

Components

Installation

Optional
Equipment

Specifications
and Parts

DSX

DSX-40 Hardware Manual

P/N 1093097

Rev 1, October 2006

Printed in U.S.A.

01.01.09

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

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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 (standard handset type)	



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 (standard handset type)	



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 (standard handset type)	



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 Half-Duplex Speakerphone

At a Glance	P/Ns 1090030 (Black) and 1090031 (White)	
	Display: 9 line x 24 character	Speakerphone: Built-in, half-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 (standard handset type)	



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 half 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: Yes	



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 Telephone

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
-	Polaris DuoSet Convertible	Over-the-Head, On-the-Ear	Voice Tube	P141
-			Noise Canceling	P141N
-	Polaris DuoPro	On-the-Ear	Voice Tube	P151
-			Noise Canceling	P151N
-	Polaris DuoPro	Over-the-Head	Voice Tube	P161
-			Noise Canceling	P161N
-	Polaris DuoPro Convertible	Over-the-Head,	Voice Tube	P171
-	Polaris DuoPro Convertible	Over-the-Head,	Noise Canceling	P171N
-	Polaris DuoPro	Behind-the-Head	Voice Tube	P181
-	Polaris 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
-	Polaris SupraPlus SL Monaural	Over-the-Head	Voice Tube	P351
-			Noise Canceling	P351N
-	Polaris SupraPlus SL Binaural	Over-the-Head	Voice Tube	P361
-			Noise Canceling	P361N

Headsets

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

¹ Requires Vista M12 Amplifier and Handset/Headset Switch

Accessories and Replacement Parts for Polaris Headsets		
NEC P/N	Description	Plantronics Item Number
750655	Polaris Extension Cable (10 ft.) • For all Polaris headset models.	40703-01
750657	Clothing Clip Replacement (1) • For all Polaris Mirage, Tristar, and Encore headset models.	29961-01 or 29961-13
750656	Ear Cushion (Package of 2) • For Supra and Encore models.	15729-11
750 650	Windscreen Replacement (1) • For Supra NC headset models	24316-01 or 24316-04
750651	Clear Voice Tube for Mirage and Supra Replacement (1)	17593-01 or 17593-06
750653	Rainbow Voice Tube for Mirage and Supra Replacement (Package of 6)	17593-7 or 17593-80
750652	Clear Voice Tube for Encore and Tristar (1)	29960-01 or 29960-13
750654	Rainbow Voice Tube for Encore and Tristar (Package of 6)	29960-70 or 29960-80



Headsets

GN Netcom Headsets

GN Netcom Non-Amplified Headsets ¹ (http://www.gnnetcom.com/us/en)			
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 for DSX Cordless Lite II Telephone

At a Glance	P/N 750637 (M175)	P/N 750642 (MX150)
		
	P/N 730602 (EXP9530)	

Components

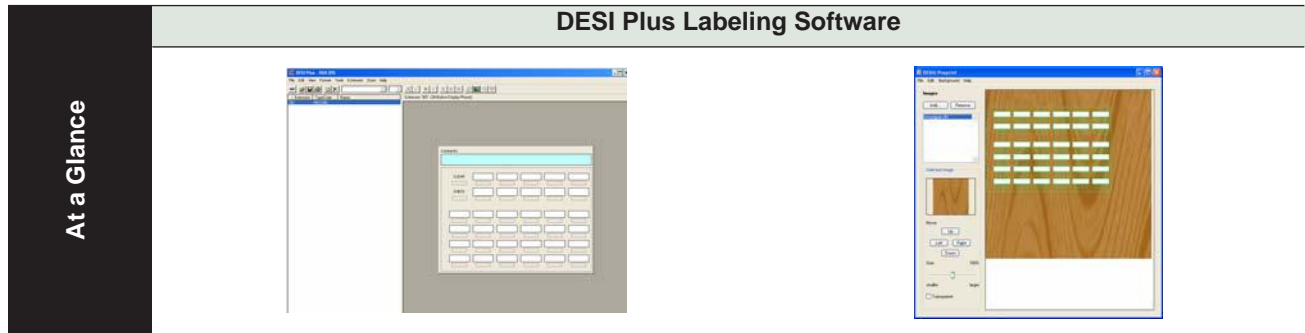


The following headsets are available for the DSX Cordless Lite II Telephone:

- M175 Headband Style (P/N 750637)
- MX150 Earloop Style (P/N 750642)
- EXP 9350 Convertible Headset (P/N 730602)

DESI Telephone Label System

DESI Plus Labeling Software



DESI Plus Labeling Software is a Windows-compatible application for printing customized key data on specially designed DESI telephone labels. Use DESI Plus 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 Plus Labeling Software is provided on the DSX System Document CD included with each DSX telephone system.

DESI Telephone Labels

At a Glance

Labels for DSX Telephones



Labels for NEC Single Line Telephones



Components

The following DESI labels are available for DSX telephone “replacement” applications.

- 22-Button Display (pkg 20 with 10 backers)
 - White (P/N 1093086)
 - Black (P/N 1093085)
- 34-Button Display (pkg 20 with 10 backers)
 - White (P/N 1093084)
 - Black (P/N 1093083)
- 34-Button Super Display (pkg 20 with 10 backers)
 - White (P/N 1093082)
 - Black (P/N 1093081)
- 60-Button DSS Console (pkg 20 with 10 backers)
 - White (P/N 1093080)
 - Black (P/N 1093079)

The following DESI labels are available for DSX telephone “preprint” applications.

- 22-Button Display Preprint (pkg 25)
 - P/N 1093072
- 34-Button Display Preprint (pkg 25)
 - P/N 1093071
- 34-Button Super Display Preprint (pkg 25)
 - P/N 1093070
- 60-Button DSS Console Preprint (pkg 25)
 - P/N 1093069

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)
- 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-40 Common Equipment

DSX-40 4x8x2 Key Telephone System with 2 Door Box Ports and Caller-ID

At a Glance	P/N 1090001	
	Digital extension ports: Built-in: 8 Fully expanded: 24	Analog line ports: Built-in: 4 Total: 8
	Analog extension ports: Built-in: 2 Fully expanded: 18	Expansion slots: Station expansion slots: 2 Line expansion slots: 1
	Built-in door box ports: 2 Built-in door box control relays: 2	Audio outputs: 1 Audio inputs: 2
	Total Ports: 40	CompactFlash interface: Yes
	Ethernet port: Yes (auto sensing)	USB connector: Yes



DSX-40 is a compact, wall-mountable, more economical member of the DSX family that offers many of the features and options of the larger DSX-80/160 in a smaller, self-contained cabinet. In its off-the-shelf basic configuration, DSX-40 supports 4 CO (outside) lines with Caller ID, 8 DSX digital keyset extensions, and 2 analog (single line) extensions with power failure. Additionally, the basic DSX-40 provides:

- CompactFlash card interface (for IntraMail, software loading, and database backup)
- Conference circuits, DTMF receivers and DTMF generators
- NAND Flash for storing the system database
- Battery for short term (14 day) backup of the internal 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
- 2 DSX Analog Door Box ports with associated relays
- Built-in V.32BIS 14.4K BPS modem for remote maintenance

Tips to remember:

1. The CPU also has a reset switch that provides the following three functions:
 - System reset (when momentarily pressed).
 - System initialization (when held down as power is turned on).
 - Software update (when held down for a few seconds while a software update CompactFlash card is installed).
2. DSX-40 provides FSK Message Waiting. It **does not** provide high voltage Message Waiting.

Even with all the value built into the basic off-the-shelf DSX-40, the system is easily expandable by adding station and line PCBs. See *DSX-40 PCBs* (page 13) for more.

DSX-40 8-Port Digital Station (8ESIU) Card

At a Glance	P/N 1091002	
	Digital station ports: 8	Installs in either the top or middle DSX-40 expansion slot.
	Max. cards installed: 2 (16 additional digital station ports)	Can be mixed with 8-Port Analog Station Cards in any combination in the top and middle expansion slots.
	Max. digital ports: 24 (8 in each digital card installed plus 8 built-in)	



The 8-Port Digital Station Card is an expansion card that provides eight additional digital station ports. You can install up to two 8-Port Digital Station Cards, using the upper and middle expansion slots, for a system maximum of 24 digital stations.

Expansion Guidelines

The top 2 DSX-40 expansion positions are for the 8-port station cards, and you can install them in either position in any combination.

DSX-40 Station Card Capacities		
Top Position (9-16)	Middle Position (17-14)	Total
8-Port Digital Card	8-Port Digital Card	24 Digital and 2 Analog
8-Port Digital Card	8-Port Analog Card	16 Digital and 10 Analog
8-Port Analog Card	8-Port Analog Card	8 Digital and 18 Analog

Tips to remember:

- The 8-Port Digital and 8-Port Analog Station Cards use the same expansion slots (upper and middle).

DSX-40 8-Port Analog Station (8SLIU) Card

At a Glance	P/N 1091003	
	Analog station ports: 8	Installs in either the top or middle DSX-40 expansion slot
	Max. analog cards installed: 2 (16 additional analog station ports)	Can be mixed with 8-Port Digital Station Cards in any combination in the top and middle expansion slots
	Max. analog ports: 18 (8 in each analog card installed plus 2 built-in)	



The 8-Port Analog Station Card is an expansion card that provides eight additional analog station ports. You can install up to two 8-Port Analog Station Cards, using the upper and middle expansion slots, for a system maximum of 18 analog stations.

Tips to remember:

- The 8-Port Digital and 8-Port Analog Station Cards use the same expansion slots (upper and middle).

DSX-40 4 Port (4COIU) Line PCB with Caller ID

At a Glance	P/N 1091001	
	Line ports: 4	Installs only in the bottom expansion slot.
	Max. line cards installed: 1 (4 additional CO line ports)	Caller ID: Built in
	Max. line ports: 8 (4 in the CO line card plus 4 built-in)	Message Waiting: FSK only



The 4-Port CO Line Card with Caller ID is an expansion card that provides four additional CO line ports with built-in Caller ID. You can install this card only in the bottom expansion slot for a system maximum of 8 outside line ports.

Tips to remember:

- You can install the 4-Port CO Line Card with Caller ID only in the bottom expansion slot.

DSX IntraMail 8 x 16

At a Glance	P/N 1091013	
	Ports: 8	Storage Hours: 16
	Routing Mailboxes: 16 8 Announcement 8 Call Routing	Subscriber Mailboxes: DSX-40: 34
	Ring Group Mailboxes: 8	UCD Group Mailboxes: 8
	Total Mailboxes: DSX-40: 66	



DSX IntraMail 4 x 8

At a Glance	P/N 1091011	
	Ports: 4	Storage Hours: 8
	Routing Mailboxes: 16 8 Announcement 8 Call Routing	Subscriber Mailboxes: DSX-40: 34
	Ring Group Mailboxes: 8	UCD Group Mailboxes: 8
	Total Mailboxes: DSX-40: 66	



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.

Built-In Automated Attendant

The Built-In Automated Attendant gives the system call answering and routing capabilities when IntraMail is not installed. The Built-In Automated Attendant can use any of the first eight Call Routing Mailboxes (001-008) for call handling, and each of these eight Routing Mailboxes can have a 30 second Instruction Menu message (Attendant Greeting). The Routing Mailboxes *must* be Call Routing Mailboxes, and all other Routing Mailbox types are ignored. Additionally, the Built-In Automated Attendant provides two voice mail ports, allowing it to process two calls simultaneously.

The Built-In Automated Attendant does not provide voice mail.

Just like the full featured IntraMail Automated Attendant, the Built-In Automated Attendant can answer outside calls on each line according to the time of the day and day of the week that the call is ringing. After answering, the Built-In Automated Attendant plays an Instruction Menu message (greeting) to the caller and provides them with dialing options.

Miscellaneous Cards and Optional Equipment

DSX Analog Door Box

At a Glance	P/N 922450
	DSX-40: <ul style="list-style-type: none">• 2 built-in door box ports• Additional door box ports requires 2PGDAD Modules connected to Digital Station 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 digital station ports.
- The DSX-40 has 2 built-in door box ports.

DSX 2PGDAD Module

At a Glance	P/N 0891027
	Provides connection and relays for two DSX Analog Door Boxes Connects to digital station port



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 digital station ports.

DSX System Administrator (PC Program)

At a Glance

Free Download

Download the DSX System Administrator from <http://www.necdsx.com>



Components

The DSX System Administrator is a Windows™-based application you can use for programming the telephone system and maintaining site databases, instead of using the conventional telephone programming. The System Administrator provides:

- **On-Line Programming (Direct Connection)**
With the PC connected to the telephone system's USB or Ethernet port, you can make immediate changes to the telephone system programming. While connected, the System Administrator also allows you to save your new data to a file on the PC hard disk, or upload a "template" database from your PC to the system.
- **Remote Programming**
Using an IP or built-in modem connection between your PC and the remote system, you can customize a customer's system without leaving your office.
- **Off-Line Programming**
With Off-Line Programming, the PC Program allows you to set up a database on your PC off line, connect to the telephone system, and upload the entire custom configuration.
- **Database Save and Restore**
Use the PC Program to save a site's data to your PC hard disk. You can easily restore the saved data later on, if required.

Miscellaneous Cards and Optional Equipment

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-40* (page 20) and shows you *about* how much space your system requires.

Single Line Telephone REN Limitations

Please note the following when installing single line telephones:

- The total Ringer Equivalence Number (REN) per system cannot exceed 10.
- The total REN per analog port cannot exceed 5.
- Ringer Equivalence is cumulative.
- A REN of 1 is the normal for an industry standard 2500 set with electromechanical ringer. Many phones with electronic ringers have significantly lower RENs.

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. 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-40* below.

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.

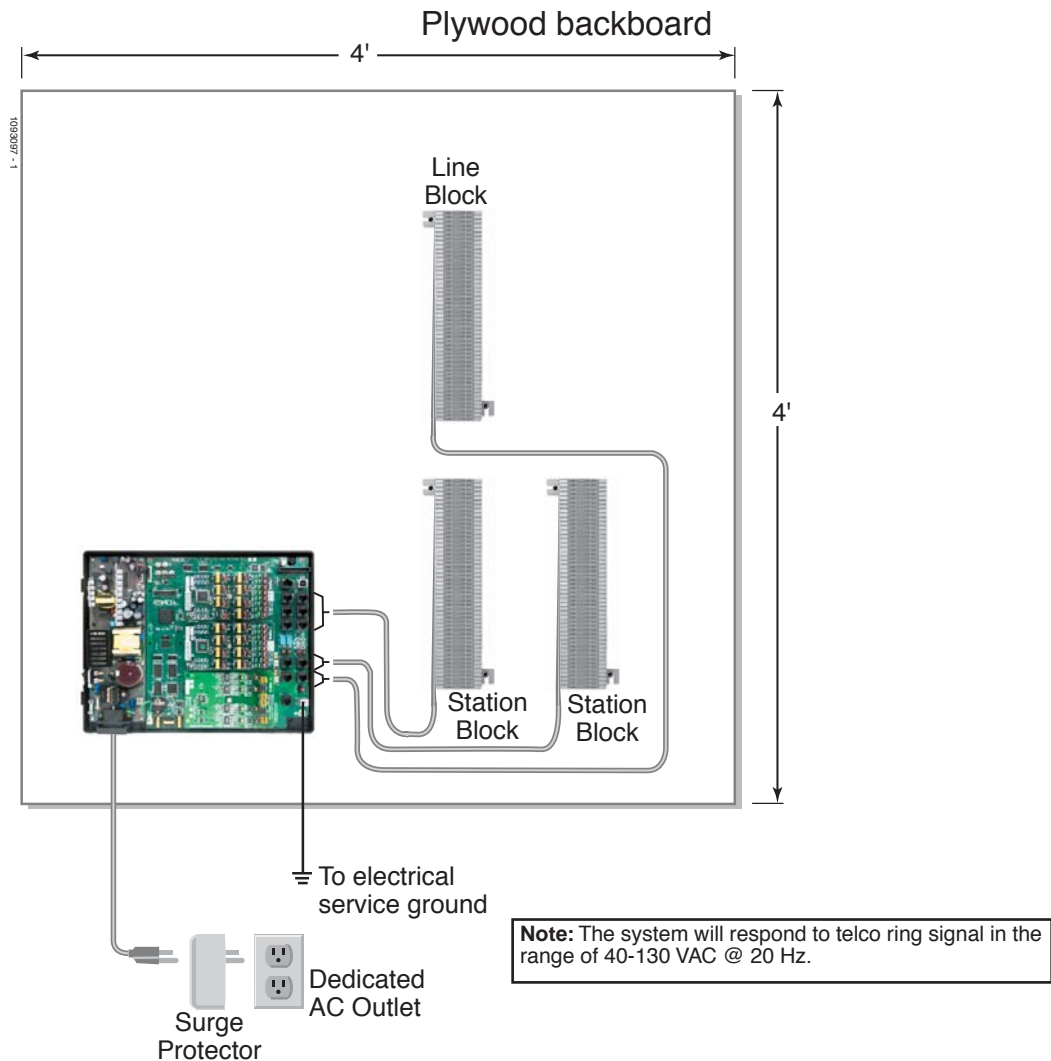


Figure 1: Installation Layout, DSX-40

Removing the Cover

You must remove the Main Equipment Cabinet cover to access the extension, line and auxiliary connections.

To remove the cover:

1. Slide the cover button to **OPEN**.
2. Press down and slide the cover away from the Main Equipment Cabinet.



Figure 2: Removing the Cover

Installing the Main Equipment Cabinet

Hanging the Cabinet

To hang the cabinet:

1. Screw suitable fasteners $11 \frac{3}{16}$ " apart in a convenient location on the MDF. Be sure to leave the fasteners "backed out" about $\frac{3}{16}$ " from the MDF backboard.
2. Hang the cabinet as shown.

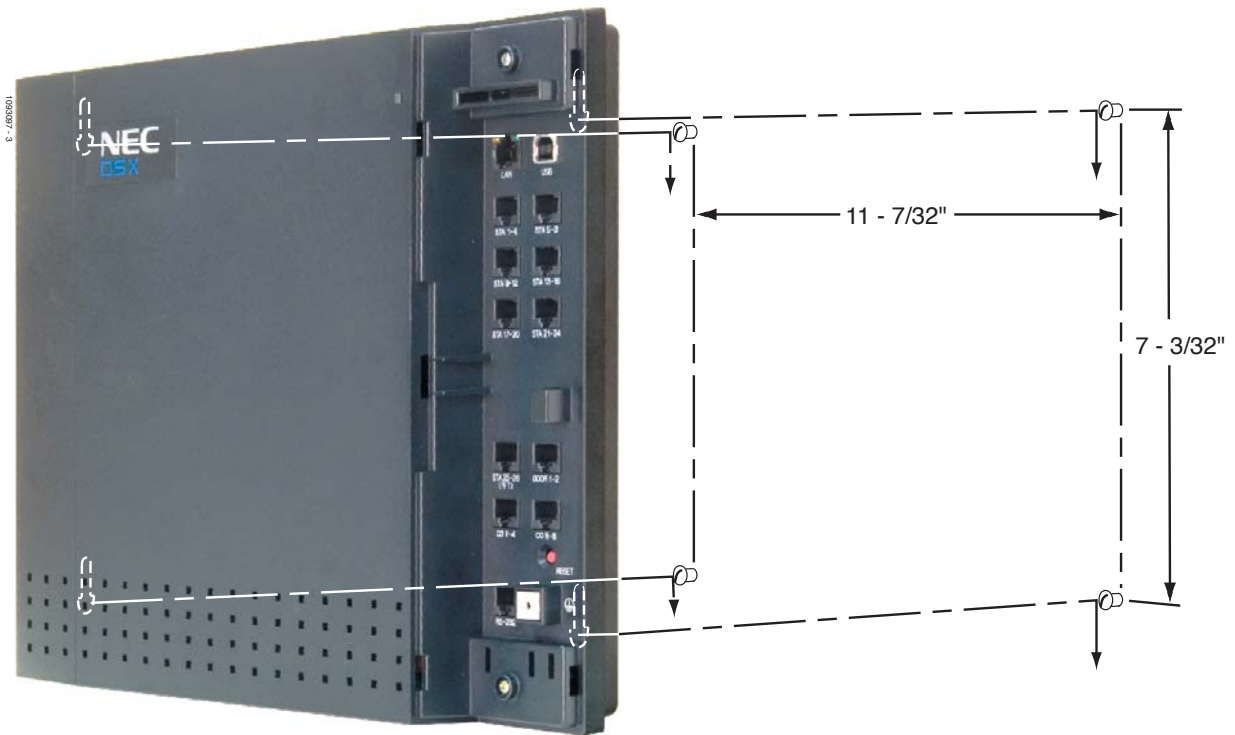


Figure 3: Hanging the Cabinet

Attaching the Ground Wire

Important
You must connect your system to Electrical Service Ground.

To attach the ground wire:

1. Loosen the lug on the cabinet's ground connection.
2. Run a 12 AWG stranded copper wire from the ground lug to Electrical Service Ground.
3. Firmly retighten the lug loosened in step 1 above.

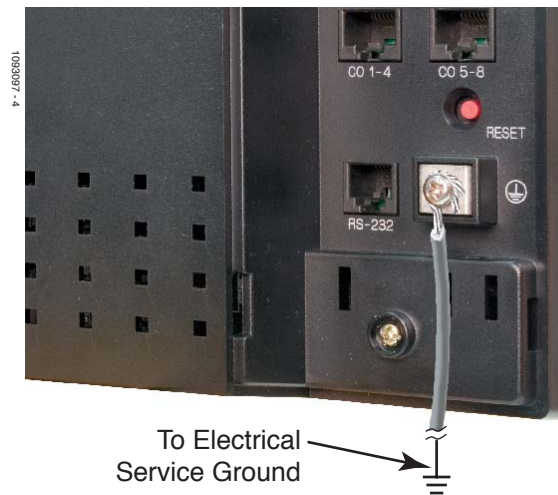


Figure 4: Attaching the Ground Wire

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

Removing the Top Panel

Top Panel Removal

You must remove the top panel in order to install the system battery and Expansion Cards (if required), or to replace the power supply AC input fuses.

To remove the top panel:

1. Be sure your system's power cord is unplugged, then unscrew the 2 captive screws that secure the cabinet top panel to the base.
2. Lift up the top panel as shown below.
3. Remove the top panel.

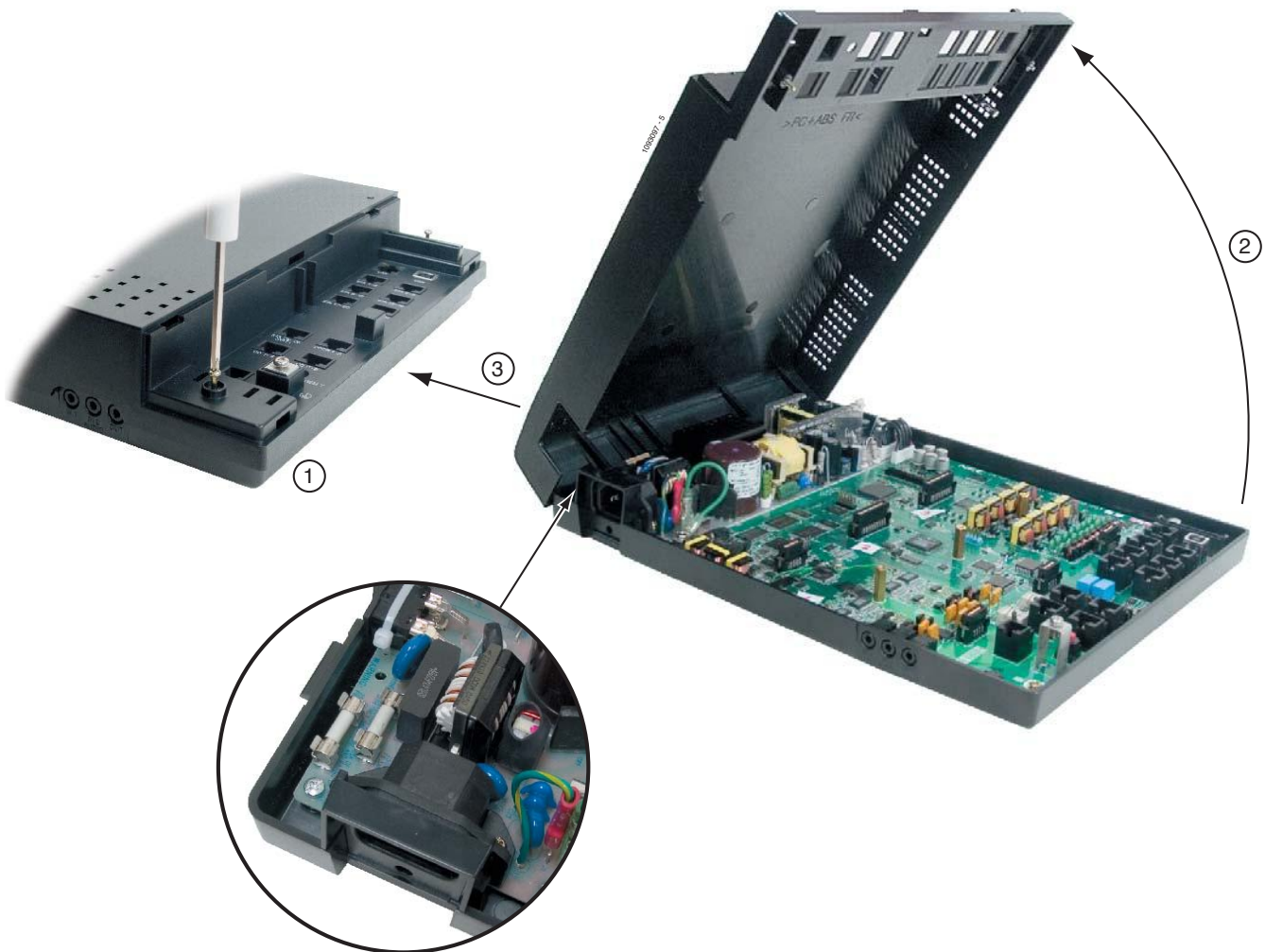


Figure 5: Removing the Top Panel

Installing Expansion Cards

The DSX-40 accepts up to 3 Expansion Cards: two for stations and one for lines. The following expansion Cards are available:

- 8-Port Digital Station Card (P/N 1091002)
- 8-Port Analog Station Card (P/N 1091003)
- 4 Port CO Line Card with Caller ID (P/N 1091001)

Station Cards

The top 2 expansion positions are for the 8-port station cards, and you can install them in either position in any combination.

DSX-40 Station Card Capacities		
Top Position (9-16)	Middle Position (17-14)	Total
8-Port Digital Card	8-Port Digital Card	24 Digital and 2 Analog
8-Port Digital Card	8-Port Analog Card	16 Digital and 10 Analog
8-Port Analog Card	8-Port Analog Card	8 Digital and 18 Analog

Line Card

The bottom expansion position is reserved for the 4-port line card. This allows you to expand the DSX-40 from 4 lines to 8 lines, all with built-in Caller ID.

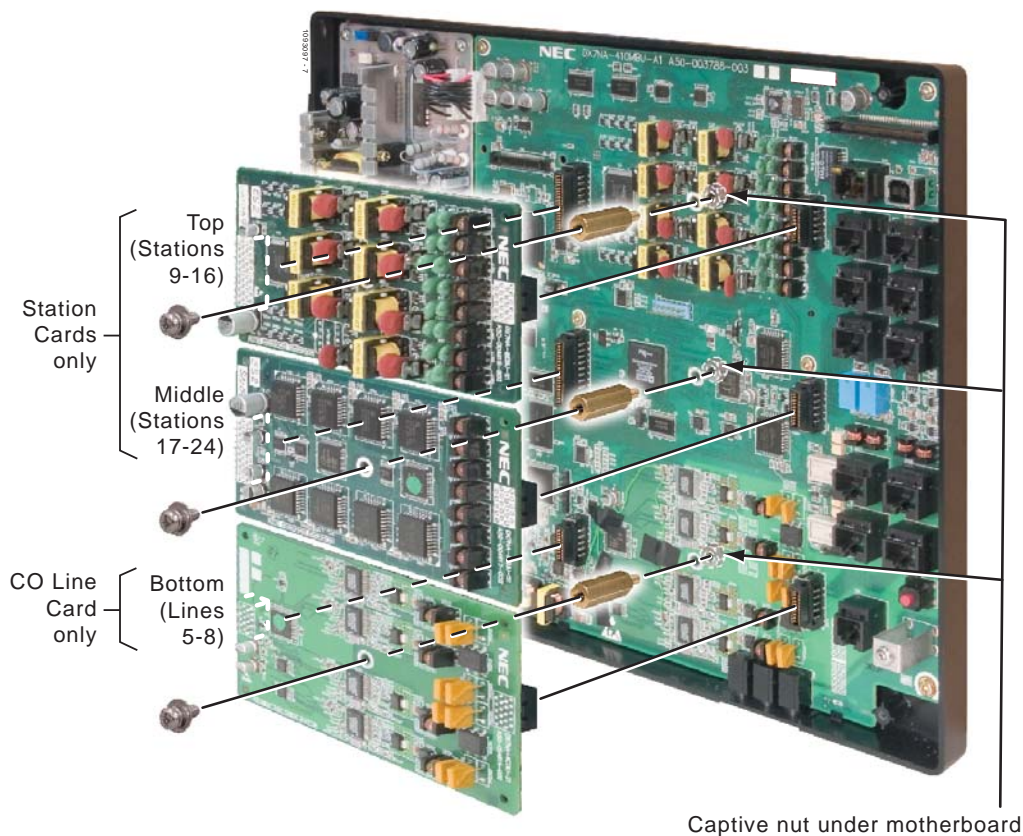


Figure 6: Installing Expansion Cards

Installing Expansion Cards, the Battery, and Replacement Fuses

Installing and Replacing the Battery

In the event of commercial AC power failure, the battery provides short-term (14 day) backup of the Real Time Clock and station parameters.

To install the battery:

1. Insert the battery into the battery clips as shown below.
2. Replace and re-secure the top panel.

OR

Go to *Installing Expansion Cards* (page 25) and install Expansion Cards as required.

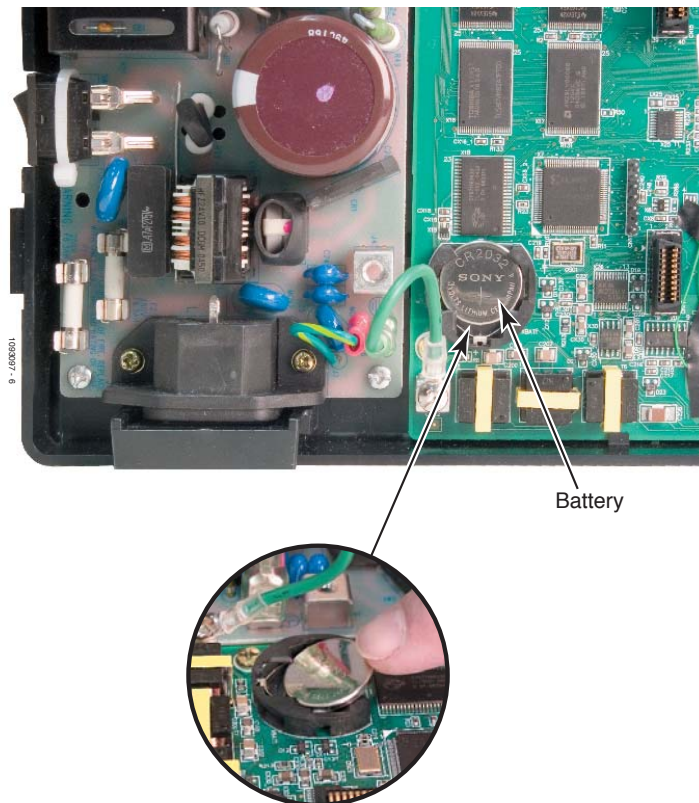


Figure 7: Installing the Battery

Installing Expansion Cards, the Battery, and Replacement Fuses

To replace an existing battery:

You should only need to replace your battery if it fails to hold a charge (i.e., no longer backs up station parameters and the Real Time Clock).

1. Do not power down the system.
 - If you power down the system and remove the battery, station parameters and the Real Time Clock will reset to the factory-installed default settings.
2. Following Figure 7, gently push down on the battery and remove it.
3. Replace the battery with a Sony CR2032 3-volt Lithium cell battery or equivalent. (This battery is available from NEC as P/N EX0254-0040.)
4. Verify that the Real Time Clock and station parameters data is intact.
5. Discard the old battery.

Caution

- Take proper precautions when discarding the battery. It may be considered hazardous material in some areas.
- There is a danger of explosion if the battery is incorrectly replaced.
- Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Power Supply AC Input Fuses

The power supply AC input fuses protect the system power supply from problems with the site's AC line. These problems can include improperly wired outlets and power surges. In normal operation, you should never need to replace the power supply AC input fuses. See the detail in *Figure 7: Installing the Battery* (page 26).

To replace a fuse:

1. Be sure your system's power cord is unplugged.
2. Using a commercially-available fuse puller, carefully remove the blown fuse(s).
3. Replace the blown fuse only with the following type:

Cooper/Bussman
Type BK/S501
Rated 6.3A/250V Ceramic

Connecting Extensions and Lines

Extension and Line Connections

Important

Install station equipment connected to Digital Station and Analog Station Cards as on-premises extensions only.

The Main Equipment Cabinet provides 8-pin mod jacks for connecting extensions and lines. Using the Installation Cable (P/N 808920) makes it easy to connect the mod jacks 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 or lines.

To connect all 26 extensions and 8 lines, you'll need 3 installation cables and 3 associated 66M1-50 connecting blocks.

Extension and Line Cabling		
Cable	Jack	Description
1	STA 1-4	First 4 built-in digital station ports.
	STA 5-8	Second 4 built-in digital station ports.
	STA 9-12	First 4 station ports in the top position.
	STA 13-16	Second 4 station ports in the top position.
	STA 17-20	First 4 station ports in the middle position.
	STA 21-24	Second 4 station ports in the middle position.
2	STA 25-26	Built-in analog station ports.
	Door 1-2	See <i>Installing a DSX Analog Door Box on a Built-In Door Box Port</i> (page 49).
3	CO 1-4	Four built-in lines.
	CO 5-8	Four additional lines provided by the line expansion card installed in the bottom position.

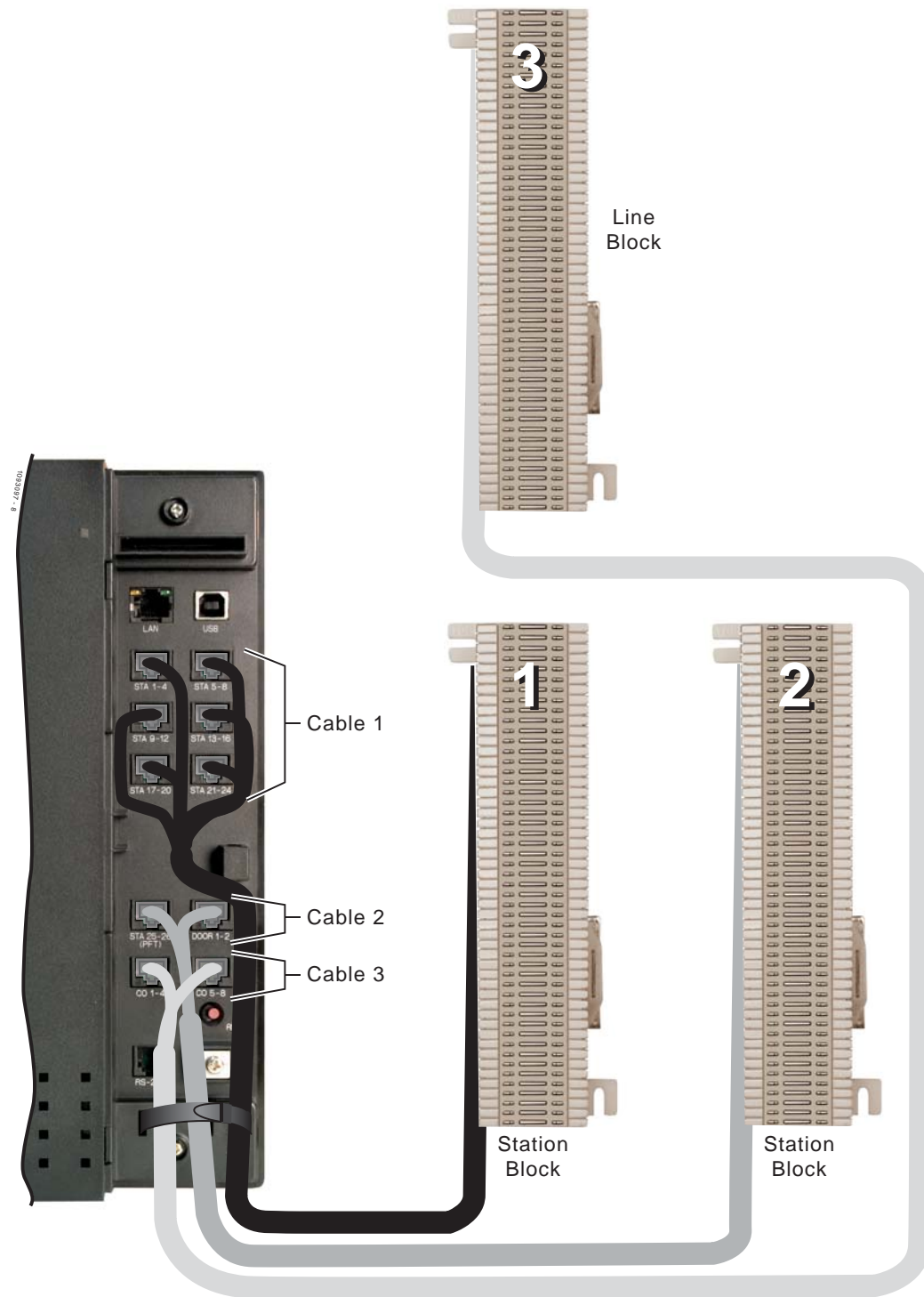


Figure 8: Extension and Line Cabling

Connecting Extensions and Lines

Punch Down for Extensions

To punch down the cables for extensions:

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

To make your own cables, see *Making Your Own Cables* (page 33).

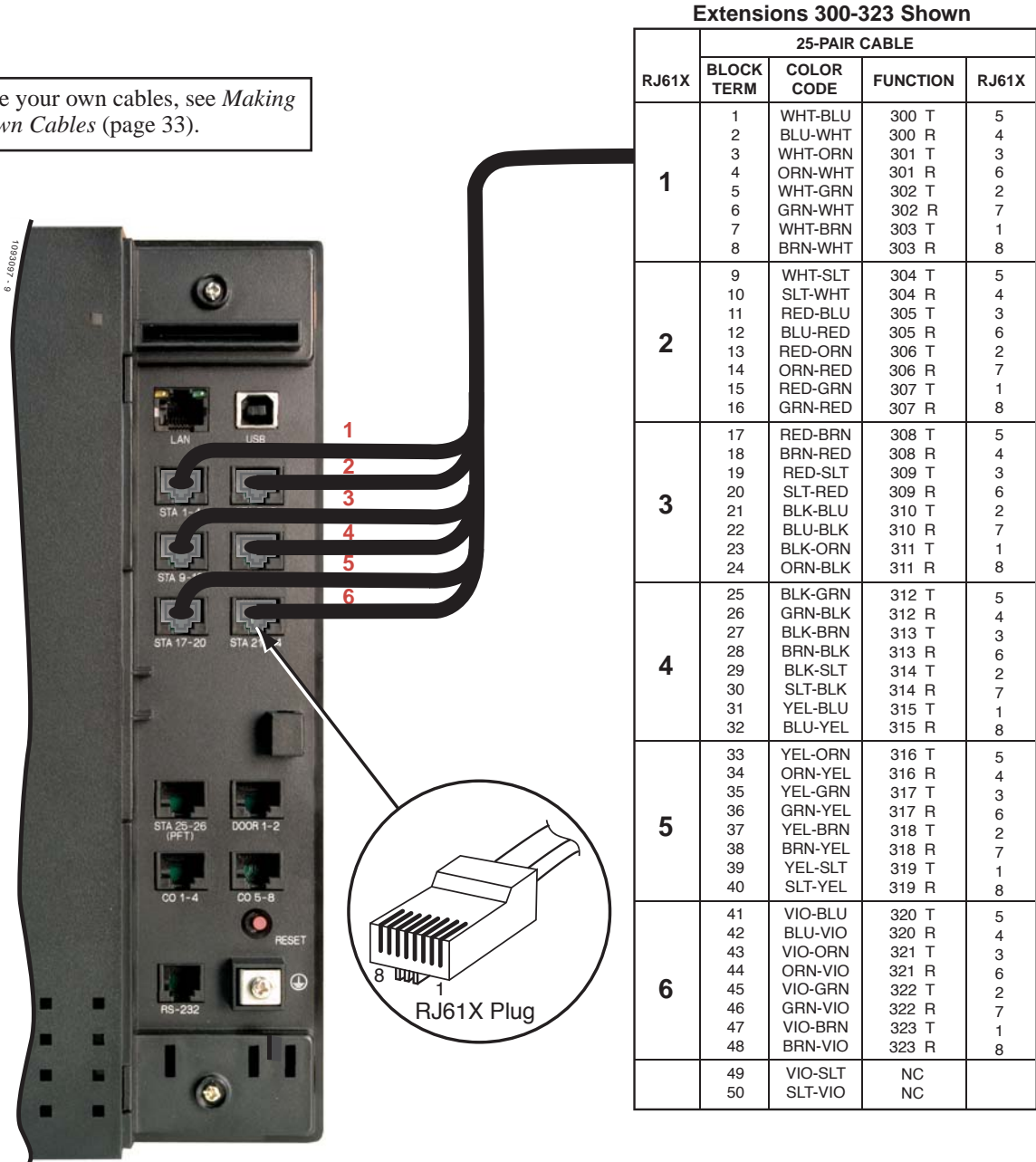


Figure 9: Punch Down for Extensions

Punch Down for Lines

To punch down the cable for lines:

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

To make your own cables, see *Making Your Own Cables* (page 33).

The diagram shows a DSX-40 hardware unit with various ports. A thick black line connects the RJ61X ports on the unit to a table of 25-pair cable color codes. A circular inset shows a close-up of an RJ61X plug with pins numbered 1 to 8. The table is titled 'Lines 1-8' and '25-PAIR CABLE'.

RJ61X	25-PAIR CABLE			
	BLOCK TERM	COLOR CODE	FUNCTION	RJ61X
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
NC	17	RED-BRN		5
	18	BRN-RED		4
	19	RED-SLT		3
	20	SLT-RED		6
	21	BLK-BLU		2
	22	BLU-BLK		7
	23	BLK-ORN		1
	24	ORN-BLK		8
NC	25	BLK-GRN		5
	26	GRN-BLK		4
	27	BLK-BRN		3
	28	BRN-BLK		6
	29	BLK-SLT		2
	30	SLT-BLK		7
	31	YEL-BLU		1
	32	BLU-YEL		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		

Figure 10: Punch Down for Lines

Connecting Extensions and Lines

Securing the Cables

Securing the Ground Wires and Station Cables

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



Figure 11: Securing the Cables

Securing the AC Power Cord

Snap in the provided power cord strain relief and install the cord as shown below.

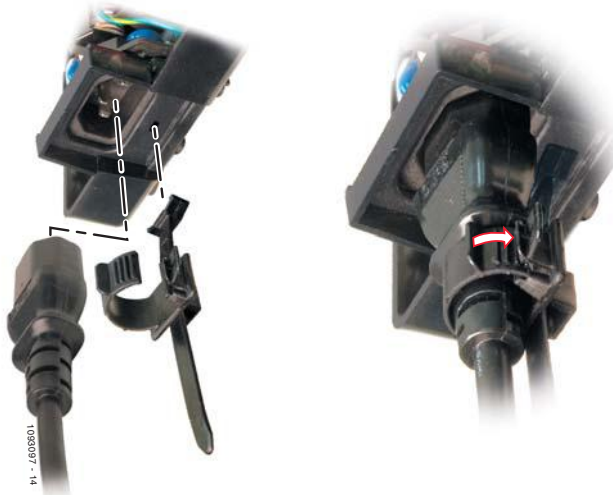


Figure 12: Installing the AC Power Cord and Strain Relief

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).

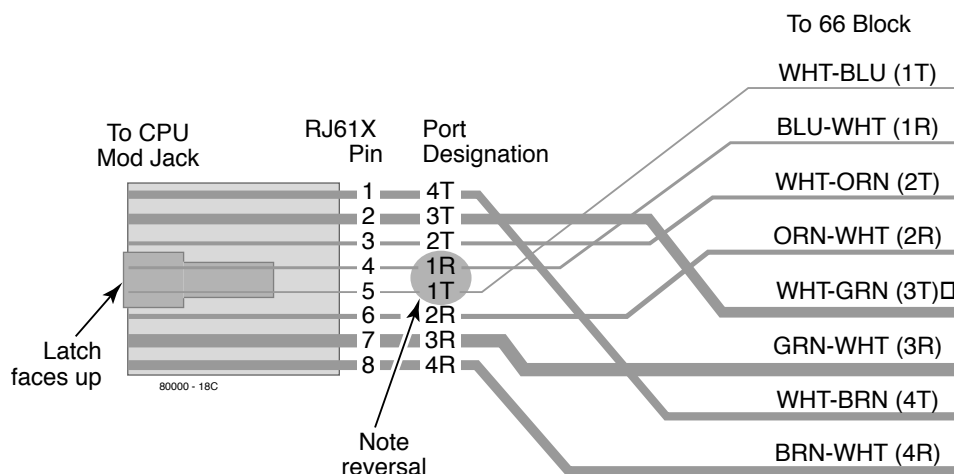


Figure 13: 8-Pin (RJ61X) Jack Pinouts

Connecting Extensions

A fully expanded DSX-40 can connect up to 26 extensions. The basic Main Equipment Cabinet provides 8 digital station ports and 2 analog station ports built in. The configuration of the remaining 16 station ports depends on the combination of 8-Port Digital Station and 8-Port Analog Station Cards installed. See *Installing Expansion Cards* (page 25) for more.

To connect extensions:

1. Using *Figure 9: Punch Down for Extensions* (page 30) as a guide, plug the installation cable plugs into the appropriate jacks on the Main Equipment Cabinet.
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.

Connecting Extensions and Lines

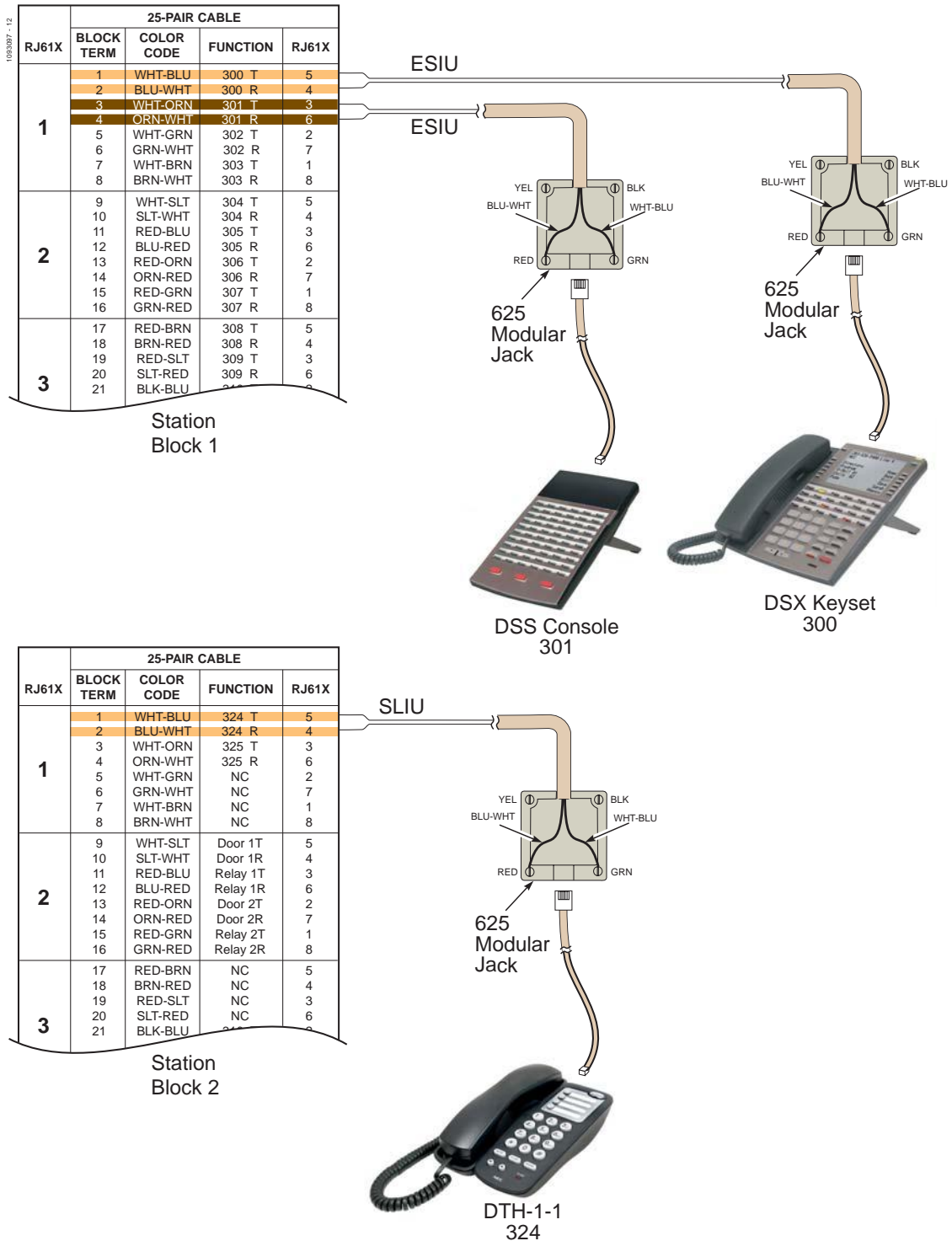


Figure 14: Connecting Extensions

Connecting Lines

A fully expanded DSX-40 can connect up to 8 analog loop-start lines with built-in Caller ID. The basic Main Equipment Cabinet provides 4 lines. By adding a 4-Port Line Card you can connect the system to 8 lines. See *Installing Expansion Cards* (page 25) for more.

To connect lines:

1. Using *Figure 10: Punch Down for Lines* (page 31) as a guide, plug the installation cable plugs into the appropriate jacks on the Main Equipment Cabinet.
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.

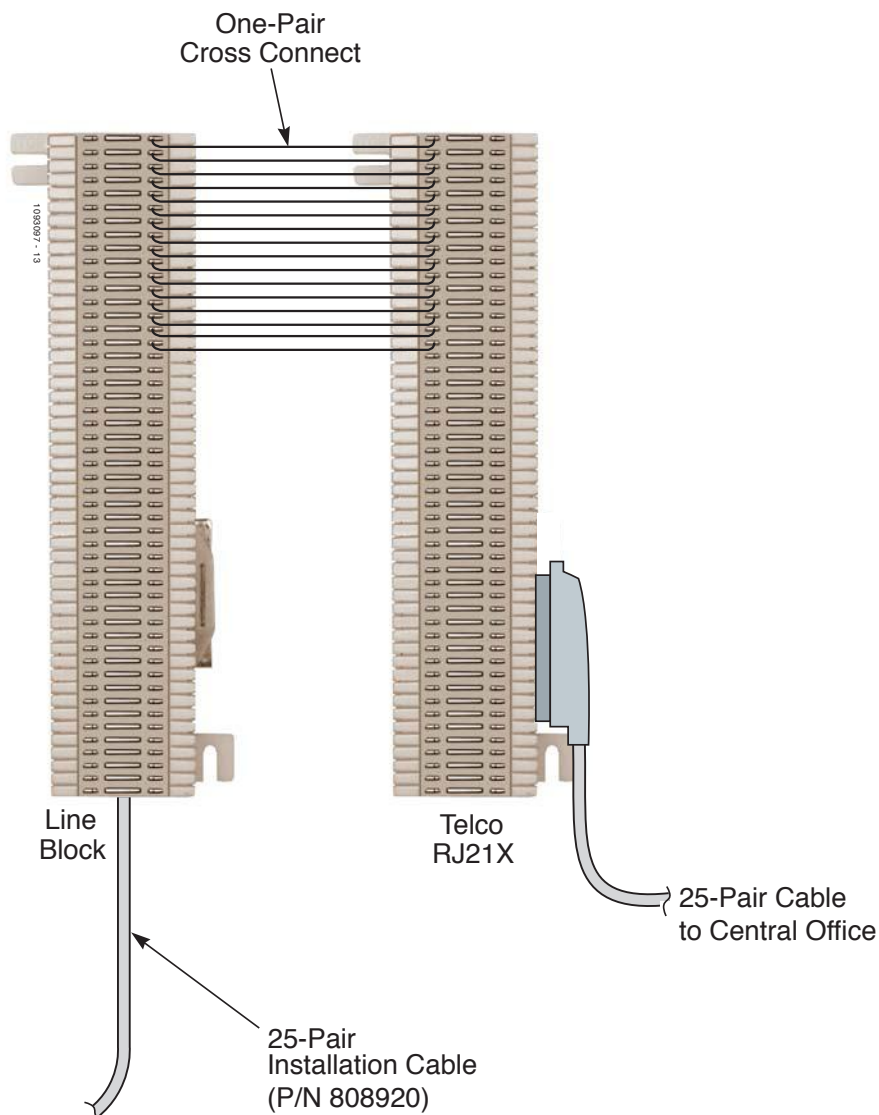


Figure 15: Installing Analog Lines

Setting Up the Telephone and DSS Console

Installing the DSX Keyset 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.

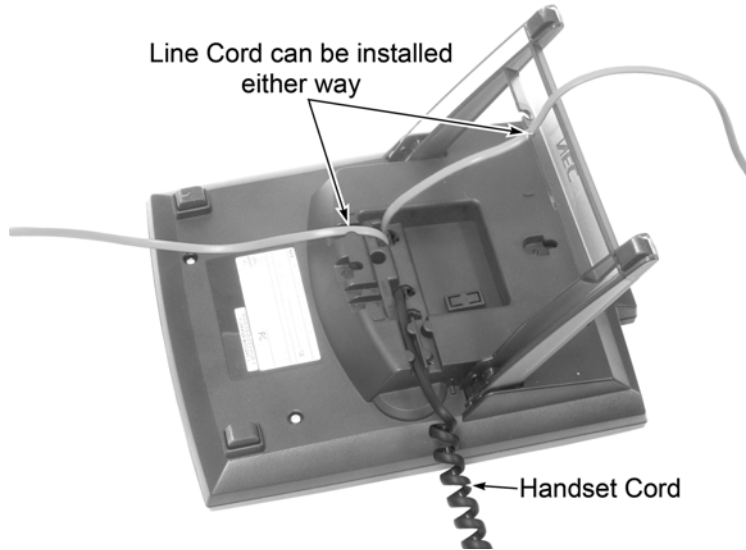


Figure 16: Installing the Handset and Line Cord

Installing the DSX Keyset 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 17: Installing the Optional Headset

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.

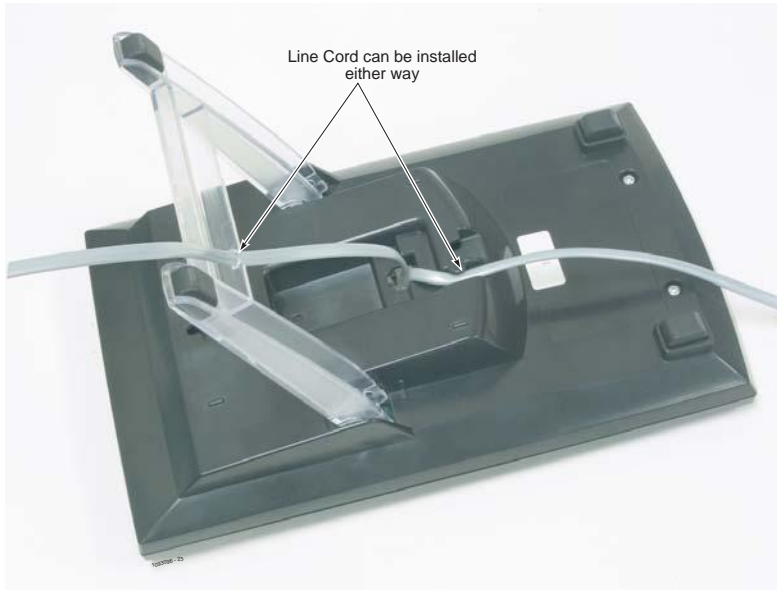


Figure 18: Installing the DSS Console Line Cord

Setting Up the Telephone and DSS Console

Keyset and DSS Console Two Position Angle Adjustment

To set the low viewing angle position:

1. Fold the legs all the way back.



Figure 19: 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 20: 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 21: Removing the Telephone Faceplate

Setting Up the Telephone and DSS Console

To reinstall the faceplate:

1. Snap back into place as shown.



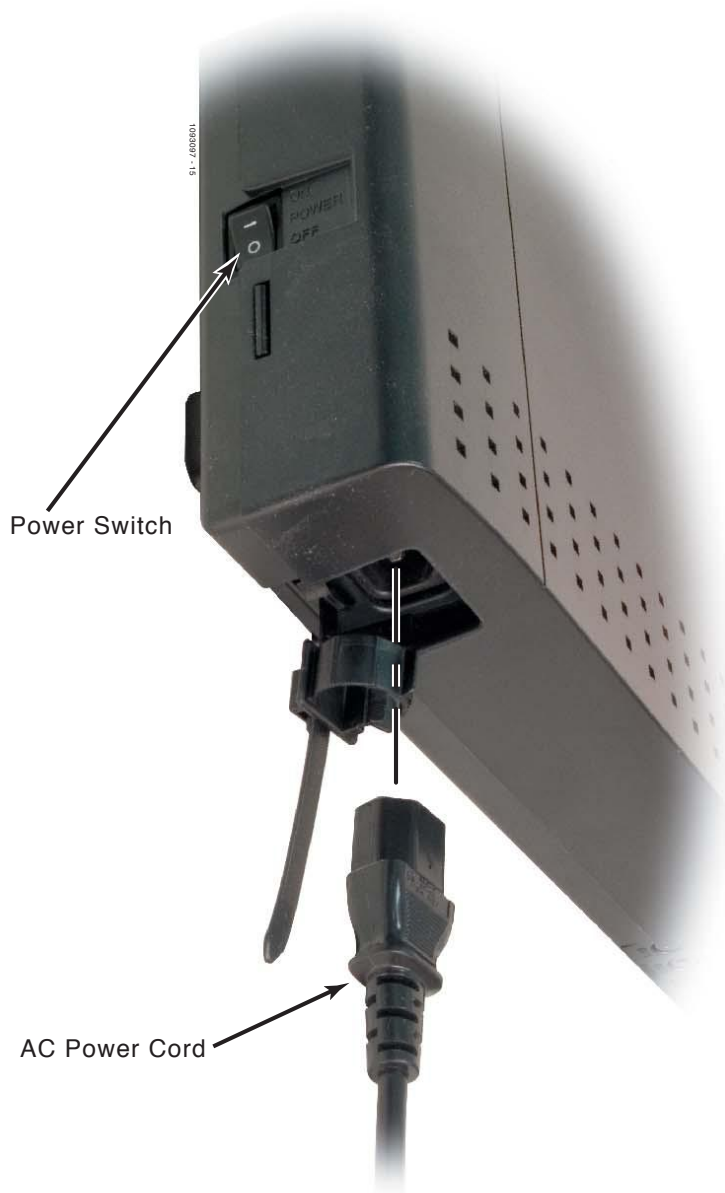
Figure 22: Reinstalling the Telephone Faceplate

Power Up

Now that you have cabled the system, it is time to power-up.

To power up the system:

1. Make sure the system is properly grounded.
2. Plug the AC Power Cord into the Main Equipment Cabinet
3. Install a surge protector in the AC outlet.
4. Plug the Mail Equipment Cabinet's AC power cord into its surge protector.
5. Turn on the cabinet's power switch.
 - The power LED will flash once blue, once green, and then “flutter” blue as the system boots.
 - After about 45 seconds, the LED will wink off blue continuously and the system will be operational.



Powering Up the System

Figure 23: Power Switch and AC Power Cord

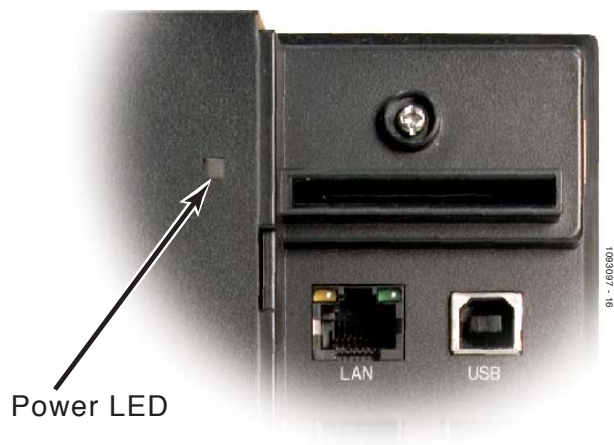


Figure 24: Power LED

Reinstalling the Cover

Now that your cabling is complete and the system is up and running, you should reinstall the cover.

To reinstall the cover:

1. Slide the cover onto the Main Equipment Cabinet as shown.
2. Slide the cover button to LOCK.



Figure 25: Reinstalling the 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 Main Equipment Cabinet.
 - The power LED will flash green, and then “flutter” blue as the system boots.
 - After about 45 seconds, the LED will wink off blue continuously and the system will be operational.
 - Resetting the system *does not* erase system programming.



Figure 26: 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 Main Equipment Cabinet while turning on the system power.
 3. When the LED on the cabinet lights blue and then goes out, release the **Reset Switch**.
 - The power LED will flash green, and then “flutter” blue as the system boots.
 - After about 45 seconds, the LED will wink off blue continuously and the system will restart with the default settings.



Figure 27: 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 Main Equipment Cabinet.
 - Although advisable, backing up the site programming is not required.
2. Press and hold the **Reset Switch** on the cabinet.
3. When the LED on the cabinet goes out, release the **Reset Switch**.
 - The LED initially lights green, yellow, and then blue. During the software load, the LED alternately lights blue and flashes green.
 - The software takes about seven minutes to 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.

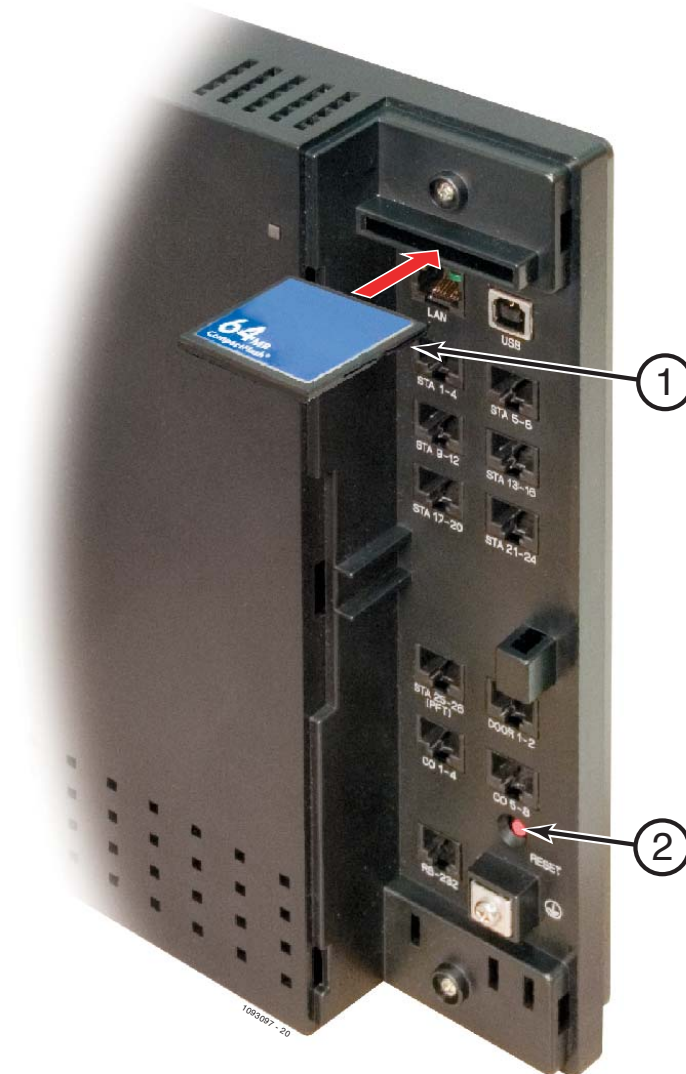


Figure 28: Loading System Software from a CompactFlash Card

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 Software Manual for more.
- If you have another (external) voice mail installed, you must disconnect and unprogram it before installing IntraMail.

Installing IntraMail

To set up IntraMail:

1. Plug the IntraMail CompactFlash card into the Main Equipment Cabinet.
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.

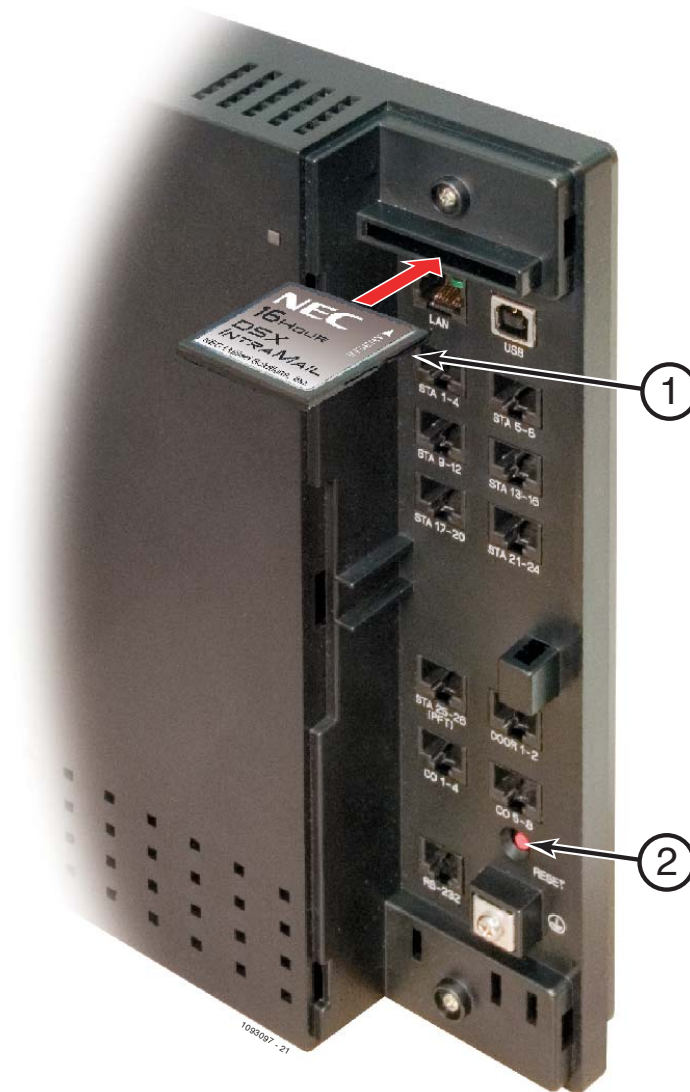


Figure 29: Installing IntraMail

Installing a DSX Analog Door Box on a Built-In Door Box Port

Connecting a DSX Analog Door Box to a Built-In Door Box Port

Do not connect a DSX Analog Door Box to a digital station port.

The DSX Analog Door Box (P/N 922450) is a self-contained Intercom unit typically used to monitor an entrance door. A visitor at the door can press the DSX Analog 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 handset. This lets the extension user talk to the visitor at the door box.

You can connect up to 2 DSX Analog Door Boxes to your system, at station ports 25 (extension 324) and 26 (extension 325).

Each DSX Analog Door Box also has an associated control relay. You can use this relay to release an electric strike on the entrance door. After answering the Door Box chimes, the extension user can press **FLASH** or a soft key to enable the DSX Analog Door Box's relay, which in turn unlocks the door.

Relay Contact Specifications	
<i>Important! Be sure the devices connected to the system's relay contacts are compatible with the following specifications.</i>	
Contact Configuration:	Normally Open
Maximum Load:	0.5A @ 120 VAC 1A @ 24 VDC
Maximum Initial Contact Resistance	100 mOhms

Optional
Equipment

The Analog Door Box is a weather-tight unit, with an operating temperature range of -20 to 60 degrees C (-4 to 140 degrees F) and a relative humidity range of 10-95%, non-condensing.

To connect to the built-in DSX-40 analog door box ports and relays:

1. Using *Figure 30: Connecting to the Built-In Analog Door Box Ports* (page 50) as a guide, on Station Block 2 punch down the Installation Cable in standard color code-order.
2. Plug the appropriate installation cable plug into jack **DOOR 1-2** on the Main Equipment Cabinet.
3. Install a modular jack for each relay and optionally for each door box within 6 feet of each door box location.

(For the next two steps, leaving a service loop in your station cable will make adds, moves, and changes easier.)

4. For each relay:
 - Run one-pair 24 AWG station cable from the station block to the associated modular jack.
 - Terminate the station cable **WHT/BLU - BLU/WHT** leads to the **RED** and **GRN** lugs in the modular jack.
5. For each door box:
 - Run one-pair 24 AWG station cable from the station block directly to the door box terminals.
OR
 - Run one-pair 24 AWG station cable from the station block to the associated modular jack.
 - Then, terminate the station cable **WHT/BLU - BLU/WHT** leads to the **RED** and **GRN** lugs in the modular jack.
6. Install bridging clips as required.
7. Connect to the door boxes and relays as shown in *Figure 30: Connecting to the Built-In Analog Door Box Ports* (page 50).
8. Refer to the *Door Box* feature in the *DSX Software Manual* for programming details.

Installing a DSX Analog Door Box on a Built-In Door Box Port

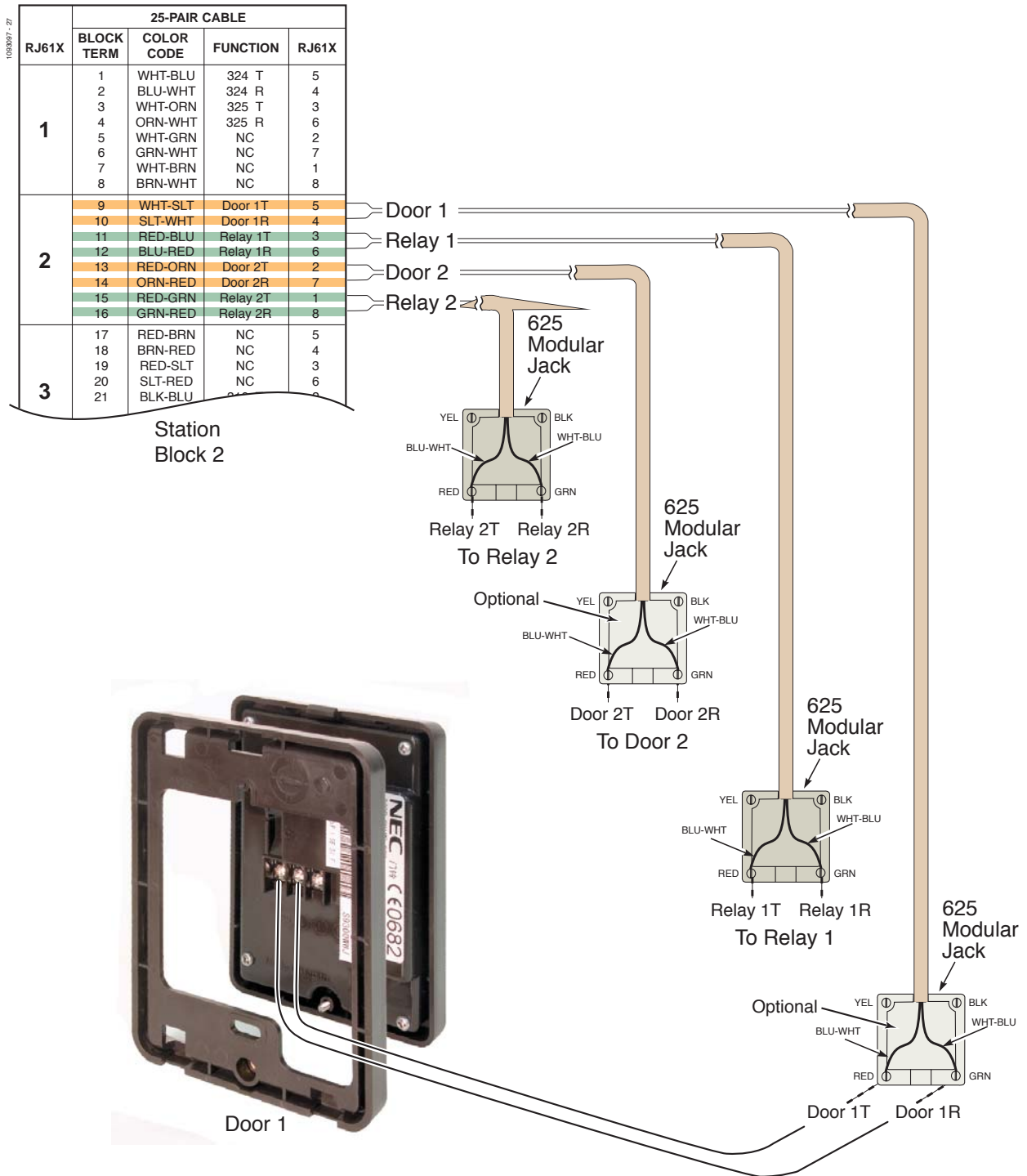


Figure 30: Connecting to the Built-In Analog Door Box Ports

You can also connect a DSX Analog Door Box to a 2PGDAD Module. See *Installing a DSX Analog Door Box and 2PGDAD Module* (page 51) for more.

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 digital station port. 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 digital station ports.

Important! Do not connect a 2PGDAD Module to station ports 21-24 (extensions 320-323).

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 a digital station port at the 2PGDAD Module location.
5. At this point in the installation, *do not connect the 2PGDAD Module to a digital station port.*

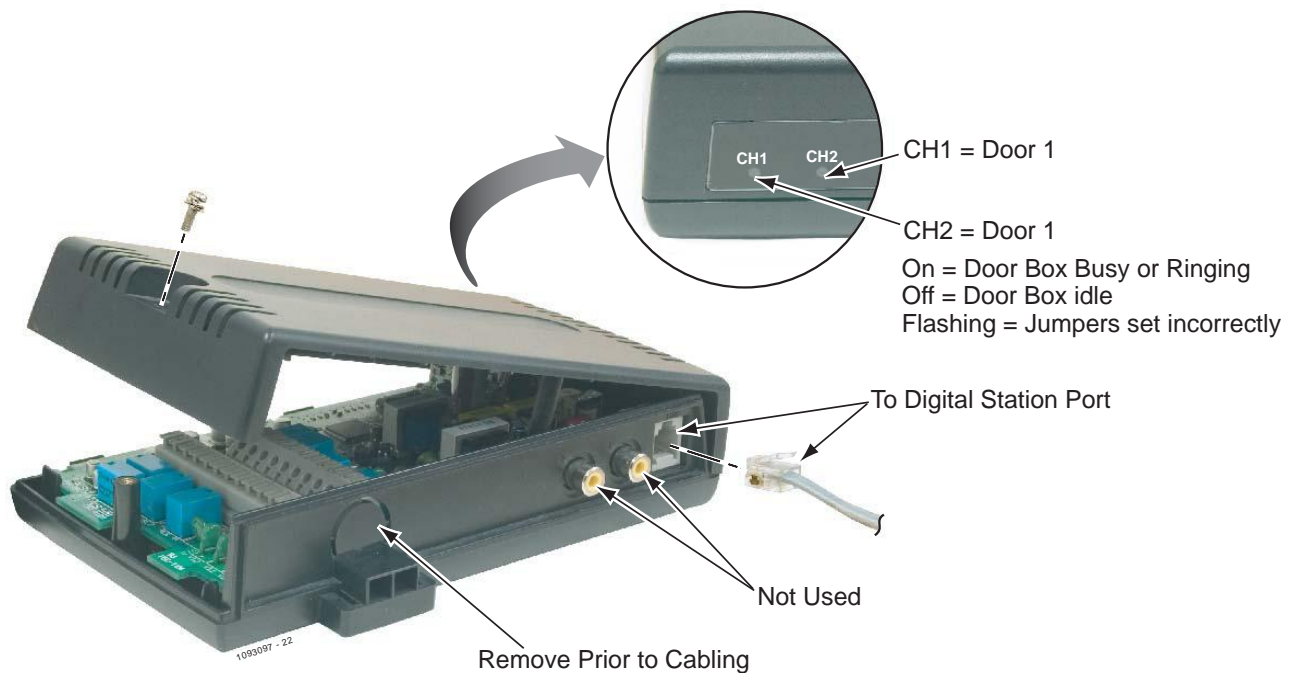


Figure 31: Removing the 2PGDAD Module Cover

Optional
Equipment

Installing a DSX Analog Door Box and 2PGDAD Module

Connecting PGDAD 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.*

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

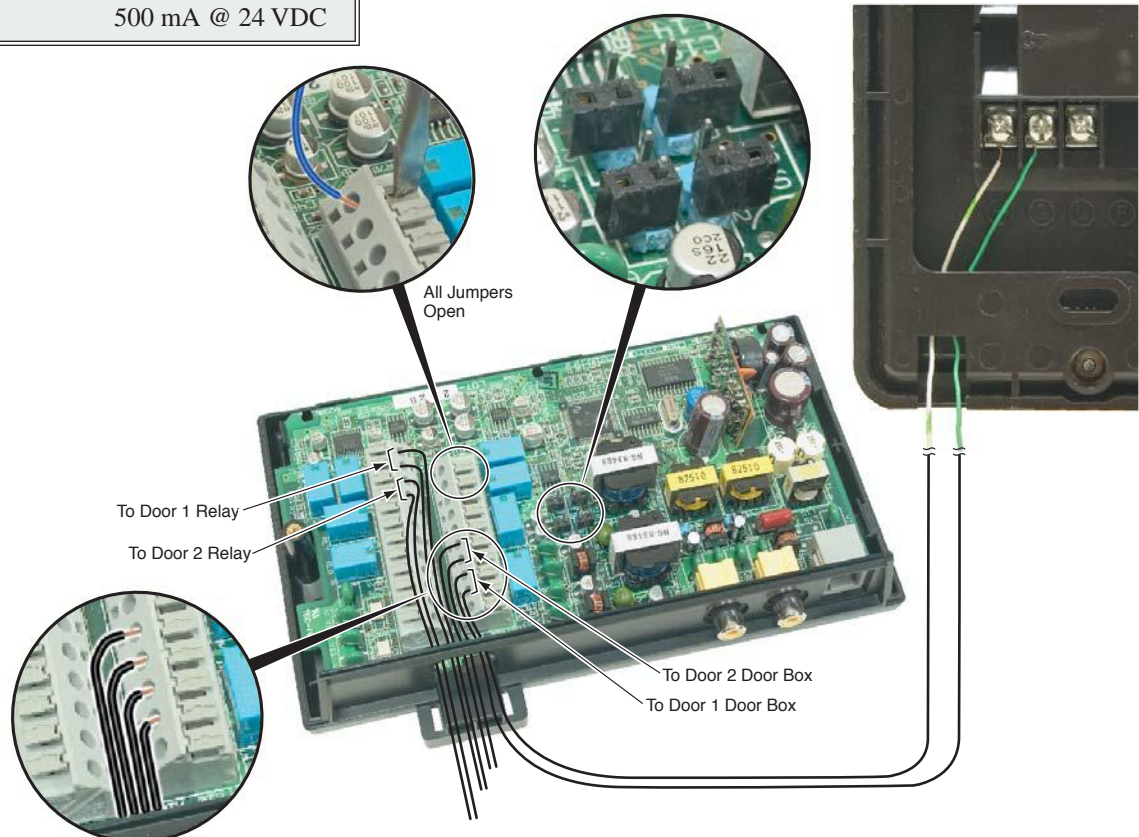


Figure 32: Connecting PGDAD Door Boxes and Relays

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 digital 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.

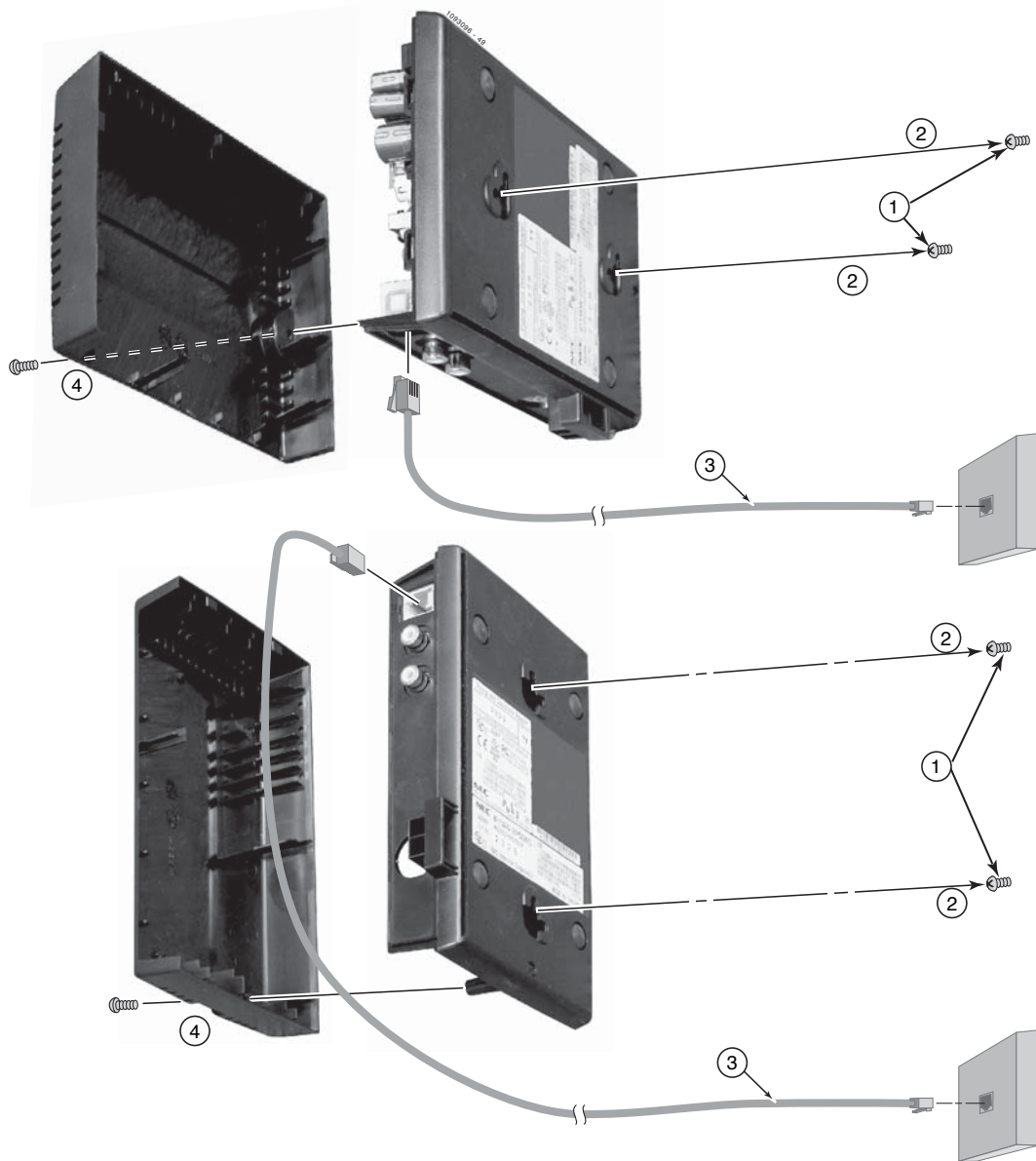


Figure 33: Mounting and Connecting the 2PGDAD Module

External Paging

Installing External Paging

The Main Equipment Cabinet provides an External Paging output. You connect the Main Equipment Cabinet 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 Main Equipment Cabinet.
3. Plug the other end of the audio cable into the paging amplifier.

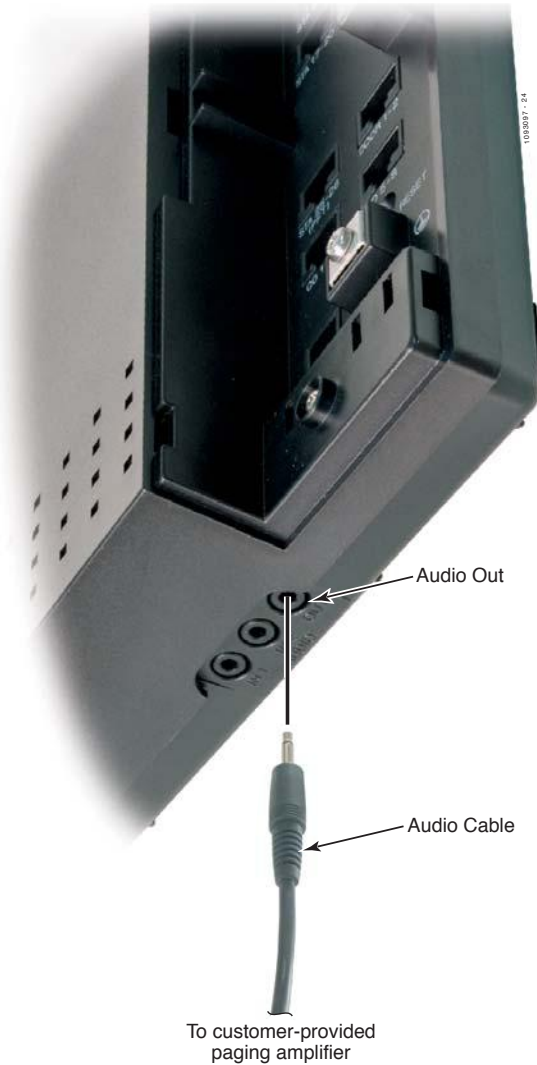


Figure 34: Connecting External Paging

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 Main Equipment Cabinet.
3. Plug the other end of the audio cable into the music source.

Optional
Equipment

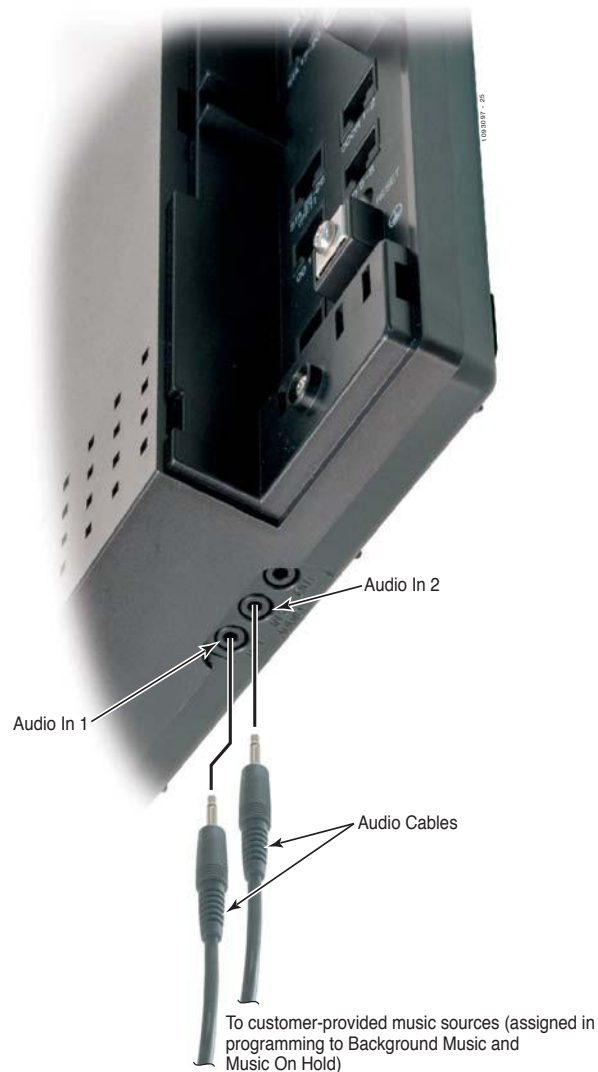


Figure 35: Connecting a Music Source

Power Failure Telephone

Power Failure Cut-Through

When AC power fails, the system can automatically cut through to a Power Failure Telephone connection. Analog stations 25 and 26 (extensions 324 and 325) are the permanent power failure extensions. When power fails:

- ▶ Analog extension 324 (station 25) automatically cuts through to line 1.
- ▶ Analog extension 325 (station 26) automatically cuts through to line 2.

For more on connecting extensions, see *Connecting Extensions and Lines* (page 28).

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.
 - Place a test call.

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 36: Reversing the Handset Hanger

Wall Mounting

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.
 - If required, coil the excess line cord into the cavity as shown.
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.

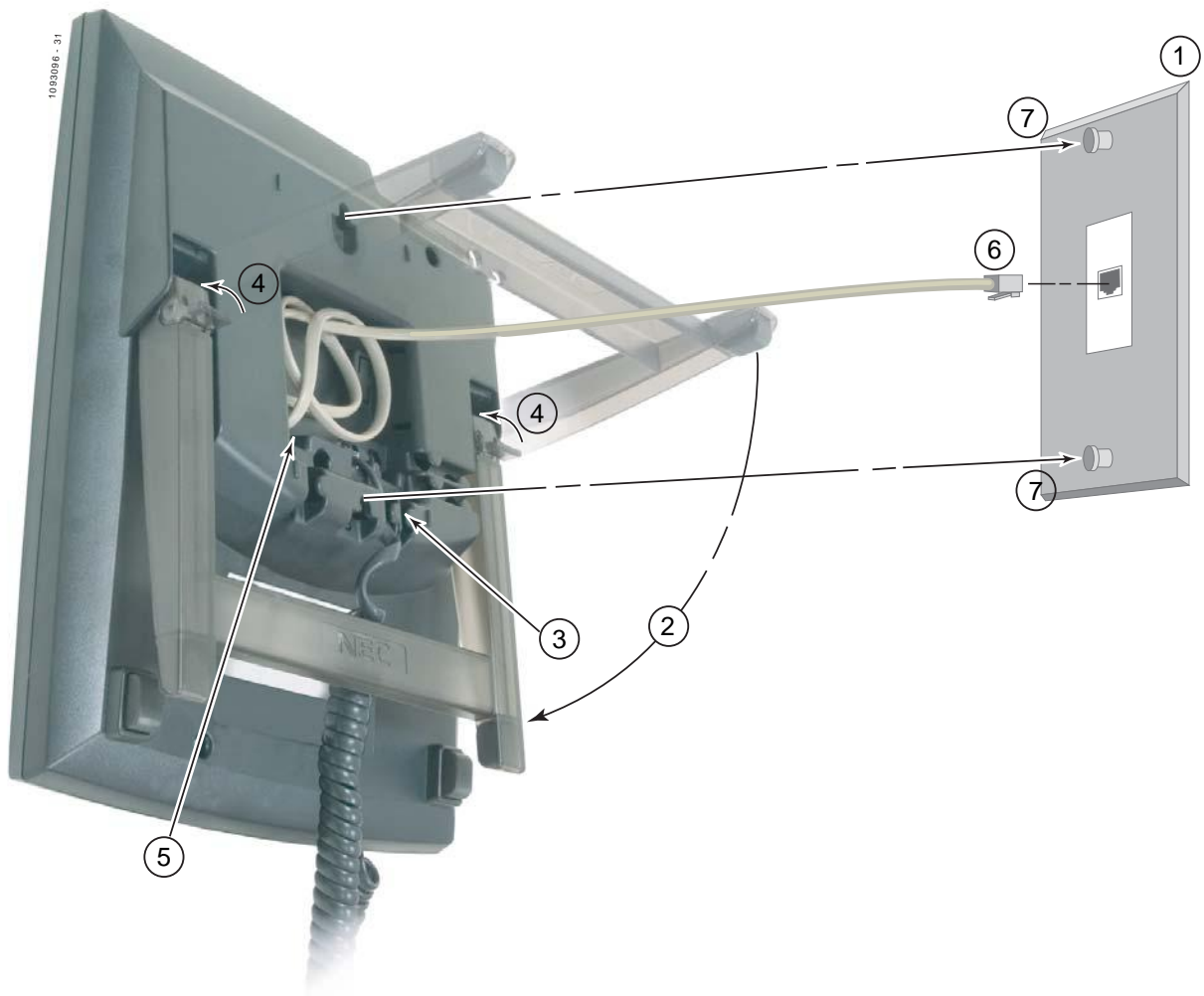


Figure 37: Mounting the Telephone to a Standard Wall Plate

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.

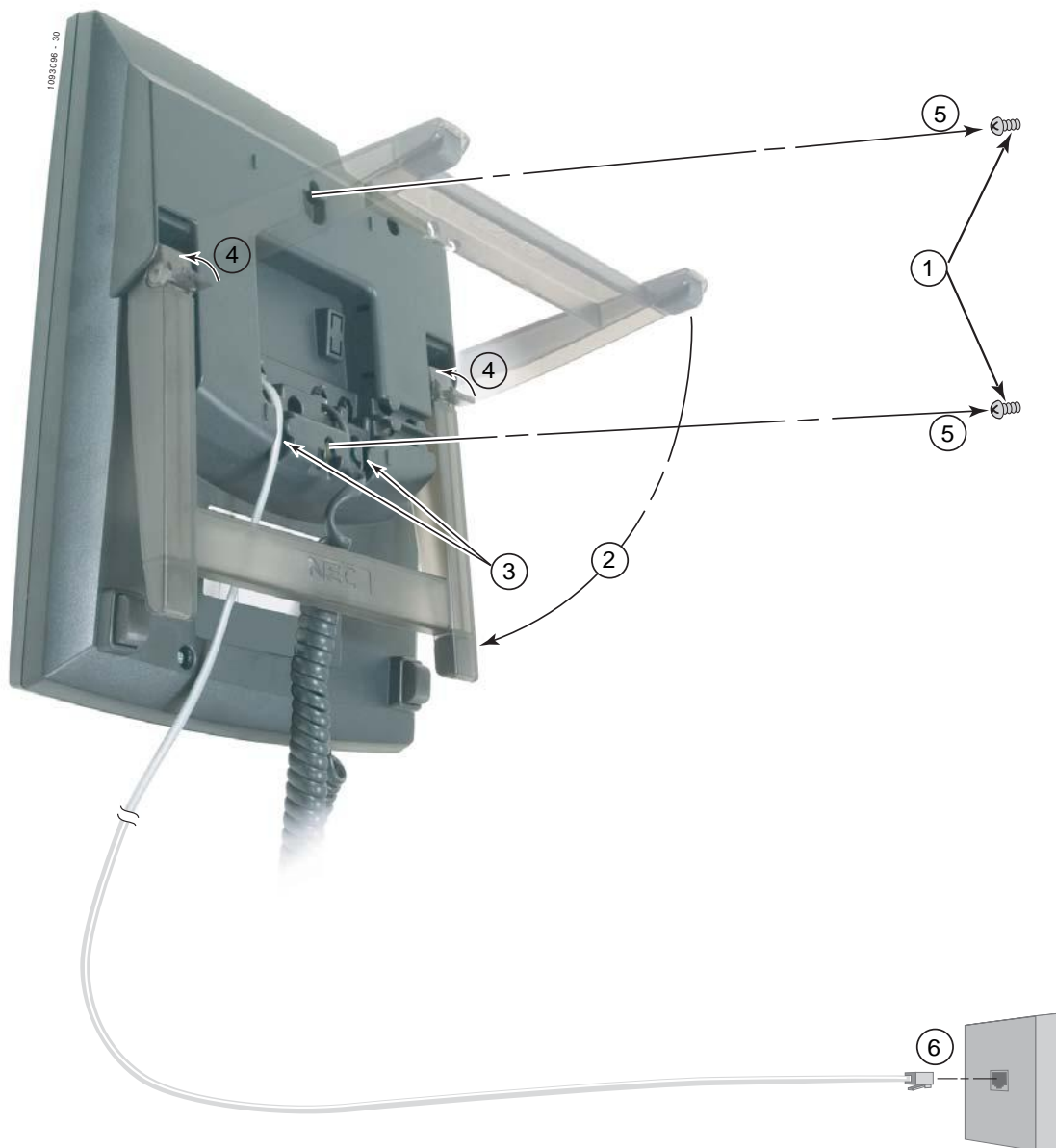


Figure 38: Mounting the Telephone Directly on the Wall

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.
 - If required, coil the excess line cord into the cavity as shown.
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.

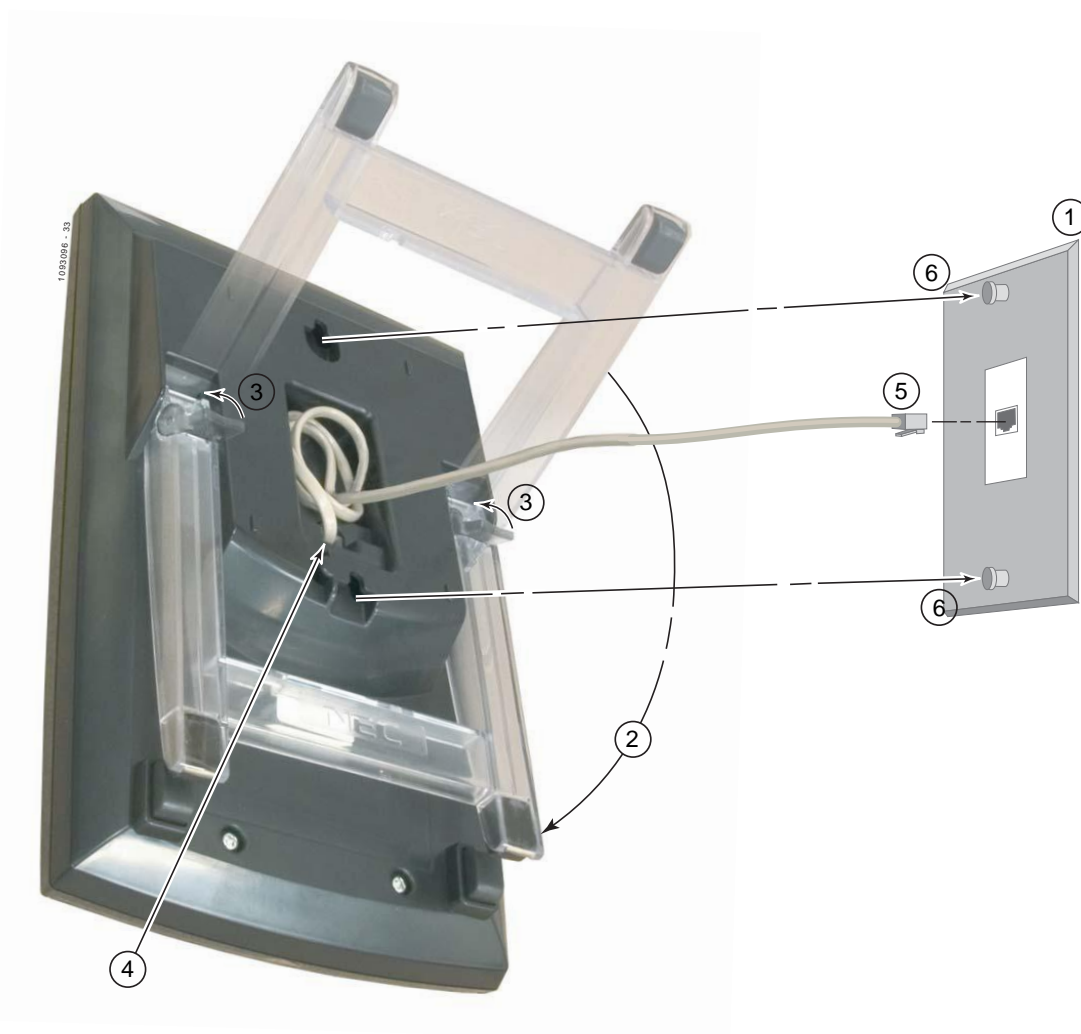


Figure 39: Mounting the DSS Console to a Standard Wall Plate

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.

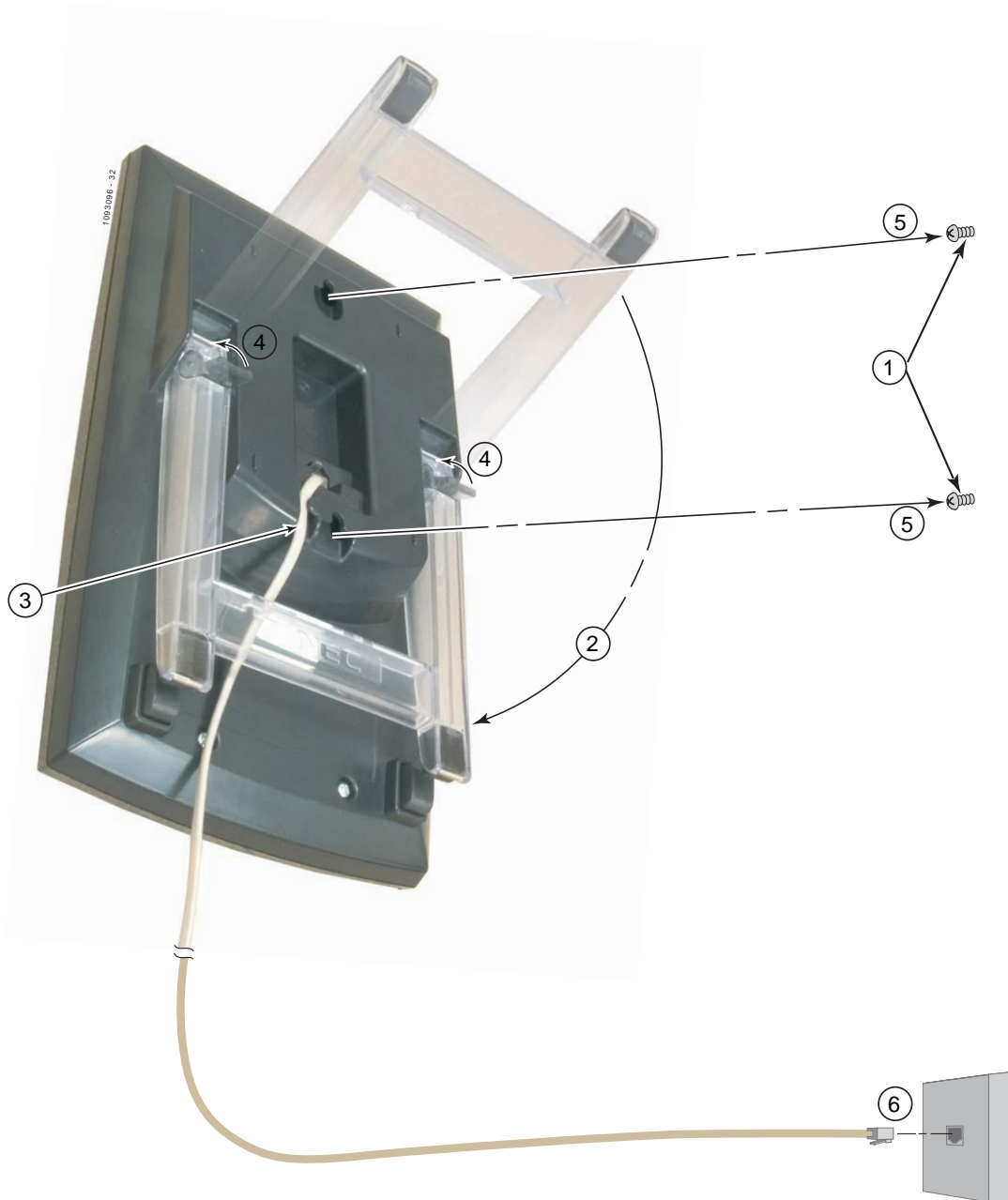


Figure 40: Mounting the DSS Console Directly on the Wall

Keyset Self Test

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 lamp (LED) 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	L1 - L24
Speed Dial bins 1-10	0 1 - 010	Keyset Soft Keys 1-4	S 1 - S 4
Super Display Soft Keys ¹	0 1 - 012	CHECK	F13
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		

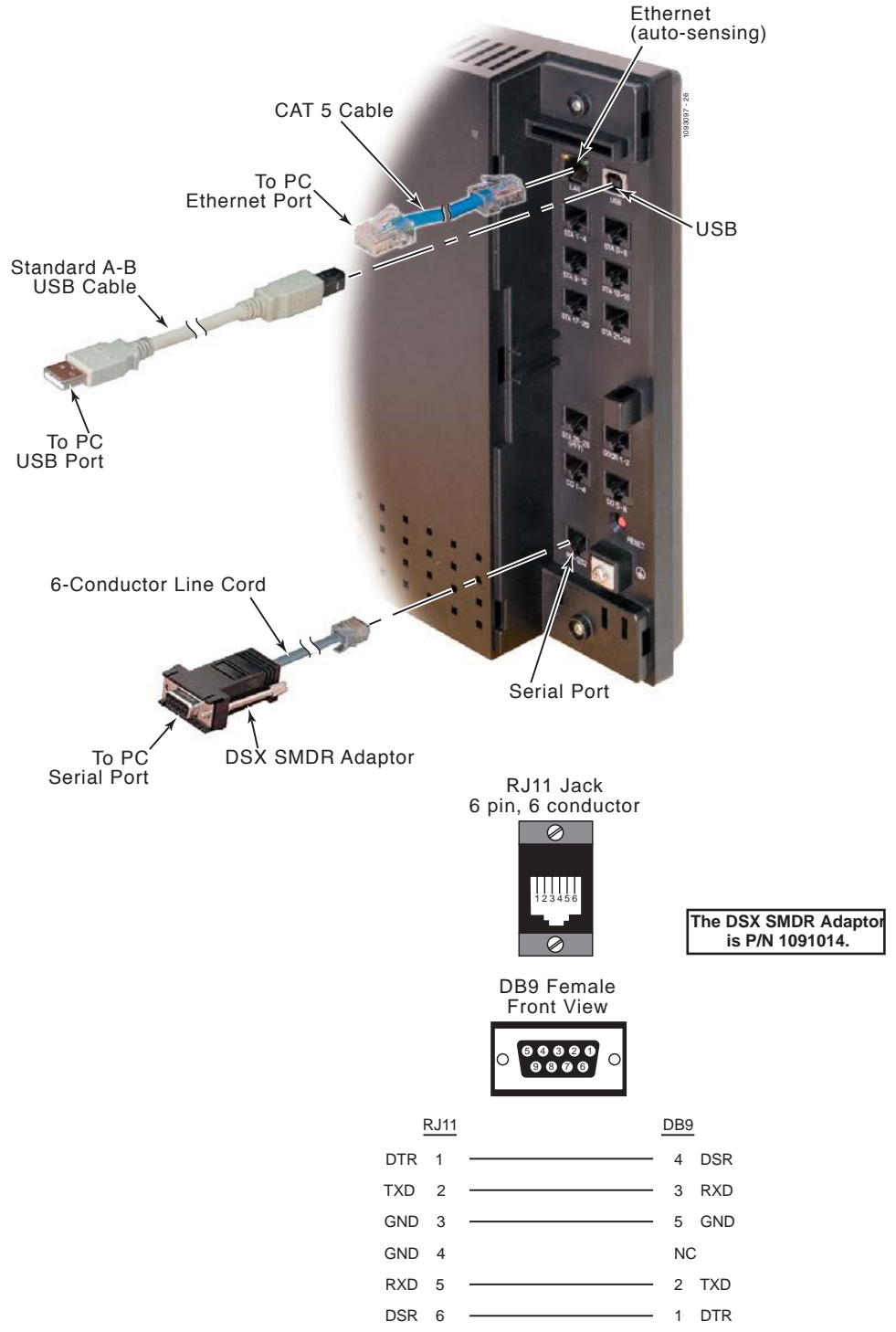
¹ When a Super Display Soft Key is pressed, 12 # characters display adjacent to the key.

To exit the Self Test Diagnostic:

1. Lift and replace the handset.

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.



Optional Equipment

Figure 41: Connecting a PC to the System

Connecting a PC to the System

Specifications and Parts

Specifications

DSX Telephone System Specifications

DSX-40 System Capacities (Page 1 of 2)	
Cabinets:	1
Talk Timeslots (Intercom/line):	Non-blocking
Ports	40
Lines:	8
Digital Telephones:	24
Analog Telephones:	18
DSS Consoles:	4 max. per system Plugs into a digital station port
DSX Analog Door Box Ports (Built-In)	2
DSX Analog Door Boxes (With 2PGDAD Modules)	Max. limited only by number of available digital station ports for 2PGDAD Modules.
Power Failure Telephones:	2
Internal Paging Zones:	8 (7 and All Call)
External Page Audio Output:	1

Specifications

DSX-40 System Capacities (Page 2 of 2)	
Music Inputs:	2
Conference Circuits:	32 Conference circuits dynamically allocated, with 8 parties max per Conference. Conference circuits provided on CPU.
8-Port Digital Station Card (Expansion)	2 max.
8-Port Analog Station Card (Expansion)	2 max.
4-Port Line Card with Built-In Caller ID (Expansion)	1 max.

Power Requirements
A dedicated 110 VAC 60 Hz circuit located within 4 feet of the cabinet is required.

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).

Environmental Specifications	
Cabinet and Key Telephones	
Temperature:	0 to 40°C (32-104°F)
Humidity:	10 to 95% (non-condensing)
DSX Analog Door Box	
The Analog Door Box is a weather-tight unit, with an operating temperature range of -20 to 60 degrees C (-4 to 140 degrees F) and a relative humidity range of 10-95%, non-condensing.	
Temperature:	-20 to 60°C (-4 to 104°F)
Humidity:	10 to 95% (non-condensing)

DSX-40 Electrical Specifications	
Power Supply:	120 VAC \pm 10% @ 50-60 Hz
Output Power:	83 Watts @ 100% full load
Input Current:	1.1A
VA:	132 VA
Kwh:	0.132 KwH
BTU:	450 Btu
Grounding Requirements:	12 AWG copper wire

Telephone and Line Voltages	
Keyset 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
Analog Station (SLIU) 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	Not available
FSK Message Waiting	Available
REN (Ringer Equivalence) Per Port	5
Total REN (Ringer Equivalence Number) per system	10
Line Voltages	
Ringing voltage	42-103 VAC @ 20 Hz
Battery (from telco)	44-56 VDC

External Paging	
Output Impedance:	600 Ohm
Output Level:	0 dB _r @ 1.0 KHz

Specifications

Mechanical Specifications				
Equipment	Width	Depth	Height	Weight
DSX-40 Cabinet	13 3/16"	2 3/4"	10 1/2"	3 lbs 9.5 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. 6.5 oz.
60-Button DSS Console	5 5/8"	9 1/2"	4 3/4"	1 lb. 3.4 oz.
DSX Analog Door Box	3 3/4"	1"	5"	6.2 oz

DSX-40 Built-In Analog Door Box Relay Contacts	
Contact Configuration:	Normally open
Maximum Load:	0.5A @ 120 VAC 1A @ 24 VDC
Maximum Initial Contact Resistance:	100 mOhms

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

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	
DSX-40 USB and ethernet connectors are located on the cabinet.	
USB:	USB 2.0 full speed (12 Mbits/sec)
Ethernet	Auto Sensing

FCC Registration Information				
Model:	DX7NA-40M			
Manufacturer:	NEC Infrontia			
FCC Part 15 Registration:	Class B			
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	1090001 1091001	REN 0.6B	RJ11C

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 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 DSX-40 Built-In Port	2-wire 26 AWG	650	
	2-wire 24 AWG	980	
	2-wire 22 AWG	1640	
DSX Analog Door Box to 2PGDAD Module	2-wire 26 AWG	650	
	2-wire 24 AWG	980	
	2-wire 22 AWG	1640	

Specifications

DSX IntraMail Specifications

Built-In Automated Attendant Capacities	
Mailboxes	Routing Mailboxes: 8 Call Routing: 8 Announcement: . . . 0 Subscriber: 0 Ring Group Mailboxes: 0 UCD Group Mailboxes: 0 Total: 8
Ports:	2
Storage Hours:	30 seconds for each Call Routing Mailbox
Does not provide voice mail.	

IntraMail Capacities	
P/N 1091011	IntraMail 4 Port/8 Hour
P/N 1091013	IntraMail 8 Port/16 Hour
Mailboxes	DSX-40 Routing Mailboxes: 16 Announcement: . . . 8 Call Routing: 8 Subscriber: 34 Ring Group Mailboxes: 8 UCD Group Mailboxes: 8 Total: 66
Max messages per mailbox (default):	300 = 99, all others = 20
Maximum length per message (default):	120 seconds
Ports:	4 or 8
Storage Hours:	8 or 16

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 Half-Duplex Speakerphone	1090030 (Black) 1090031 (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
Cordless Lite II EXP 9350 Convertible Headset	730602

Specifications and Parts

Parts List

DESI Labels	
Description	Part Number
DSX Telephone Labels	
The following DESI labels are available for DSX telephone “replacement” applications (pkg 20 with 10 backers)	
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
The following DESI labels are available for DSX telephone “preprint” applications (pkg 25).	
22-Button Display Preprint	1093072
34-Button Display Preprint	1093071
34-Button Super Display Preprint	1093070
60-Button DSS Console Preprint	1093069
DTH-1-1 Telephone Labels	
Metallic Silver	780450
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

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

Common Equipment	
Description	Part Number
DSX-40	
DSX-40 Main Equipment Cabinet	1090001
Additional Common Equipment	
Installation Cable	808920
DSX SMDR Adaptor (requires customer-provided 6-conductor line cord)	1091014

Cards	
Description	Part Number
DSX-40	
8-Port Digital Station Card (Expansion)	1091002
8-Port Analog Station Card (Expansion)	1091003
4-Port Line Card with Built-In Caller ID (Expansion)	1091001

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

Parts List

Replacement Parts	
Description	Part Number
Handset and Cord Assembly (black)	1091016
Handset and Cord Assembly (white)	1091038
22 Button Clear Plastic Cover (pkg 5)	1091018
34 Button Clear Plastic Cover (pkg 5)	1091019
34 Button Super Display Clear Plastic Cover (pkg 5)	1091020
60 Button DSS Clear Plastic Cover (pkg 5)	1091021
RFI Bead Kit	88901
Replacement Battery for CPU	EX0254-0040 (Sony CR2032)

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October 26, 2006, Rev 1

Printed in U.S.A.