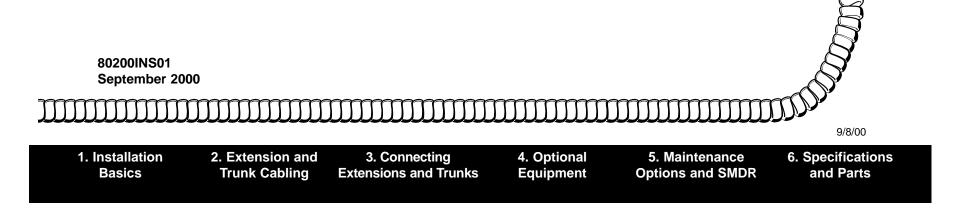
Nitsuko



Hardware Manual



This manual has been developed by Nitsuko America. 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:

Nitsuko America, Telecom Division 4 Forest Parkway Shelton, CT 06484

Attention: Manager, Technical Publications

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1. Installation Basics — For Your Notes —

Unpacking

Unpack the equipment and check it against your equipment lists. Inspect for physical damage. If you are not sure about a component's function, review the Product Description Manual. 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. The Installation Layout (Figure 1-1) shows you *about* how much space your system requires.

1. Installation Basics

SYSTEM CONFIGURATION

System Configuration

Using the factory installed default configuration, your DS1000 system provides:

	Base	Expansion	Total
Trunks	3	3	6
Digital Extensions	8	8	16
Analog Extensions	4	4	8
Analog Door Boxes	1	1	2
Relays	1	1	2
Page Output	1	-	1
Music Input	1	-	1

Turn to page 1-9 for more installing the Expansion PCB.

System Load Factor Calculations

The combination of extensions, trunks, Digital Door Boxes and DSS Consoles you can connect to your system may be limited by the System Load Factor. Use the *DS1000 System Load Factor Calculations* chart at right to verify your system's configuration.

To check your system configuration:

- 1. Indicate the quantity for each item installed in the **Qty** column.
- 2. For each item, multiply the **Qty** times and **Load Factor** and enter the value in the **Total Load** column.

- 3. Add all the values in the **Total Load** column and enter the value in row 1.
- 4. Compare the entry in row 2 to your entry in row 1. *Row 1* must always be equal to or less than the entry in row 2.

Do not operate your system if the System Load Factor total (row 1) exceeds the allowable load of 30 (row 2).

DS1000 System Load Factor Calculations			
Item	Load Factor	Qty	Total Load
Digital Telephone and Digital Door Box	1		
Analog Telephone	1		
Analog Door Box	0		
24-Button DSS Console	1		
110-Button DSS Console	2		
Total DSS Consoles installed cannot exceed 4.			cannot exceed 4.
1. Total load for this configuration:			
	2. Maximur	m allowable load	30

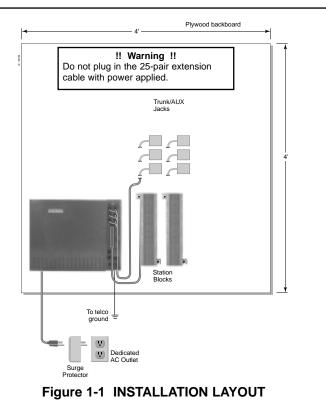
Planning the Installation (Figure 1-1)

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 more than adequate. Mount this backboard using suitable fasteners, taking care to adhere to standard installation practices and local codes.

The equipment cabinet requires a three-prong, dedicated 110 VAC 60 Hz circuit (NEMA 5-15 receptacle) located within 4 1/2' feet of the AC receptacle.

Normally, you install the extension blocks and trunk/AUX jacks to the right of the Main Cabinet.

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



1-5

1. Installation Basics

Removing the Cover (Figure 1-2)

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

- 1. Slide the cover button to **OPEN**.
- 2. Slide the cover away from the Main Equipment Cabinet.



Hanging the Cabinet (Figure 1-3)

- 1. Screw suitable fasteners 11 3/16" apart in a convenient location on the MDF. Be sure to leave the fasteners "backed out" about 3/16" from the MDF backboard.
- 2. Hang the cabinet as shown in Figure 1-3.

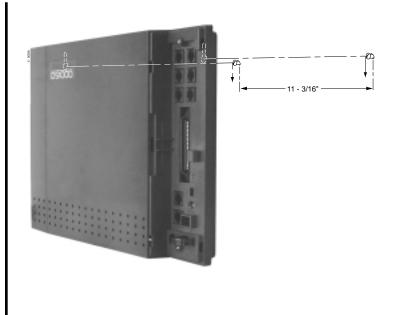


Figure 1-3 HANGING THE CABINET 1-7

1. Installation Basics

GROUNDING THE CABINET

Attaching the Ground Wire (Figure 1-4)

!! Important !! You must connect your system to a known earth ground according the following instructions.

- 1. Loosen the lug on the cabinet's ground connection.
- 2. Following Figure 1-4, run a 12 AWG stranded copper wire from the ground lug to a known earth ground.
- 4. Firmly retighten the lug loosened in step 1 above.

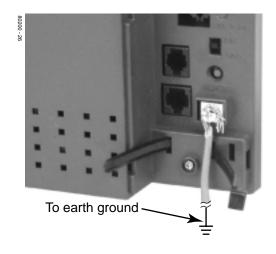


Figure 1-4 ATTACHING THE GROUND WIRE 1-8

Removing the Top Panel (Figure 1-5)

You must remove the top panel in order to install the system battery and Expansion Board.

In the event of commercial AC power failure, the battery provides short-term backup of system memory and the system time and date (Real Time Clock). The battery will hold memory and time and date for up to 10-14 days.

The Expansion Board provides an additional 3 analog trunks, 8 digital extensions, 4 analog extensions and 1 analog door box. With the expansion board installed, the capacity of your system is 6 analog trunks, 16 digital extensions, 8 analog extensions, and 2 analog door boxes.

• 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 at right.
- 3. Remove the top panel.

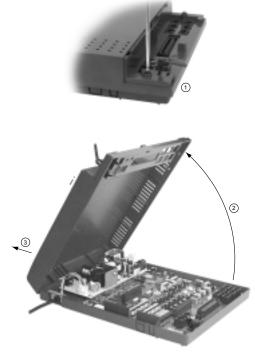


Figure 1-5 REMOVING THE TOP PANEL 1-9

1. Installation Basics

Installing the Battery (Figure 1-6)

- To install the battery:
- 1. Insert the battery into the battery clips as shown at right.
- 2. Replace and resecure the top panel.

OR Go to page 1-12 and install the Expansion Board.

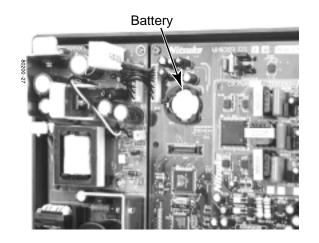


Figure 1-6 INSTALLING THE BATTERY 1-10

Replacing the Battery

• 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 memory and the Real Time Clock).

1. Do not power down the system.

If you power down the system and remove the battery, programmed data and the Real Time Clock will reset to the factory-installed default settings.

- 2. Following Figure 1-6, 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 not available from Nitsuko.)
- 4. Verify that the system's programmed data is intact.
- 5. Discard the old battery.

!! Important !!

Take proper precautions when discarding the battery. It may be considered hazardous material in some areas.

!! Caution !!

Danger of explosion if 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.

1. Installation Basics

Installing the Expansion Board (Figure 1-7)

- To install the Expansion Board:
- 1. Be sure your system's power cord is unplugged. *The Expansion Board is not hot-swappable.*
- 2. Plug in the Expansion Board as shown at right.
 - Be sure to snap the Expansion Board into the plastic standoffs that are supplied with the Expansion Board.
- 3. Replace and resecure the top panel.

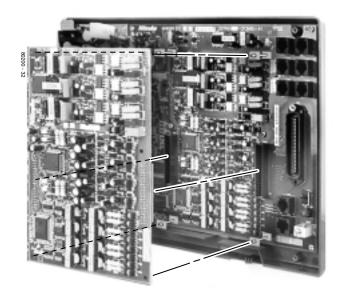


Figure 1-7 INSTALLING THE EXPANSION BOARD 1-12

Section 2, EXTENSION AND TRUNK CABLING

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Reviewing the Installation Method	
The Extension Block	2-4
Installing the Extension Block	2-4
Trunk and AUX Mod Jacks	2-8
Installing Trunk and AUX Mod Jacks	2-8
-	

!! Important !! Install telephones connected to the Main Equipment Cabinet as on-premise extensions only.

2. Extension and Trunk Cabling

— For Your Notes —

BEFORE YOU START CABLING

Reviewing the Installation Method

Your system uses a different installation method for extensions and trunk/AUX connections:

• Extension Blocks

The system uses a 66M1-50 extension block and a second 66M1-50 cross connect block for connecting extensions. See *The Extension Block* on page 2-4 and the illustration on page 2-5.

• Trunk/AUX Mod Jacks

You'll use up to 6 mod jacks for the trunk/AUX connections. Turn to *Trunk and AUX Mod Jacks* on page 2-8 for more on this method.

Your telco normally provides trunks in RJ-11C, RJ-14C, or RJ-25C modular jacks.

For more on connecting Door Boxes, Paging, music and power failure, turn to *Section 4, Optional Equipment*.

2. Extension and Trunk Cabling

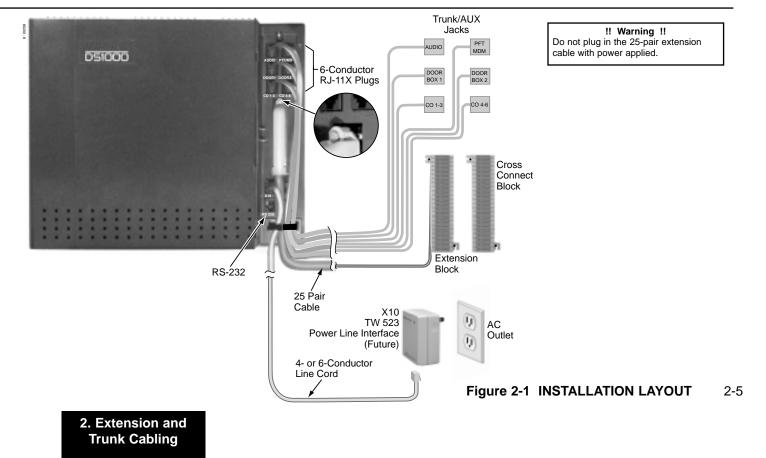
THE EXTENSION BLOCK

Installing The Extension Block (Figures 2-1 through 2-3).

- To connect to the extension block:
- 1. Arrange your extension and extension cross-connect blocks according to the illustration below.
- 2. Following Figure 2-2 on page 2-6, punch down a standard 25-pair cable on the extension block.

The cable should have a female amphenol 50-pin connector on one end and be terminated on the other.

THE EXTENSION BLOCK



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

Extension Assignments

Figure 2-2 EXTENSION ASSIGNMENTS

.

THE EXTENSION BLOCK

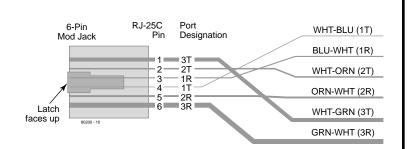


Figure 2-3 MOD PLUG PINOUTS

2. Extension and Trunk Cabling 2-7

TRUNK AND AUX MOD JACKS

Installing Trunk and AUX Mod Jacks (Figures 2-1 and 2-4).

• To connect to trunk mod jacks:

- 1. Arrange your mod jacks trunk according to Figure 2-1 on page 2-5.
- 2. Using standard 6-conductor line cords, connect each mod jack to the appropriate plug in the Main Equipment Cabinet.
- 3. Figure 2-4 shows the pinouts for each mod jack.

For more on connecting Door Boxes, Paging, music and power failure, turn to Section 4, Optional Equipment.

TRUNK AND AUX MOD JACKS

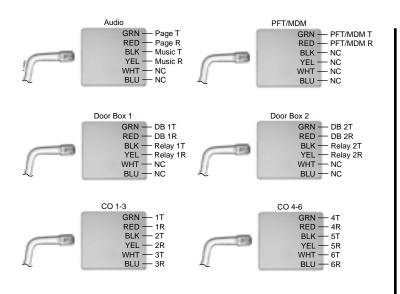


Figure 2-4 MOD JACK ASSIGNMENTS

2. Extension and Trunk Cabling 2-9

— For Your Notes —

Section 3, CONNECTING EXTENSIONS AND TRUNKS

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Connecting Trunks	3-3
Connecting Analog Trunks	3-3
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Power-Up	3-4
Finishing the Installation	3-5
Reinstalling the Cover	3-5

3. Connecting Extensions and Trunks

CONNECTING EXTENSIONS

Connecting Extensions (Figure 3-1)

The base system connects 8 digital extensions and 4 analog extensions. With the Expansion Board installed, the system provides a total of 16 digital extensions and 8 analog extensions.

- 1. 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 cross-connect block to the modular jack.
- 4. Terminate the station cable WHT/BLU BLU/WHT leads to the RED and GRN lugs in the modular jack.
- 5. Back at the main equipment location, run one pair of crossconnect wire between the pins on the extension block and cross-connect block to complete the connection.
- 6. Install bridging clips as required.

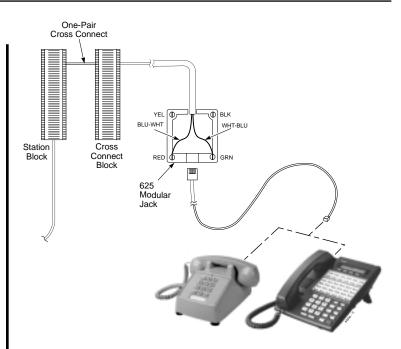


Figure 3-1 CONNECTING EXTENSIONS 3-2

CONNECTING TRUNKS

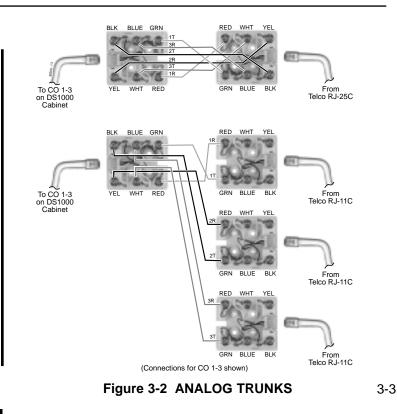
Connecting Analog Trunks (Figure 3-2)

The base system connects 3 loop start CO trunks. With the Expansion Board installed, the system provides a total of 6 loop start CO trunks.

1. Using Figure 3-2 as a guide, install additional modular jacks as required.

The telco may provide your trunks in a single RJ-25C jack or in multiple RJ-11C jacks. Review the installation at right.

- 2. Wire the additional modular jacks as shown.
- 3. Plug line cords from the telco mod jacks to the system mod jacks as shown.



3. Connecting Extensions and Trunks

POWERING UP THE SYSTEM

Power-Up (Figures 3-3 and 3-4)

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. Install a surge protector in the AC outlet.
- 3. Plug the main cabinet's AC power cord into its surge protector.
- 4. Turn on the cabinet's power switch.

After a brief interval, the system will start and the power LED will flash slowly (green).

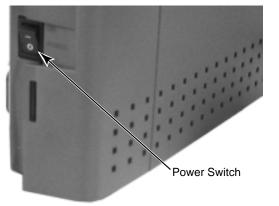


Figure 3-3 POWER SWITCH

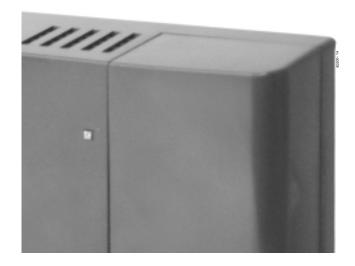


Figure 3-4 POWER LED

3-4

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FINISHING THE INSTALLATION

Reinstalling the Cover (Figure 3-5)

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

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

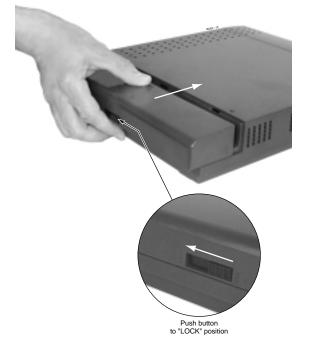


Figure 3-5 REINSTALLING THE COVER 3-5

3. Connecting Extensions and Trunks — For Your Notes —

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4. Optional Equipment — For Your Notes —

EXTERNAL PAGING

Installing External Paging (Figure 4-1)

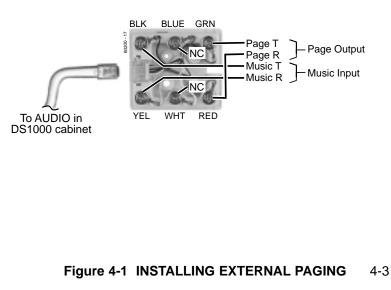
Your system provides an External Paging output. You connect the Paging output to audio inputs on customer provided Paging systems. Zone 1 and All Call Paging announcements broadcast from the External Paging output.

Be sure the connected Paging equipment is compatible with the following page output specifications:

Output Impedance: 600 Ohms Output Level: 0 dBr @ 1.0 kHz

• To connect an External Paging amplifier:

- 1. Connect the external Paging amplifier to the GRN and RED lugs on the Audio modular jack.
- 2. Plug a 6-conductor line cord into the AUDIO jack on the cabinet *and* into the Audio modular jack.





EXTERNAL PAGING

External Paging Relay Control

You can alternately use the 2 Door Box relays to control an External Paging amplifier. Figure 4-2 on page 4-7 shows you the location of the Door Box relays. Note that if you use a relay for External Paging Control, you cannot also use it for Door Box strike control.

!! Important !!

Be sure the devices connected to the system's relay contacts are compatible with the following specifications.

Contact Configuration	Normally Open
Maximum Load	0.5A @ 120 VAC
	1 A @ 24 VDC
Maximum Initial Contact Resistance	100 mOhms

Connecting the Relays for External Paging Control

- 1. If you are using the Door 1 relays, connect the BLK and YEL lugs on the Door Box 1 modular jack to the relay that controls the External Paging system.
- 2. If you are using the Door 2 relays, connect the BLK and YEL lugs on the Door Box 2 modular jack to the relay that controls the External Paging system.

Connecting the Relays for External Paging Control

- In **0201: Door 1 Relay**, to assign the Door 1 Relay for External Paging control, enter 2.
- In **0201: Page Zone (Door 1 Relay)**, enter the Page Zone (1-7) that should activate the Door 1 relay. Note that Zone 1 and All Call Paging announcements broadcast from the External Paging output.
- In **0201: Door 2 Relay**, to assign the Door 2 Relay for External Paging control, enter 2.
- In **0201: Page Zone (Door 2 Relay)**, enter the Page Zone (1-7) that should activate the Door 2 relay. Note that Zone 1 and All Call Paging announcements broadcast from the External Paging output.

ANALOG DOOR BOX

Installing the Analog Door Box (Figure 4-2)

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

The Analog Door Box (P/N 92245) is a self-contained Intercom unit typically used to monitor an entrance door. A visitor at the door can press the 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 Analog Door Boxes to your system. The base system provides an Analog Door Box and associated relay at extension 324. If you have the Expansion Board installed, you have a second Analog Door Box and associated relay at extension 325. Analog Door Boxes do not add to the System Load Factor.

Each 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 Analog Door Box's relay, which in turn unlocks the door.

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 of 10-95%, non-condensing.

!! Important !!

Be sure the devices connected to the system's relay contacts are compatible with the following specifications.

Contact Configuration	Normally Open
Maximum Load	0.5A @ 120 VAC
	1 A @ 24 VDC
Maximum Initial Contact Resistance	100 mOhms

4. Optional Equipment

ANALOG DOOR BOX

• To connect an Analog Door Box:

Door Box Audio

- 1. Connect the GRN and RED lugs on the Door Box 1 modular jack to terminals 1 and 2 on Analog Door Box 1 (324).
- 2. Connect the GRN and RED lugs on the Door Box 2 modular jack to terminals 1 and 2 on Analog Door Box 2 (325).

Door Relays

- 1. Connect the BLK and YEL lugs on the Door Box 1 modular jack to the relay that controls the door strike associated with Analog Door Box 1 (324).
- 2. Connect the BLK and YEL lugs on the Door Box 2 modular jack to the relay that controls the door strike associated with Analog Door Box 2 (325).

Also see *Programming the Door Box* on page 4-10 and *Operating the Door Box* on page 4-11.

ANALOG DOOR BOX

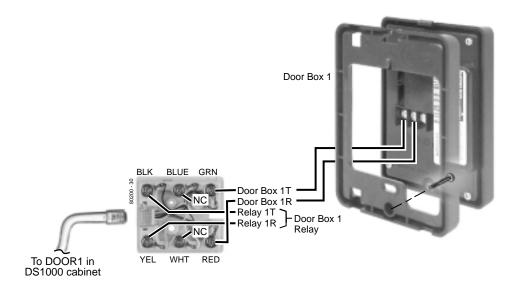


Figure 4-2 CONNECTING AN ANALOG DOOR BOX



4-7

DIGITAL DOOR BOX

Installing the Digital Door Box (Figure 4-3)

Do not connect a Digital Door Box to an Analog Door Box port.

The Digital Door Box (P/N 80560) is a self-contained Intercom unit typically used to monitor an entrance door — similar in operation to an Analog Door Box. 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 handset. 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.

The number of Digital Door Boxes you can install is limited by the System Load Factor. (See page 1-4).

A Digital Door Box can control the relay contacts in the Door 1 and Door 2 connectors — just like an Analog Door Box. Connection (see *Door Relays* on page 4-6), programming (see *Door Box Relay Control* on page 4-10), and operation (see *Operating the Door Box* on page 4-11) are identical. The Digital Door Box is a weather-tight unit, with an operating temperature range of 0 to 45 degrees C (32 to 113 degrees F) and a relative humidity of 10-95%, non-condensing. It is not intended for outdoor installation.

Any available digital extension port can support a Digital Door Box.

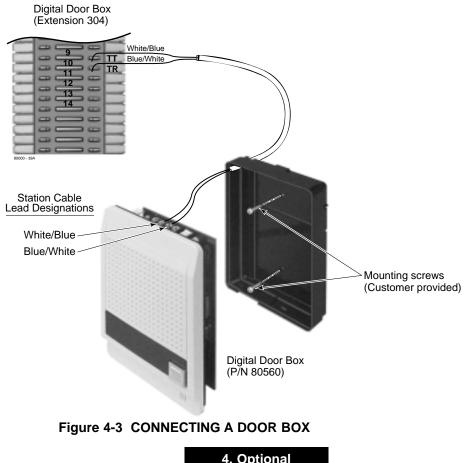
• To install the Digital Door Box:

- 1. Snap open the Door Box case.
- 2. Punch down one end of a two-pair twisted station cable on the extension block as shown in Figure 4-3.
- 3. Run the station cable through the hole in the back of the Door Box.

When wall mounting, use the two holes in the base of the Door Box for the mounting screws.

- 4. Strip the conductors back about 1/2 inch and connect to the Door Box terminals.
- 5. Snap the Door Box cover back onto the base.

Also see *Programming the Door Box* on page 4-10 and *Operating the Door Box* on page 4-11.



4-9



DOOR BOX PROGRAMMING

Programming the Door Box

Door Box Setup

You must assign the circuit type and chime pattern to each installed Door Box.

- In **1801: Extension Circuit Type**, enter 10 to assign the extension as a Door Box. (By default, this assignment is already made for the Analog Door Boxes.)
- In 1801: Door Chime, enter the Door Chime type.
 - 0 = Normal Ring Group ringing.
 - 1 = Low pitch chime pattern.
 - 2 = *Mid range pitch chime pattern*.
 - 3 = High pitch chime pattern.

If you enter Door Chime type 0 (normal ring) above, you can set up Call Coverage keys for the Ring Group. This allows extensions that are not members of the Ring Group to answer Door Box calls. Extensions with Call Coverage keys to the Door Box Ring Group can also activate the relay (see Door Box Relay Control below).

Door Box Ringing

When a visitor at the door presses the Door Box call button, the Door Box will alert (chime) all the extensions in the Ring

Group to which the Door Box belongs. For example, if the Door Box and extensions 301 and 302 are in Ring Group 1, pressing the call button alerts 301 and 302.

- In **1802: Ring Group Number**, assign the Door Box and the extensions that should alert to the same Ring Group.
- In **0511: Ring Group Master Extension Numbers and Names**, assign a Ring Group master number to the Ring Group assigned in the previous step.

Door Box Relay Control

For Analog Door Boxes, you normally set up Door Box 1 to control the Door 1 relays, and Door Box 2 to control the Door 2 relays (see **1801: Relay Owner** below). If the Relay Owner is a Digital Door Box instead, it can control either relay.

- In **0201: Door 1 Relay**, to assign the Door 1 Relay for door strike control, enter 1.
- In **0201: Door 2 Relay**, to assign the Door 2 Relay for door strike control, enter 1.
- In **1801: Relay Owner**, for the Door Box extension (324, 325, or the Digital Door Box extension number):
 - Enter 1 to have the Door Box control Door 1 relays.
 - Enter 2 to have the Door Box control Door 2 relays.

4-10

DOOR BOX OPERATION

Operating the Door Box

To place a call from the Door Box:

- 1. Press the Door Box call button.
- 2. When someone inside the building answers your call, speak toward the Door Box.

To place a call to the Door Box:

- 1. Lift handset and press ICM.
- 2. Dial the Door Box extension number.

To answer the Door Box chimes from a keyset:

1. Lift handset or press **SPK**.

To control the system relay which in turn controls the door strike:

Once set up in programming, this option is available to any member of the Door Box Ring Group as well as any extension with a Call Coverage Key for the Door Box Ring Group.

- 1. To open the relay, press **FLASH** key or **OPEN** soft key.
- 2. To close the relay, press **FLASH** key again or **CLOSE** soft key.



MUSIC SOURCE

Installing a Music Source (Figure 4-4)

Your system provides connection for a customer provided music source. Use this music source for Background Music and Music on Hold.

Be sure the connected music source is compatible with the following music input specifications:

Input Impedance: 10K Ohms Output Level: +18 dBr @ 1.0 KHz

• To connect a music source:

- 1. Connect the music source to the BLK and YEL lugs on the Audio modular jack.
- 2. Plug a 6-conductor line cord into the AUDIO jack on the cabinet *and* into the Audio modular jack.

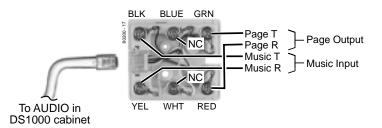


Figure 4-4 INSTALLING A MUSIC SOURCE 4-12

MUSIC SOURCE

Programming Background Music

• 0201: Background Music Enter Y to enable Background Music system-wide.

• **1802: BGM** Enter Y to enable Background Music at the extension.

Programming Music on Hold

• 0201: Music on Hold Enter Y to enable Music on Hold system-wide.

• 0201: MOH on Transfer

Enter Y to enable Music on Hold for transferred calls.

4. Optional Equipment

POWER FAILURE TELEPHONE

Power Failure Cut-Through (Figure 4-5)

(Check the *Release Notes* that came with your system for the availability of this option.)

When AC power fails, the system can automatically cut through to a Power Failure Telephone connection.

• To install Power Failure Cut-Through:

1. Connect the GRN and RED lugs on the PFT/MDM modular jack to the GRN and RED lugs on the Power Failure Telephone's mod jack.

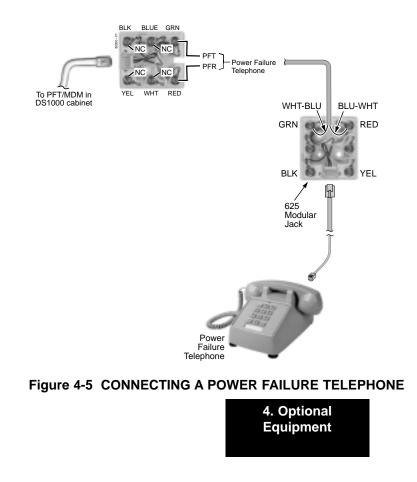
• To test the Power Failure Telephone:

- 1. Connect a power failure telephone per Figure 4-5.
- 2. Power down the system.
- 3. At the Power Failure Telephone, lift the handset. *You should hear dial tone from trunk 1.*
- 4. Place a test call.

If power is restored while a cut-through call is in progress, the call is maintained until the user hangs up the Power Failure Telephone.

While your system is powered up, your Power Failure Telephone is extension 316.

POWER FAILURE TELEPHONE



4-15

DSS CONSOLE

Installing a DSS Console (Figures 4-6 and 4-7)

The DSS Console gives a keyset user a Busy Lamp Field (BLF) and one-button access to extensions, trunks and system features. Keep the following in mind when installing DSS Consoles:

- You can only connect 4 DSS Consoles.
- You can only connect DSS Consoles to Super Display or 34-Button Display telephones.
- A DSS Console does not require a separate station port it connects directly to the keyset.

• To install a DSS Console:

- 1. Turn the telephone upside down and remove the plastic filler plug from the DSS modular connector.
- 2. Plug the DSS Console's 8-pin modular line cord into the telephone's DSS connector.
- 3. Plug the other end of the 8-pin line cord into the DSS Console's 8-pin jack.
- 4. If you have a 24-Button DSS Console, attach the metal plate to both the DSS Console and telephone as shown.

Programming DSS Consoles

• 1801: DSS Type

For the extension to which you have connected the DSS Console, enter 1 for 24-button, 2 for 110-button and 0 for unassigned.

• 1801: DSS Block Number

For the extension to which you have connected the DSS Console, enter the number of the block that corresponds to the connected console. A block is a unique DSS Console assignment. The system provides up to 4 blocks; one for each console.

> Your consoles can share the same block if you want them to have the same programming. They will still have unique Personal Speed Dial numbers, since a DSS Console uses the Personal Speed Dial for the extension to which it is attached.

• 1704: DSS Console Key Assignment

Program the DSS Console's keys. Refer to the software manual for additional programming details.

DSS CONSOLE

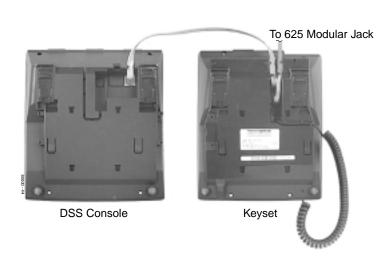


Figure 4-6 INSTALLING A 110-BUTTON DSS CONSOLE

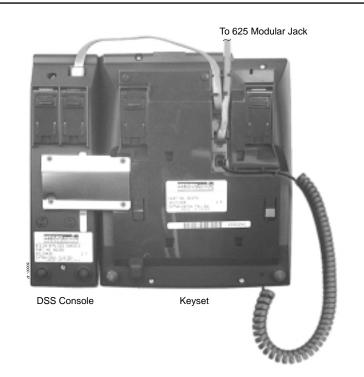
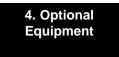


Figure 4-7 INSTALLING A 24-BUTTON DSS CONSOLE 4-17



Installing the Wall-Mount Kit

You can use a wall-mount kit to attach any key telephone to a wall. The wall-mount kit includes a mounting bracket, wall-mount screws and a handset hanger.

Installing the Wall-Mount Handset Hanger (Figure 4-8)

- 1. Remove the rubber plug that covers the slots for the handset hanger. Store the plug in a safe place.
- 2. Insert the handset hanger in the slot provided beneath the telephone's hookswitch.



Figure 4-8 INSTALLING THE WALL-MOUNT HANGER 4-18

Wall-Mounting a Key Telephone (Figures 4-9 through 4-11)

- To mount the telephone on the wall (Figure 4-9):
- 1. Using the screws provided, attach the wall-mount bracket to the wall in the desired location.
- 2. Plug in the telephone's modular line cord.
- 3. Run the telephone's line cord through one of the slots in the bottom of the wall-mount bracket.
- 4. Plug the line cord into the telephone's 625 modular jack.
- 5. Place the telephone on top of the wall-mount bracket and snap into place.

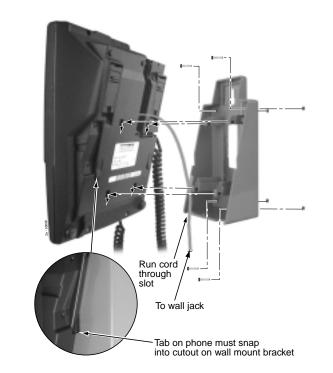


Figure 4-9 INSTALLING THE WALL MOUNT BRACKET 4-19



- To mount the telephone on a wall plate (Figure 4-10):
- 1. Snap the wall-mount bracket onto the wall plate.
- 2. Plug the telephone's line cord into the jack in the wall plate and into the telephone.
- 3. Place the telephone on top of the wall-mount bracket and snap into place.

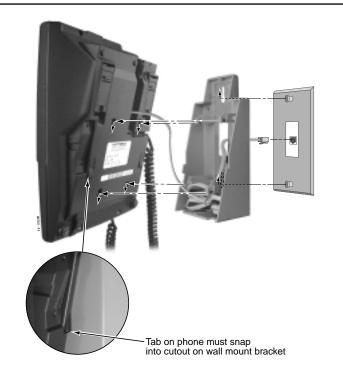


Figure 4-10 MOUNTING ON A WALL PLATE 4-20

- To remove the telephone from the wall mount kit (Figure 4-11):
- 1. From the front of the phone, grab the tabs that secure the telephone to the wall-mount kit.
- 2. While pressing in the tabs, lift up the phone until it snaps clear of the wall-mount kit.

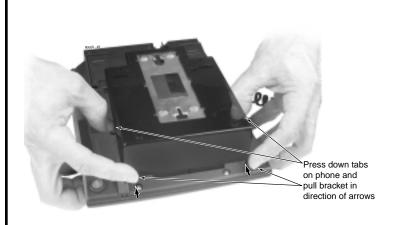


Figure 4-11 REMOVING THE WALL MOUNT BRACKET 4-21



— For Your Notes —

DESK STAND

Using the Desk Stand (Figure 4-12)

Each telephone has an integrated desk stand. You can extend the desk stand in one of two positions: low and high.

- To use the desk stand low position:
- 1. Flip up each telephone leg until it snaps into place.
- To use the desk stand high position:
- 1. Flip up each telephone leg into the low position.
- 2. Push out the leg extender.
- 3. Slide the extender up, then down until it locks in place as shown at right.

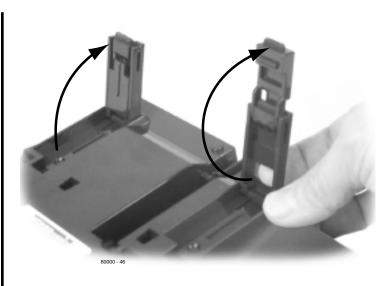


Figure 4-12 USING THE DESK STAND 4-23



REJ RECORDING JACK

Installing the REJ Recording Jack (Figure 4-13)

Use the REJ Recording Jack (P/N 80175) to connect a Super Display or 34-Button Display Telephone to an external tape recorder or amplifier. The REJ output is a mono sub-miniature jack which connects directly to an AUX level input. The REJ broadcasts both sides of your conversation (i.e., your voice and your caller's voice) whenever you lift your handset. The REJ does not broadcast Paging announcements or activate for Handsfree calls.

CAUTION

Be sure the connected audio device provides a standard AUX level input.

• To install the REJ Recording Jack:

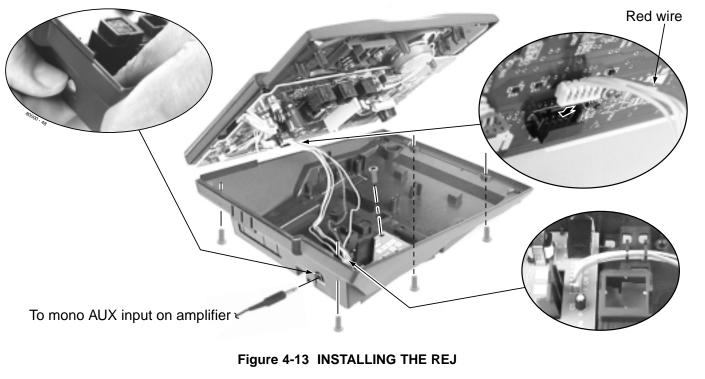
- 1. Unplug the telephone line cord and handset cord, and turn the telephone face down on a non-abrasive surface.
- 2. Remove the 4 screws that secure the telephone base.
- 3. Separate the telephone faceplate from the telephone base.
- 4. On the left side of the telephone base, remove the plastic molding that covers the hole for the REJU connector. *You only need to remove the top half of the molding.*
- 5. Install the REJ as shown (with the components facing down).
- 6. Secure with the supplied screw.

• To connect the REJ Recording Jack:

- 1. Route the REJ wires through the guides in the telephone base.
- 2. Plug the REJ cable into the connector in the telephone PCB. The connector is keyed so you can't plug in the cable the wrong way.
- 3. Reassemble the telephone, plug in the handset, and reconnect the line cord.
- 4. Using an audio cable, connect the REJ to the amplifier's mono AUX input.

To connect to a stereo AUX input, use a commercially available mono-to-stereo splitter cable.

REJ RECORDING JACK





4-25

REJ RECORDING JACK

— For Your Notes —

Section 5, MAINTENANCE OPTIONS AND SMDR

In this section	Page
SMDR	
Installing SMDR	5-2
Programming SMDR	5-2
Modem Installation	
Installing a Modem	5-4

In this section	Page
Making your own Data Cables System Reset	
Resetting Your System	

5-1

5. Maintenance Options and SMDR

SMDR

Installing SMDR (Figure 5-1)

Station Message Detail Recording (SMDR) provides a record of the system's outside calls. Once set up in programming, SMDR automatically outputs from the system's RS-232 (serial) port to a customer-provided printer, terminal or SMDR data collection device.

You can also connect a PC to the system serial port to collect call history data.

• To connect an SMDR device:

- 1. Plug one end of a mod-8 (standard 8 conductor) patch cord into the system's RS-232 port.
- 2. Plug the other end of the mod-8 patch cord into the DB9 to Mod-8 Adaptor (P/N 85980).
- 3. Plug the adaptor into the DB9M COM connector on the back of your PC.

The default communications parameters of the CPU serial port are 19200 8 N 1 (19200 baud, eight data bits, no parity and 1 stop bit).

If you have a PC connected to collect history data, press Shift 1 to turn history on and off.

Programming SMDR

• 0301: CPU Baud Rate

Assign the baud rate for the RS-232-C port on the CPU. The options are 0 (1200), 1 (2400), 2 (4800), 3 (9600), 4 (19200), and 5 (38400).

You can also press Ctrl Break on a PC connected to the system serial port to toggle through the available system baud rates.

• 0301: SMDR Port

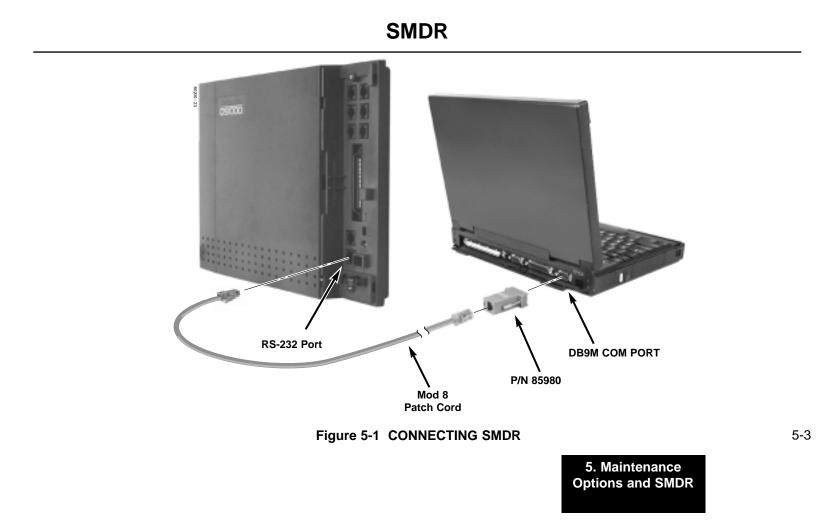
Enter 1 to enable SMDR output from the system's RS-232-C port.

• 0301: Print SMDR Header

Enter Y to have the beginning of the SMDR report include the column header data. Enter N to have the SMDR report only include the call data (without the header).

• 1001: Print SMDR

Enter Y to have the SMDR report include calls on the trunk. Enter N to have the SMDR report exclude calls on the trunk.



MODEM INSTALLATION

Installing a Modem (Figure 5-2)

You can connect a modem to the system's serial port to remotely collect history data and/or SMDR.

• To connect a modem:

- 1. Plug one end of a mod-8 (standard 8 conductor) patch cord into the system's RS-232 port.
- 2. Plug the other end of the mod-8 patch cord into the DB25 to Mod-8 Adaptor (P/N 85981).
- 3. Plug the other end of the adaptor into the DB25F connector on the back of your modem.

The default communications parameters of the system's serial port are 19200 8 N 1 (19200 baud, eight data bits, no parity and 1 stop bit).

If you have a PC connected to collect history data, press Shift 1 to turn history on and off.

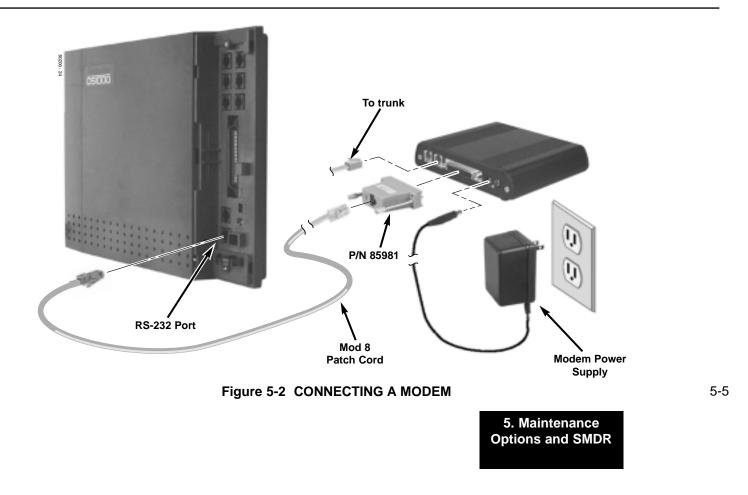
• To call from a PC at a remote site:

The remote PC must have a modem connected. Also, the default communications parameters of the system's serial port are 19200 8 N 1 (19200 baud, eight data bits, no parity and 1 stop bit).

- 1. Using commercially available communications software, dial the phone number of the trunk connected to the modem at the telephone system site.
- 2. To test history, type Shift 1 on the remote PC.

If history doesn't output correctly, press Ctrl Break on the remote PC to toggle through the available CPU baud rates.

MODEM INSTALLATION



MAKING YOUR OWN DATA CABLES

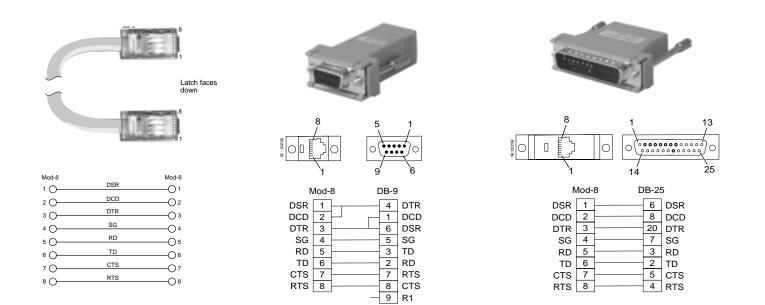


Figure 5-3 MAKING YOUR OWN DATA CABLES

5-6

SYSTEM RESET

Resetting Your System (Figure 5-4)

You may need to reset your system for troubleshooting purposes.

- To reset your system:
- 1. Make sure the RUN/LOAD switch is set to RUN.
- 2. Following the illustration at right, press the red reset switch. *Your system will automatically restart.*

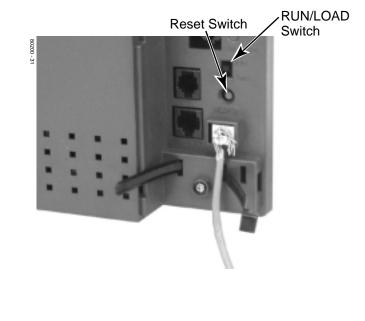
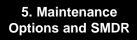


FIGURE 5-4 RESETTING YOUR SYSTEM 5-7



— For Your Notes —

Section 6, SPECIFICATIONS AND PARTS LIST

In this section	Page
Specifications Parts List	

6-1

6. Specifications and Parts

System Capacities

Cabinets:	1
Talk Timeslots (Intercom/line):	Non-blocking
Analog Trunks (CO/PBX lines):	Base: 3
	Expansion: 3
	Total: 6
Digital Telephones:	Base: 8
	Expansion: 8
	Total: 16
Analog Telephones:	Base: 4
	Expansion: 4
	Total: 8
Door Boxes (digital):	1 per digital station port
Door Boxes (analog)	Base: 1
	Expansion: 1
	Total: 2

System CapacitiesPower Failure Telephones:1DSS Consoles:1 max. per keyset, 4 max.
per systemExternal Paging Zones:1Internal Paging Zones:8 (7 and All Call)Page Audio Output:1Music Input:1Conference CircuitsConference circuits dynamically allocated, with 8 parties max. per Conference.REJ Recording Jack Units1 max. per keyset

Environmental Requirements

Meeting established environmental standards maximizes the life of the system. Refer to the Standard Practices Manual for further information. Be sure that the site is not:

- 1. In direct sunlight or in hot, cold or humid places.
- 2. In dusty areas or in areas where sulfuric gases are produced.
- 3. In places where shocks or vibrations are frequent or strong.
- 4. In places where water or other fluids comes in contact with the main equipment.
- 5. In areas near high-frequency machines or electric welders.
- 6. Near computers, telexes, microwaves, air conditioners, etc.
- 7. Near radio antennas (including shortwave).

Power Requirements

A dedicated 110 VAC 60 Hz circuit located within 4 1/2 feet of the cabinet is required.

Environmental Specifications

Cabinet, Key Telephones and Digital Door Box

Temperature: 0-45°C (32-113°F) Humidity: 10-95% (non-condensing)

Digital Door Box not intended for outdoor installation.

Analog Door Box

Temperature: -20-60°C (4-140°F) Humidity: 10-95% (non-condensing)

Electrical Specifications

Power Supply: Output Power Input Current VA Kwh BTU	120 VAC ±- 10% @ 50-60 Hz
Output Power	35 W
Input Current	550 mA
VA	66 VA
Kwh	.066 KwH
BTU	225 BTU
Grounding Requirements:	12 AWG copper wire

6-3

6. Specifications and Parts

Mechanical Specifications				
Equipment	Width	Depth	Height	Weight
Cabinet	13 3/4""	2 1/2""	10 1/2"	4 lbs 1 oz
Non-display Keyset	7 1/4"	9"	2 7/8""	1 lb 11 oz
Display Keyset	7 1/4"	9"	2 7/8"	1 lb 12 oz
Super Display Keyset	7 1/4"	9"	2 7/8"	1 lb 16 oz
DSS Console	7 7/8"	8 7/8"	2 3/4"	1 lb 6 oz
Analog Door Box	3 3/4"	1"	5"	6 oz
Digital Door Box	4"	1 1/2"	5 3/16"	10 oz
2-OPX Module	9 3/8"	7 3/8"	1 1/4"	3 lbs

External Paging

Output Impedance: Output Level: 600 Ohm 0 dBr @ 1.0 KHz

Relay Contacts			
Contact Configuration:	Normally open		
Maximum Load:	0.5A @ 120 VAC		
	1A @ 24 VDC		
Maximum Carry Current	2A		
Maximum Switched Voltage 120 VAC or 60 VDC			
Maximum Switched Power 60 VA or 24 W			
Minimum Switched Current 1 mA			
Minimum Switched Voltage 1 VDC			
Minimum Switched Power 0.05 mW			
Maximum Initial Contact Resistance: 100 mOhms			

BGM/MOH Music Source Input

Input Impedance: Input Level:

10K Ohms +18 dBr (+/- 2 dBr) @ 1.0 KHz

FCC Registration Information					
Model:			DS1000		
Manufact	urer:		Nitsuko	Nitsuko	
FCC Part	15 Registr	ation:	Class A		
FCC Reg	istration Nu	umber:	1ZDTHA-353	91-KF-E	
			1ZDTHA-353	92-MF-E	
Industry (Canada				
Certificat	e (DOC) N	umber	TBD		
Reg. Status	FIC	Mfrs. Port Identifier		Network Jacks	
Original	02LS2	80200	REN 0.6B	RJ11C	

Cabling Requirements

1. 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, single line telephones, Door Boxes and 3-ACI Modules must be a dedicated, isolated cable pair.

Device	Cable Type	Cable Run Length (ft) Notes
Key Telephone &	2-wire 26 AWG	650	
Digital Door Box	2-wire 24 AWG	1000	
Single Line	2-wire 26 AWG	8000	at constant 20 mA
Telephone	2-wire 24 AWG	12,000	at constant 20 mA
	2-wire 22 AWG	16,000	at constant 20 mA
Analog Door Box	2-wire 24 AWG	330	
	2-wire 22 AWG	550	

6-5

6. Specifications and Parts

PARTS LIST

Station Equipment

Description	Part Number
34-Button Super Display Telephone	80673
34-Button Display Telephone	80663
22-Button Telephone	80570
22-Button Display Telephone	80573
24-Button DSS Console	80556
110-Button DSS Console	80555
Wall Mount Kit	80579
Analog Telephones (customer provided)	

Peripheral Station Equipment Part Number 80560 92245

Description	
Digital Door Box	
Analog Door Box	

Common Equipment			
Description	Part Number		
DS1000 3 x 8 x 4 Cabinet	80200		
DS1000 3 x 8 x 4 Expansion Board	80221		
DB9 to Mod-8 Adaptor	85980		
DB25 to Mod-8 Adaptor	85981		

PARTS LIST

Replacement F	Parts
---------------	-------

Description	Part Number
Handset and Cord Assembly	80150
Noise Cancelling Handset	80150NC
22 Button Clear Plastic Cover	80600-22
34 Button Clear Plastic Cover	80600-34
34 Button Super Display Clear Plastic Cover	80600-S34
110 Button DSS Clear Plastic Cover	80600-DSS
24 Button DSS Clear Plastic Cover	80600-24DSS
Directory Tray	92602
9' Handset Coil Cord	92297-9
13' Handset Coil Cord	92297-13
25' Handset Coil Cord	92297-25
7' Telephone Line Cord	82476-7
14' Telephone Line Cord	82476-14
Wall Mount Handset Clip Holder	80578

6-7

6. Specifications and Parts

— For Your Notes —

NITSUKO AMERICA

Nitsuko America, Telecom Division 4 Forest Parkway Shelton, CT 06484

> TEL: 203-926-5400 FAX: 203-929-0535

Other Important Telephone Numbers

Sales:
Customer Service:
Customer Service FAX:
Technical Service:
Discontinued Product Service:
Technical Training:
Emergency Technical Service (After hours)
(Excludes discontinued products)

NITSUKO * CANADA

Nitsuko Canada, Division of Nitsuko America 165 Matheson Blvd. E., Unit #4-6 Mississauga, Ontario Canada L4Z 3K2

TEL: 905-507-2888, FAX: 905-507-2971



4 Forest Parkway Shelton, CT 06484 TEL: 203-926-5400 FAX: 203-929-0535

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