NITSUKO AMERICA

PORTRAIT 308

Hardware Manual

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Tips

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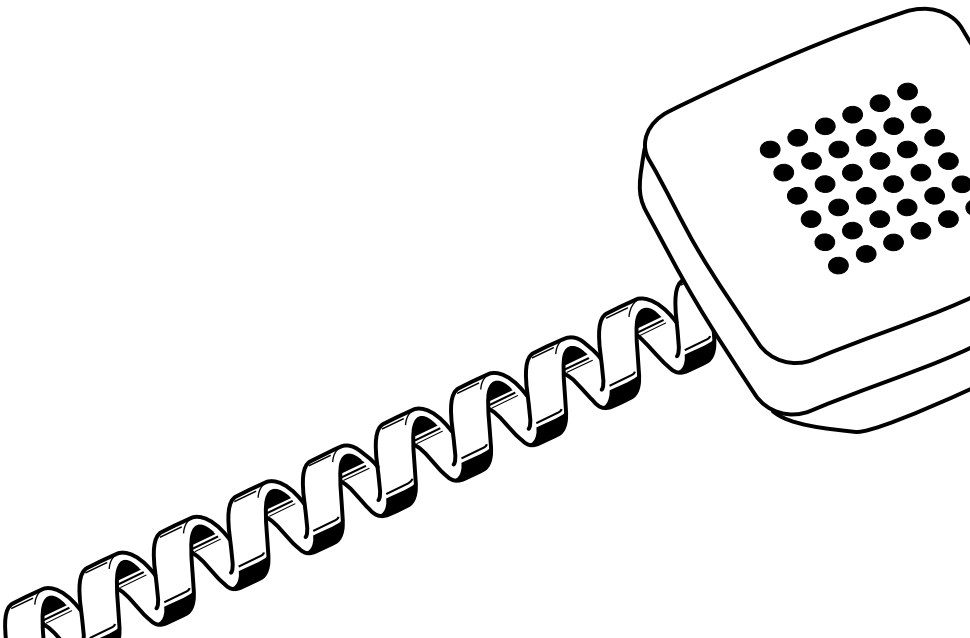


This manual has been developed by Nitsuko America. It is intended for the use of its customers and service personnel, and should be read in its entirety before attempting to install or program the system. Any comments or suggestions for improving this manual would be appreciated. Forward your remarks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

Nitsuko America, Telecom Division
4 Forest Parkway
Shelton, CT 06484
Attention: Manager, Technical Publications

Section 1
Installing the KSU

In this section . . . Page

Unpacking

Unpack the equipment and check it against your equipment lists. Inspect for physical damage.

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 a wall-mounted cabinet: the KSU. 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 1-2 on page 1-5) shows you *approximately* how much space your system requires.

The KSU requires a three-prong dedicated 110 VAC 60 Hz circuit (NEMA 5-15 receptacle) located within 6 feet of the AC receptacle. You should install the extension block to the right of the KSU. Telco should install the RJ11C to the left of the KSU.

Removing the Cover (Figure 1-1)

1. Loosen the screw located on the right-hand side of the cabinet.
2. Slide the cover in the direction of the arrow while pressing the marked postion slightly.

   This allows access to the station and line connectors. To have access to PCB's, you must then remove the main cover.

3. Loosen the two screws located on the top right and bottom right of the cabinet.
4. Lift the cover and slide it slightly in the direction of the arrow to remove.

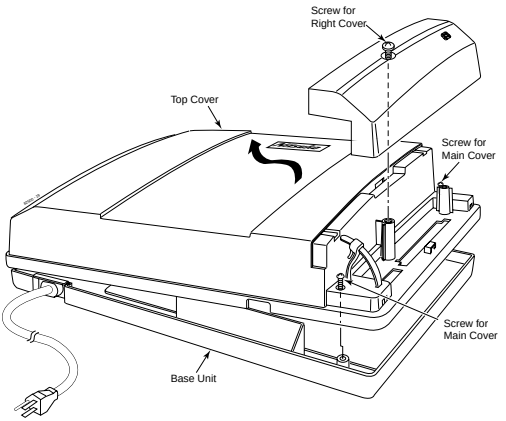


Figure 1-1 REMOVING THE COVER

Mounting the Cabinet

1. Using suitable fasteners, mount a Main Distribution Frame (MDF) plywood backboard in a centrally located spot.
2. Tape the template that is included with the cabinet on the backboard at the desired location. Make sure the template is level.

   If the template is not available, the top two screws should be 11 1/4" apart. The bottom two screws should be 7 1/8" below the top screws, at the same distance apart.

3. Using the template as a guide, install the four mounting screws into the backboard. Leave approximately 1/4” of the shank exposed.
4. Hang the main unit on the mounting screws.

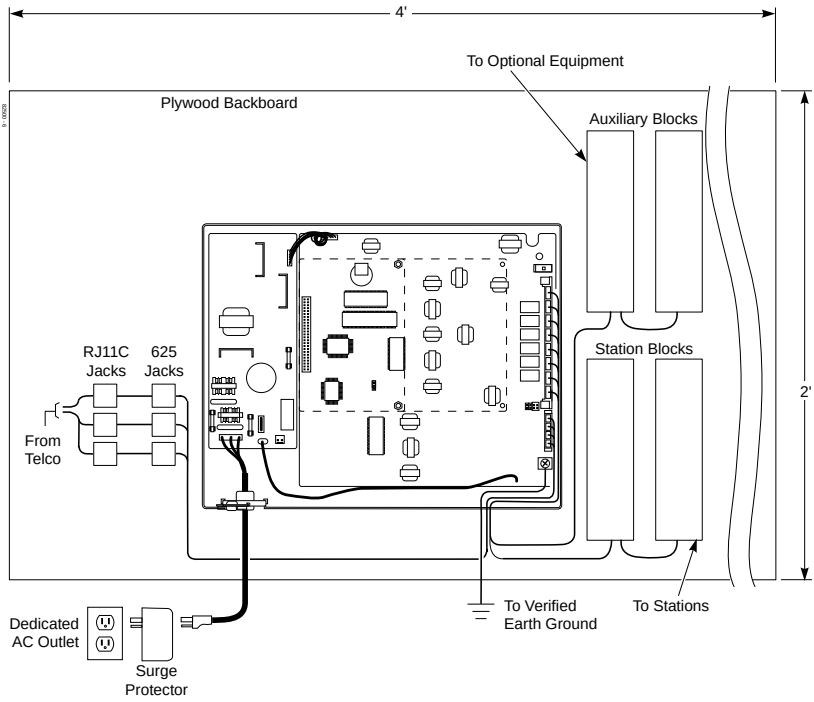


Figure 1-2 INSTALLATION LAYOUT

Connecting the Ground Wire (Figure 1-3)

1. After removing the front cover, loosen the lug on the ground connection located on the lower right-hand side of the cabinet.
2. Use a piece of 12 AWG stranded copper wire and connect the wire to the ground terminal. Tighten the lug on the ground connector.
3. Connect the grounding cable to a known earth ground.

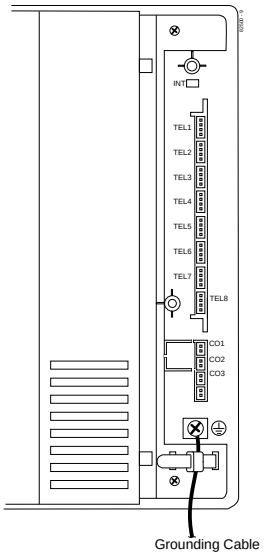


Figure 1-3 GROUNDING A CABINET

Now that your cabinet is installed and grounded, go to *Part 2: PCB Installation and Startup*.

Section 2
PCB Installation and Startup

In this section . . . Page

Where to Install the PCBs (Figure 2-1)

Maximum Configuration:	**3 Trunks** **8 Extensions**

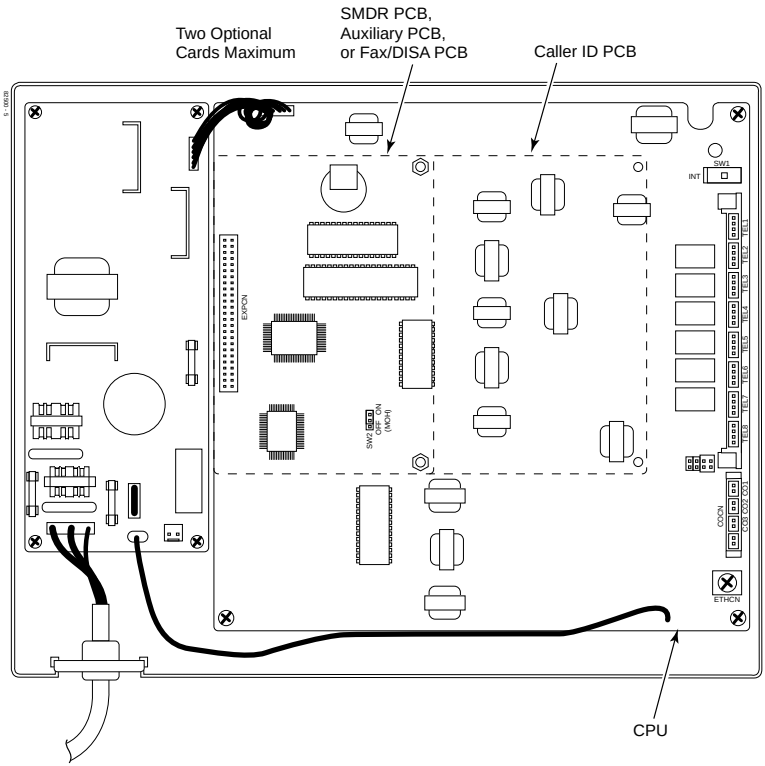


Figure 2-1 PCB LOCATION

Central Processing Unit (CPU) PCB (Figure 2-2)

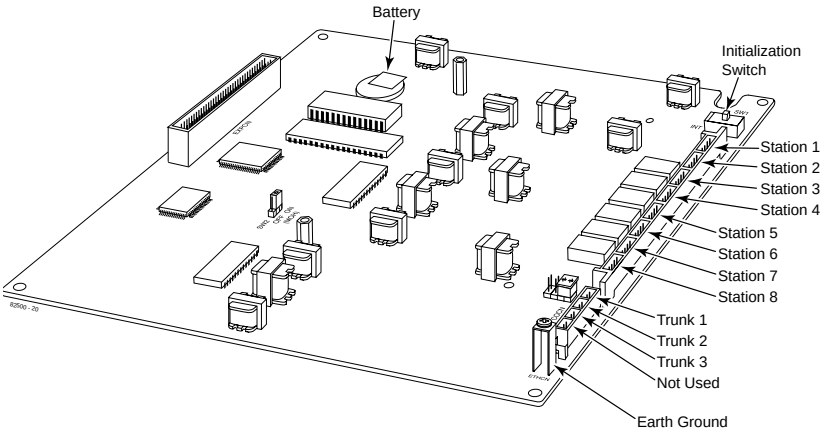


Figure 2-2 CPU PCB

The CPU PCB comes already installed in the KSU. The CPU provides:

- The system's central processing, stored program and memory for the customer's site-specific data.
- Mode switch for cold (default data) or warm (customer data) start on power-up.
- Battery for backup of the customer's site-specific data. The battery's life is between 3.5 and 7 years - depending on how often the system is powered down. The more the system's power is off, the shorter the battery's life.
- Connection points for the CO and station DDK connectors.

To prepare the CPU PCB:

1. Slide the INT switch (SW1) to the left (toward INT).

   This ensures that the system will load the default database on initial power-up. Approximately 10 seconds after initial power-up, you must change the SW1 switch to the right.

Refer to *Part 3, Installing Extensions and Trunks* for instructions on connecting the stations and trunks.

SMDR (3SMDR) PCB (Figure 2-3)

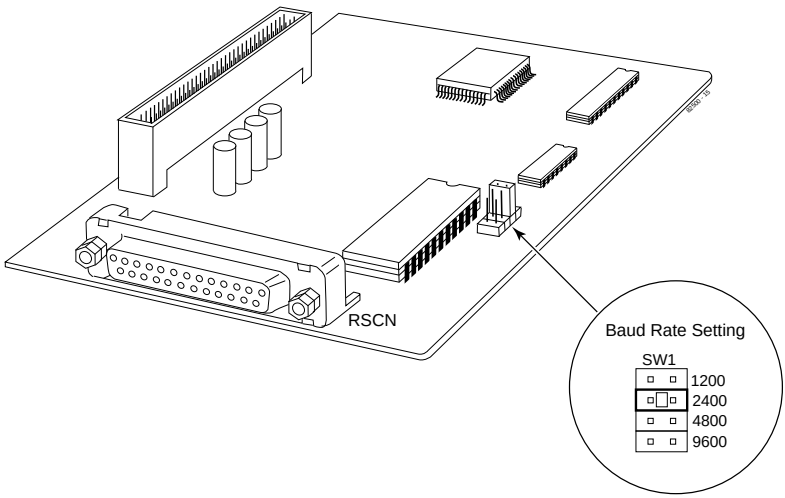


Figure 2-3 SMDR PCB

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

Note: The Portrait 308 system can accommodate any combination of optional cards, but the system capacity can not exceed two optional cards.

To install a SMDR PCB:

1. Align the 3SMDR PCB over the connector labeled EXPCN on the CPU or other installed optional PCB.
2. Press the PCB into the EXPCN connector.
3. Using the two metal spacers included with the 3SMDR PCB, attach the PCB to the CPU or other installed optional card.
4. Connect the RS-232C cable into the 3SMDR PCB.
5. Locate the filler pieces on the lower portion of the base of the KSU. Using a flat-blade screwdriver, carefully pry out the filler piece on the right.
6. Secure the RS-232C cable with the cable tie. Route the cable through hole in the the cabinet.
7. Attach the other end of the RS-232C cable to the printer.
8. Set the interface conditions of the printer as follows:

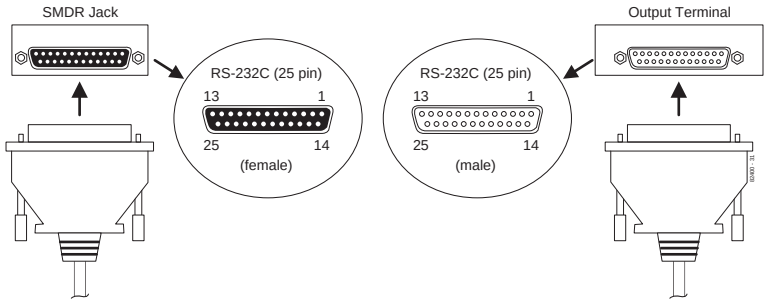
   Word length: 7 bit **Start bit length:** 1 bit
   Parity bit: Even parity **Stop bit length:** 2 bit

SMDR RS-232C Cable (Figure 2-4)

To connect the SMDR and printer, an RS-232C cable is required. To make your own cable, it must be a straight-through cable connecting pins 2, 3, 6, 7, 8 and 20. Refer to the Figure 2-4.

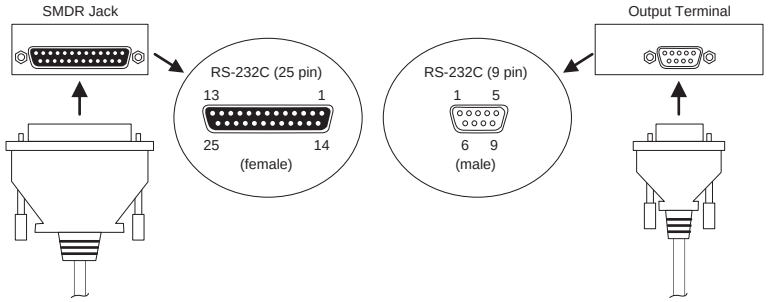
Note that the cable length should not exceed 50' in length.

25 pin - 25 pin Cable



Pin No.	Description	Pin No.	Description
2	Receive Data	2	Receive Data
3	Transmit Data	3	Transmit Data
6	Data Terminal Ready	6	Data Terminal Ready
7	Signal GND	7	Signal GND
8	Request To Send	8	Request To Send
20	Data Set Ready	20	Data Set Ready

25 pin - 9 pin Cable



Pin No.	Description	Pin No.	Description
2	Receive Data	3	Transmit Data
3	Transmit Data	2	Receive Data
6	Data Terminal Ready	6	Data Set Ready
7	Signal GND	5	Signal GND
8	Request To Send	1	Data Carrier Detect
20	Data Set Ready	4	Data Terminal Ready

*** The other Pins are not used. These Pin conditions are "Open".**

Figure 2-4 RS-232C CABLE

AUXILIARY (3DHEXU) PCB (Figure 2-5)

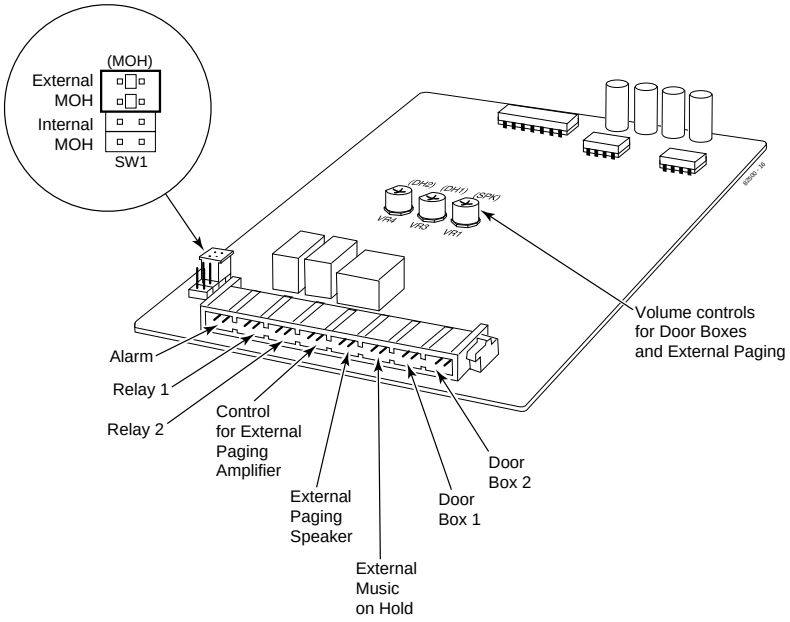


Figure 2-5 Auxiliary PCB

The optional Auxiliary PCB provides:

- Connections for one alarm sensor
- Connections for customer-supplied Music On Hold
- Two Door Box interfaces
- One External Paging output with SPST relay contact
- Two common-use relay contacts

Note: The Portrait 308 system can accommodate any combination of optional cards, but the system capacity can not exceed two optional cards.

As the Auxliary PCB does not have an EXPCN connector, when using this PCB, it must be placed on top of any other optional PCB.

To install an Auxiliary PCB:

1. Align the 3DHEXU PCB over the connector labeled EXPCN on the CPU or other installed optional PCB.
2. Press the PCB into the EXPCN connector.

3. Using the two metal spacers included with the 3DHEXU PCB, attach the PCB to the CPU or other installed optional card.

Refer to *Part 4: Installing Optional Equipment* for more on installing Door Boxes, External Paging Equipment, and Alarm Sensors.

CALLER ID (3CIDU) PCB (Figure 2-6)

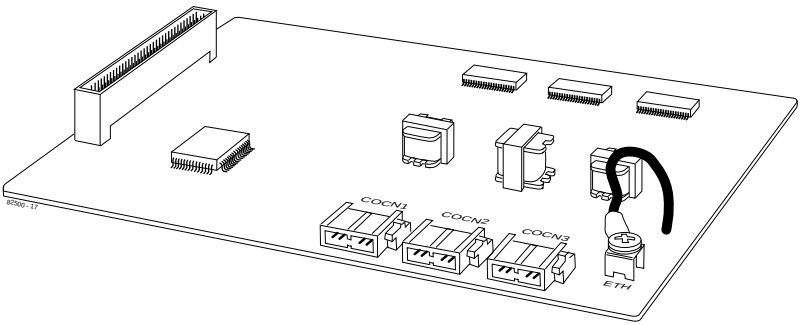


Figure 2-2 Caller ID PCB

The optional Caller ID PCB provides:

- Connections for three CO lines to provide Caller ID capability to display telephones.

Note: The Portrait 308 system can accommodate any combination of optional cards, but the system capacity can not exceed two optional cards.

The Caller ID PCB must be the first optional PCB installed on the CPU.

To install a Caller ID PCB:

1. Place the two nylon spacers included with the 3CIDU PCB in the holes on the right-hand side on the CPU.
2. Align the 3CIDU PCB over the connector labeled EXPCN and the metal and nylon spacers on the CPU. *If another optional card is already installed, it should be taken out and reinstalled on top of the 3CIDU PCB.*
3. Press the PCB into the EXPCN connector and press the PCB into the nylon spacers until they snap into place.
4. Using the two metal spacers included with the 3CIDU PCB, attach the PCB to the CPU.
5. Use a piece of 12 AWG stranded copper wire and connect the wire to the ETH ground terminal on the 3CIDU PCB to the ETHCN ground terminal on the CPU.

Refer to *Part 4: Installing Optional Equipment* for more on installing Caller ID lines.

FAX/DISA (3FAXU) PCB (Figure 2-7)

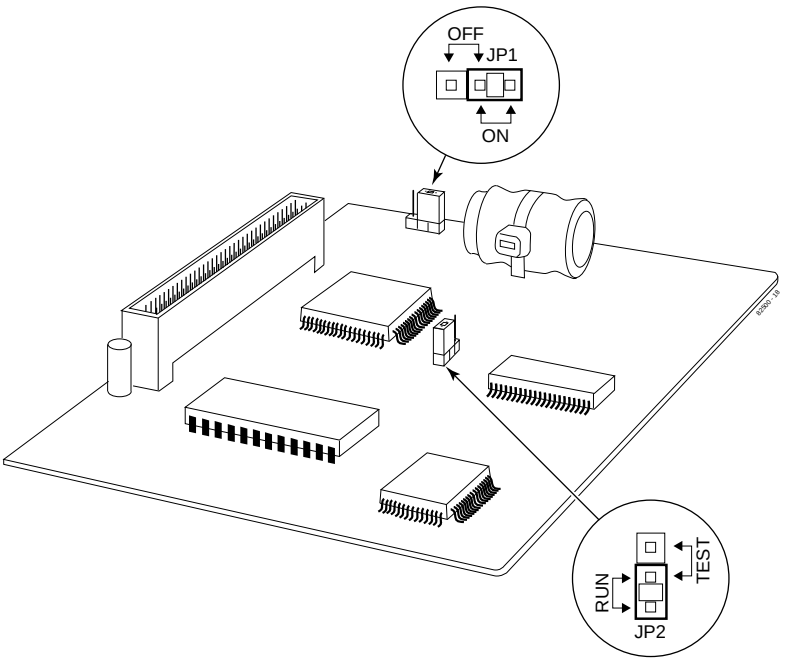


Figure 2-7 Fax PCB

The optional Fax/DISA PCB provides:

- Capability of installing one fax machine to an extension port to detect the CNG signal from an incoming fax.
- Interface for DISA capability.

Note: The Portrait 308 system can accommodate any combination of optional cards, but the system capacity can not exceed two optional cards.

To install a Fax/DISA PCB:

1. Align the 3FAXU PCB over the connector labeled EXPCN and the metal spacers on the CPU or other installed optional card.
2. Press the PCB into the EXPCN connector.
3. Using the two metal spacers included with the 3FAXU PCB, attach the PCB to the CPU or other installed optional card.
4. Move the jumper from the JP1 connector to the ON side (Figure 2-7).
5. Move the jumper from the JP2 connector to the RUN side (Figure 2-).

Refer to *Part 4: Installing Optional Equipment* for more on installing a fax machine to the system.

Power-Up Sequence

Now that all the PCBs you need are installed, you can power-up the system.

1. Install a surge protector in the AC outlet you intend to use for system power.
2. Set the initialization switch to the left side.
3. Plug the AC power cord for the KSU into its surge protector.
4. Wait approximately 10 seconds, then move the initialization switch to the right.

System LEDs on Power-Up

PCB	LED	Status
CPU	Processor LED (Red)	About 5 seconds after power-up, flashes quickly.
	Power LED (Green)	Lit steadily when the CPU has power.

Section 3
Installing Extensions and Trunks

In this section . . .	Page

Working With DDK Connectors

The system uses DDK-type connectors for extensions, trunks and optional equipment. Using the optional DDK Installation Cables (4-pin station cable=P/N 82490, 2-pin C.O. line cable=P/N 82492) makes it easy to connect the PCBs to standard 66M1-50 connecting blocks. The cables available for the system are for CO lines (one-pair), keysets (2-pair), and auxiliary options (one-pair). If desired, separate DDK connectors without cable can be purchased. In general, each cabinet needs:

- One 66M1-50 block and DDK Installation Cable for extensions.
- One 66M1-50 block and DDK Installation Cable for optional equipment
- Up to three (depending on your requirements) RJ11C modular jacks and one DDK Installation Cable for trunks.

Making Additional DDK Connectors (Figure 3-1)

To make DDK connectors, using 22 or 24 gauge solid 2-pair twisted wire for keysets or 22 or 24 gauge solid 1-pair twisted wire for CO lines, single line telephones, Power Failure, or auxiliary functions, do the following:

1. Do not strip the wires. Insert the wires into the top piece (clear plastic) of the connector. Following the standard color code:

   #1=White/Blue #2=Blue/White,
   #3=White/Orange #4=Orange/White

   (Ignore #3 and #4 if only using 1-pair twisted wire)

   Refer to Figure 3-4 for additional help with the color code. Make sure that the wire ends do not protrude beyond the rear end of the connector.

2. Place the top half of the connector over the lower half and press down or use pliers to snap together. Verify that the connector will not come apart and that all the wires are secure. Once together, these connectors will not separate without breaking.

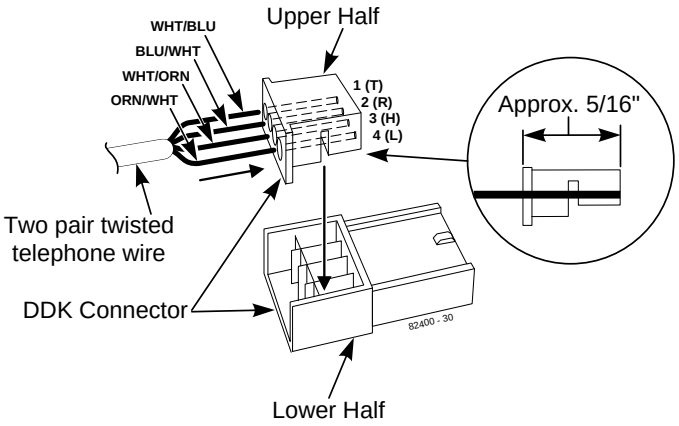


Figure 3-1 MAKING DDK CONNECTORS

Punching Down a DDK Installation Cable

The DDK Installation Cables have 4-pin DDK connectors installed on one end and are unterminated on the other.

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

   Refer to Figure 3-3 if you need help with the color code.

2. Make all wire connections required for any optional cards installed.

3. The main cover should then be replaced on the cabinet, with only the right-side cover removed.

   This will allow access to make the station and trunk connections.

4. After you have punched down your cables, secure them with the cable holder located on the right-hand side of the KSU (Figure 3-2).

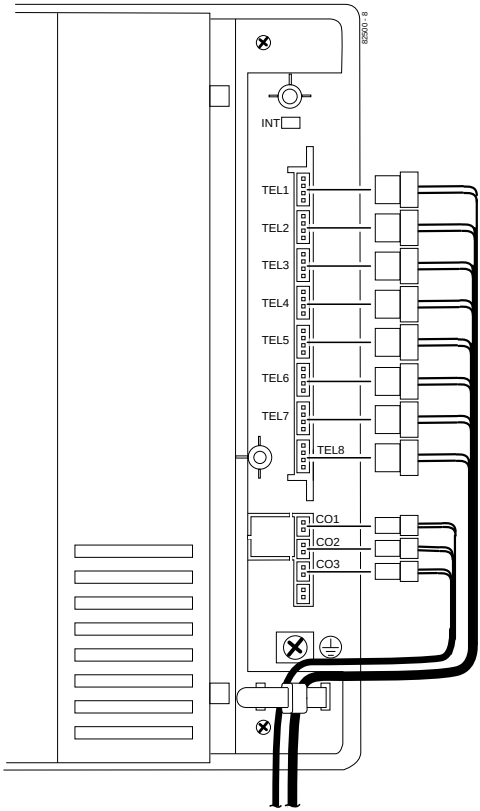


Figure 3-2 SECURING THE CABLES

25-PAIR CABLE				
CONN. PIN	BLOCK TERM.	COLOR CODE	CPU PCB's (EXT. [PORTS])	FUNC.
26	1	WHT-BLU	10 (10)	T
1	2	BLU-WHT		R
27	3	WHT-ORN		H
2	4	ORN-WHT		L
28	5	WHT-GRN	11 (11)	T
3	6	GRN-WHT		R
29	7	WHT-BRN		H
4	8	BRN-WHT		L
30	9	WHT-SLT	12 (12)	T
5	10	SLT-WHT		R
31	11	RED-BLU		H
6	12	BLU-RED		L
32	13	RED-ORN	13 (13)	T
7	14	ORN-RED		R
33	15	RED-GRN		H
8	16	GRN-RED		L
34	17	RED-BRN	14 (14)	T
9	18	BRN-RED		R
35	19	RED-SLT		H
10	20	SLT-RED		L
36	21	BLK-BLU	15 (15)	T
11	22	BLU-BLK		R
37	23	BLK-ORN		H
12	24	ORN-BLK		L
38	25	BLK-GRN	16 (16)	T
13	26	GRN-BLK		R
39	27	BLK-BRN		H
14	28	BRN-BLK		L
40	29	BLK-SLT	17 (17)	T
15	30	SLT-BLK		R
41	31	YEL-BLU		H
16	32	BLU-YEL		L
42	33	YEL-ORN	No Connection	
17	34	ORN-YEL		
43	35	YEL-GRN		
18	36	GRN-YEL		
44	37	YEL-BRN	No Connection	
19	38	BRN-YEL		
45	39	YEL-SLT		
20	40	SLT-YEL		
46	41	VIO-BLU	No Connection	
21	42	BLU-VIO		
47	43	VIO-ORN		
22	44	ORN-VIO		
48	45	VIO-GRN	No Connection	
23	46	GRN-VIO		
49	47	VIO-BRN		
24	48	BRN-VIO		
50	49	VIO-SLT	No Connection	
25	50	SLT-VIO		

82500-4

T = Tip (DDK Pin 1)
R = Ring (DDK Pin 2)
H = High (DDK Pin 3)
L = Low (DDK Pin 4)

Figure 3-3 CONNECTING BLOCK

Station Connections (Figure 3-4)

The CPU has 4-pin DDK connectors for eight stations. The stations can be a combination of keysets or single line telephones, but the system can only accept a maximum of six single line telephones (ports 10 and 11 can only use keysets).

Refer to Part 4: Installing Optional Equipment for instructions on connecting a power failure telephone.

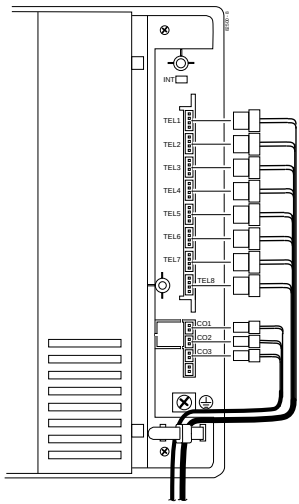


Figure 3-4 STATION CONNECTIONS

1. Following the conventional color code, insert the DDK connectors into the PCB. For example, the eight stations in the system would have these connections:

Ext./Port	DDK Connector Pair
10	WHT-BLU / BLU-WHT / WHT-ORN / ORN-WHT
11	WHT-GRN / GRN-WHT / WHT-BRN / BRN WHT
12	WHT-SLT / SLT-WHT / RED-BLU / BLU-RED
13	RED-ORN / ORN-RED / RED-GRN / GRN-RED
14	RED-BRN / BRN-RED / RED-SLT / SLT-RED
15	BLK-BLU / BLU-BLK / BLK-ORN / ORN-BLK
16	BLK-GRN / GRN-BLK / BLK-BRN / BRN-BLK
17	BLK-SLT / SLT-BLK / YEL-BLU / BLU-YEL

Note that single line telephones only use one-pair wire (T/R). When installing a single line set, the second pair is not used (H/L).

2. Install a modular jack for each extension within six feet of the telephone's location. See Figure 3-5.
3. For each keyset, run two-pair 24 AWG station cable from the cross-connect block to the modular jack. For each single line phone, run one-pair 24 AWG station cable from the cross-connect block to the modular jack.
4. Terminate the station cable to the modular jack lugs:
   WHT-BLU to GREEN lug
   BLU-WHT to RED lug
   WHT-ORN to BLACK lug *
   ORN-WHT to YELLOW lug *

   * Lug not used when installing a single line phone.
5. Back at the MDF, run two pairs of cross-connect wires (or one pair of cross-connect wires for single line phones) between the pins on the B block and cross-connect block to complete the connection.
6. Install bridging clips as required.
7. After completing step 6, you should be able to place and answer calls at the extension.

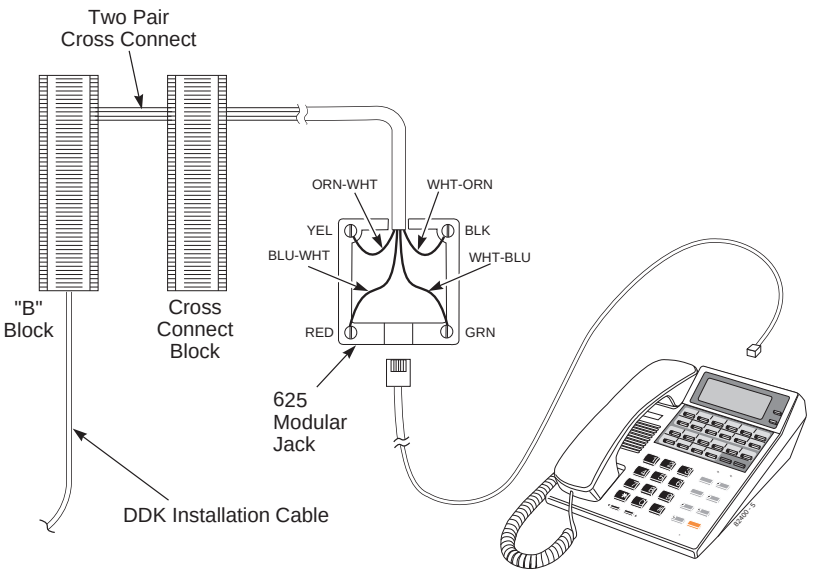


Figure 3-5 CONNECTING KEYSET TELEPHONES

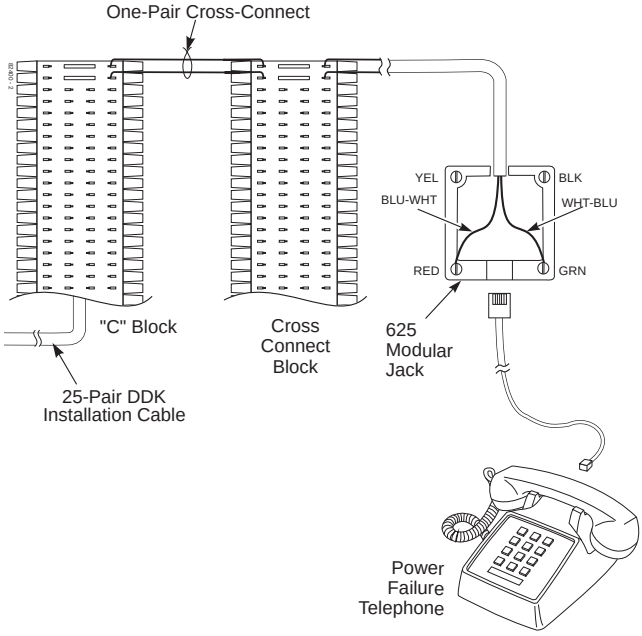


Figure 3-6 CONNECTING SINGLE LINE TELEPHONES

Trunk Connections (Figure 3-7)

The CPU has 2-pin DDK connectors for three loop start CO trunks.

Refer to Part 4: Installing Optional Equipment for instructions on connecting a power failure telephone.

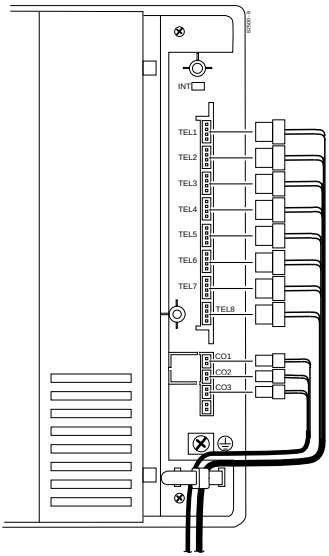


Figure 3-7 TRUNK CONNECTIONS

1. Following the conventional color code, insert the DDK connectors into the PCB. For example, the CPU would have these connections:

Trunk	DDK Connector Pair
1	WHT-BLU / BLU-WHT
2	WHT-ORN / ORN-WHT
3	WHT-GRN / GRN-WHT

2. For each trunk, run one pair of wires from the DDK connection to a 625 modular jack, which then connects to the telco's RJ11C jacks using a standard line cord (Figure 3-8 on the following page).
3. After completing step 2, you should be able to place and answer calls over the connected trunk.

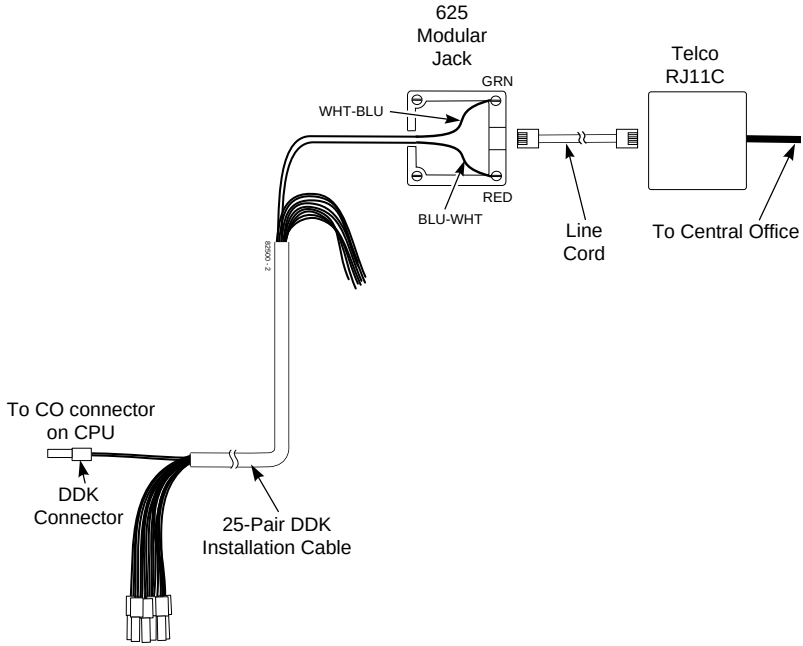


Figure 3-8 CONNECTING TRUNKS

- For Your Notes -

Section 4
Installing Optional Equipment

In this section . . . . . .Page

Using External Alarm Sensors

The Auxiliary (3DHEXU) PCB provides one alarm circuit which detects a make (open) or break (closed) contact from an alarm. Programming determines if the alarm input requires an open or closed circuit.

An alarm detection causes the system to send a signal to stations programmed to receive the alarms. The alarm signal can also be sent to external paging speakers.

Installing an External Alarm Circuit (Figure 4-1)

CAUTION

Be sure the requirements of the alarm system sensors do not exceed the system specifications of a loop resistance of less than 100 Ohms.

1. Locate an available 2-pin DDK connector in an auxiliary (C) block.
2. For the DDK connector chosen, cross-connect the associated wire pair from the C block to the cross-connect block.
3. Install bridging clips as required.
4. Connect the two leads from the external alarm to the associated terminals on the cross-connect block.
5. Plug the DDK connector into the ARM connector on the Auxiliary PCB.
6. Set whether the alarm circuit is normally open or closed in Program 44. In system programming, enter the following:

   1 * 1 * then either 1 or 0

   The above entry sets the following: 1 (Alarm 1) * (enter information) 1 (Activate Alarm) * (enter information) then either 1 (Normally open circuit) or 0 (normally closed circuit).

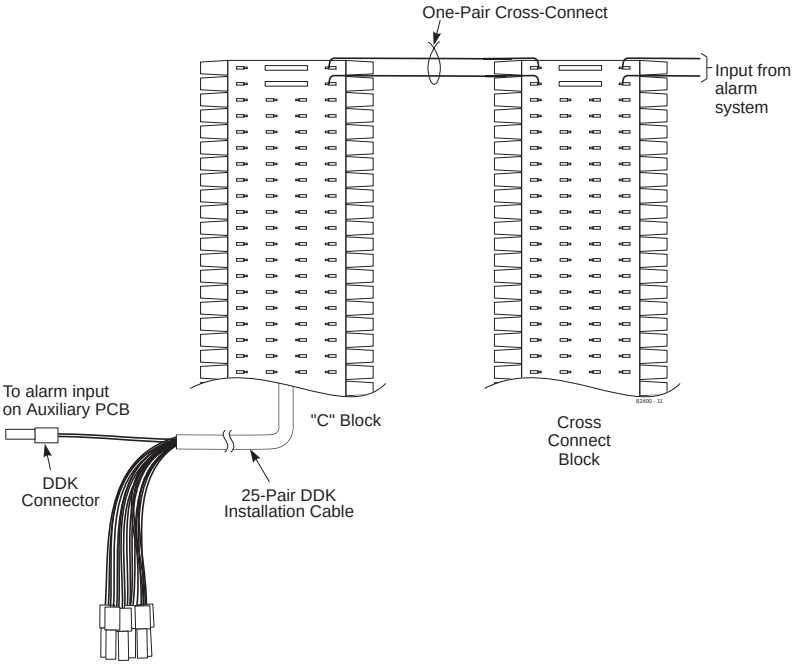


Figure 4-1 CONNECTING AN ALARM

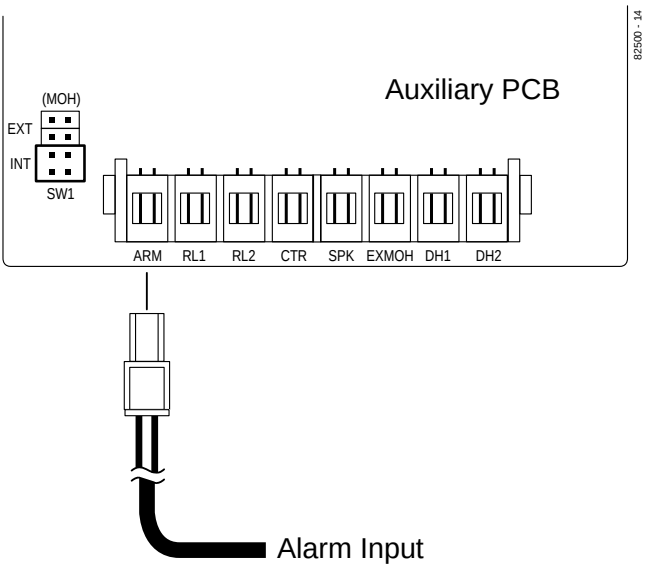


Figure 4-2 CONNECTING TO THE AUXILIARY PCB

Using External Paging

The Auxiliary PCB has one External Paging audio output and one associated control relay. You connect the audio output to the audio input on customer-provided paging systems. In some paging systems, you can use the control relay to automatically turn the amplifier on and off. The control relay is normally opened and closes whenever a user calls the External Paging zone.

Installing External Paging and Page Relay (Figure 4-4)

CAUTION

Be sure the audio input requirements of the paging equipment are compatible with the audio output specifications of the system.

Output Impedance: 600 Ohms
Output Level: Nominal 250 mV (-10 dBm)
Maximum Output: 400 mV RMS
Minimum Initial Contact Resistance: 50 mOhms
Relay Contact: 250 mA @ 24 VDC

1. Locate an available 2-pin DDK connector in an auxiliary (C) block.
2. For the DDK connector chosen, cross-connect the associated wire pair from the C block to the cross-connect block.
3. Install bridging clips as required.
4. Connect the lead to the paging system audio input.
5. Plug the DDK connectors into the Auxiliary PCB. One connector is plugged into the connector on the PCB labeled SPK, the other goes to CTR.
6. Adjust the volume level of the External Zone by turning the VR1 control (also labeled SPK).

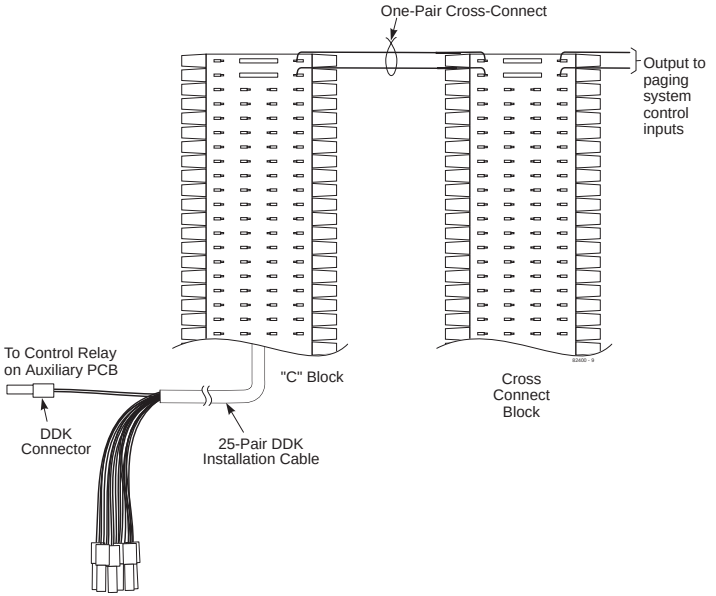


Figure 4-4 CONNECTING EXTERNAL PAGING/RELAY

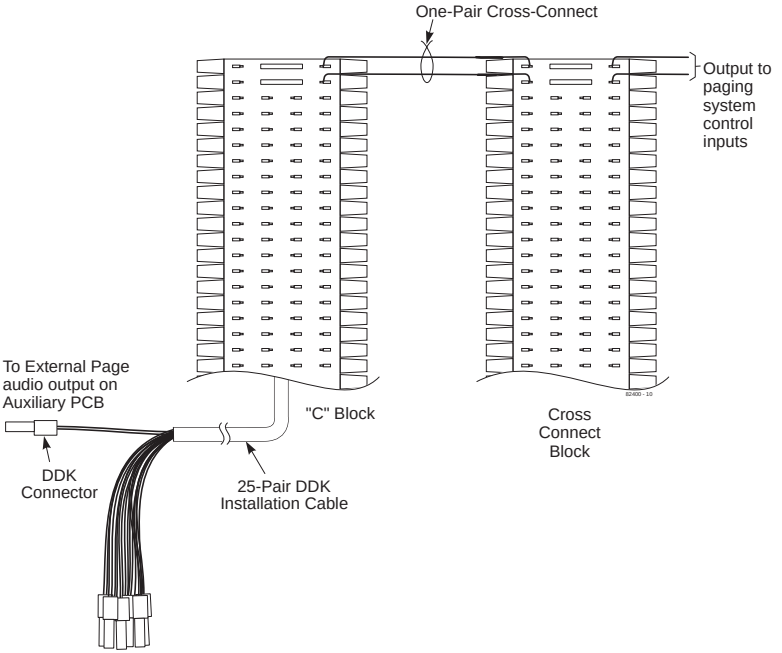


Figure 4-5 CONNECTING EXTERNAL PAGING

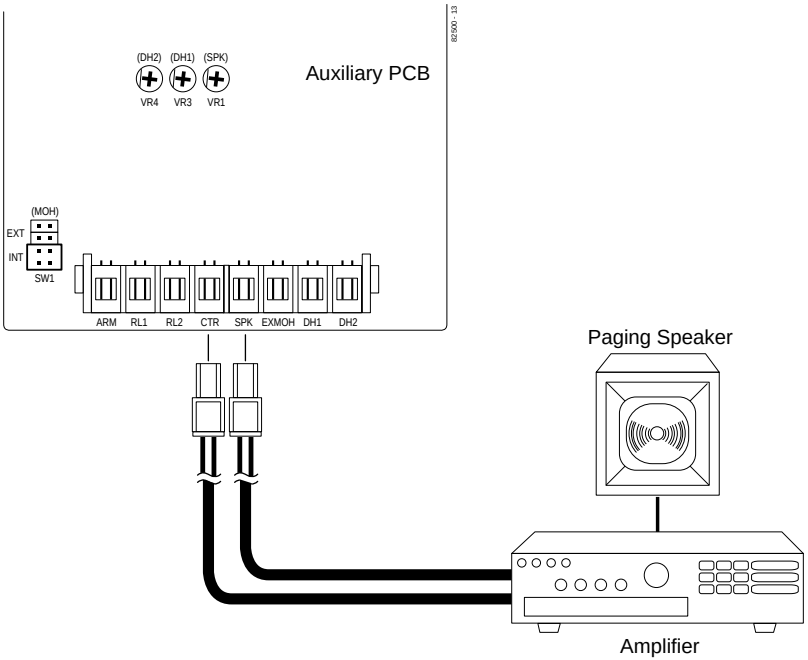


Figure 4-6 CONNECTING CONTROL RELAYS TO THE AUXILIARY PCB

Using the Door Box

Each Auxiliary PCB supports two Door Boxes. In addition, you can connect each circuit's control relay to an electric door strike. This allows an extension user to remotely activate the door strike while talking to a visitor at the Door Box. The control relays are normally open.

Installing a Door Box (Figure 4-7)

1. Locate an available 2-pin DDK connector in an auxiliary (C) block.
2. For the DDK connector chosen, cross-connect the associated wire pair from the C block to the cross-connect block.
3. Connect leads from lugs 1 and 2 on the Door Box to the cross-connect block. Be sure to maintain the proper polarity.
4. Plug the DDK connector into the Door Box (1 or 2) connector on the Auxiliary PCB. The first Door Box is labeled DH1 on the PCB. The second Door Box is labeled DH2.
5. Install bridging clips as required.
6. Use VR3 or VR4 on the CPU to adjust the volume of the Door Box. VR3 corresponds to Door Box 1, VR4 corresponds to Door Box 2.

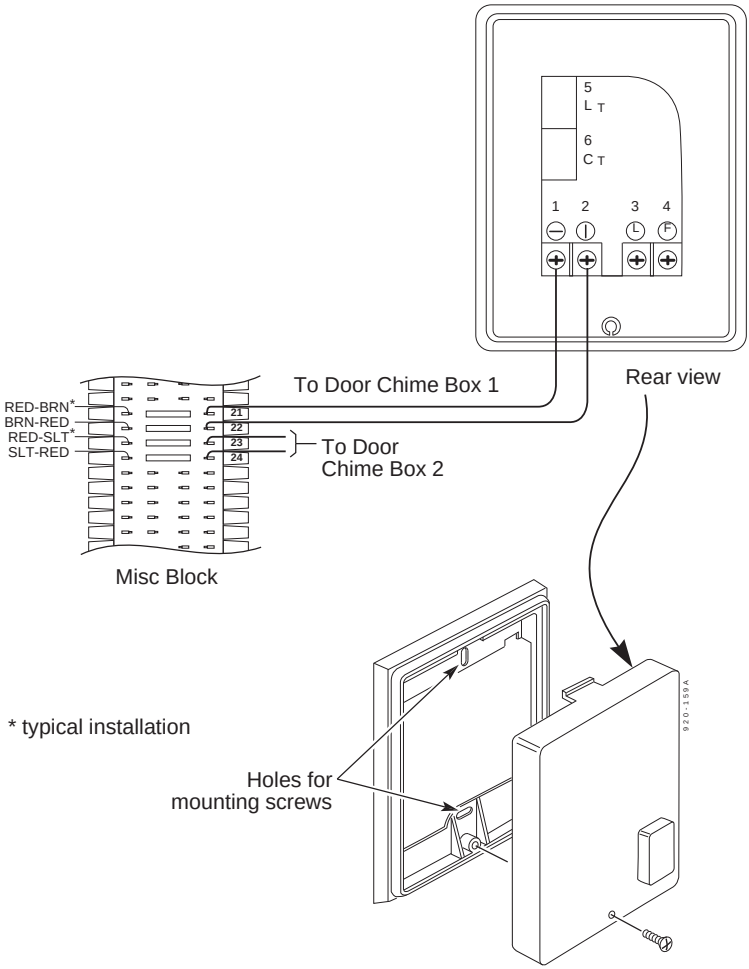


Figure 4-7 CONNECTING A DOOR BOX

Installing Door Strike Control Relays (Figure 4-8)

CAUTION

Be sure the requirements of the door strike are compatible with the control relay output specifications of the system.

Contact Configuration: Normally open
Maximum Load: 250 mA @ 24 VDC
Maximum Initial Contact Resistance: 50 mOhms

1. Locate an available 2-pin DDK connector in an auxiliary (C) block.
2. For the DDK connector chosen, cross-connect the associated wire pair from the C block to the cross-connect block.
3. Connect two leads from the door strike to the associated terminals on the cross-connect block.

   If the door strike is a high current device, you may have to install an auxiliary relay that powers the door strike relay.

4. Plug the DDK connector into the Auxiliary PCB connector labeled RL1 or RL2. RL1 controls the door strike relay for Door Box 1, RL2 controls Door Box 2.
5. Install bridging clips as required.
6. In Program 56 assign a relay to a door box.

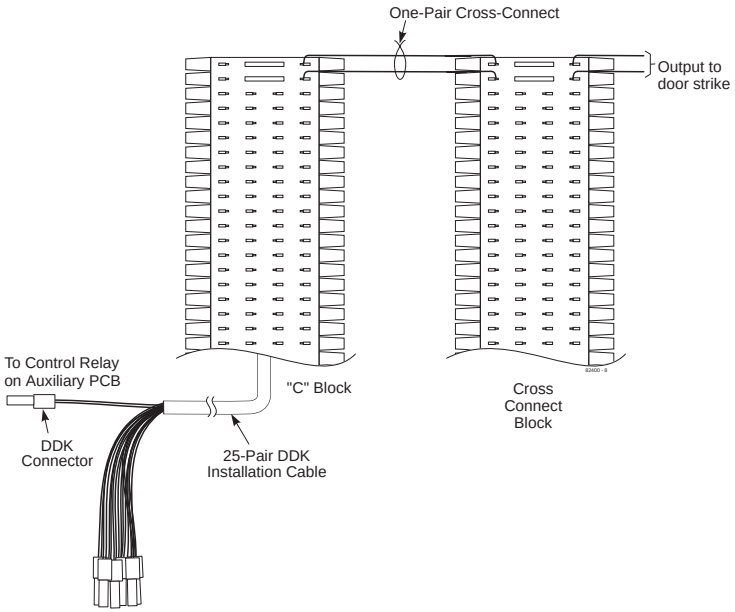


Figure 4-8 CONNECTING TO THE DOOR STRIKE

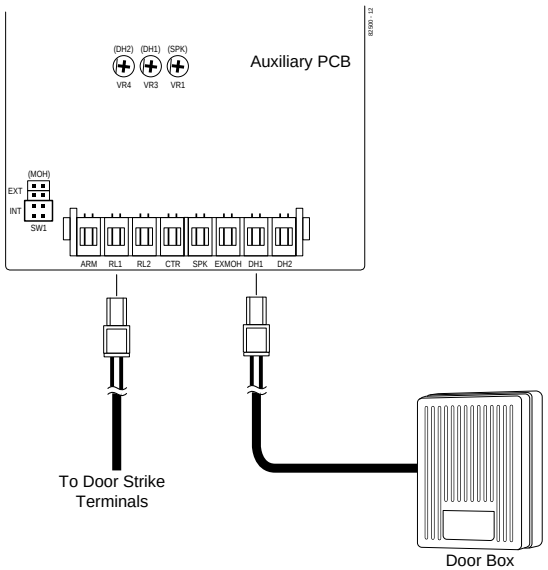


Figure 4-9 CONNECTING DOOR BOX/DOOR STRIKE RELAYS TO THE AUXILIARY PCB

Music on Hold

Music on Hold (MOH) provides music to callers on Hold. The system's default setting provides an internal (synthesized) MOH music source, or a customer-provided music source connected to the Auxiliary PCB can be used instead.

There are two jumpers that determine whether or not the system will play Music on Hold. The first jumper is located on the CPU and is labeled SW2. This jumper should be set to the ON position. If it is not, it overrides the setting of the SW1 jumper on the Auxiliary PCB (3DHEXU-A).

Installing a Music Source on the Auxiliary PCB

(Figure 4-10)

CAUTION

Be sure the music source is compatible with the MOH input specifications on the CPU PCB.

Input Impedance: 600 Ohm
Input Level: Nominal 250 mV (-10 dBm)
Maximum Input: 1V RMS

1. Locate an available 2-pin DDK connector in an auxiliary (C) block.
2. For the DDK connector chosen, cross-connect the associated wire pair from the C block to the cross-connect block.
3. Connect two leads from the customer-provided music source to the associated terminals on the cross-connect block.
4. Plug the DDK connector into the EXMOH input on the Auxiliary PCB.
5. Set the SW1 (MOH) jumper on the Auxiliary PCB to the EXT position. Make sure the SW1 jumper on the CPU is set to the ON position. If synthesized MOH is desired, set the SW1 (MOH) jumper on the ***Auxiliary*** PCB to the INT position.
6. Install bridging clips as required.
7. Adjust the volume for the MOH on the external source.

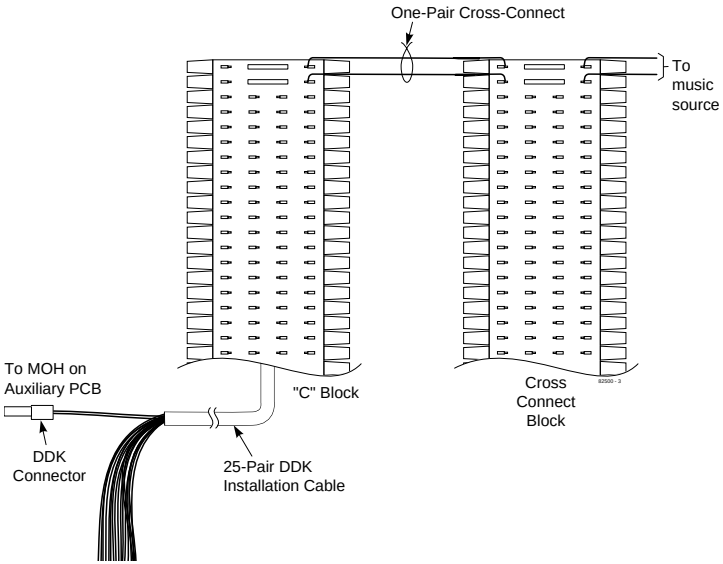


Figure 4-10 CONNECTING MUSIC SOURCES

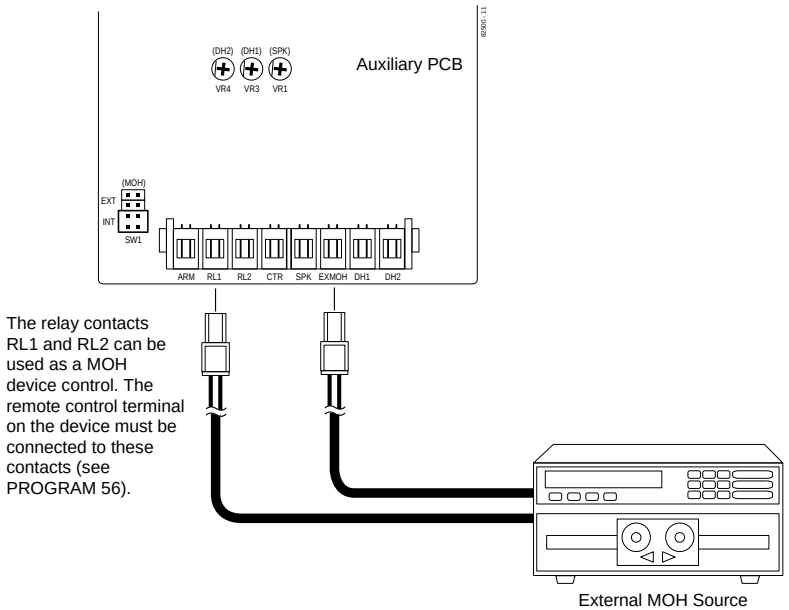


Figure 4-11 CONNECTING TO THE AUXILIARY PCB

Using the Caller ID Feature

Each Auxiliary PCB supports the use of Caller ID on the three CO lines in the system. Caller ID allows a display key-set to show an incoming caller's telephone number and/or name with the time and date on the phone's display. The caller's information can be checked before answering an incoming call. The information received by the system depends upon the capabilities of your local telco.

Connecting Caller ID (Figure 4-12)

1. With two 2-pin DDK connectors (one connected on each end of the cable), make a jumper cable about 8" in length. If more than one Caller ID line is to be connected, make a jumper cable for each line.
2. For the first line, plug one end of the jumper cable into the COCN1 connector labeled "4" on the Caller ID PCB.

   Repeat this step for lines 2 (COCN2) and 3 (COCN3).
3. Plug the opposite end of the jumper cable into the COCN connector labeled CO1 on the CPU.

   Repeat this step for lines 2 (CO2) and 3 (CO3).
4. For each trunk, run one pair of wires from the COCN1 connector labeled "1" on the Caller ID PCB to a 625 modular jack, which then connects to the telco's RJ11C jacks using a standard line cord (Figure 4-12 on the following page).

   Repeat this step for lines 2 (COCN2) and 3 (COCN3).
5. Connect a grounding cable from the ETH terminal on the Caller ID PCB to the ETHCN terminal on the CPU.
6. Remove the knock-out panel from the main cover that is located next to the CO connectors on the CPU.
7. Run the wires for the telco connection through one of the knockouts located on the bottom of the base cabinet.
8. Replace the covers on the cabinet.

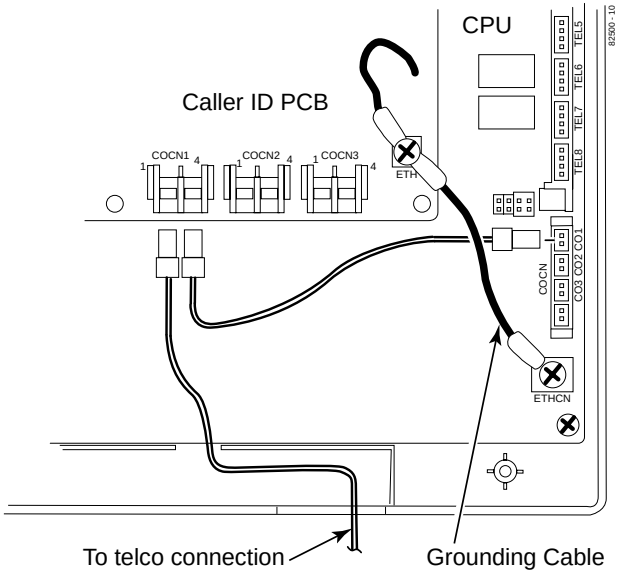


Figure 4-12 CONNECTING CALLER ID

Programming

The following programs affect how the Caller ID and SMDR features operate. Program each one according to your requirements.

Required Programming

Program 3 - Line Options (2) -- E. Caller ID

This determines if the Caller ID feature is enabled or disabled for the line number entered. [0 = Disabled, 1 = Enabled *(default = 0)*]

Optional Programming

Program 15 - System Options (1) -- E Single Step Access

Designate if an extension user can obtain an outside or ICM dial tone in a single step without lifting the handset or pressing the SPK key. [0 = Disabled, 1 = Enabled *(default = 0)*]

NOTE: *If Disabled just touch the line key to see the Caller ID information. If Enabled you must press FLASH key + Line key to see the Caller ID information.*

Program 58 - SMDR Options (2) -- D. Caller ID Printout

Program whether the SMDR will print Caller ID information, and if so, which information will be printed. [0 = Not Printed, 1 = Telephone Number Printed, 2 = Name Printed, 3 = Name Printed, but if Name information is not provided by telco, then only the Number will print. *(default = 0)*]

Program 61 - Extension Options (4) -- B. Caller ID Data Indication

Choose whether the station displays the Caller ID data. [0 = Not Indicated, 1 = Indicated *(default = 1)*]

Program 61 - Extension Options (4) -- C. Editing the Caller ID Table

Enable or disable a station's ability to edit the Caller ID table. [0 = Disabled, 1= Enabled *(default = 1)*]

Program 64 - System Options (7) -- B. Temporary Memory Status

Assign the status of the Temporary Memory Indication. [0 = Not Indicated, 1 = Indicated *(default = 0)*]

Program 74 - Caller ID Timers

Program each of the following timers:

1. ***Caller ID Information Waiting Timer:***
   When the system detects a Caller ID signal, the LED of the CO key shows a busy indication. After the programmed time has expired, the LED status goes to a normal incoming call.
   [000 = Not Timed Out, 001 - 015 = 1 - 15 seconds *(default = 007)*]
2. ***Incoming Signal Detection Timer:***
   If an incoming signal continues more than the specified time, the system recognizes the signal as "Incoming".
   [000 - 015 = 0 - 1.5 seconds (each number represents a 100 ms step) *(default = 001)*]

3. Caller ID Signal Duration Timer:

If the interval between the first incoming signal and the Caller ID signal is more than the specified time, the system accepts the call.

[000 - 015 = 0 - 750 ms (each number represents a 50 ms step) *(default = 000)*]

4. Caller ID Signal Carrier Detection Timer:

If the carrier signal of Caller ID continues more than the specified time, the system accepts the call.

[000 - 008 = 500 - 900 ms (each number represents a 50 ms step), 009 - 014 = 1s - 2s (each number represents a 200 ms step) *(default = 015)*]

000 = 500 ms	008 = 900 ms
001 = 550 ms	009 = 1.0 s
002 = 600 ms	010 = 1.2 s
003 = 650 ms	011 = 1.4 s
004 = 700 ms	012 = 1.6 s
005 = 750 ms	013 = 1.8 s
006 = 800 ms	014 = 2.0 s
007 = 850 ms	015 = 3.0 s

Program 93 - Sub-CPU Version

This program indicates the Sub-CPU version for each unit. To view the version number, enter one of the following, then press the * to display the version number (e.g. 93-01 -10 [93=program 01=CPU 10=version number]).

00 = main ROM
01 = CPU
02-09 = not used
10 = Caller ID PCB
11-13 = not used
14 = Fax/DISA PCB

Program 94 - Clear Caller ID Table

Use this program only when you wish to clear all of the information in the Caller ID Table. To clear all information, press * # then HOLD.

Fax Connections (3FAXU) (Figure 4-13)

The Fax/DISA PCB allows for the connection of a G3-type fax machine to a station port. It will detect the CNG signal from an incoming fax call and allow the call to be connected automatically to the fax unit. (If a G2-type fax machine is used, an incoming call may not be automatically transferred to the fax machine.)

1. The connection from the modular jack to the CPU requires only one pair, but the DDK connector must a 4-pin connector. The wires should be connected to the tip and ring. Refer to Figure 4-13 for the wiring of the DDK connector.
2. Plug the DDK connector into any available station port on the CPU **except** TEL1 or TEL2.
3. Install a modular jack within six feet of the fax unit's location.
4. Run 24 AWG station cable from the cross-connect block to the modular jack. Using two-pair cable will allow the jack to be either a fax or keyset in the future, if needed, without rewiring the station.
5. Terminate the station cable to the module jack lugs:
   WHT-BLU to GREEN lug
   BLU-WHT to RED lug
6. Back at the MDF, run one pair of cross-connect wires between the pins on the B block and cross-connect block to complete the connection.
7. Make sure the JP1 and JP2 jumpers on the Fax/DISA PCB are set to the proper position. JP1 should be set to "ON" and JP2 should be set to "RUN".
8. Install bridging clips as required.
9. Plug a line cord from the modular jack to the line port on the fax unit.
10. Plug in the fax unit and turn the power on.

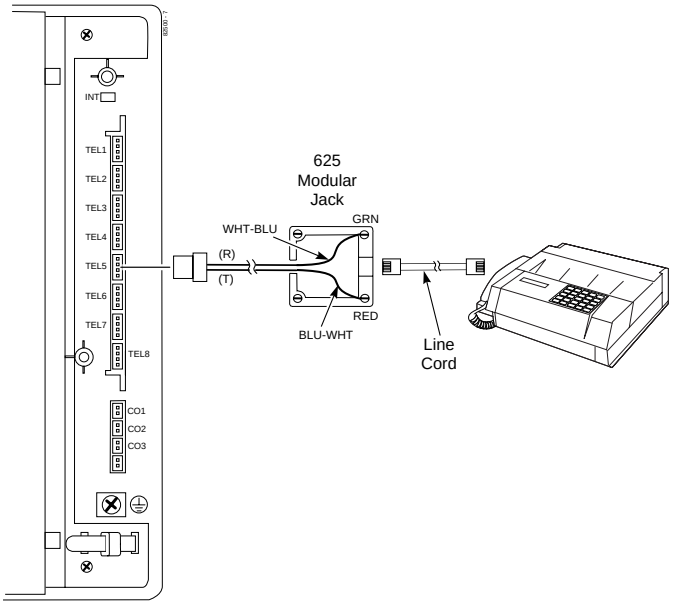


Figure 4-13 CONNECTING THE FAX UNIT

Programming

The following programs affect how the FAX feature operates. Program each one according to your requirements.

Required Programming

Program 67 - Fax Assignment (1)

Assign the following options:

1. **Line Number**
   Assign the line number to be used for the fax machine. [00=Not assigned, 01-03=Line numbers 01-03 (default = 00)]
2. **Station Port**
   Assign the station port to which the fax machine is connected. [00 = Not assigned, 12 - 17 = stations 12-17 *(default = 00)*]

Optional Programming

Program 68 - Fax Assignment (2)

Program each of the following items:

A. Line Type

Program whether the line is to be used for fax (0), DISA (1) or both (2). The setting here determines whether or not the automated attendant will play the greeting messages. *(default = 0)*

B. CNG signal is not received

Set how the system should handle a call when the CNG signal is not received. [0=cut off, 1=transfer to operator, 2=transfer to fax *(default = 2)]*

C. Extension Busy

Program how the system should handle a call when the desired extension is busy. [0=cut off, 1=transfer to operator, 2=resend Attendant Message #2 *(default = 0)]*

D. Not Used

(default = 0)

E. Not Used

(default = 0)

Program 69 - Fax Assignment (3)

Program each of the following timers:

1. Automatic Answer Timer

If the system should not answer the call immediately, but should wait for a specified amount of time, set the timer for the desired delay time. [000 = Immediate answer, 001 - 255 = 1-255 seconds (*default = 000*)]

2. Waiting Time for CNG Signal Detection

Set how long the system should wait for a CNG signal. [000 = Not assigned, 001 - 255 = 1-255 seconds (*default = 015*)]

3. Waiting Time for DTMF Signal Receiving

Program how long the system should wait to receive DTMF signals. [000 = Not assigned, 001 - 255 = 1-255 seconds (*default = 010*)]

4. Calling Time for Telephone/Fax

Program the calling timer for fax or extensions. [000 = Not assigned, 001 - 255 = 1-255 seconds (*default = 030*)]

Program 75 - Extension Options (5) -- C. Automatic Line Seizing by Fax

Enable or disable the ability for the fax machine to automatically seize a line when going off-hook. [0 = Disabled, 1= Enabled *(default = 0)*]

Program 93 - Sub-CPU Version

This program indicates the Sub-CPU version for each unit. To view the version number, enter one of the following, then press the * to display the version number (e.g. 93-01 -10 [93=program 01=CPU 10=version number]).

00 = main ROM	01 = CPU
02-09 = not used	10 = Caller ID PCB
11-13 = not used	14 = Fax/DISA PCB

Preparing the Automated Attendant Message

The Fax/DISA PCB provides five automated attendant messages which are used for the fax and DISA features only. Before using either feature, each message must be recorded. These messages can only be recorded at station 10.

Each message's recording time is fixed and can not be changed. The following chart shows the length of time and sample message for each message.

Message 1	18 seconds	Thank you for calling the XYZ company. Please hold while your call is being processed. Thank you. **(This is only a greeting message. A caller wishing to send a fax must wait for Message 2 before proceeding.)**
Message 2	18 seconds	Thank you for calling the XYZ company. Please dial your extension number between 0 and 7. If you wish to send a fax, please dial # or press the start key now. Thank you. ***Note: The extension numbers must be specified as 0 through 7. This corresponds as: 0=extension 10 . . . 7=extension 17.***

Message 3	9 seconds	You have dialed an incorrect number. Please enter your extension number again.
Message 4	9 seconds	Your call is being transferred to the operator. Please hold.
Message 5	9 seconds	We're sorry you're experiencing problems. Please try your call again later.

To Record a Message:

1. Lift the handset.
2. Press ICM.
3. Dial 930.
4. Dial the message number (1-5).
5. Press *.

   Start recording after dial tone is heard. Make sure to speak clearly.
6. Press * to stop recording.

   Pressing # will cancel the recording.
7. Hang up.

To Erase a Message:

1. Lift the handset or press SPK.
2. Press ICM.
3. Dial 931.
4. Dial the message number (1-5).
5. Press *.

   A confirmation tone is heard.
6. Hang up.

To Confirm a Message:

1. Lift the handset or press SPK.
2. Press ICM.
3. Dial 932.
4. Dial the message number (1-5).
5. Press *.

   The message is played.
6. Hang up.

Power Failure Cut-Through (Figure 4-14)

When system AC power fails, the CPU automatically connects the first trunk to the Power Failure Telephone (station 17). When the power failure option is used, station 17 must be a single line set. If this option is *not* used, the station can either be a single line or keyset telephone.

1. Set the SW3 jumper located on the CPU to the PF position.
2. Plug a 2-pin DDK connector into the CO1 connector on the CPU PCB.
3. Run the wires from the DDK connector to a 625 modular jack, which then connects to the telco's RJ11C jack using a standard line cord.
4. Install a modular jack for the Power Failure Telephone within six feet of the telephone's location.
   This must be station 17.
5. Plug a 4-pin DDK connector into the TEL8 connector on the CPU.
6. Run the two-pair 24 AWG station cable from the cross-connect block to the Power Failure Telephone's modular jack.
7. Terminate the station cable WHT/BLU - BLU/WHT - WHT/ORN - ORN/WHT leads to the GREEN, RED, BLACK, and YELLOW lugs in the modular jack.
8. Back at the MDF, run two pairs of cross-connect wires between the pins on the B block and cross-connect block to complete the connection.
8. Install bridging clips as required.
9. Plug a line cord into the Power Failure Telephone and the phone's modular jack.
   No programming is required to enable the Power Failure Telephone.

To test the Power Failure Telephone:

1. Make sure the INT switch on the CPU is set to the right.
   This ensures that your programming and configuration is retained when you power down the system.
2. Power down the system.
3. At the Power Failure Telephone, lift the handset and place a test call.
   The call will go out on the first trunk.

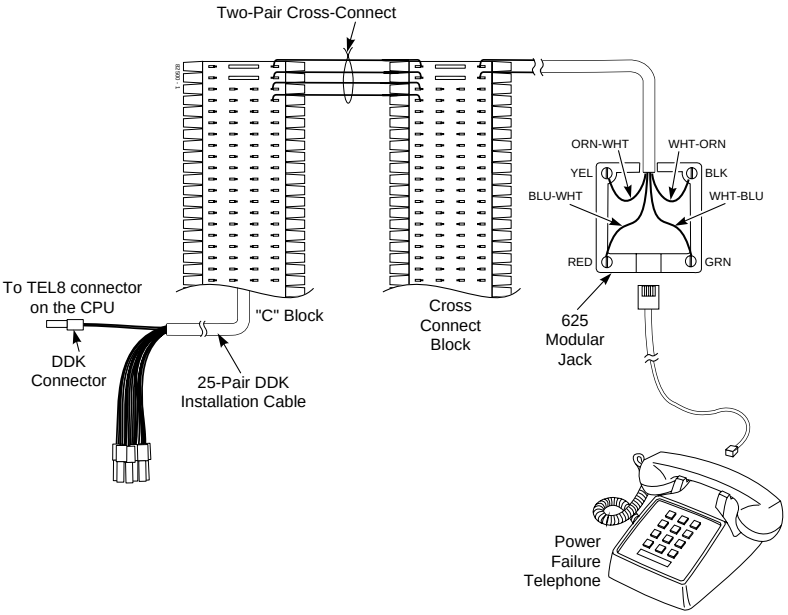


Figure 4-14 CONNECTING A POWER FAILURE TELEPHONE

Using Voice Mail (Figure 4-15)

The Portrait System is compatible with the NVM-202ex or NVM-22 (P/N 17590**A**) Voice Mail Systems. This feature provides telephone users with comprehensive Voice Messaging and Auto Attendant capabilities. The system has a capacity of five voice mail ports.

System Requirements:

- NVM-202ex (P/N 17670) software 6.01 or higher *OR* NVM-22 (P/N 17590**A**) software 7.01 or higher Voice Mail Units.
- Portrait 308 with software version 1.00 or higher.
  *NOTE: The Voice Mail ports can be any station port **other than** ports 10, 11 or 17. The ports do not have the required loop current and data transmission capability.*
- Voice Mail Interface (P/N 82440)

To confirm if your equipment can support voice mail, you can also use **Program 93 - Sub-CPU Version** in the Portrait system. The version number of the CPU (Unit 1) should be "10" or above. If the version number is below 10, the CPU can not support the voice mail option.

When active, each voice mail port uses an intercom link. The Portrait system provides two intercom links. When the voice mail ports exceed the available intercom links, intercom calls will be blocked. If only one voice mail port is being used, it must be connected to "LINE1".

1. Following the conventional color code, insert the DDK connectors into the station port connectors on the PCB.
2. Install a modular jack for each voice mail port within six feet of the voice mail unit.
3. For each voice mail port, run two-pair 24 AWG station cable from the cross-connect block to the modular jack.
4. Terminate the station cable to the modular jack lugs:
   WHT-BLU to GREEN lug
   BLU-WHT to RED lug
   WHT-ORN to BLACK lug

ORN-WHT to YELLOW lug

5. Back at the MDF, run two pairs of cross-connect wires between the pins on the B block and cross-connect block to complete the connection.
6. Install bridging clips as required.
7. Using a four-conductor line cord, connect the first modular jack to “LINE1” on the Voice Mail Interface. Then, connect the second modular jack to “LINE2” on the Voice Mail Interface.

   If “LINE1” fails due to improper installation for an equipment problem, “LINE2” will not function.
8. Connect a four-conductor line cord from the Port 1 & 2 jacks on the back of the Voice Mail to the “VOICE MAIL” connector on the Voice Mail Interface.

Programming

1. **Program 7 - Incoming Line Access/Audible**
   Use this program to enter the lines that should ring to the Voice Mail.
2. **Program 65 - Voice Mail Port**
   Enter the extension number for each Voice Mail port.
3. Refer to the Voice Mail’s Manual for further programming.

System	Manual P/N	See
NVM - 22	17590INS**	Chapter 1 - Installation Chapter 2 - Programming
NVM - 202ex	17570SWG**	Chapter 2 - Starting Up and Installing NVM-202ex Chapter 5 - Customizing System and Port Options
	17570INS**	Chapter 3 - Starting Up and Installing NVM-202ex

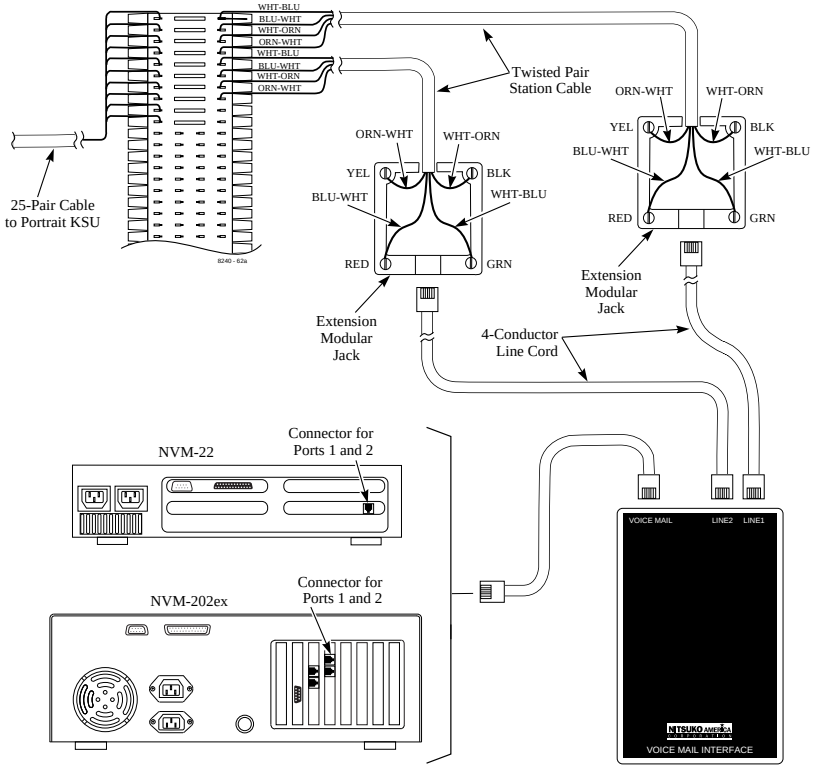


Figure 4-15 INSTALLING VOICE MAIL

Using 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. When a phone is wall-mounted, the directory tray located beneath the phone can not be used.

Note: The wall-mount kit currently does not accommodate installing on a wall plate.

Installing the Wall-Mount Handset Hanger (Figure 4-16)

1. Insert the handset hanger in the slot provided beneath the telephone's hookswitch.

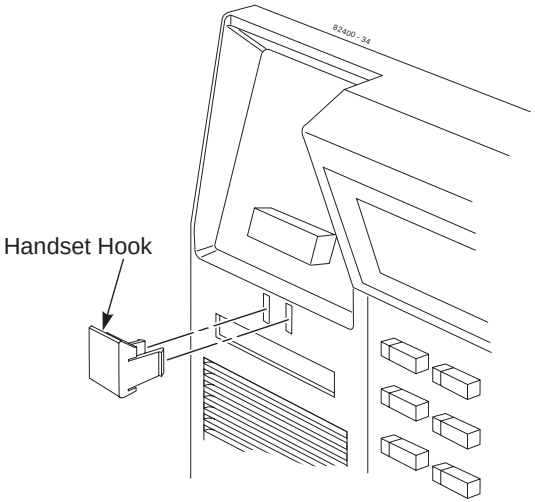


Figure 4-16 INSTALLING THE WALL-MOUNT HANGER

Wall-Mounting a Key Telephone (Figure 4-17)

1. Mount the wall-mount kit's plastic bracket in the desired location using the screws provided.
2. Insert the telephone's line cord from the 625 modular jack through the plastic bracket using the space provided in the bracket.
4. Place the telephone on top of the plastic bracket on the clips provided. Gently push the bottom of the bracket in until it snaps into the slots on the phone.

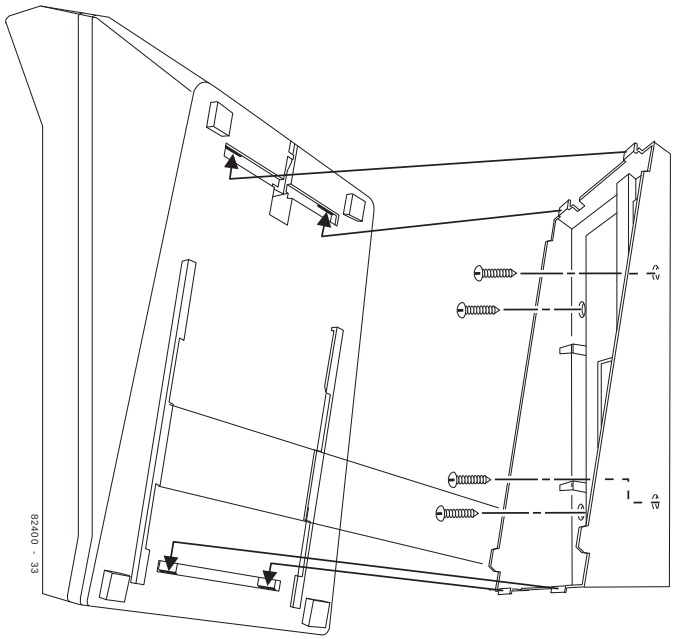


Figure 4-17 INSTALLING THE WALL MOUNT BRACKETS

- For Your Notes -

Section 5
Specifications and Parts List

In this section . . .	Page
Specifications	5-3
Parts List	5-7

System Capacities

Tenant Groups:	4
Cabinets:	1
Talk Timeslots (Intercom/line):	2
Analog Trunks (CO/PBX lines):	3
Electronic Key and/or Analog Telephones: (6 single line telephones maximum)	8
Power Failure Telephones:	1
Door Boxes:	2
Door Box/Music On Hold Relays:	2
Alarm Sensors:	1
External Paging Zones:	1
Internal Paging Zones:	4
Speed Dial, Personal:	10
Speed Dial, System:	100
Caller ID Circuits:	3
Voice Mail Ports:	5

PCBs

Auxiliary PCB:	1
Caller ID PCB:	1
CPU Central Processing Unit:	1
Fax/DTMF PCB:	1
SMDR PCB:	1

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).

SPECIFICATIONS

Power Requirements

A dedicated 110 VAC 60 Hz 15 amp circuit (terminated in a NEMA 5-15R receptable) located within six feet of the cabinet is required. You should install a separate dedicated outlet for each cabinet.

Environmental Specifications

Cabinets and Key Telephones	**Door Box**
Temperature: 0-45^{o}C (32-113^{o}F)	Temperature: -20-60^{o}C (-4-140^{o}F)
Humidity: 10-95% (non-condensing)	Humidity: 10-95% (non-condensing)

Electrical Specifications

Power Supply:	110 VAC ±- 10% @ 50-60 Hz 15 amps
Power Requirements:	72 VA-(max 64 W), .6 amps
Grounding Requirements:	12 AWG copper wire

External Paging

Output Impedance:	600 Ohm
Output Level:	Nominal 250 mV (-10 dBm)
Maximum Output:	400 mV RMS

Door Box/External Paging Contacts

Configuration:	Normally open
Relay Contact:	250 mA @ 24 VDC

Alarm Sensors

Loop Resistance:	Less than 100 ohms

MOH Music Source Input

Input Impedance:	600 Ohm
Input Level:	Nominal 250 mV (-10 dBm)
Maximum Input:	1V RMS

Inputs for MOH are located on the Auxillary PCB.

FCC Registration Information

Model:	Portrait 308
Manufacturer:	Nitsuko America
Load Number (DOC):	N/A
FCC Part 15 Registration:	Class A
Sample FCC Registration Number:	1ZDTHA-12345-MF-E

(Refer to the label on the KSU for the FCC Registration Number.)

Reg. Status	MTS/WATS Interfaces	Mfrs. Port Identifier
Original	02LS2	NX7NA-308M-A
Ringer Eq. Number	**SOC**	**Network Jacks**
0.7B	9.0F	RJ11C

Cabling Requirements

1. Do not run station cable in parallel with the AC source, telex or computer, etc. If the cables are near cable runs to those devices, use shielded cable with grounded shields or install the cable in conduit.
2. When cables must be run on the floor, use cable protectors.
3. Cable runs for key telephones, single line telephones and Door Boxes must be a dedicated, isolated cable pair.

Device	Cable Type	Cable Run Length (ft)
Key Telephone	2-pair twisted 22 or 24 AWG solid copper wire	1000
Single Line Telephone	2-wire 22 or 24 AWG solid copper wire	3,700 at constant 20 mA
Door Box	2-wire 22 or 24 AWG solid copper wire	500

Mechanical Specifications

Type of Equipment	Width	Depth	Height	Weight
Equipment Cabinet	13 1/4”	10 1/2”	3 1/4”	4 lbs 6 oz *
(* KSU with only CPU card installed)				
22-Button Display Telephone	6 11/16”	8 11/16”	3 7/16”	1 lb 12 1/2 oz
22-Button Standard Telephone	6 11/16”	8 11/16”	3 7/16”	1 lb 10 1/2 oz
16-Button Standard Telephone	6 11/16”	8 11/16”	3 7/16”	1 lb 10 1/2 oz
Door Box	5.28”	4”	1.4”	1/2 lb

Station Equipment

Description	Part Number
22-Button Display Telephone (Gray)	82473
22-Button Display Telephone (White)	82473W
22-Button Standard Telephone (Gray)	82470
22-Button Standard Telephone (White)	82470W
22-Button Standard Telephone with DSS/BLF Keys (Gray)	82471
22-Button Standard Telephone with DSS/BLF Keys (White)	82471W
16-Button Standard Telephone (Gray)	82460
16-Button Standard Telephone (White)	82460W
ST4 Single Line Telephone (White)	85403W
ST4 Single Line Telephone (Black)	85403B
Wall Mount Kit (Gray)	82479
Wall Mount Kit (White)	82479W
Analog Telephones (customer provided)	

Peripheral Station Equipment

Description	Part Number
Door Box	92245

Common Equipment

Description	Part Number
Cabinet (Includes CPU Central Processing Unit)	82500

PCBs

Description	Part Number
CPU Central Processing Unit	Included in 82500
Auxiliary PCB	82510
Caller ID PCB	82525
FAX/DTMF PCB	82530
SMDR PCB	82520

Replacement Parts

Description	Part Number
Handset (Gray)	82496
Handset (White)	82496W
Handset and Cord Assembly (Gray)	82495
Handset and Cord Assembly (White)	82495W
Handset Coil Cord - 6’ (Gray)	82475-6
Handset Coil Cord - 9’ (Gray)	82475-9
Handset Coil Cord - 13’ (Gray)	82475-13
Handset Coil Cord - 6’ (White)	82475-6W
Handset Coil Cord - 9’ (White)	82475-9W
Handset Coil Cord - 13’ (White)	82475-13W
Line Cord - 7’ (Ash)	82476-7
Line Cord - 14’ (Ash)	82476-14
Line Cord - 25’ (Ash)	82476-25
Line Cord - 7’ (White)	82476-7W
Line Cord - 14’ (White)	82476-14W
Line Cord - 25’ (White)	82476-25W
16-Button Display Telephone Plastic C.O. Cover	82488-6
22-Button Display Telephone Plastic C.O. Cover	82488-12
Top Directory Plastic Cover	82488-D
Station # Plastic Cover	92600-EN
16-Button Telephone Paper Insert	82489-6
22-Button Telephone Paper Insert	82489-12
Top Directory Paper Insert	82489-D
Station # Designation Strip	92605-EN
DDK Connectors, 2 pin (qty: 25)	85993
DDK Connectors, 4 pin (qty: 25)	85995
DDK Installation Cable, 4 wire for extension connection	82490
DDK Installation Cable, 2 wire for trunk connection	82492
DDK Installation Cable, 6” 2 wire for power failure connection	82491
Flying Directory Attachment	82481
Flying Directory Paper Card & Plastic Holder Assembly	82482
Flying Directory Clear Plastic Holder	82483
Flying Directory Paper Card Insert	82484
Flying Directory Card Assembly (Kit) Consists of: (1) 82481, (1) 82482	82480
Bottom Directory Tray Assembly (Card & Holder)	82485
Bottom Directory Clear Plastic Card Holder	82486
Bottom Directory Paper Card	82487
Wall Mount Hook	82499

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

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