1-1 Telephone Labels	
Black	780400
Metallic Green	780401
Metallic Silver	780402
Lime Green	780403
Preprint (blank)	780459
DTR-1HM-1 Telephone Labels	
Black	780404
Metallic Green	780405
Metallic Silver	780406
Lime Green	780407
Preprint (blank)	780460
DTH-1-1 Telephone Labels	
Metallic Silver	780450

DSX Telephone Headsets	
Description	Part Number
See <i>Headsets</i> (page 5).	

Specifications and Parts

Parts List

Common Equipment	
Description	Part Number
DSX-80 4-Slot KSU	1090002
DSX-160 8-Slot KSU	1090003
DSX Power Supply	1091008
Installation Cable	808920
DSX Serial Adaptor (requires customer-provided 6-conductor line cord)	1091014

Cards	
Description	Part Number
CPU Card	1090010
16 Port Digital Station Card (16ESIU)	1091004
16 Port Analog Station Card with HV Message Waiting (16SLIU)	1091007
8 Port Analog Station Card with HV Message Waiting (8SLIU)	1091010
T1/E1/PRI Line Card	1091006
16 Port CO Line Card (16COIU)	1091005
8 Port CO Line Card (16COIU)	1091009

IntraMail	
Description	Part Number
IntraMail 8 Port x 16 Hour	1091013
IntraMail 4 Port x 8 Hour	1091011

Replacement Parts	
Description	Part Number
Handset and Cord Assembly	1091016
22 Button Clear Plastic Cover	1091018
34 Button Clear Plastic Cover	1091019
34 Button Super Display Clear Plastic Cover	1091020
60 Button DSS Clear Plastic Cover	1091021
RFI Bead Kit	88901
Replacement Battery for CPU Card	EX0254-0040

Parts List

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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