

BUSINESSCOM **PLUS**[™]

Hardware Manual

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BUSINESSCOM PLUS

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REVISION CONTROL

Revision	Date	Change
1-o	27 Ju187	Initial Release of Manual.
2-o	15 Sept 87	Added description of BLF telephones. Added strapping information and description of DSS Consoles used as BLF units. Added SMDR Option Switch settings. Added drawing on B-2COU-A PCB, BUSINESSCOM PLUS 8/12. Added drawing on generic KSU and power supply. Added DSS Console (Series 2) Strap Detail. Modified existing drawings on the BUSINESSCOM 8/12 KSU and Installation of Door Chime Box, BUSINESSCOM PLUS 8/12. Updated power supply section. Updated parts numbers in Equipment List.

BUSINESSCOM PLUS HARDWARE MANUAL

HOW TO USE THIS MANUAL

This manual is divided into three parts:

PART 1 INTRODUCTION consists of a system description, instructions for completing the Equipment List, and specifications.

PART 2 INSTALLATION provides instructions for selecting an installation site, installing and connecting the components described in Part 1, and installing and connecting various pieces of optional equipment.

PART 3 MAINTENANCE AND TROUBLESHOOTING explains how to keep the system operating properly, minimize operating problems, avoid system failures, and extend the time between service calls.

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PART I INTRODUCTION

SYSTEM DESCRIPTION'

This part describes the components of a BUSINESSCOM PLUS 8/12/24/36/64 Electronic Key Telephone System, including the stations, instruments, specifications, site, and FCC/telco (telephone company) requirements.

The BUSINESSCOM PLUS system is a highly reliable, computerized telephone system that is designed to improve office communications. The main processor for the systems is a Z80 microprocessor; additional processors provide tasksharing between the Main Processing Unit (MPU) and the station Printed Circuit Boards (PCBs). Residing in the Key Service Unit (KSU), these replaceable PCBs simplify growth and change.

The system model number indicates the maximum number of telephones or stations in the system. For example, a BUSINESSCOM PLUS 8 indicates that the system can accommodate up to eight telephones. The BUSINESSCOM PLUS 64 (the largest system) can support up to 64 telephones.

The chart below lists the maximum capacities of each of the five available BUSINESSCOM PLUS system models:

<u>System</u>	<u>CO Lines</u>	<u>Intercom Links</u>	<u>Stations</u>
BUSINESSCOM PLUS 8	3	2	8
BUSINESSCOM PLUS 12	5	2	12
BUSINESSCOM PLUS 24	5	*6	24
BUSINESSCOM PLUS 36	12	*6	36
BUSINESSCOM PLUS 64	24	"6	64

* A system option may allow additional Intercom links.

Regardless of the system you select, the following equipment is required:

- o KSU
- o Power Supply
- o Printed Circuit Boards (PCBs)
- o Telephones

This section provides instructions for completing the Equipment List (Table 1-1) located at the end of this part. Use the Equipment List to make a record of the required equipment.

Item 1 - Major Components

Each BUSINESSCOM PLUS System requires a KSU and a power supply - two major components of every **BUSINESSCOM PLUS 8/12/24/36/64** System.

KSU

The KSU is the cabinet containing the printed circuit boards (**PCBs**) necessary to operate the system. The following types of **KSUs** are available for the BUSINESSCOM PLUS **8/12/24/36/64** Systems:

- o The BUSINESSCOM **8/12** KSU (P/N 15000 or P/N 15001) for the BUSINESSCOM PLUS **8/12** System, shown in Figure 1-1, includes one of each of the following **PCBs**:
 - o **B-CP8SU-B**
 - o **B-3COU-A**
 - o **B-5ROU-2A**
- o The BUSINESSCOM 24 KSU-B (P/N 15101) which can be used instead of the BUSINESSCOM 24 KSU (P/N **15100**) described below.
- o The BUSINESSCOM 36 KSU-B (P/N 15201) for the BUSINESSCOM PLUS **24/36/64**, which can be used instead of the BUSINESSCOM 36 KSU (P/N 15200) described below.
- o The BUSINESSCOM 64 EXP-CAB (P/N 15301) is the expansion cabinet which increases the capacity of the BUSINESSCOM 36 KSU-B (P/N 15201) to 24 lines and 64 stations. It uses a **12-pin** to **15-pin** power cable.
- o The BUSINESSCOM 24 KSU (P/N 15100) for the BUSINESSCOM PLUS 24 accommodates 12 lines and 24 stations. The base cabinet is identical to the BUSINESSCOM 36 KSU (P/N 15200) except that it can support fewer lines and stations. The KSU includes the power supply cable used to connect the KSU to the **V4M** Supply.

COMPLETING THE EQUIPMENT LIST

KSU (cont'd)

- o The BUSINESSCOM 36 KSU (P/N 15200)
for the BUSINESSCOM PLUS 36 System accommodates
12 lines and 36 stations. The KSU includes the
power supply cable used to connect the KSU to
the **V4M** Supply.

- o The BUSINESSCOM 64 KSU (P/N **15300**)
for the BUSINESSCOM PLUS 64 System accommodates
24 lines and 64 stations. The KSU includes a short
18-pin-to-18-pin power supply cable used to connect
the KSU to the **V4L** Supply.

On the Equipment List (Table **1-1**), indicate the KSU
for your system.

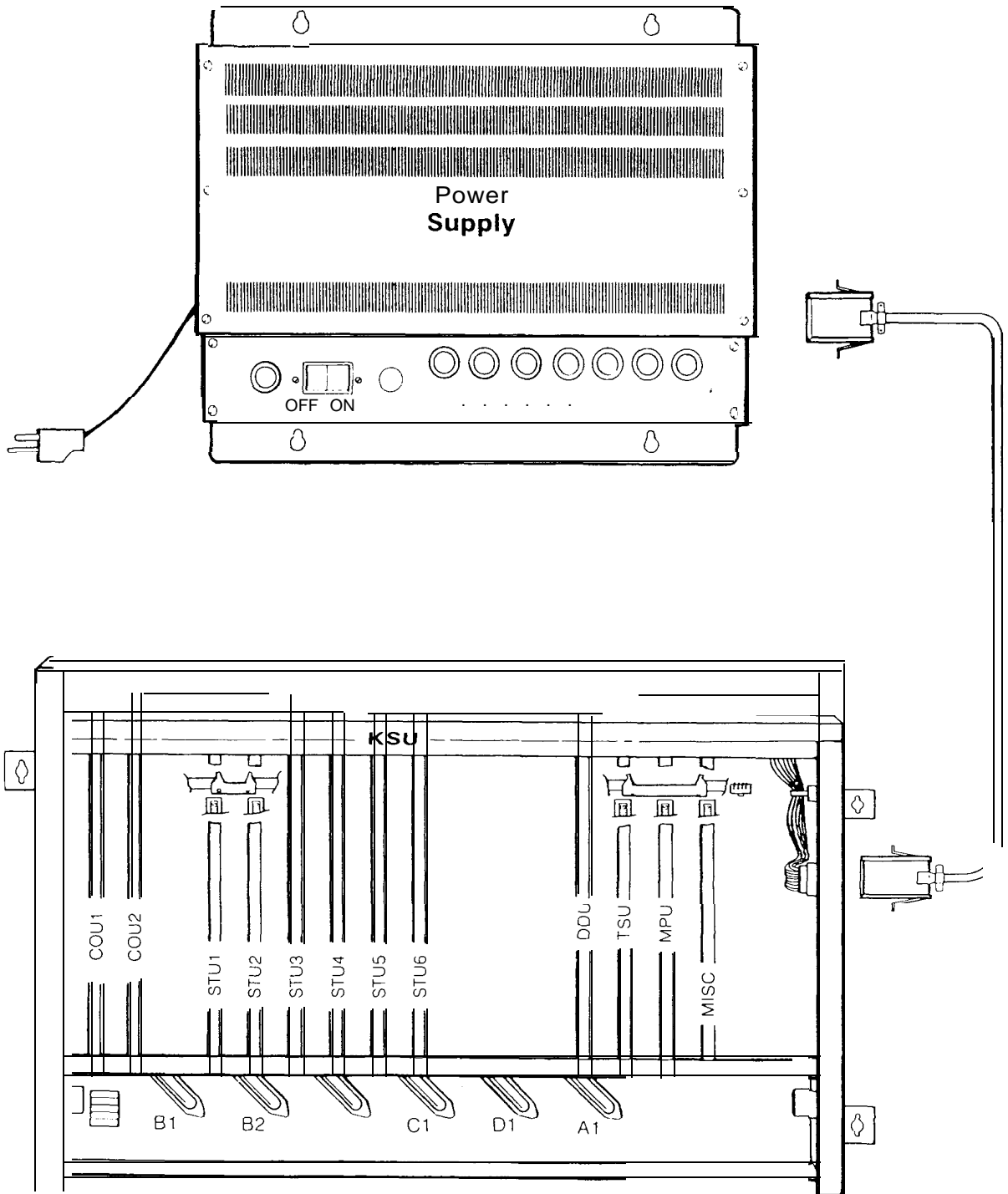


FIGURE 1-1 THE BUSINESSCOM PLUS KSU AND POWER SUPPLY

COMPLETING THE EQUIPMENT LIST

 Item 1 - Major Components (Cont'd)

Power Supply

The following power supplies are available for BUSINESSCOM PLUS Systems:

<u>System</u>			<u>Battery Backup Condition</u>	<u>Power Supply</u>	<u>P/N</u>
BUSINESSCOM PLUS	8/12		without	V4S	62505 or 15420
BUSINESSCOM PLUS	24/36		without	V4M	15120
BUSINESSCOM PLUS	24/36		with	V4M	15120H
BUSINESSCOM PLUS	64		without	V4L	15320
BUSINESSCOM PLUS	64		with	V4L	15320H or 15323H

Power Supply
 Cords

The following power supply cords are also available:

<u>KSU/ N</u>	<u>V4M P. S. (12-pin)</u>	<u>V4L P. S. (18-pin)</u>
15101 or 15201	10821	10822
15301 w/15201	N/A	10822
15100 or 15200	15121	15141
15300	N/A	15321

On the Equipment List, indicate the power supply for your BUSINESSCOM PLUS System.

COMPLETING THE EQUIPMENT LIST

Item 2 - Printed Circuit Boards

The PCBs installed in the KSU are as follows:

PCBs FOR THE BUSINESSCOM PLUS 8/12

The following PCBs control the operation of a BUSINESSCOM PLUS 8/12:

Main Processing
Unit and Station PCB

(B-CP8SU-A)

The **B-CP8SU-A** PCB (P/N 15060) is the central processor and eight key station interface PCB which is included in the P/N 15000 KSU. It provides **Z80** control and contains:

- o System Main Processor Unit (**MPU**)
- o System memory: one 8K x 8 RAM
- o An OPX-enable strap (JO)
- o A power-on reset circuit to restart the MPU
- o One memory backup battery *
- o Various timers for program control
- o Three power **LEDs** and a clock generation confirmation LED
- o 400 Hz interrupted tone for Paging splash tones, Intercom dial tone, Intercom busy tone, and Intercom fast-busy tone
- o 800 Hz tone for splash tones and alarm tones
- o Two tune internal Music On Hold (**MOH**)
- o A switch to select between internal MOH and external MOH
- o External Background Music (**BGM**) input
- o External MOH relay contact
- o External Zone Paging output and relay contacts
- o Two Internal Zone Paging amps, one for each Intercom port. Paging is selected by the MPU and the crosspoints for each station.
- o Interface circuits for eight key telephones and crosspoint matrix for five lines, two Intercom ports, and two page amplifiers
- o Outputs for three power failure bells for lines 1, 2 and 3
- o Three adjustment potentiometers: VR-0 MOH adjust, VR-1 page zone output adjust, BR-2 BGM adjust
- o 50-pin connector (**B1**) for installer connections

The **B-CP8SU-A** PCB is compatible with daughter boards **B-5ROU-1A** and **B-5ROU-1B** PCB.

COMPLETING THE EQUIPMENT LIST

Item 2 - Printed Circuit Boards (cont'd)

PCBs FOR THE BUSINESSCOM PLUS 8/12 (cont'd)

Main Processing Unit PCB

(B-CP8SU-B) The **B-CP8SU-B** PCB (P/N 15061) is similar to the **B-CP8SU-A** PCB in system memory, but it has a **B-5ROU-2A** PCB daughter board installed. The **B-CP8SU-B** PCB is included in the P/N 15001 KSU.

ROM PCB

(B-5ROU-1A) The **B-5ROU-1A** PCB (P/N 150701, which is included in the P/N 15000 KSU, is a daughter board compatible with the **B-CP8SU-A** PCB that provides three 16K x 8 ROM for the basic system-operating software.

ROM PCB

(B-5ROU-1B) The **B-5ROU-1B** PCB (P/N 15062) is a daughter board compatible with the **B-CP8SU-A** PCB that provides three 16K x 8 ROM, one 4K x 8 ROM, and one 2K x 8 ROM. This memory is used for the basic system-operating software and for Station Message Detail Recording (**SMDR**).

ROM PCB

(B-5ROU-2A) The **B-5ROU-2A** PCB (P/N 150711, which is included in the P/N 15001 KSU, is a daughter board compatible with the **B-CP8SU-B** PCB. It provides three 16K x 8 ROMs and one 4K x 8 RAM. This memory is used for the basic system-operating software and for SMDR.

Note that the optional SMDR Interface PCB, **B-SMDR-SA**, requires the **B-5ROU-1B** or the **B-5ROU-2A** PCB.

Three-Circuit Line PCB

(B-3COU-A) The **B-3COU-A** PCB (P/N 15065) is a CO/PBX/DIAL-IN interface included in either 8/12 KSU, and it provides:

- o Interface circuits for three **CO/PBX** lines. Each of the interface circuits contains a ring detect circuit, a seize detect circuit, an electronic dial pulse circuit, a muting relay for dial pulse signaling and a negative impedance circuit to compensate for losses on the line
- o One DTMF generator
- o Crosspoints for MOH
- o Six 1-amp fuses for tip and ring power cross protection
- o Nine Metal Oxide Varistors (**MOVs**) for secondary lightning protection
- o LED for in-use indication
- o Six straps for Power Failure Cut-Through operation

Item 2 - Printed Circuit Boards (cont'd)

BUSINESSCOM **PLUSs** FOR THE BUSINKSSCOM PLUS 8/12 (cont'd)

Two-Line CO PCB
(B-2COU-A)

- The **B-2COU-A** PCB (P/N 15020) is similar to the **B-3COU-A** PCB, but it incorporates only:
- o Two interface circuits for **CO/PBX** lines
 - o Four 1-amp fuses for tip and ring power cross protection
 - o Six **MOVs** for secondary lightning protection
 - o Four straps for Power Failure Cut-Through operation
 - o All other functions of the **B-3COU-A** PCB

Four-station
Interface PCB
(B-4STU-A)

- The **B-QSTU-A** PCB (P/N 15025) is a station interface which provides:
- o Interface for four key telephones
 - o Crosspoint matrix for five lines, two Intercom ports, BGM, and two page ports
 - o Output for external zone paging amplifier
 - o Two Power Failure External Bell outputs for line 4 and line 5
 - o **50-pin** connector (**B2**) for installer connections

COMPLETING THE EQUIPMENT LIST

Item 2 - Printed Circuit Boards (cont'd)

PCBs FOR THE BUSINESSCOM PLUS 8/12 (cont'd)

Two Key Telephone,
Two Single Line OPX
Interface PCB
(B-22SU-B)

The **B-22SU-B** PCB (P/N **15031**) is a station interface between the KSU and single line telephones. It provides:

- o Interface circuits for two key telephones and two single line Off-Premises Extension **(OPX)** telephones*
- o An OPX circuit that can be assigned by programming as a dial-in station for Direct Inward System Access **(DISA)**
- o Crosspoint matrix for five CO lines, BGM, two Intercom links, and two page ports
- o Six option straps for OPX/DISA and internal or external battery
- o Six **MOVs** for secondary lightning protection
- o Control of the ringing signal provided by an external ringing generator to the OPX

The **B-22SU-B** PCB is required for OPX and DISA. The **B-22SU-B** PCB can be used with either DTMF or dial pulse type telephones, but DISA lines must be served by a DTMF instrument.

* A single line telephone installed using an interface PCB (e.g., the **B-22SU-B** or the **B-STU-D PCB**) will be referred to as an Off-Premises Extension **(OPX)**. Single line telephones may be installed on-premises or as **OPXs**.

Multi-Frequency
Receiver Unit PCB
(B-MFRU-B)

The **B-MFRU-B** PCB (P/N **15179B**) is a DTMF receiver daughter board for the **B-22SU-B** or the **B-STU-D** PCB. The **B-MFRU-B** provides interface circuits to detect and decode DTMF signals from DTMF **OPXs** and DISA calls.

One **B-MFRU-B** PCB is required to accept DTMF from each single line (2500 type) telephone or DISA port.

Door Chime Box
Interface PCB
(B-2DBU-A)

The **B-2DBU-A** PCB (P/N **15045**) is used with Door Chime Box (P/N **15040**). It provides:

- o Interface circuits for two Door Chime Boxes
- o VR-1 to adjust the audio volume level to the Door Chime **Box(es)**

COMPLETING THE EQUIPMENT LIST

Item 2 - Printed Circuit Boards (cont'd)

PCBs FOR THE BUSINESSCOM PLUS 8/12 (cont'd)

SMDR

Interface PCB
(B-SMDR-SA)

SMDR on a BUSINESSCOM PLUS 8/12 requires the following equipment:

- o Installation of the B-SMDR-SA PCB (P/N 15075)
- o The correct B-5ROU PCB:
 - o **B-5ROU-1B** for systems with a **B-CP8SU-A** PCB
 - o **B-5ROU-2A** for systems with a **B-CP8SU-B** PCB
- o A customer-provided RS-232-C compatible serial printer configured as follows:
 - o ASCII format
 - o 1 start bit, 7 data bits, no parity, and 1 stop bit

PCBs FOR THE BUSINESSCOM PLUS 24/36/64

Main processing
Unit PCB

(B-MPU-A)

The B-MPU-A PCB (P/N 15165) contains:

- o The System Main Processing Unit
- o System memory: three 16K x 8 ROMs
two 8K x 8 **RAMs**
- o Sixteen station-enable leads
- o One write-protect circuit
- o Six line-enable leads
- o Two expansion leads
- o One 16 Hz generator
- o One power-on reset circuit to restart MPU
- o Battery for memory backup *
- o Several timers
- o One LED for confirmation of clock generation

- * A 3V non-rechargeable, replaceable lithium battery, installed for power failure memory backup, supports memory for **approximately** one month after a power failure.

Main Processing
Unit PCB

(B-MPU-B)

The B-MPU-B PCB (P/N 15166) is similar to the B-MPU-A PCB except that it provides three 16K x 8 ROMs, one 8K x 8 ROM, and three 8K x 8 **RAMs** of memory for the basic system-operating software and SMDR.

The B-MPU-B PCB is compatible with the B-SMDR-LA PCB.

Item 2 - Printed Circuit Boards (cont'd)

PCBs FOR THE BUSINESSCOM PLUS 24/36/64 (cont'd)

Main Processing
Unit PCB

(B-MPU-C)

The B-MPU-C PCB (P/N 15167) is similar to the B-MPU-A PCB except that it provides two 32K x 8 ROMs and three **8K x 8 RAMs** of memory for the basic system-operating software and for SMDR. It also:

- o Provides Enhancement Software Package **(ESP)** features
- o Is compatible with the Busy Lamp Field **(BLF)** telephone

Like the B-MPU-B, the B-MPU-C PCB is compatible with B-SMDR-LA PCB.

Tone Sender PCB
(B-TSU-A)

The B-TSU-A PCB (P/N 15155) provides the following:

- o Paging splash tones and DSS preemption tones
- o Intercom busy tone
- o Intercom fast busy tone
- o Splash and alarm tones
- o Internal MOH generator
- o Switch SW1 to select between internal and external MOH
- o Volume control potentiometer to adjust the level on internal or external MOH
- o Six internal zone paging amplifiers, one for each port
- o A daughter board for external Music On Hold, BGM Interface **(B-HABU-Z)** and External Page Interface PCB **(B-GCU-A)**.

Four-Station
Interface PCB
(B-STU-A)

The B-STU-A PCB (P/N 15125) provides:

- o Interface for four key telephones
- o Crosspoint matrix for 12 lines, six Intercom ports, and six page ports

Two-Station
Interface PCB
(B-STU-B)

The B-STU-B PCB (P/N 15135) is similar to the B-STU-A PCB, but it provides an interface in the first two ports only for up to two key telephones.

COMPLETING THE EQUIPMENT LIST

Item 2 - Printed Circuit Boards (cont'd)

PCBs FOR THE BUSINESSCOM PLUS 24/36/64 (cont'd)

Four-Station Interface PCB (B-STU-D)

The B-STU-D PCB (P/N 15181) serves as an interface between the KSU and single line telephones. The B-STU-D may be installed in any B-STU slot except the first one.

Since the B-STU-D is required for OPX and DISA use, it is also called the OPX/DISA Interface PCB. The B-STU-D PCB can be used with either DTMF or dial pulse type telephones, but DISA lines must be DTMF type lines.

The maximum number of B-STU-D PCBs that can be installed in a system is as follows:

<u>System</u>	<u>Maximum</u>
BUSINESSCOM PLUS 24	3
BUSINESSCOM PLUS 36	4
BUSINESSCOM PLUS 64	8

The B-STU-D PCB provides:

- o Interface circuitry for four single line stations
- o Control of the ringing signal provided by an external ring
- o **MOVs** for secondary lightning protection
- o An OPX circuit that can be accessed either by tip and ring or assigned by programming as a dial-in station for DISA
- o Crosspoint matrix for 12 lines, six intercom ports, and six page ports
- o Ten option straps for OPX/DISA and internal or external battery

Multi-Frequency Receiver Unit PCB (B-MFRU-B)

The B-MFRU-B PCB (P/N 15179B) is a receiver daughter board for the B-STU-D or the B-22SU-B PCB. The B-MFRU-B provides interface circuits to detect and decode DTMF signals from a single line or dial-in CO/PBX line.

One B-MFRU-B PCB is required to accept DTMF from each single line (2500 type) telephone or DISA port.

Four-Station Interface PCB (B-STU-G)

The B-STU-G PCB (P/N 15126) is similar to the B-STU-A PCB. In addition, it is compatible with Busy Lamp Field (BLF) telephones.

Item 2 - Printed Circuit Boards (cont'd)

PCBs FOR THE BUSINESSCOM PLUS 24/36/64 (cont'd)

Four-Circuit

CO PCB

(B-COU-A)

The B-COU-A PCB (P/N **15105**) provides:

- o Interface circuitry for four **CO/PBX** lines
- o One DTMF generator and crosspoints for MOH. Each interface circuit contains a ring detect circuit, seize detect circuit, an electronic dial pulse circuit, a muting relay for dial pulse signaling, and a negative impedance circuit to compensate for losses on the line.
- o Four **MOVs** for secondary lightning protection

Two-Circuit

CO PCB

(B-COU-B)

The B-COU-B PCB (P/N **15115**) is similar to the B-COU-A PCB, but it provides interface circuitry for only two **CO/PBX** lines. This PCB serves the first two of four CO circuits.

Line Expansion PCB

(B-XPU-A)

The B-XPU-A PCB (P/N 15360) is needed for BUSINESSCOM PLUS 64 systems only. It provides crosspoints for lines 13 through 24 and 32 stations.

The first expansion PCB is required for access to lines 13 through 24 from the first 32 ports. A second Expansion PCB is required for access to lines 13 through 24 from ports 33 through 64.

DSS and

Door Chime Box

Interface PCB

(B-DDU-A)

The B-DDU-A PCB (P/N **15130**) provides an interface for:

- o Two Door Chime Boxes (P/N 15040)
- o Two DSS Consoles (P/N 15151 or P/N 15351)

External Music

Interface PCB

(B-HBU-A)

The B-HBU-A PCB (P/N **15140**) is a daughter board for the B-TSU-A Tone Sender PCB that provides:

- o Connections for two alarm sensors
- o Connections for customer-supplied MOH and BGM
- o External alarm signals to stations
- o Connections for four external inputs for Remote Busy Line Indication (FAX)
- o Volume control potentiometer for adjustment of BGM level

COMPLETING ~~THE~~ EQUIPKENT LIST

Item 2 - Printed Circuit Boards (cont'd)

PCBs FOR THE BUSINESSCOM PLUS 24/36/64 (cont'd)

External Page
Interface PCB
(B-GCU-A)

The B-GCU-A PCB (P/N 15180) is a daughter board for the B-TSU-A Tone Sender PCB that provides:

- o Two external zone paging outputs
- o Two external zone paging relay contacts
- o Volume control potentiometers to control audio level of page zones

Line Protection
Unit PCB
(B-LPU-A)

The B-LPU-A PCB (P/N **15340**), required for KSU P/N 15300 only, provides:

- o Tip and ring fuses for 12 lines
- o 36 **MOVs** (secondary lightning protection) for 12 lines

SMDR
INTERFACE PCB

The B-SMDR-LA PCB, required for SMDR on a BUSINESSCOM PLUS **24/36/64**, contains:

- o Circuitry for controlling printing options and formatting transmission data
- o A buffer for storing station message data for a maximum of eight calls per CO line when the printer is busy.

SMDR on a BUSINESSCOM PLUS **24/36/64** requires the following equipment:

- o Installation of the B-SMDR-LA PCB
- o B-SMDR-LA Cable Kit (P/N 15346 or 15347)
- o Installation of a B-MPU-B or a B-MPU-C PCB
- o A customer-provided RS-232-C compatible serial printer configured as follows:
 - o ASCII format
 - o 1 start bit, 7 data bits, no parity, 1 stop bit

For information on additional **PCBs** for a BUSINESSCOM PLUS System, see Item 4 - Optional Equipment.

Item 3 -- Telephones

Telephone Styles

Five styles of telephones in the BUSINESSCOM PLUS family are available (see Figures 1-2 through 1-4):

- o Standard
- o Executive Display
- o Standard w/Busy Lamp Field (BLF)
- o Executive Display w/BLF
- o Display w/BLF (BUSINESSCOM PLUS 8/12 only)

Standard Telephone

- A Standard telephone is factory-equipped with:
- o A speaker to accommodate tone signaling and Intercom voice/tone announcements
 - o A slide control to adjust speaker volume
 - o Intercom & Hold keys with LEDs
 - o Red LEDs to provide a visual indication of call or feature status
 - o Ten DSS keys for storing Speed Dial and Intercom numbers
 - o Message Waiting (MW) and Monitor LEDs
 - o A microphone to permit Handsfree Reply on Intercom

Standard phones in the BUSINESSCOM PLUS family include:

- o 12TS 5-Line Standard (P/N 15013)
- o 24TS 8-Line Standard (P/N 15111)
- o 36TS 12-Line Standard (P/N 15211)
- o 64TS 24-Line Standard (P/N 15311)

All standard telephones are available for a BUSINESSCOM PLUS 24/36/64 system, but only the 12TS 5-Line Standard (P/N 15013) is available for a BUSINESSCOM PLUS 8/12.

The lines may be CO lines, PBX, or Centrex lines in any combination, provided that the total number of lines equals the amount in the model description: a 24TS 8-Line Standard phone can support up to eight lines.

Executive Display Telephone

An Executive Display telephone is factory-equipped with all the components of a Standard telephone plus:

- o Both red and green LEDs to show CO line status
- o Speakerphone module (B-SPDU-A PCB, P/N 15050)
- o Liquid crystal display to show:
 - o date/time/month/day
 - o incoming and outgoing Intercom calls
 - o outgoing CO line calls
 - o call duration
 - o programming data
 - o two programmable alarms
 - o Speed Dial numbers
 - o Message Waiting originating station number check



5-Line Standard Telephone



5-Line Executive Display Telephone

FIGURE 1-2 5-LINE STANDARD AND EXECUTIVE DISPLAY TELEPHONES



8-Line Standard Telephone

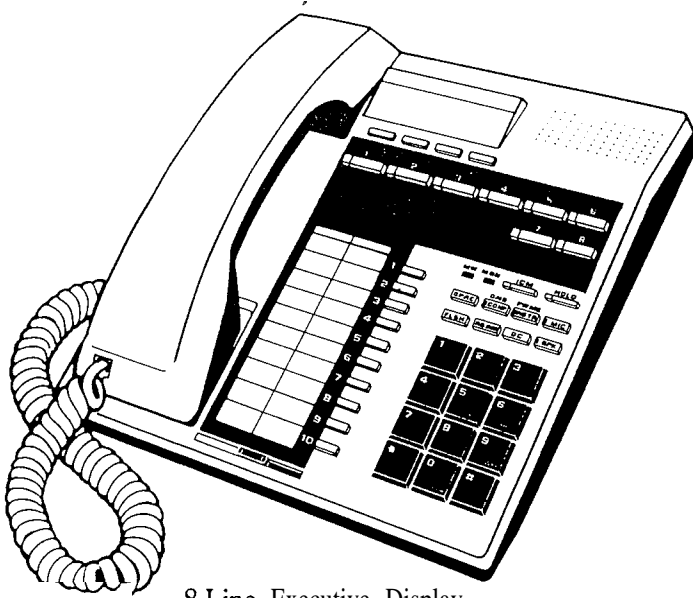


12-Line Standard Telephone

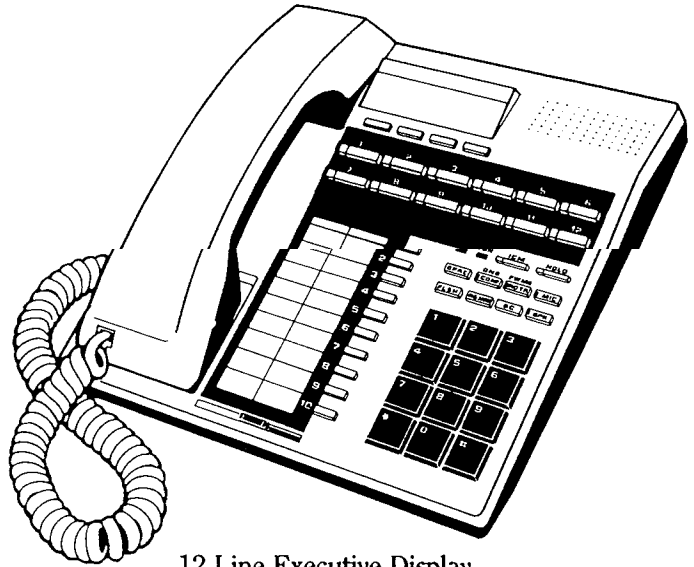


24-Line Standard Telephone

FIGURE 1-3 8-, 12-, 24-LINE STANDARD TELEPHONES



8-Line Executive Display Telephone



12-Line Executive Display Telephone



24-Line Executive Display Telephone

FIGURE 1-4 8-, 12-, 24-LINE EXECUTIVE DISPLAY TELEPHONES

COMPLETING THE EQUIPMENT LIST

Item 3 -- Telephones (cont'd)

Executive Display telephones in the BUSINESSCOM PLUS family include:

- o 12TDX 5-Line Executive Display (P/N 15015)
- o 24TDX 8-Line Executive Display (P/N 15113)
- o 36TDX **12-Line** Executive Display (P/N 15213)
- o 64TDX 24-Line Executive Display (P/N 15313)

Executive Display telephones are available for any BUSINESSCOM PLUS **24/36/64** system, but the 12TDX 5-Line Executive Display (P/N 15015) is the only model available for a BUSINESSCOM PLUS **8/12**.

Busy Lamp Field Telephone

Busy Lamp Field Telephones are basically similar to other telephones for the BUSINESSCOM PLUS family, but they provide BLF indications. Through programming, each of the ten DSS keys can be associated with a specific extension, and a red LED under the key shows the status of the extension assigned to the key: busy, idle, or in the Do Not Disturb (**DND**) Mode (see Figure 1-5, A Typical BLF Telephone).

The 12 **TDX/BLF** telephone (P/N 15017), available for use on the BUSINESSCOM PLUS **8/12** only, is similar to the Executive Display phone for the BUSINESSCOM PLUS **8/12** (P/N 15015) except that:

- o the B-SPDU-A PCB is not factory-installed
- o twelve fixed-position **DSS/BLF** keys are located below the five line keys for all twelve extensions of the system

Six different BLF telephones available for BUSINESSCOM PLUS **24/36/64** systems include three Standard BLF models and three Executive Display BLF models. Each telephone set is equipped with:

- o Ten user-programmable function keys
- o All features of non-BLF telephone sets of similar **type**

Every model requires a B-STU-G PCB station card and the B-MPU-C PCB.

The following Standard telephones with BLF are available for any BUSINESSCOM PLUS **24/36/64**:

- o **24TS/BLF** 8-Line Standard **w/BLF** (P/N 15118)
 - o **36TS/BLF 12-Line** Standard **w/BLF** (P/N 15218)
 - o **64TS/BLF** 24-Line Standard **w/BLF** (P/N 15318)
- but no Standard telephone with BLF is available for the BUSINESSCOM PLUS **8/12**.

- The following Executive Display telephones with BLF are available for any BUSINESSCOM PLUS 24/36/64:
- o 24TDX/BLF 8-Line Executive Display w/BLF (P/N 15518)
 - o 36TDX/BLF 12-Line Executive Display w/BLF (P/N 15618)
 - o 64TDX/BLF 24-Line Executive Display w/BLF (P/N 15718)

Indicate on the Equipment List (Table 1-1) the type and number of telephones needed at your installation.

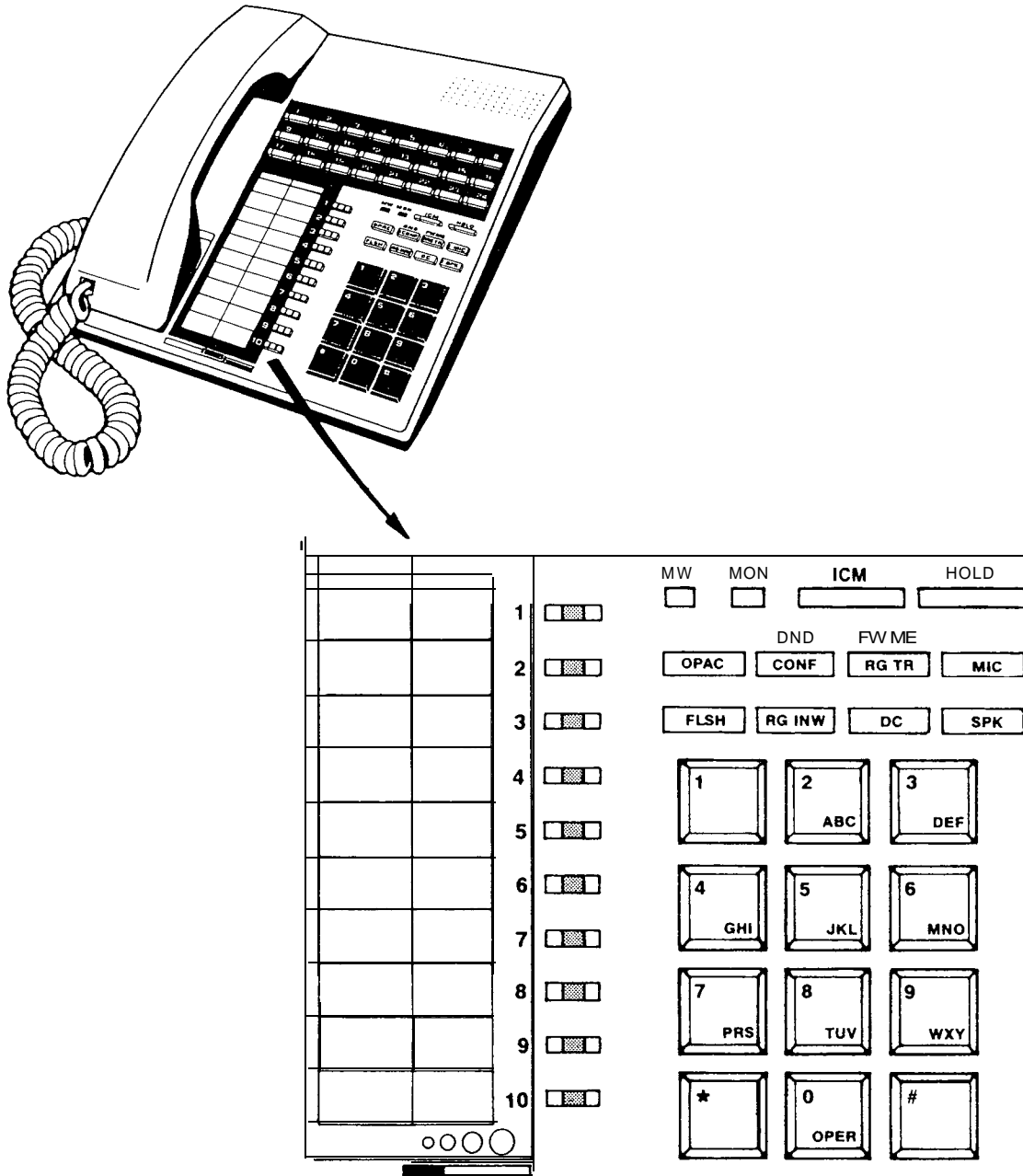


FIGURE 1-5 A TYPICAL BLF TELEPHONE

COMPLETING THE EQUIPMENT LIST

Item 4 - Optional Equipment

The customer may select one or more optional components to be purchased and installed with the BUSINESSCOM PLUS system. The need for a particular software feature will determine the choice of equipment to support it.

TIE/communications Inc. provides much of this equipment which is described below. The customer who desires them must supply the remaining components, described in the following section, "Item 4a - Optional Equipment Supplied by Customer."

TIE/communications Inc. supplies the following optional equipment:

Handsfree Unit **PCB** (B-SPDU-A)

The B-SPDU-A PCB (P/N **15050**) provides a **voice-**switching circuit to allow handsfree telephone operation. This PCB may be installed in any BUSINESSCOM PLUS key telephone.

Executive Display telephones and Executive Display telephones with BLF are factory-equipped with the Speakerphone Unit PCB, but it may be ordered separately for Standard telephones in the BUSINESSCOM PLUS family.

The maximum number of B-SPDU-A **PCBs** permitted per system:

<u>BUSINESSCOM PLUS</u> <u>System</u>	<u>Maximum</u>
8/12	12
24/36	12
64	24

Headset **PCB** (B-TBU-D)

The B-TBU-D PCB (P/N 15052) allows a modular **carbon-**type headset to be used with any Series 2 telephone in the system. For headset compatibility, one PCB is required per telephone.

COMPLETING THE EQUIPMENT LIST

Item 4 - Optional Equipment (cont'd)

SMDR Cable Kit (B-SMDR-LA)

The B-SMDR-LA Cable Kit (P/N 15346) provides the necessary hardware for B-SMDR-LA PCB operation in the following **KSUs**: P/N 15001, 15100, 15200, 15300.

The kit contains the following components:

- o SMDR Jack-Mounting Bracket for the KSU
- o 25-conductor ribbon cable for connection to B-SMDR-LA PCB
- o In/Out of Service rocker switch with red LED
- o RS-232-C Jack for connection of serial SMDR printer

SMDR Cable Kit (B-SMDR-LA)

The B-SMDR-LA Cable Kit (P/N 15347) is designed for the following KSU-Bs: P/N 15101, 15201, 15301. It provides the same components as the P/N 15346 Cable Kit except:

- o SMDR Jack-Mounting Plate instead of the **Jack-Mounting Bracket**

Loud Bell Relay Kit (LBR Kit)

The LBR Kit (P/N 15341) is an interface kit used to adapt a BUSINESSCOM PLUS telephone for Loud Bell Relay Operation. It provides the contact switching necessary to drive a loud signaling device, (**e.g.**, a horn or a bell) or a ringing indicator (**e.g.**, a lamp or beehive indicator).

The Loud Bell Relay Kit contains the following components:

- o B-TBU-D PCB
- o B-LBR-A Assembly, including the B-LBR-A PCB *
- o **18-volt** AC/DC adaptor
- o 6-Conductor Modular Jack for inside telephone
- o **4-Wire** Jumper Cable

* The B-LBR-A PCB (P/N 15340) may be ordered separately as a replacement part.

COMPLETING THE EQUIPMENT LIST

Item 4 - Optional Equipment (cont'd)

Battery Backup Box (BBB)

The Battery Backup Box (P/N 15321H) provides power to a BUSINESSCOM PLUS **24/36/64** System in case of a power failure. The BUSINESSCOM PLUS **24/36** System requires a **15120H** Power Supply. The BUSINESSCOM PLUS 64 System requires a 15320H or a 15323H Power Supply.

The Battery Backup Box contains a:

- o fuse
- o safety or pull-up relay
- o terminal block
- o terminal connecting wire as well as battery terminal screws and large tie wraps. The customer provides the batteries which are not included.

Wall-Mounting Kit

The Wall-Mounting Kit (P/N 15412) is used to mount a BUSINESSCOM PLUS telephone to the wall. It contains one of each component listed below:

- o Handset hanger for holding handset in place when mounting on wall
- o Wall-mount base
- o Six-wire modular cord
- o Wall-mounting plate and eight screws for mounting.

Door Chime Box

The Door Chime Box (P/N 15040) is installed to allow someone inside to converse with someone outside at the door. For Door Chime operation, a **B-2DBU-A** PCB (P/N 15045) must be installed in the KSU of a BUSINESSCOM PLUS **8/12** or a B-DDU-A PCB (P/N 15130) in the KSU of a BUSINESSCOM PLUS **24/36/64**. Up to two Door Chime Boxes may be used in a BUSINESSCOM PLUS System.

The Door Chime Box provides:

- o Distinctive ringing tones (if two boxes are used)
- o Intercom call capabilities to Door Chime Box or Boxes
- o Programmed ringing assignments for Door Chime tones

Item 4 - Optional Equipment (cont'd)

DSS Console/
Door Chime
Interface PCB
(B-DDU-A)

The B-DDU-A PCB (P/N 15130) is inserted in the KSU of a BUSINESSCOM PLUS **24/36/64** for use with Door Chime Box (P/N 15040) and DSS Console (P/N 15151 or **15351**).

It provides:

- o Interface circuits for two Door Chime Boxes
- o VR-1 to adjust audio volume level to the Door Chime Box
- o Interface circuits for two DSS Console positions

Modular
Adaptor

The Modular Adaptor (P/N 62598) can be attached to the KSU of a BUSINESSCOM PLUS **8/12** (P/N 15001) only so that the telephones can be plugged directly into the KSU. It eliminates the need for wiring the telephones to a station block.

24/36 DSS
Console

The **24/36** DSS Console (P/N 15151) is designed for the BUSINESSCOM PLUS **24/36** only, and it provides:

- o DSS keys with **LEDs** for BLF indications
- o Ring-Inward key
- o All Call Paging key with LED
- o External All Zone Paging key with LED
- o Two External Zone Paging keys with **LEDs**
- o Four Internal Zone Paging keys with **LEDs**
- o Night Transfer key with LED
- o Message Waiting key with LED
- o Signal/Voice Call key
- o Two Door Chime Box keys with **LEDs**
- o Alarm LED

64 DSS Console

The 64 DSS Console (P/N 15351) provides the same features as those of the DSS Console (P/N **15151**), but it is designed for the BUSINESSCOM PLUS 64 only.

COMPLETING THE **EQUIPMENT** LIST

Item 4a - Optional Equipment, Supplied by Customer

The customer who desires the use of the features mentioned below must provide:

<u>Feature</u>	<u>Equipment</u>
External Paging	External Speakers One paging amplifier per system An external music source (e.g., a radio, record player, tape cassette or MUSAK) for Background Music and Music on Hold .
OPX	Single line (2500/500 type) telephones Ringing Generator External 48 VDC Power Supply
DISA	Switched gain repeater for amplification in case of line loss
SMDR	RS-232-C cable One serial printer
External Alarm Signals to Stations	Switch or contact closure upon Alarm condition
FAX Indication	Contact-Closure when FAX is off-hook
Headset	One carbon-compatible type headset
Battery Backup	One matched pair of batteries for Battery Backup Box

On the Equipment List, indicate the optional equipment for your installation.

TABLE 1-1 EQUIPMENT LIST, BUSINBSSCOM PLUS 8/12/24/36/64 (1/6)

<u>Description</u>	<u>P/N</u>	<u>Notes</u>	<u>Number</u>
ITEM 1 - MAJOR COMPONENTS			
KSU			
8/12 KSU includes:	15001	1 required/BUSINESSCOM PLUS 8/12	
(1) B-CP8SU-B PCB			
(1) B-3COU-A PCB			
(1) B-5ROU-2A PCB			-----
KSU for the BUSINESSCOM PLUS 24 (includes power supply cable for V4M Power Supply)	15100 or 15101	1 required/BUSINESSCOM PLUS 24	-----
KSU for the BUSINESSCOM PLUS 36 (includes power supply cable for V4M Power Supply)	15200 or 15201	1 required/BUSINESSCOM PLUS 36	-----
KSU for the BUSINESSCOM PLUS 64 (includes power supply cable for V4L V4L Power Supply)	15300	1 required/BUSINESSCOM PLUS 64	-----
Expansion Cabinet for BUSINESSCOM PLUS 64 (includes power supply cable for V4L Power supply)	15301	1 required to expand capacity of BUSINESSCOM 36 KSU-B (P/N 15201)	-----
POWER SUPPLY			
* V4S Power Supply	62505 or 15420	1 required only for BUSINESSCOM PLUS 8/12	-----
* V4M Power Supply	15120	1 required only for BUSINESSCOM PLUS 24/36	-----
* V4L Power Supply	15320	1 required only for BUSINESSCOM PLUS 64	-----
BBB Power Supply for BUSINESSCOM PLUS 24/36	15120H	Only for a BUSINESSCOM PLUS 24/36 w/Battery Backup Box (P/N 15321H)	-----
BBB Power Supply for BUSINESSCOM PLUS 64	15320H or 15323H	Only for a BUSINESSCOM PLUS 64 w/Battery Backup Box (P/N 15321H)	-----
Battery Backup Box	15321H	Battery Backup Box for BUSINESSCOM PLUS 24/36/64	-----
* Not compatible with the Battery Backup Box			

TABLE 1-1 EQUIPMENT LIST, BUSINESSCOM PLUS 8/12/24/36/64 (2/6)

<u>Description</u>	<u>P/N</u>	<u>Notes</u>	<u>Number</u>
ITEM 2 - PRINTED CIRCUIT BOARDS			
PCBs FOR THE BUSINESSCOM PLUS 8/12:			
B-2COU-A	15020		-----
B-4STU-A	15025		-----
B-22SU-B	15031	1 required on a BUSINESSCOM PLUS 8 or BUSINESSCOM PLUS 12 for OPX/DISA capabilities	-----
B-MFRU-B	15179B		-----
B-2DBU-A	15045	1 required for Door Chime Box	-----
B-SMDR-SA	15075	1 required on BUSINESSCOM PLUS 8/12 for SMDR	-----
PCBs FOR THE BUSINESSCOM PLUS 24/36/64:			
B-MPU-A	15165		-----
B-MPU-B	15166		-----
B-MPU-C	15167	Enhancement Software Package	-----
B-TSU-A	15155		-----
B-STU-A	15125		-----
B-STU-B	15135		-----
B-STU-D	15181	1 required on BUSINESSCOM PLUS 24/36/64 for OPX/DISA capability	-----
B-MFRU-B	15179B		-----
B-STU-G	15818	Required for BLF phones	-----
B-COU-A	15105		-----
B-COU-B	15115		-----
B-XPU-A	15360	1 or 2 required when exceeding 12 CO lines	-----
B-DDU-A	15130	Required for DSS/Door Chime Box	-----

TABLE 1-1 EQUIPMENT LIST, BUSINESSCOM PLUS 8/12/24/36/64 (3/6)

<u>Description</u>	<u>P/N</u>	<u>Notes</u>	<u>Number</u>
B-HBU-A	15140		-----
B-GCU-A	15180		-----
B-LPU-A	15340	1 or 2 required for P/N 15300 KSU only	-----
B-PFU-A	15005	Replacement part for P/N 15300 KSU only	-----
B-SMDR-LA	15345A	1 required for SMDR on BUSINESSCOM PLUS 24/36/64 only	-----
B-SMDR-LA Cable Kit	15346	Installed only in non- KSU-Bs for BUSINESSCOM PLUS 24/36/64 using SMDR	-----
B-SMDR-LA Cable Kit	15347	Installed only in KSU-Bs for BUSINESSCOM PLUS 24/36/64 using SMDR	-----

ITEM 3 - TELEPHONES

TELEPHONES FOR THE BUSINESSCOM PLUS 8/12:

8TS 3-Line Standard	15009	Not presently available	-----
12TS 5-Line Standard	15013		-----
12TDX 5-Line Executive Display	15015		-----
12TDX/BLF Display	15017	BUSINESSCOM PLUS 8/12 only	-----

TELEPHONES FOR THE BUSINESSCOM **PLUS 24/36/64:**

12TS 5-Line Standard	15013		-----
12TDX 5-Line Executive Display	15015		-----
12TDX/BLF 5-Line Executive Display w/BLF	15017		-----
24TS 8-Line Standard	15111		-----
24TS/BLF 8-Line Standard w/BLF	15118		-----

TABLE 1-1 EQUIPMENT LIST, BUSINESSCOM PLUS 8/12/24/36/64 (4/6)

<u>Description</u>	<u>P/N</u>	<u>Number</u>
TELEPHONES FOR THE BUSINESSCOM PLUS 24/36/64 (cont'd)		
24TDX 8-Line	15113	
Executive Display		-----
24TDX/BLF 8-Line	15518	
Executive Display w/BLF		-----
36TS 12-Line Standard	15211	-----
36TS/BLF 12-Line	15218	
Standard w/BLF		-----
36TDX 12-Line	15213	
Executive Display		-----
36TDX/BLF 12-Line	15618	
Executive Display w/BLF		-----
64TS 24-Line Standard	15311	-----
64TS/BLF 24-Line	15318	
Standard w/BLF		-----
64TDX 24-Line	15313	
Executive Display		-----
64TDX/BLF 24-Line	15718	
Executive Display w/BLF		-----

TABLE 1-1 EQUIPMENT LIST, BUSINESSCOM PLUS 8/12/24/36/64 (5/6)

<u>Description</u>	<u>P/N</u>	<u>Notes</u>	<u>Number</u>
ITEM 4 - OPTIONAL EQUIPMENT			
B-SPDU-A PCB	15050	1 required for speakerphone compatibility	-----
B-TBU-C PCB	15052	1 required for headset compatibility	-----
B-LBR Kit	15341	Includes B-LBR-A PCB 1 required for loud bell ringing compatibility	-----
Battery Backup Box (BBB)	15321H	For BUSINESSCOM PLUS 24/36/64 only	-----
Wall-Mounting Kit	15412		-----
Door Chime Box	15040		-----
o B-2DBU-A PCB	15045	For BUSINESSCOM PLUS 8/12	-----
o B-DDU-A PCB	15130	for BUSINESSCOM PLUS 24/36/64	-----
Modular Connector	62598	For BUSINESSCOM PLUS 8/12 only	-----
24/36 DSS Console	15151	For BUSINESSCOM PLUS 24/36 only	-----
64 DSS Console	15351	For BUSINESSCOM PLUS 64 only	-----
ITEM 4a - OPTIONAL EQUIPMENT, SUPPLIED BY CUSTOMER			
External Paging Equipment		yes/no	-----
External Music Source		yes/no	-----
Number of External Speakers			-----
Single line telephones (OPXs)		yes/no	-----
A serial printer with an RS-232-C cable		1 required for SMDR	-----
External music source		Required for BGM & MOH	-----
Matched pair of batteries for Battery Backup Box		For Battery Backup Box, BUSINESSCOM PLUS 24/36/64 only	-----

TABLE 1-1 EQUIPMENT LIST, BUSINESSCOM PLUS 8/12/24/36/64 (6/6)

The following related system documentation recommended for reference during installation of a BUSINESSCOM PLUS 8/12/24/36/64 system:

<u>Description</u>	<u>P/N</u>	<u>Number</u>
BUSINESSCOM PLUS Hardware Manual	01652HWB	-----
BUSINESSCOM PLUS Software Only (B-MPU-C)	01651SWB	-----
BUSINESSCOM PLUS User Guides:		
Multibutton BUSINESSCOM PLUS	01652MBB	-----
Attendant Console BUSINESSCOM PLUS	01652ACB	-----
OPX BUSINESSCOM PLUS (Enhanced Software Package, Only)	01652 OPX	-----

GENERAL INFORMATION

FCC and Telco Requirements

The Federal Communications Commission (FCC) has established rules and regulations for the operation and installation of privately-owned telephone equipment. According to Part 68 (Connection of Terminal Equipment to the Telephone Network) and its amendments, the FCC requires several actions before and during installation of customer-provided telephone equipment. The following paragraphs outline these actions.

Notification to Telco

The telco may want to be notified of the proposed cut-over date and supplied with the following information about the system:

- a. The particular lines used (telephone numbers **xxx-xxxx** through **xxx-xxxx**).
- b. Model: **BUSINESSCOM PLUS 8/12/24/36/64**
Manufacturer: TIE/communications, Inc.

For BUSINESSCOM PLUS **8/12**:

FCC Registration Number: **BJ27JK-71379-KF-E**
Ringer Equivalence: **0.3B**
Registered Jack: **RJ11C**

For BUSINESSCOM PLUS **24/36/64**:

FCC Registration Number: **BJ27JK-71382-KF-E**
Ringer Equivalence: **0.4B**
Registered Jack: **RJ21X**

Primary **Protection** Devices

The National Electrical Code (**NEC**) requires the telco to provide primary protection devices on telephone lines terminated at customer sites.

Check the entry point to verify that a primary protection device has been installed. If not, notify the telco before proceeding with the installation.

Telco Lines

Telco lines for a BUSINESSCOM PLUS **8/12** must be terminated in **RJ11C** connectors, dropped within six feet of the proposed installation site.

Telco lines for a BUSINESSCOM PLUS **24/36/64** must be terminated in **RJ21X** connectors, dropped within 25 feet of the proposed installation site.

GENERAL INFORMATION

FCC and Telco Requirements (cont'd)

FCC-Approved Connectors

Connect this system to telco lines only with the FCC-approved plugs and jacks which are appropriate to the BUSINESSCOM PLUS System (see Registered Jack entry above).

Incidence of Harm

If trouble occurs, the FCC requires that the customer disconnect the registered equipment from the telephone line in order to determine if the equipment is malfunctioning. If so, the customer should stop using the equipment until the problem is corrected.

The telco may temporarily stop service if the customer-provided equipment is causing harm to the telco network. Whenever practical, the telco must notify the customer that service may be temporarily discontinued. The telco must also attempt to inform the customer before actually disconnecting service and provide customers with an opportunity to correct the problem. In addition, the telco must advise customers of their right to bring complaint procedures before the FCC.

Radio Frequency Interference

WARNING: THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY. IF NOT INSTALLED AND USED ACCORDING TO MANUFACTURER'S INSTRUCTIONS, THIS EQUIPMENT MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS.

All BUSINESSCOM PLUS systems have been tested. Tests show that a BUSINESSCOM PLUS **8/12** complies with the limits for a Class B computing device and a BUSINESSCOM PLUS **24/36/64** with the limits for a Class A computing device according to Subpart J of Part 15 of FCC Rules. The Class A or Class B computing device provides reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area may cause interference, but operation of a Class B computing device is less likely to cause such interference. If interference occurs, the FCC requires that corrective measures be taken at the user's expense.

FCC and **Telco** Requirements (cont'd)

Determine if the equipment is causing interference to radio or television reception by turning the equipment off and then on. If an interference problem exists, try one of the following solutions:

- a. Reorient the receiving antenna
- b. Relocate the receiver with respect to the equipment
- c. Plug the equipment and receiver into different branch circuits

For further information on radio-TV interference, order the FCC-prepared booklet, How to Identify and Remove Radio-TV Interference Problems from the:

U.S. Government Printing Office
Washington, D.C. 20402
(Stock No. 004-000-00345-4)

Radio
Frequency
Susceptibility

If you install the system in a strong radio frequency (RF) field, the field may affect proper system operation. Use of the installation and grounding procedures outlined in this manual will help to minimize RF susceptibility.

Hearing Aid
Compatibility

Hearing aid-compatibility is identified on packing materials. FCC rules prohibit the use of non-hearing aid-compatible telephones in the following locations:

- a. Any public or semi-public location where **coin-**operated or credit card telephones may be found
- b. Elevators, highways, and tunnels (automobile, subway, railroad, or pedestrian) where a person with impaired hearing might be isolated in an emergency.
- c. Places where telephones are installed specifically to alert emergency authorities (such as fire, police, or medical assistance personnel)
- d. Hospital rooms, residential health care facilities, convalescent homes and prisons, specifically where telephones are used for signaling life-threatening or emergency situations if alternative signaling methods are not available
- e. Workstations for hearing-impaired personnel
- f. Hotel, motel, apartment lobbies; in stores where telephones are used by patrons to order merchandise; in public transportation terminals where telephones are used to call taxis, reserve lodging or rent automobiles

GENERAL INFORMATION

FCC and **Telco** Requirements (cont'd)

g. Hotel and motel rooms. At least ten percent of the rooms must contain hearing aid-compatible telephones: or contain jacks for plug-in hearing aid-compatible telephones which will be provided to hearing-impaired customers upon request.

Hearing aid-compatible handsets are available through TIE/communications, Inc.

Responsibility of Grantee

The FCC prohibits any alteration or modification of this equipment not expressly shown in this manual. When suspecting equipment malfunction, the installer should disconnect the system from the **telco** lines by unplugging either the **RJ11C** connector on a BUSINESSCOM PLUS 8/12 or the **RJ21X** connector on a BUSINESSCOM PLUS 24/36/64.

ONLY FCC-CERTIFIED INSTALLERS MAY INSTALL A CONNECTING BLOCK BETWEEN THE KSU AND THE **RJ11C** OR **RJ21X**

Installation Training

Programmed Learning Course

A programmed learning **correspondance** course, Technical Training by Return Mail, is available exclusively through TIE Technical Training.

For further details, contact:

TIE Technical Training
4 Progress Ave.
Seymour, CT 06483
Reference: Programmed Learning Courses

Classroom Training

Formal classroom training for certification is available from TIE/communications, Inc.

For further information, please contact:

TIE Technical Training
4 Progress Ave.
Seymour, CT 06483
Attn: Manager, Technical Training

SPECIFICATIONS

BUSINESSCOM PLUS 8/12 SPECIFICATIONS (1/2)

GENERAL SPECIFICATIONS

Maximum System Capacity:	<u>BUSINESSCOM</u>	<u>PLUS 8</u>	<u>BUSINESSCOM</u>	<u>PLUS 12</u>
CO Lines:	5		5	
Intercom Talkpaths:	2		2	
Key Telephones:	8		12	
Speakerphones:	8		12	
*OPX Telephones:	0		2	

ELECTRICAL SPECIFICATIONS

Power Requirements: (AC supply must be dedicated)

KSU/Power Supply Operating Range: 117 VAC \pm 10%

60 Hz \pm 1 Hz

Power Dissipation of KSU/Power Supply **Unit:** 269 Watts @ 2.3 amps
920 BTU/hr.

Grounding Requirements:

KSU ground lug, 14 AWG insulated copper wire to cold water pipe or known good earth ground

Cable Requirements:

Four-conductor (two-pair twisted) station wire.

0 1000 **ft.** (300 **m**) using 24 AWG

0 1500 **ft.** (450 **m**) using 22 AWG

Door Chime Box: 500 **ft.** (150 **m**) using 24 AWG

Background Music Specifications:

Input Impedance: 600 ohm

Input Level: Nominal 250 **mV** (-10 **dBm**)

Maximum Input: 1 **Vrms**

Music-on-Hold Specifications

Input Impedance: 600 ohm

Input Level: Nominal 250 **mV** (-10 **dBm**)

Maximum Input: 1 **Vrms**

Limit for Alarm Circuit:

Loop Resistance: 1000 ohm maximum

External Paging Specifications:

Output Impedance: 600 ohm

Output Level: Nominal 250 **mV** (-10 **dBm**)

Maximum Output: 400 **mVrms**

* Affects maximum number of key telephones on system.

SPECIFICATIONS

BUSINESSCOM PLUS 8/12 SPECIFICATIONS (2/2)

MECHANICAL SPECIFICATIONS

Dimensions and Weights:

KSU	18.5 in.	x	12.8 in.	x	2.7 in.	
	47.0 cm	x	32.5 cm	x	7.0 cm	
Power Supply	7.2 in.	x	6.3 in.	x	3.1 in.	
	18.5 cm	x	16.0 cm	x	7.5 cm	
All Telephones	3.1 in.	x	8.0 in.	x	8.7 in.	2.2 lb.
	8.0 cm	x	20.5 cm	x	22.1 cm	1.0 kg
Door Chime Box	5.1 in.	x	3.9 in.	x	0.7 in.	0.44 lb.
	13.1 cm	x	9.9 cm	x	3.5 cm,	0.2 kg

ENVIRONMENTAL SPECIFICATIONS

Environmental Operating Conditions:

Temperature:

KSU/Telephones: 0 to 45 degrees C (32 to 113 degrees **F**)

Door Chime Box: -20 to 60 degrees C (**-4** to 140 degrees **F**)

Humidity: 10% to 95% noncondensing

SPECIFICATIONS

BUSINESSCOM PLUS 24 SPECIFICATIONS (1/2)

GENERAL SPECIFICATIONS

Maximum System Capacity:
CO Lines: 8
Intercom Talkpaths for Basic System: 6
Key Telephones: 24
Speakerphones: 12
*OPX Telephones: 12

ELECTRICAL SPECIFICATIONS

Power Requirements: (AC supply must be dedicated)
KSU/Power Supply Operating Range: 117 VAC \pm 10% 60 Hz \pm 1 Hz

Power Dissipation: KSU/Power Supply Unit: 246 Watts @ 2.1 amps
840 BTU/hr.

Grounding Requirements:

KSU ground lug, 14 AWG or larger copper wire to cold water pipe or known good earth ground

Cable Requirements:

Four-conductor (two-pair twisted) station wire
o 1000 ft (305 m) using 24 AWG
o 1500 ft (457 m) using 22 AWG
Door Chime Box: 500 ft. (152.4 m) using 24 AWG
Console: 1000 ft. (305 m) using 24 AWG
or
500 ft. (152 m) if one of the two consoles used serves as a Busy Lamp Field (BLF)

Background Music Specifications:

Input Impedance: 600 ohm
Input Level: Nominal 250 mV (-10 dBm)
Maximum Input: 1 Vrms

Music on Hold Specifications:

Input Impedance: 600 ohm
Input Level: Nominal 250 mV (-10 dBm)
Maximum Input: 1 Vrms

Limit for Alarm Circuit: Loop resistance of 1000 ohm maximum

External Paging Specifications:

Output Impedance: 600 ohm
Output Level: Nominal 250 mV (-10 dBm)
Maximum Output: 400 mVrms

* Affects maximum number of key telephones on system.

SPECIFICATIONS

BUSINESSCOM PLUS 24 SPECIFICATIONS (2/2)

MECHANICAL SPECIFICATIONS

Dimensions and Weights:

KSU	16.8 in.	x	21.5 in.	x	7.8 in.	26.5 lb.
	43.0 cm	x	55.0 cm	x	20.0 cm	12.0 kg
Power Supply	12.1 in.	x	14.2 in.	x	4.8 in.	12.8 lb.
	31.0 cm	x	36.4 cm	x	12.2 mm	5.8 kg
Executive/Key Telephone	3.1 in.	x	8.0 in.	x	8.6 in.	2.2 lb.
	8.0 cm	x	20.5 cm	x	22.1 cm	1.0 kg
Door Chime Box	5.1 in.	x	3.9 in.	x	1.4 in.	0.4 lb.
	13.1 cm	x	9.9 cm	x	3.5 cm	0.2 kg
DSS Console	2.0 in.	x	7.4 in.	x	8.8 in.	1.3 lb.
	52 mm	x	189 mm	x	224 mm	0.6 kg

ENVIRONMENTAL SPECIFICATIONS

Environmental Operating Conditions:

Temperature:

KSU and Telephones: 0 to 45 degrees C (**32** to 113 degrees **F**)

Door Chime Box: -20 to 60 degrees C (**-4** to 140 degrees **F**)

Humidity: 10% to 95% noncondensing

SPECIFICATIONS

BUSINKSSCOM PLUS 36 SPECIFICATIONS (1/2)

GENERAL SPECIFICATIONS

Maximum System Capacity:
CO Lines: 12
Intercom Talkpaths: 6
Key Telephones: 36
Speakerphones: 12
***OPX** Telephones: 18

ELECTRICAL SPECIFICATIONS

Power Requirements: (AC supply must be dedicated)
KSU/Power Supply Operating Range: 117 VAC \pm 10% 60 Hz \pm 1 Hz

Power Dissipation:

KSU/Power Supply Unit 333 Watts @ 2.85 amps 1140 BTU/hr.

Grounding Requirements:

KSU ground lug, 14 AWG insulated copper wire to cold water pipe or known good earth ground

Cable Requirements:

Four-conductor (two-pair twisted) station wire

0 1000 **ft.** (305 m) using 24 AWG

0 1500 **ft.** (457 m) using 22 AWG

Door Chime Box: 500 ft (152 m) using 24 AWG

Console: 1000 ft. (305 m) using 24 AWG

or

500 **ft.** (152 m) if one of the two consoles used serves as a BLF

Background Music Specifications:

Input Impedance: 600 ohm

Input Level: Nominal 250 **mV** (-10 **dBm**)

Maximum Input: 1 Vrms

Music On Hold Specifications:

Input Impedance: 600 ohm

Input Level: Nominal 250 **mV** (-10 **dBm**)

Maximum Input: 1 Vrms

Limit for Alarm Circuit: Loop resistance at 1000 ohm maximum

External Paging Specifications:

Output Impedance: 600 ohm

Output Level: Nominal 250 **mV** (-10 **dBm**)

Maximum Output: 400 **mVrms**

* Affects maximum number of key telephones in system.

SPECIFICATIONS

BUSINESSCOM PLUS 36 SPECIFICATIONS (2/2)

MECHANICAL SPECIFICATIONS

Dimensions and Weights

KSU	16.8 in. 43.0 cm	x x	21.5 in. 55.0 cm	x x	7.8 in. 20.0 cm	33.9 lb. 14.0 kg
Power Supply	12.1 in. 31.0 cm	x x	14.2 in. 36.4 cm	x x	4.8 in. 12.2 cm	12.8 lb. 5.8 kg
Executive/Key Telephone	3.1 in. 8.0 cm	x x	8.0 in. 20.5 cm	x x	8.6 in. 22.1 cm	2.2 lb. 1.0 kg
Door Chime Box	5.1 in. 13.1 cm	x x	3.9 in. 9.9 cm	x x	1.4 in. 3.5 cm	0.4 lb. 0.2 kg
DSS Console	2.0 in. 5.2 cm	x x	7.4 in. 18.9 cm	x x	8.8 in. 22.4 cm	1.3 lb. 0.6 kg

ENVIRONMENTAL SPECIFICATIONS

Environmental Operating Conditions:

Temperature:

KSU and Telephones: 0 to 45 degrees C (32 to 113 degrees **F**)

Door Chime Box: -20 to 60 degrees C (**-4** to 140 degrees **F**)

Humidity: 10% to 95% noncondensing

SPECIFICATIONS

BUSINESSCOM PLUS 64 SPECIFICATIONS (1/2)

GENERAL SPECIFICATIONS

System Capacity:
CO Lines: 24
Intercom Talkpaths: 6
Key Telephones: 64
Speakerphones: 24
***OPX** Telephones: 32

ELECTRICAL SPECIFICATIONS

Power Requirements: (AC supply must be dedicated)
KSU/Power Supply Operating Range: 117 VAC \pm 10% 60 Hz \pm 1 Hz

Power Dissipation:
KSU/Power Supply Unit: 684 Watts @ 5.85 amps 2340 BTU/hr.

Grounding Requirements:
KSU ground lug, 14 AWG or larger copper wire to cold water pipe or known good earth ground

Cable Requirements:
Four-conductor (two-pair twisted) station wire
o 1000 ft. (305 m) using 24 AWG
o 1500 ft. (457 m) using 22 AWG
Door Chime Box: 500 ft. (152 m) using 24 AWG
Console: 1000 ft. (305 m) using 24 AWG
or
500 ft. (152 m) if one of the two consoles used serves as a BLF

Background Music Specifications:
Input Impedance: 600 ohm
Input Level: Nominal 250 mV (-10 dBm)
Maximum *Input: 1 Vrms

Music On Hold Specifications:
Input Impedance: 600 ohm
Input Level: Nominal 250 mV (-10 dBm)
Maximum Input: 1 Vrms

Limit for Alarm Circuit: Loop resistance at 1000 ohm maximum

External Paging Specifications
Output Impedance: 600 ohm
Output Level: Nominal 250 mV (-10 dBm)
Maximum Output: 400 mVrms

* Affects maximum number of keyphones in system.

spECIFICATIONS

I-4 SPECIFICATIONS

BUSINESSCOM PLUS 64 SPECIFICATIONS (2/2)

MECHANICAL SPECIFICATIONS

Dimensions and Weights:

KSU	27.8 in.	x	26.1 in.	x	8.5 in.	81.6 lb
	71.3 cm	x	67.0 cm	x	21.9 cm	37.0 kg
Power Supply	13.3 in.	x	19.0 in.	x	4.8 in.	19.4 lb
	34.0 cm	x	48.9 cm	x	12.2 cm	8.8 kg
Executive/Key Telephone	3.1 in.	x	8.0 in.	x	8.6 in.	2.2 lb
	8.0 cm	x	20.5 cm	x	22.1 cm	1.0 kg
Door Chime Box	5.1 in.	x	3.9 in.	x	1.4 in.	0.4 lb
	13.1 cm	x	9.9 cm	x	3.5 cm	0.2 kg
DSS Console	2.0 in.	x	7.4 in.	x	8.8 in.	1.3 lb
	5.2 cm	x	18.9 cm	x	22.4 cm	0.6 kg

ENVIRONMENTAL SPECIFICATIONS

Environmental Operating Conditions

Temperature:

KSU and Telephones: 0 to 45 degrees C (32 to 113 degrees **F**)

Door Chime Box: -20 to 60 degrees C (**-4 to** 140 degrees **F**)

Humidity: 10% to 95% noncondensing

PART 2 INSTALLATION

INSTALLATION INTRODUCTION

The INSTALLATION Section provides detailed procedures for installing BUSINESSCOM PLUS Systems. This section presents the system installation in five parts:

- o PREPARING FOR INSTALLATION
shows how to select an installation site. It also indicates the tools and test equipment needed to install the system.
- o INSTALLING THE KSU AND POWER SUPPLY
shows how to install, connect, and ground the system's KSU and power supply. It tells how to install a surge protector and explains how to power up and power off the system.
- o INSTALLING STATION CABLING AND SYSTEM CONNECTIONS
shows how to mount the connecting blocks, install the system's station cabling, and connect the CO lines.
- o INSTALLING THE **PCBs** AND CHECKING WIRING
explains the static precautions to observe when handling **PCBs**, and install them in the KSU. Shows how to verify the DC voltage measurements of the system's station cabling and wiring from the MDF **66M1-50** Block.
- o INSTALLING OPTIONAL EQUIPMENT
explains how to install the equipment and accessories required for the optional features.

WARNING: ALTERATIONS OR MODIFICATIONS OF THIS EQUIPMENT NOT EXPRESSLY SHOWN IN THIS MANUAL VOIDS APPLICABLE WARRANTIES, FOR PROTECTION AGAINST RISK OF FIRE, REPLACE FUSES ONLY WITH FUSES OF THE SAME TYPE AND RATING.

Read this entire section before proceeding with the actual installation.

PREPARING FOR INSTALLATION

Site Requirements

Meeting and maintaining established environmental standards maximizes the life of your system. Be sure that the site you select for installing the KSU is:

- o a clean, dry, and secure location.
- o not accessible to unauthorized personnel
- o free from static electricity (e.g., dry copiers) and excessive vibration (e.g., heavy machinery)
- o removed from caustic chemicals
- o environment-controlled

This site must also comply with the standards outlined in the Bell Functional Product Class Criteria of September, 1978, in PUB 48002. Paragraph 3.4.3.2 **(C)**, Indoors - With Environmental Control:

Equipment intended for use in a controlled environment is exposed to temperatures between 40 degrees **F** (**4** degrees **C**) and 100 degrees **F** (38 degrees **C**) and relative humidities between 5 percent and 95 percent.

Mount the KSU on the wall only. Provide ample room at the installation site for mounting the KSU along with the necessary connecting blocks and any ancillary equipment. Maintain at least 3 feet (915 cm) between the room ceiling and the top of the KSU. Always allow adequate space for air circulation.

The site must have a dedicated NEMA **5-15R** outlet with a 117 VAC @ 60 Hz and a **15-amp** circuit for the power **supply**. The AC service outlet must be located within six feet of the power supply location. The AC service must provide a "third-wire ground."

In addition to the third-wire ground in the AC circuit, be sure to provide a separate earth ground for the KSU. (The third wire of the AC line cord is not an acceptable earth ground.) The earth ground must be within 25 feet (7.6 m) of the installation. A cold water pipe that is metallic throughout (including all joints and sections) generally provides a good earth ground.

Site Summary Check

Before installing the KSU, check the following conditions:

- o Location acceptable
- o AC line installed
- o Provisions for ground
- o **Telco** lines available
- o Primary protection installed

PREPARING FOR INSTALLATION

Tools and

Test Equipment

The following tools, documentation, and test equipment are required when you install the system:

- o BUSINESSCOM PLUS Hardware Manual and **User** Guides
- o Volt/Ohm meter - high input impedance (**+1%** tolerance of accuracy)
- o Lineman's test set
- o Punch down tool for cross connecting wires
- o Flatblade screwdriver
- o Grounded wrist strap
- o Work light or flashlight
- o Spare **PCBs**
- o Marking pen/pencils to label blocks and cables
- o Drill for mounting equipment
- o Separate copies of the Program Record Form (Appendix A) to be left on site

The following items should also be considered:

- o Extension cord for AC power (possibly two)
- o Stepladder(s), depending on location
- o Handsaw for cutting wood
- o Tape measure or folding ruler for equipment layout
- o Level (for mounting backplane and equipment)
- o Electric or hand drill
- o Wire cutters and strippers for wiring modular jacks
- o Sheathing tool for station and 25-pair cabling
- o Pliers; needle nose pliers
- o Hammer
- o Tools to install ground rod or cold water pipe ground lug
- o Plastic probe or tuner tool
- o Tone generation device -- Toner

Have available the following hardware/cables:

- o Exterior grade **3/4-inch** thick plywood backboard for mounting KSU and power supply
- o 25-pair cables (free on one end, terminated with female type 57 connector on the other) for station connections
- o 25-pair cable terminated with a female connector on one end, male on the other, for connection to **RJ21X**
- o Modular line cord for each extension (for connection to **telco RJ11C** jacks)
- o Two-pair twisted station cable, enough to connect each modular jack to KSU (**Do not use random twisted I-wire inside [quad] cable or 25-pair cable.**)
- o 14 AWG (or heavier) grounding wire
- o **66M1-50** connecting blocks with bridging clips
- o **625A4** or **625F4** modular station jacks with **screw-type** terminals
- o Power line surge protector (should be a **self-contained**, three-prong grounded receptacle with a **15-amp** capacity or equivalent, such as EFI Model DPI 253, TII Model 439)
- o Appropriate mounting hardware and fasteners
- o Bridging clips for the blocks

PREPARING FOR INSTALLATION

-
- Before installing the system, be sure to:
- o Unpack all the telephone equipment.
 - o Compare the equipment received with a list of equipment ordered.
 - o Check for any physical damage.
 - o Check that all components are on site.
 - o Verify that a building plan is complete and on site. This plan should show the location and type of telephone instrument, extension numbering, and any special considerations.

Hanging the Backboard

Review the installation layout drawing (Figures 2-1 through 2-4), and locate the area for the backboard. Plan the layout of equipment on the backboard. Consider optional equipment and future expansion. The Main Distribution Frame (MDF) is mounted on the same plywood backboard that is used for mounting system equipment. If located in a damp environment or on masonry, the plywood should be painted or sealed.

CAUTION: ALLOW ROOM FOR CHANGES AND EXPANSION WITH YOUR KSU AND CONNECTING BLOCK MOUNTING LOCATIONS. PLACE EQUIPMENT ON MOUNTING SITE FOR GOOD VENTILATION, DIRECT LIGHTING, AND EASY SERVICE.

Attach the plywood to the designated location with the proper fasteners. Using the installation layout, mark the equipment layout on the backboard.

Mounting the KSU

1. When unpacking the KSU from the shipping carton, be sure to remove all hardware.
2. Remove the mounting bracket screws from the KSU, and position the brackets.
3. Using the KSU as a guide, mark four points on the plywood backboard. These points correspond to the centers of the mounting holes.
4. Drill pilot holes at these points, and insert suitable fasteners having a #10 shank diameter.
5. Hang the KSU on the four fasteners.
6. Tighten each fastener until the KSU is securely attached to the backboard.

NOTE: Do not install **PCBs** at this time. If a modular connector is used on the BUSINESSCOM PLUS 8/12, the KSU mounting brackets must be repositioned. (See Modular Connector in INSTALLING OPTIONAL EQUIPMENT.)

Grounding the KSU

1. Connect the ground wire from the cold water pipe ground or ground rod to the side of the KSU. This wire should be as short as possible and no longer than 25 feet (7.6 m).

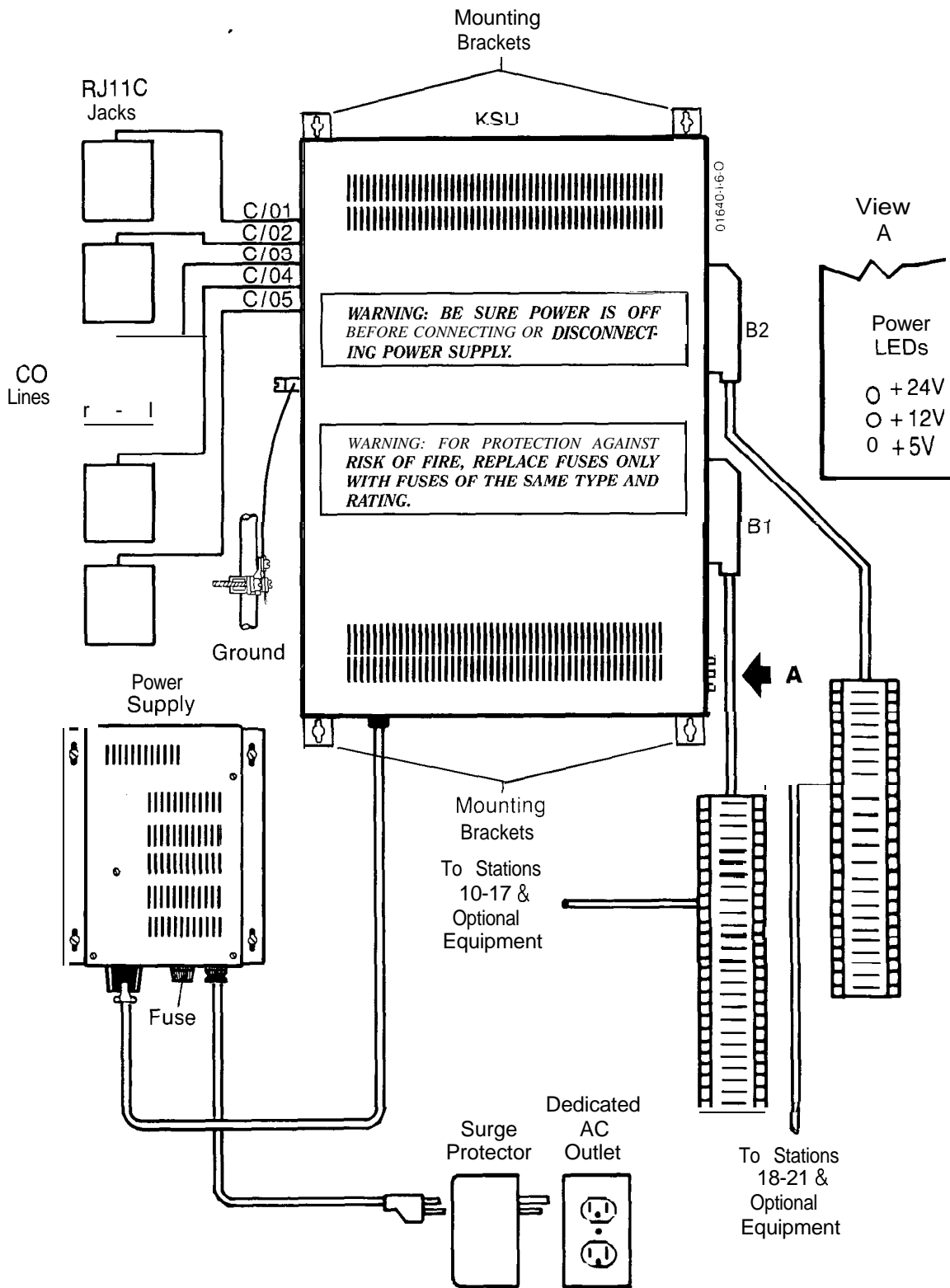


FIGURE 2-1 BUSINESSCOM PLUS 8/12 INSTALLATION LAYOUT

PREPARING FOR INSTALLATION

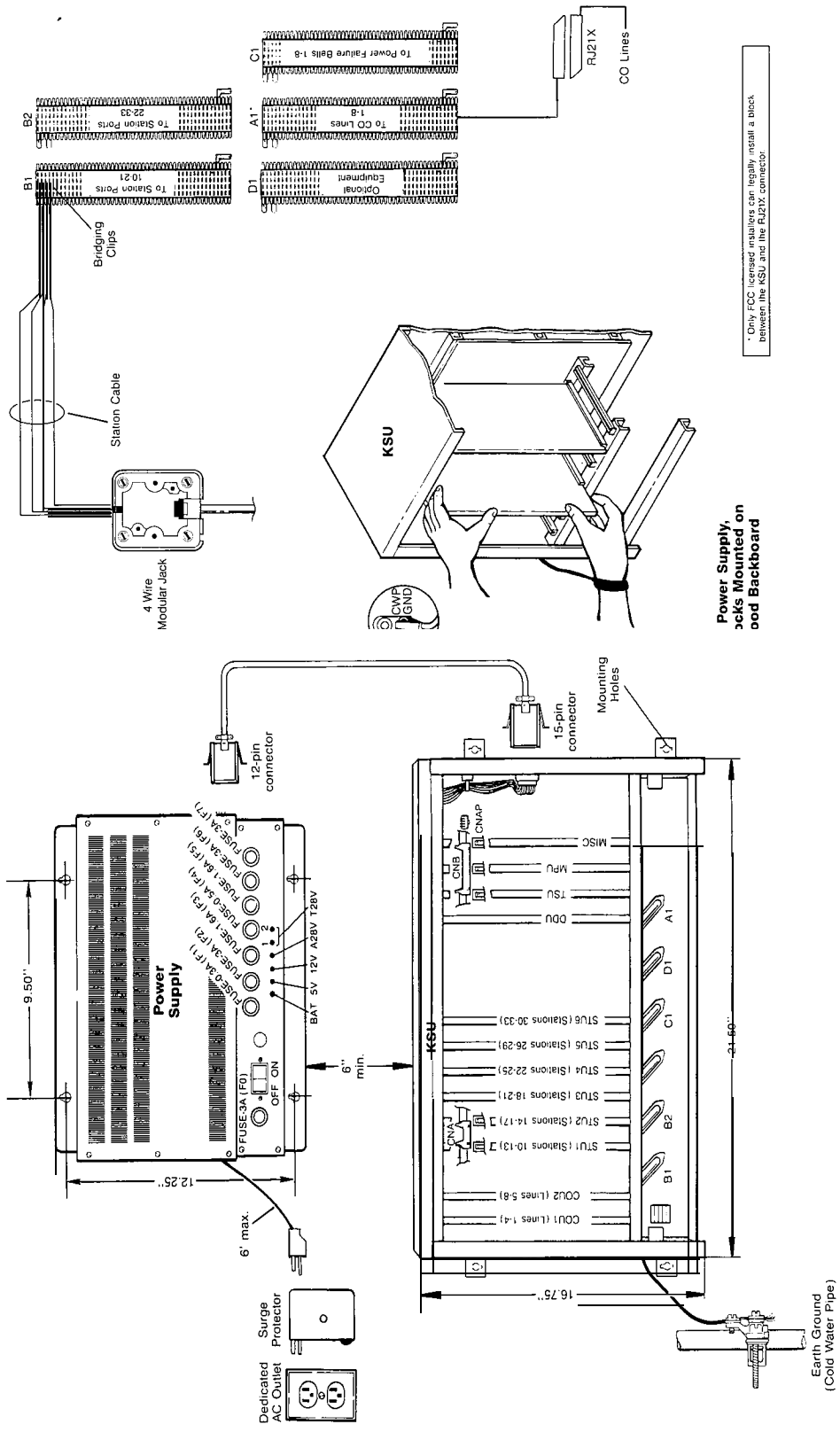
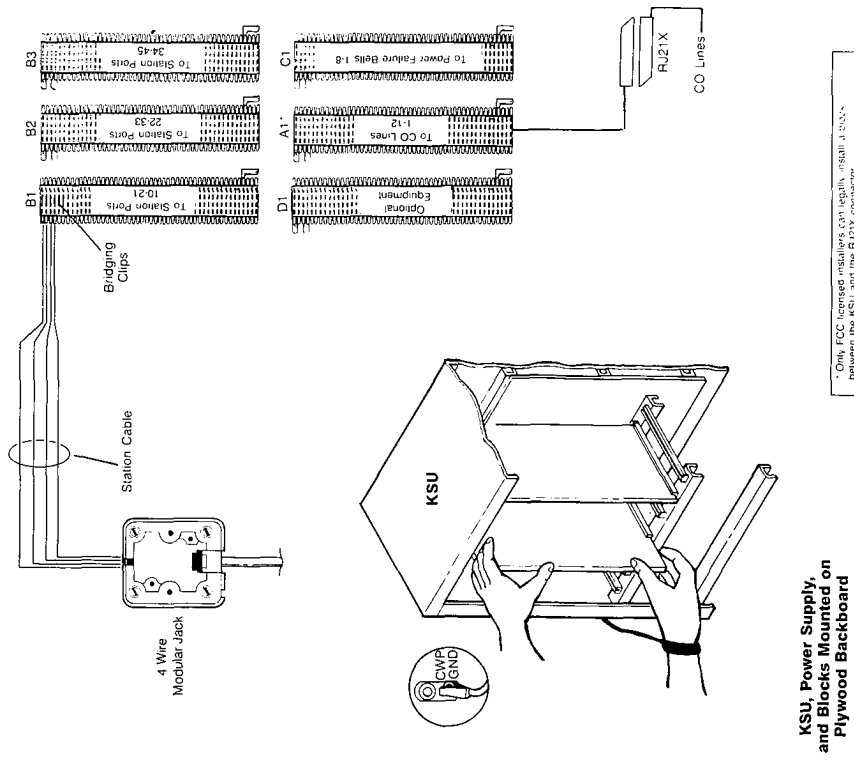


FIGURE 2-2 **BUSINESSCOM** 24 KSU-B (P/N 15101)

PREPARING FOR INSTALLATION



KSU, Power Supply, and Blocks Mounted on Plywood Backboard

* Only FCC certified modules can be installed at this location between the KSU and the RJ21X connector.

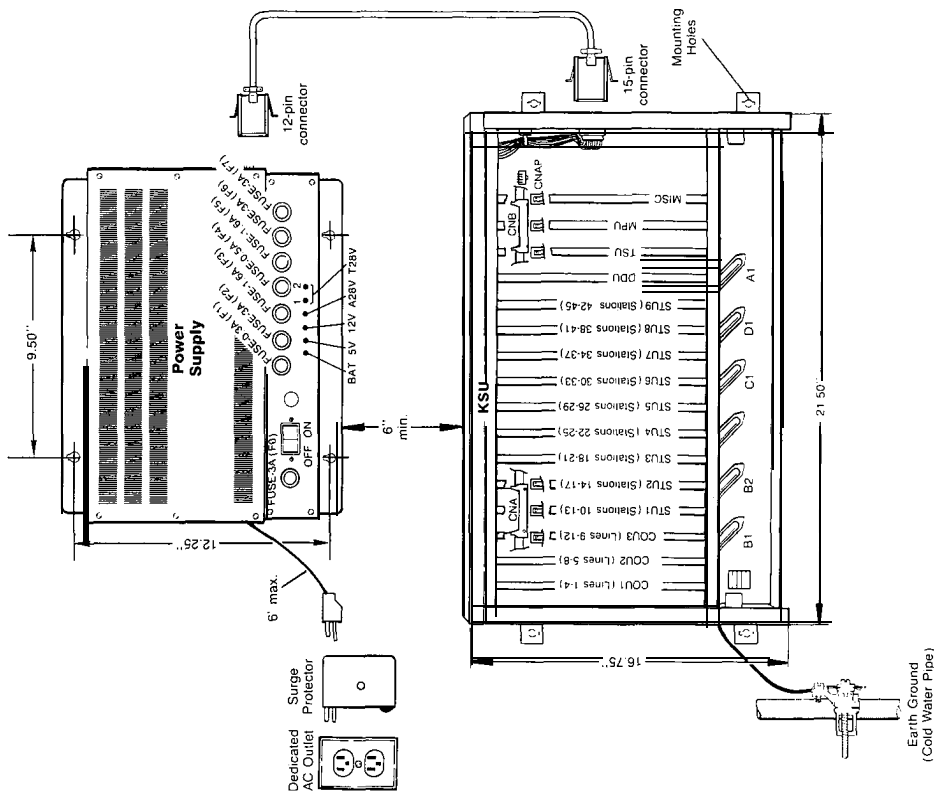


FIGURE 2-3 BUSINESSCOM 36 KSU-B (P/N 15201)

PREPARING FOR INSTALLATION

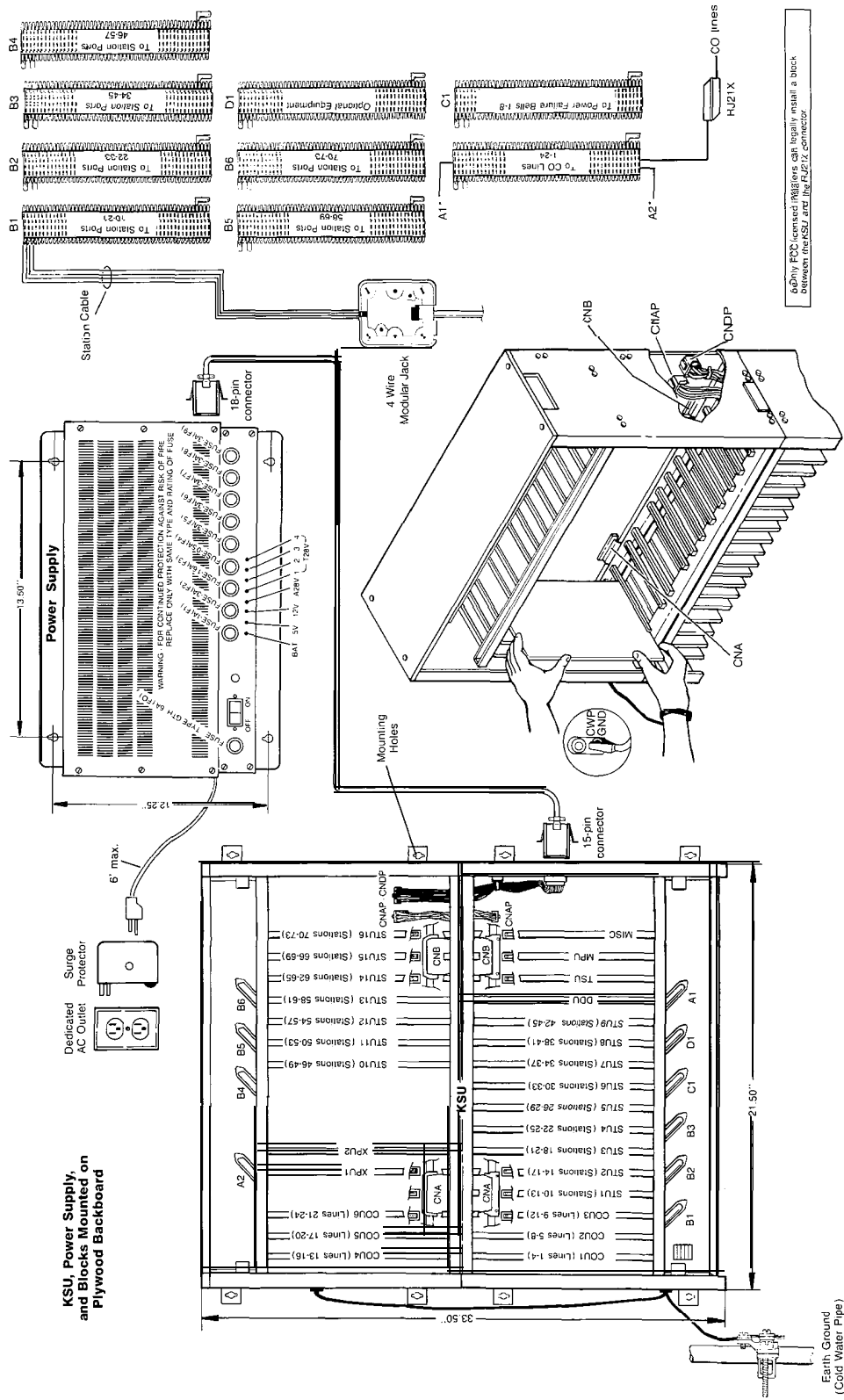


FIGURE 2-4 BUSINESSCOM 36 KSU-B (P/N 15201) W/BUSINESSCOM 64 EXPANSION CABINET (P/N 15301)

Mounting the BUSINESSCOM PLUS
64 Expansion
Cabinet

1. **Mount** the BUSINESSCOM PLUS 36 KSU-B (P/N 15201) according to the preceding paragraph.
2. Remove the top of the KSU.
3. Position the Expansion Cabinet on top of the KSU.
4. Drill pilot holes at these points, and insert fasteners having a **1/4-inch** shank diameter. Screw in fasteners until the clearance between the fastener head and the mounting surface is **1/4** inch.
5. Refer to Figure 2-4 BUSINESSCOM 64 KSU-B (P/N 153011, and hang the Expansion Cabinet on the four fasteners.

Connections

1. Connect the gray ribbon cables (**CNA** and **CNB**) in the Expansion Cabinet to the connectors in the KSU, and make sure that the connections are secure.
2. Connect the two power cables on the KSU to the connector in the Expansion Cabinet. Make sure that the connections are secure.
3. Install the two metal plates on the sides of the two cabinets (where the cabinets meet).
4. Tighten each fastener until the Expansion Cabinet is securely attached to the plywood backboard.
5. Place the top of the KSU on top of the Expansion Cabinet.

Grounding the
BUSINESSCOM PLUS
Cabinet

- 64 Expansion
1. Install an additional small piece of 14 AWG wire to the ground lug on the side of the KSU.
 2. Connect the other end of the wire to the ground lug on the expansion cabinet.

Mounting the
Power Supply

Mount the power supply for a BUSINESSCOM PLUS system (with/without a Battery Backup Box *****) at least six inches above the KSU or to one side of it, and mount it within six feet of the dedicated AC outlet as follows:

1. Mark four points on the plywood backboard. These points correspond to the centers of the mounting holes.
2. Drill pilot holes at these points, and insert fasteners having a #10 shank diameter. Screw in fasteners until the clearance between the fastener head and the mounting surface is **1/4** inch.
3. Hang the power supply on the four fasteners.
4. Tighten each fastener until the power supply is securely attached to the backboard.

* For installation of the Battery Backup Box, see Battery Backup Box in INSTALLING OPTIONAL EQUIPMENT.

Grounding the
Power Supply ,

The power supply is grounded through the third-wire ground lead in the AC power cord.

For BUSINESSCOM PLUS **24/36/64** systems, connect a grounding wire (**14** AWG or heavier) between the KSU grounding lug and the power supply ground lug to prevent electromagnetic interference.

Connecting the
Power Supply to
the KSU

WARNING: BEFORE CONNECTING OR DISCONNECTING THE POWER SUPPLY, THE POWER SUPPLY MUST BE OFF.

Turn off the power, and connect the power supply to the KSU with the supplied cable. On a BUSINESSCOM PLUS **8/12**, the connection for the power supply is on the bottom of the KSU. On a BUSINESSCOM PLUS **24/36/64**, this connection is on the right-hand side and the connection for the KSU is on the lower left-hand corner (cover removed). The ground lugs of KSU-Bs are on the left side of the **KSUs**.

Installing the
Surge Protector

1. Install the power line surge protector at the dedicated AC receptacle to minimize the effects from high static voltage, low level transients, and ripple effects.
2. Connect this unit according to the manufacturer's instructions.

For information on fuses, see POWER SUPPLY FUSES in Part 3 MAINTENANCE AND TROUBLESHOOTING.

Powering up
the System

1. Plug the AC power cord into the power line surge protector.
2. Turn on the power supply.
 - o On the BUSINESSCOM PLUS **8/12**, the three power **LEDs** on the right side of the power supply should light.
 - o On the BUSINESSCOM PLUS **24/36/64**, all the power supply **LEDs** (green and red) should light. If they do not, see TELEPHONE TROUBLESHOOTING in Part 3).

Powering down
the System

1. Turn off the power supply.
2. Unplug the AC power cord.

Initializing
the System

For a complete system initialization:

1. Disconnect lithium battery on B-MPU- or **B-CP8SU-PCB**.
2. Place the WR switch in the up position (initial position (see Figure 2-5 Programming Switch WR, B-MPU-PCB)).
3. Plug in the power supply, and turn it on.

After approximately 10 seconds:

1. Move the WR switch to the down position (i.e., normal).
2. Plug in the lithium battery. Data in memory is now protected against power failure.
3. Remove Programming Button Access Door. Use a **blunt-edged, non-conductive** item to press programming button (see Figure 2-6 Entering the Programming Mode).

Program 91 initializes the Speed Dial Number bins, resets the Alarm settings, and loads default values under the telephone DSS keys.

1. Enter Program Access Code 91.
 2. Press *. Display reads: 91 A
 3. Press *, and press # to exit program.
- To exit programming mode, press programming button.

Reinitializing
the System

If it is necessary to reinitialize the system but retain the contents of Speed Dial Number bins and DSS key assignments, proceed as follows:

1. Without disconnecting the lithium battery, move WR switch to up (initial) position.
2. After the power supply has been off for at least 10 seconds, move WR switch to down (normal) position.
3. Reprogram the system.

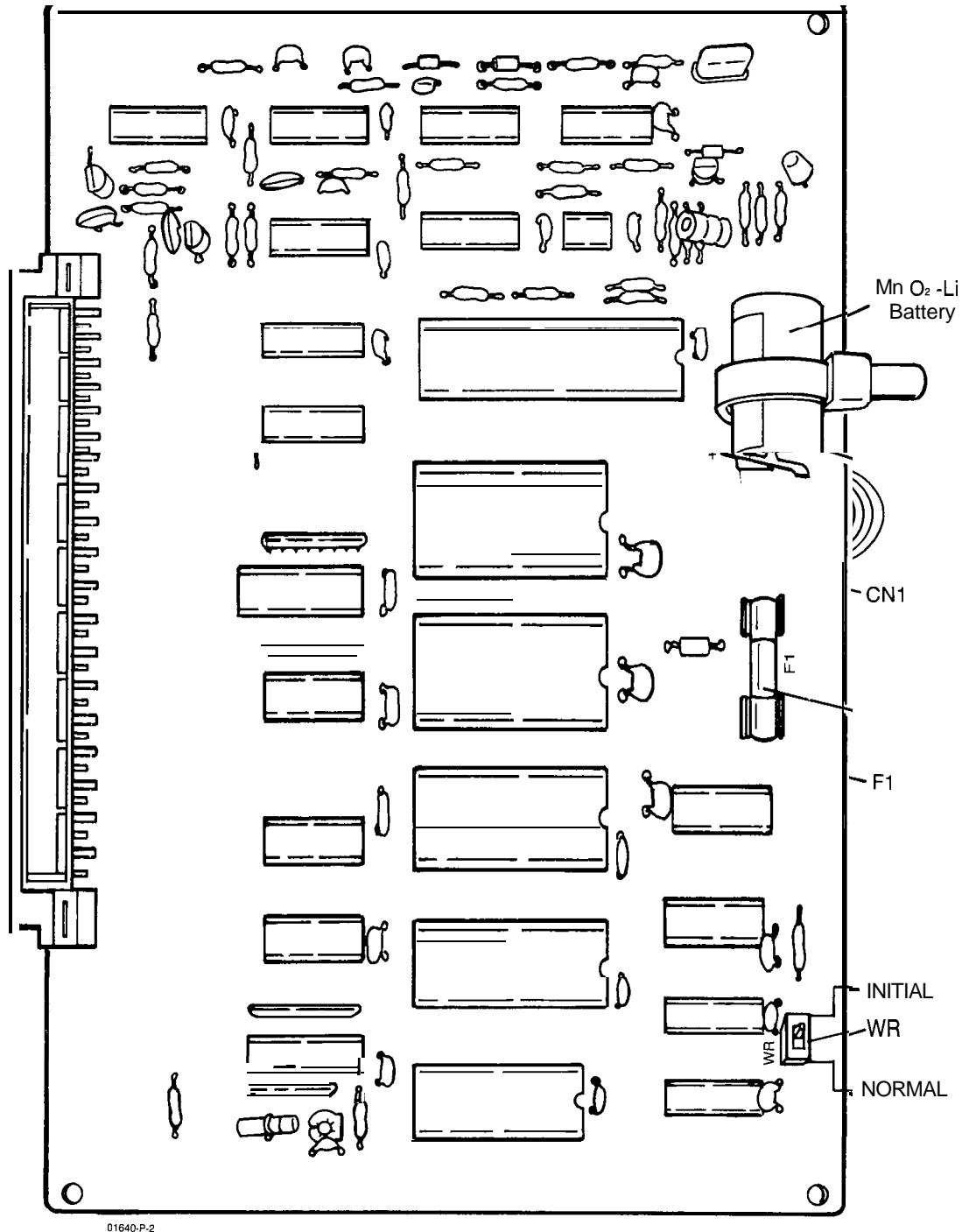


FIGURE 2-5 PROGRAMMING SWITCH WR, B-MPU- PCB

II-2 INSTALLING THE RSU AND POWER SUPPLY

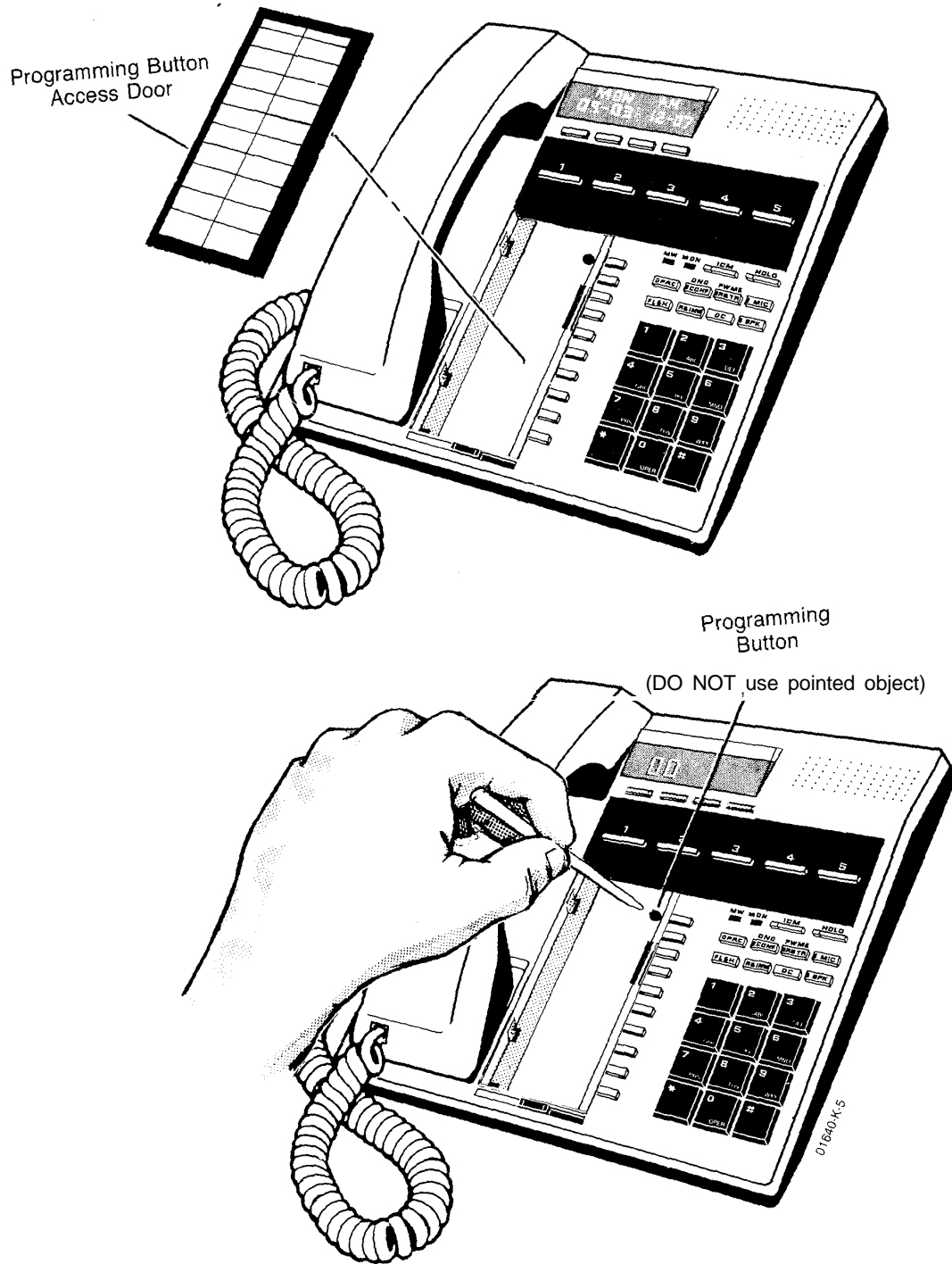


FIGURE 2-6 KENTERING THE PROGRAMMING MODE

INSTALLING STATION CABLING **AND** SYSTEM CONNECTIONS

Connecting Blocks

Mounting Connecting Blocks

Mount the connecting blocks (**66M1-50** or equivalent) to the right of the KSU. These blocks are recommended for station cable, console cable, External Paging, Background music (**BGM**), and alarm terminations (see Tables 2-1 through **2-3**). By specification, **BUSINESS-COM PLUS** systems use twisted-pair station cabling - wiring in which each pair has ten twists per **foot**-length of cable.

Port Assignments on Block

Use 25-pair cables to connect the station blocks to the KSU connector. Designated port assignments are:

BUSINESSCOM PLUS 8/12

B1 Ports 10 - 17

Door Chime Box & Music On Hold

External Speaker & Contacts

BGM Source & Power Failure External Bells

BUSINESSCOM PLUS 12

B2 Ports 18 - 21

Power Failure External Bells & External Alarm Input

BUSINESSCOM PLUS 24

B1 Ports 10 - 21

B2 Ports 22 - 23

A1 Lines 1 - 8

C1 Power Failure Bells 1 - 8

D1 DSS Consoles, Door Chime Boxes, MOH, Loudspeakers, BGM Source, Alarm Inputs

BUSINESSCOM PLUS 36

B1 Ports 10 - 21

B2 Ports 22 - 33

B3 Ports 34 - 45

A1 Lines 1 - 12

C1 Power Failure Bells 1 - 12

D1 DSS Consoles, Door Chime Boxes, MOH, Loudspeakers, BGM Source, Alarm Inputs

BUSINESSCOM PLUS 64

B1 Ports 10 - 21

B2 Ports 22 - 33

B3 Ports 34 - 45

B4 Ports 46 - 57

B5 Ports 58 - 69

B6 Ports 70 - 73

C1 Power Failure Bells 1 - 24

A1 Lines 1 - 12

A2 Lines 13 - 24

D1 DSS Consoles, Door Chime Boxes, MOH, Loudspeakers, BGM Source, Alarm Inputs

INSTALLING STATION CABLING AND SYSTEM CONNECTIONS

TABLE 2-1 BUSINESSCOM PLUS 8/12 CUT DOWN BLOCK

25 Pair Cable		Connecting Block		Modular Adaptor Number		
Conn Pin	Color Code	Block Term	Function			
26 1	WHT-BLU BLU-WHT	STATION 0	T1AT	1		
27	WHT-ORN		T1AR			
2	ORN-WHT		T1BT			
			T1BR			
28 3	WHT-GRN GAN-WHT	STATION 11	T2AT	2		
29	WHT-BRN		T2AR			
4	BRN-WHT		T2BT			
			T2BR			
30 5	WHT-SLT SLT-WHT	STATION 12	T3AT	3		
31	RED-BLU		T3AR			
6	BLU-RED		T3BT			
			T3BR			
32 7	RED-ORN ORN-RED	STATION 13	T4AT	4		
33	RED-GRN		T4AR			
8	GRN-RED		T4BT			
			T4BR			
34 9	RED-BRN BRN-RED	STATION 14	T5AT	5		
35	RED-SLT		T5AR			
10	SLT-RED		T5BT			
			T5BR			
36 11	BLK-BLU BLU-BLK	STATION 15	T6AT	6		
37	BLK-ORN		T6AR			
12	ORN-BLK		T6BT			
			T6BR			
38 13	BLK-GRN GRN-BLK	STATION 16	T7AT	7		
39	BLK-BRN		T7AR			
14	BRN-BLK		T7BT			
			T7BR			
40 15	BLK-SLT SLT-BLK	STATION 17	T8AT	8		
41	YEL-BLU		T8AR			
16	BLU-YEL		T8BT			
			T8BR			
42 17	YEL-ORN ORN-YEL	PF 1	Power Failure Ext Bells	9		
43	YEL-GRN				10	
18	GRN-YEL					11
44 19	YEL-BRN BRN-YEL	PF 3	Door Box 1	13		
45	YEL-SLT				14	
20	SLTYEL					15
46 21	VIO-BLU BLU-VIO	PF 4	MOH Ext. Source	17		
47	VIO-ORN				18	
22	ORN-VIO					19
48 23	VIO-GRN GRN-VIO	PF 5	Ext. Spk	21		
49	VIO-BRN				22	
24	BRN-VIO					23
50 25	VIO-SLT SLTVIO	PF 6	Ext. Spk. Contacts	25		
					26	
						27

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TABLE 2-2 BUSINESSCOM PLUS 12 CUT DOWN BLOCK

25 Pair Cable		Connecting Block B2		Modular Adaptor Number		
Conn Pin	Color Code	Block Term.	Function			
26 1	WHT-BLU BLU-WHT	STATION 18	T9AT	1		
27	WHT-ORN		T9AR			
2	ORN-WHT		T9BT			
			T9BR			
28 3	WHT-GRN GRN-WHT	STATION 9	T10AT	2		
29	WHT-BRN		T10BT			
4	BRN-WHT		T10BR			
			T10BR			
30 5	WHT-SLT SLT-WHT	STATION 20	T11AT	3		
31	RED-BLU		T11BT			
6	BLU-RED		T11BR			
			T11BR			
32 7	RED-ORN ORN-RED	STATION 21	T12AT	4		
33	RED-GRN		T12AR			
8	GRN-RED		T12BT			
			T12BR			
34 9	RED-BRN BRN-RED	16 Hz	OPX Ring			
35	RED-SLT		Gen. In.			
10	SLT-RED					
36 11	BLK-BLU BLU-BLK	48 Vdc	Earth Ground			
37	BLK-ORN		OPX Ext. Battery			
12	ORN-BLK					
38 13	BLK-GRN GRN-BLK					
39	BLK-BRN					
14	BRN-BLK					
40 15	BLK-SLT SLTBLK					
41	YEL-BLU					
16	BLU-YEL					
42 17	YEL-ORN ORN-YEL	PF 4	Power Failure Ext Bells	9		
43	YEL-GRN				10	
18	GRN-YEL					11
44 19	YEL-BRN BRN-YEL		Ext Alarm Zone 1	11		
45	YEL-SLT				12	
20	SLTYEL					13
46 21	VIO-BLU BLU-VIO					
47	VIO-ORN				15	
22	ORN-VIO					16
48 23	VIO-GRN GRN-VIO					
49	VIO-BRN				18	
24	BRN-VIO					19
50 25	VIO-SLT SLTVIO					
					21	
						22

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25-PAIR CABLE 4-CONDUCTOR		BUSINESSCOM 36 KSU-B (P/N 15201)			BUSINESSCOM 64 EXP CAB (P/N 15301)			BUSINESSCOM (P/N 15101 or P/N				
CLIP NO.	CONN. PIN	CABLE COLOR	BLOC	BI	BLOCK B2	BLOCK B3	BLOCK B4	BLOCK B5	BLOCK B6	BLOCK C1		BLOCK D1
1	26	WHT-BLU		AT						PF	1T	D
2	1	BLU-WHT	PORT	AR	PORT	PORT	PORT	PORT	PORT	BELL 1	1R	D
3	27	WHT-ORN	10	BT	22	34	46	58	70	PF	2T	D
4	2	ORN-WHT		BR						BELL 2	2R	D
5	28	WHT-GRN		AT						PF	3T	D
6	3	GRN-WHT	PORT	AR	PORT	PORT	PORT	PORT	PORT	BELL 3	3R	D
7	29	WHT-BRN	11	BT	23	35	47	59	71	PF	4T	D
8	4	BRN-WHT		BR						BELL 4	4R	D
9	30	WHT-SLT		AT						PF	5T	MO
10	5	SLT-WHT	PORT	AR	PORT	PORT	PORT	PORT	PORT	BELL51	5R	M
11	31	RED-BLU	12	BT	24	36	48	60	72	PF	6T	M
12	6	BLU-RED		BR						BELL 6	6R	M
13	32	RED-ORN		AT						PF	7T	E
14	7	ORN-RED	PORT	AR	PORT	PORT	PORT	PORT	PORT	BELL 7	7R	E
15	33	RED-GRN	13	BT	25	37	49	61	73	PF	8T	1
16	8	GRN-RED		BR						BELL 8	8R	1
17	34	RED-BRN		AT								EA
18	9	BRN-RED	PORT	AR	PORT	PORT	PORT	PORT	PORT			E
19	35	RED-SLT	14	BT	26	38	50	62	74			2
20	10	SLT-RED		BR								2
21	36	BLK-BLU		AT								BG
22	11	BLU-BLK	PORT	AR	PORT	PORT	PORT	PORT	PORT			I
23	37	BLK-ORN	15	BT	27	39	51	63	75			1
24	12	ORN-BLK		BR								IA
25	36	BLK-GRN		AT								2
26	13	GRN-BLK	PORT	AR	PORT	PORT	PORT	PORT	PORT			2
27	39	BLK-BRN	16	BT	20	40	52	64	76			3
28	14	BRN-BLK		BR								3
29	40	BLK-SLT		AT								4
30	15	SLT-BLK	PORT	AR	PORT	PORT	PORT	PORT	PORT			4
31	41	YEL-BLU	17	BT	29	41	53	65	77			5
32	16	BLU-YEL		BR								5
33	42	YEL-ORN		AT								6
34	17	ORN-YEL	PORT	AR	PORT	PORT	PORT	PORT	PORT			6
35	43	YEL-GRN	16	BT	30	42	54	66	78			
36	18	GRN-YEL		BR								
37	44	YEL-BRN		AT								
38	19	BRN-YEL	PORT	AR	PORT	PORT	PORT	PORT	PORT			
39	45	YEL-SLT	19	BT	31	43	55	67	79			
40	20	SLT-YEL		BR								
41	46	VIO-BLU		AT								
42	21	BLU-VIO	PORT	AR	PORT	PORT	PORT	PORT	PORT			
43	47	VIO-ORN	20	BT	32	44	56	68	80			
44	22	ORN-VIO		BR								
45	46	VIO-GRN		AT								
46	23	GRN-VIO	PORT	AR	PORT	PORT	PORT	PORT	PORT			
47	49	VIO-BRN	21	BT	33	45	57	69	81			
48	24	BRN-VIO		BR								
49	50	VIO-SLT										
50	25	SLT-VIO										

*BUSINESSCOM 36 KSU-B (P/N 15201) ONLY

Table 2-3 BUSINESSCOM PLUS 24136164 KSU-B BLOCK DESIGNATIONS

INSTALLING STATION CABLING AND SYSTEM CONNECTIONS

----- Connecting Blocks (cont'd)

Unsupervised Conference

If Unsupervised Conference is used, punch down at the following points a 600-ohm resistor with a rating of **1/2** Watt and a 10% tolerance:

<u>System</u>	<u>Block</u>	<u>Pin</u>
BUSINESSCOM PLUS 8/12	B1	21, 22
BUSINESSCOM PLUS 24	B1	33, 34
BUSINESSCOM PLUS 36	B2	1, 2
BUSINESSCOM PLUS 64	B3	5, 6

When the B-MPU-C PCB is installed, the station positions used for Unsupervised Conference are programmable and may differ from the above. The 600 ohm resistor must be installed across the AT/AR leads for the programmed extensions.

Mounting a Jack Assembly

Mount a modular jack assembly, **625A4** or **625F4**, at each station location.

Station Cabling

Installing Sta- tion Cabling

Use two-pair twisted station cable from the KSU and station blocks to the modular jacks at the telephones. Home run station cabling to the connecting block. The cabling should not exceed 1,000 feet for 24 AWG wire or 1,500 feet for 22 AWG wire.

CAUTION: DO NOT USE RANDOM TWISTED I-WIRE INSIDE CABLE (QUAD) BETWEEN THE STATIONS AND THE MAIN DISTRIBUTION FRAME (MDF).

Cabling **Telco** OPX Lines

An Off-Premises Extension (**OPX**) on a BUSINESSCOM PLUS system requires **telco** OPX lines. Do not run cable from the KSU to extensions or stations in other buildings.

For an OPX, the BUSINESSCOM PLUS **8/12** requires a **B-22SU-B** PCB and the BUSINESSCOM PLUS **24/36/64** requires a B-STU-D PCB. To install the **B-22SU-B** PCB, see Installing the **B-22SU-B** PCB in INSTALLING OPTIONAL EQUIPMENT: to install the B-STU-D PCB, see Installing the B-STU-D PCB in the same section.

Terminating Cabling at Blocks

Station cabling terminates at the station blocks (**KSU**) and station jacks. Connect cabling at the station jacks as follows:

<u>Station Cable</u>	<u>Jack Terminal</u>
WHT/BLU	GRN
BLU/WHT	RED
WHT/ORN	BLK
ORN/WHT	YEL

INSTALLING STATION CABLING AND SYSTEM CONNECTIONS

Station Cabling (cont'd)

CAUTION: FOR PROPER OPERATION, IT IS IMPORTANT TO MAINTAIN PAIR-FOR-PAIR CONNECTIONS AND OBSERVE POLARITY OF PAIRS AT ALL LOCATIONS WHERE TERMINATIONS OR CROSS CONNECTIONS ARE MADE.

Install bridging clips for the AT, AR, BT, and BR terminals.

Connecting CO Lines, BUSINESSCOM PLUS **8/12**

The telco installs the RJ11C connectors to which the KSU is attached.

CAUTION: HAVE THE TELCO PERSONNEL INSTALL THE CO LINES WITHIN SIX FEET OF THE SYSTEM INSTALLATION,

To connect the RJ11C to the KSU:

1. Plug in the station line cords into the RJ11C connectors at one end.
2. At the other end, plug the station line cords into the connectors on the side of the KSU. Label each input to indicate the CO line.

Connecting CO Lines BUSINESSCOM PLUS **24/36/64**

The telco installs an **RJ21X** connector within 25 feet of the KSU.

To connect the **RJ21X** to the KSU:

1. Plug a 25-pair cable into the **RJ21X** connector at one end.
2. At the other end, plug the A1 connector for each of the following boards:

<u>System</u>	<u>New Connector</u>
BUSINESSCOM PLUS 24	A1
BUSINESSCOM PLUS 36	A1
BUSINESSCOM PLUS 64	A1 A2

WARNING: ONLY FCC-LICENSED PERSONNEL MAY INSTALL A CONNECTING BLOCK BETWEEN THE **RJ21X** AND THE KSU.

Static
Precautions

The **PCBs** are sensitive to static electricity. The rules below are safe-handling techniques for **static-sensitive** equipment. Following them when installing or maintaining **PCBs** will help you to guard against static damage.

- o Always handle a PCB in the static-free, conductive bag in which it was shipped. Do not use this bag as a holder for the PCB when it is outside the bag.
- o Do not slide the PCB across a work surface.
- o Only surfaces or items at ground potential should come into contact with **PCBs**.
- o Keep work area free of any plastic or metal objects.
- o Carefully insert or remove a PCB from the KSU.

WARNING: BEFORE INSERTING OR REMOVING A PCB, BE SURE THAT THE SYSTEM POWER IS OFF.

Minimizing
Static
Charges

To minimize static charges when installing, removing, or maintaining **PCBs**:

- o Discharge any accumulated body static by touching a grounded object
- o Wear a wrist strap attached to the ground lug of the KSU.
- o Keep foot movement to a minimum.

Installing the **PCBs**

Factory-Equipped
PCBs

The BUSINESSCOM PLUS **8/12** KSU is shipped with the following **PCBs** installed (shown in bold print on Figure 2-7 BUSINESSCOM **8/12** KSU):

- o **B-CP8SU-B**, the central processor, supports Station Ports 10 - 17
- o **B-3COU-A** supports CO lines 1 - 3
- o **B-5ROU-2A** provides system-operating software.

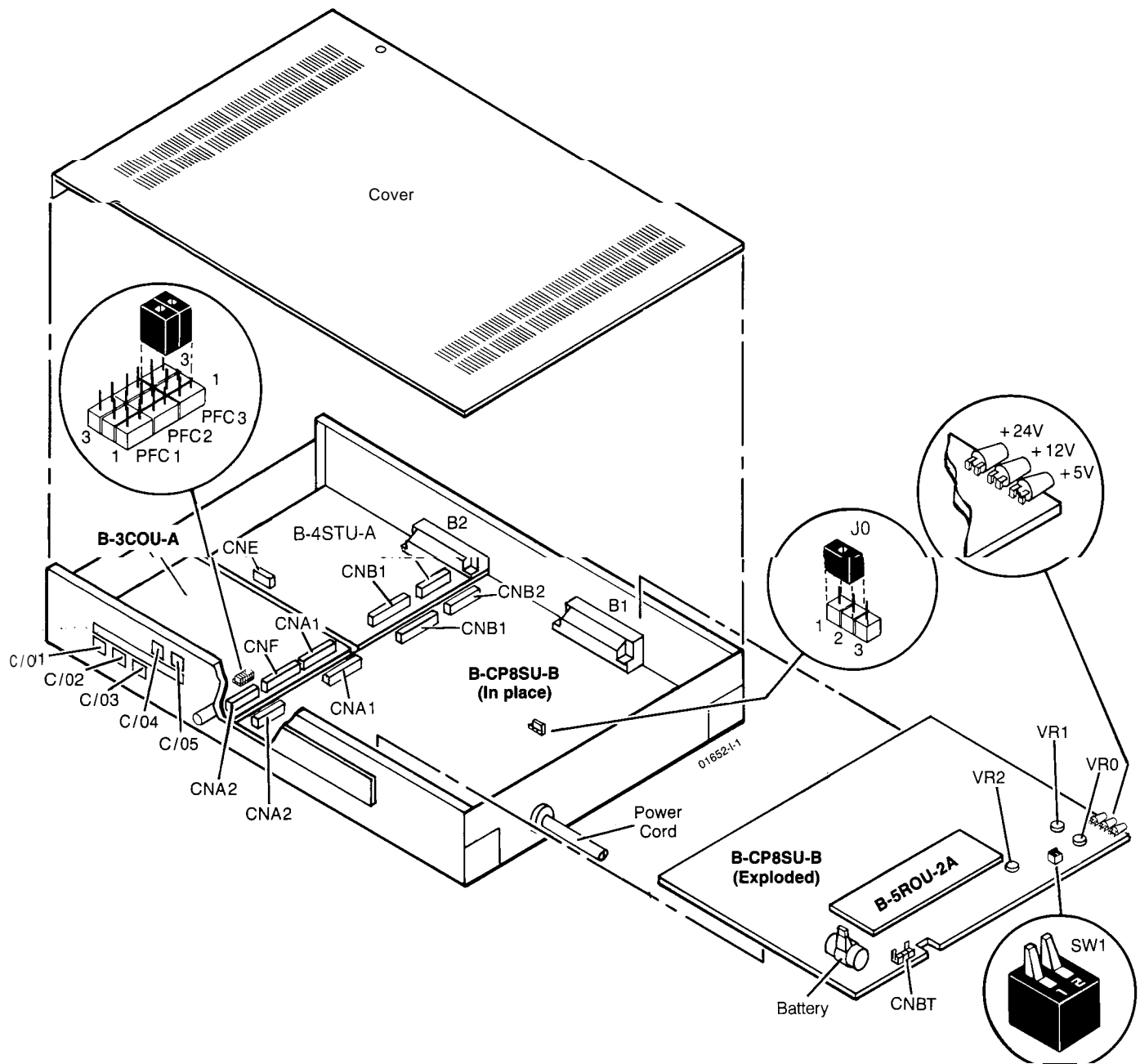


FIGURE 2-7 BUSINESSCOM **8/12** KSU (P/N 15000 or P/N 15001)

B-CP8SU-

Preparation,
BUSINESSCOM PLUS **8/12**

Before installing optional **PCBs**, prepare the **B-CP8SU-** as follows:

1. Strap the battery into place, but do not plug it into connector **CNBT**. When the battery is weak or is not connected, the letters **BAT** flash in the upper right-hand corner of all Display phones.
2. On switch **SW1**, set toggle 1 so that it is opposite the number 1.
3. On **SW1**, set toggle 2 so that it is next to the number 2 for internal Music On Hold (**MOH**) or opposite the number 2 for external **MOH**. Potentiometer **VRO** adjusts the level of **MOH**. If external **MOH** is desired, see Installing External **MOH** in **INSTALLING OPTIONAL EQUIPMENT**.
4. When the **B-22SU-B** PCB is required,
 - o set **JO** strap to the 2-3 position
 - o reinitialize the system
 - o see Installing the **B-22SU-B** PCB in **INSTALLING OPTIONAL EQUIPMENT**

If the **B-22SU-B** PCB is not required,
o set **JO** to the 1-2 position

B-MPU- & B-TSU-A

Preparation,
BUSINESSCOM PLUS **24/36/64**

Prepare the **B-MPU-** PCB and the **B-TSU-A** PCB as follows:

1. Strap the battery on the **B-MPU-** into place, but do not plug it into connector **CN1**. When the battery is weak or not connected, the letters **BAT** flash in the upper right-hand corner of Display phones.
2. Set the **WR** switch on the **B-MPU-** to the initial (I) position.
3. Set switch **SW1** on the **B-TSU-A** so that it is next to the number 1 for internal Music On Hold (**MOH**) or opposite the number 1 for external **MOH**. Potentiometer **VR1** adjusts the volume level of the **MOH**. If external **MOH** is required, see Music On Hold in **INSTALLING OPTIONAL EQUIPMENT**.

The **B-STU-**, **B-COU-**, **B-XPU-A**, and the **B-LPU-A** **PCBs** may be installed directly from the box, without any preparation.

PCB Insertion

Each PCB is keyed. To insert a PCB:

1. Place the connector edge into the slot, keeping the component side of the PCB facing towards your left.
2. Install the PCB with the thumb of each hand on the card edge and the fingers on the **KSU** frame.
3. Push the PCB until firmly seated.

Battery Be sure that the lithium **battery** is in place but unconnected. Display phones indicate if the battery is not connected by flashing the letters **BAT** in the upper right corner of the display.

Inserting PCBs in BUSINESSCOM PLUS 8/12

**B-22SU-B,
B-4STU-A, &
B-2COU-A**

To install a **B-4STU-A** (when only key telephone circuits are used), **B-22SU-B**, and/or a **B-2COU-A** PCB, refer to Figure 2-7 and Figure 2-8 Installing the B-COU-A PCB, BUSINESSCOM PLUS 8/12 and connect the ribbon cables as follows:

<u>PCBs</u>	<u>Connector</u>
B-CP8SU- & B-3COU-A	CNA1 - CNA1 CNA2 - CNA2
B-CP8SU- & (B-4STU-A or B-22SU-B)	CNB1 - CNB1 CNB2 - CNB2
B-2COU-A & (B-4STU-A or B-22SU-B)	CNE - CNE
B-3COU-A & B-2COU-A	CNF - CNF

The **B-22SU-B** or **B-BSTU-A** provides ports 18 - 21. The key telephone ports on the **B-22SU-B** are ports 18 and 19. The OPX ports on the **B-22SU-B** are ports 20 and 21. The **B-COU-A** provides CO lines 4 and 5.

NOTE: The laminated side of the cable's connecting edge has a blue stripe across it. The unlaminated side is used as a contacting surface.

**Setting
SW1, B-CP8SU-**

Set **SW1-1** on the **B-CP8SU-** PCB to the initial position.

To select internal or external Music On Hold on a BUSINESSCOM PLUS 8/12, set **SW1-2** as follows:

<u>Feature</u>	<u>SW1 Setting</u>
Internal MOH	Position 2
External MOH	Opposite end of Position 2

**Potentiometer
Adjustments**

The following potentiometers on the **B-CP8SU-** PCBs are used for making adjustments at the following levels:

<u>Potentiometer</u>	<u>Adjustment</u>
VRO	MOH Background Level
VR1	External Zone output level
VR2	Level of BGM

II-4 INSTALLING THE PCBs AND CHECKING WIRING

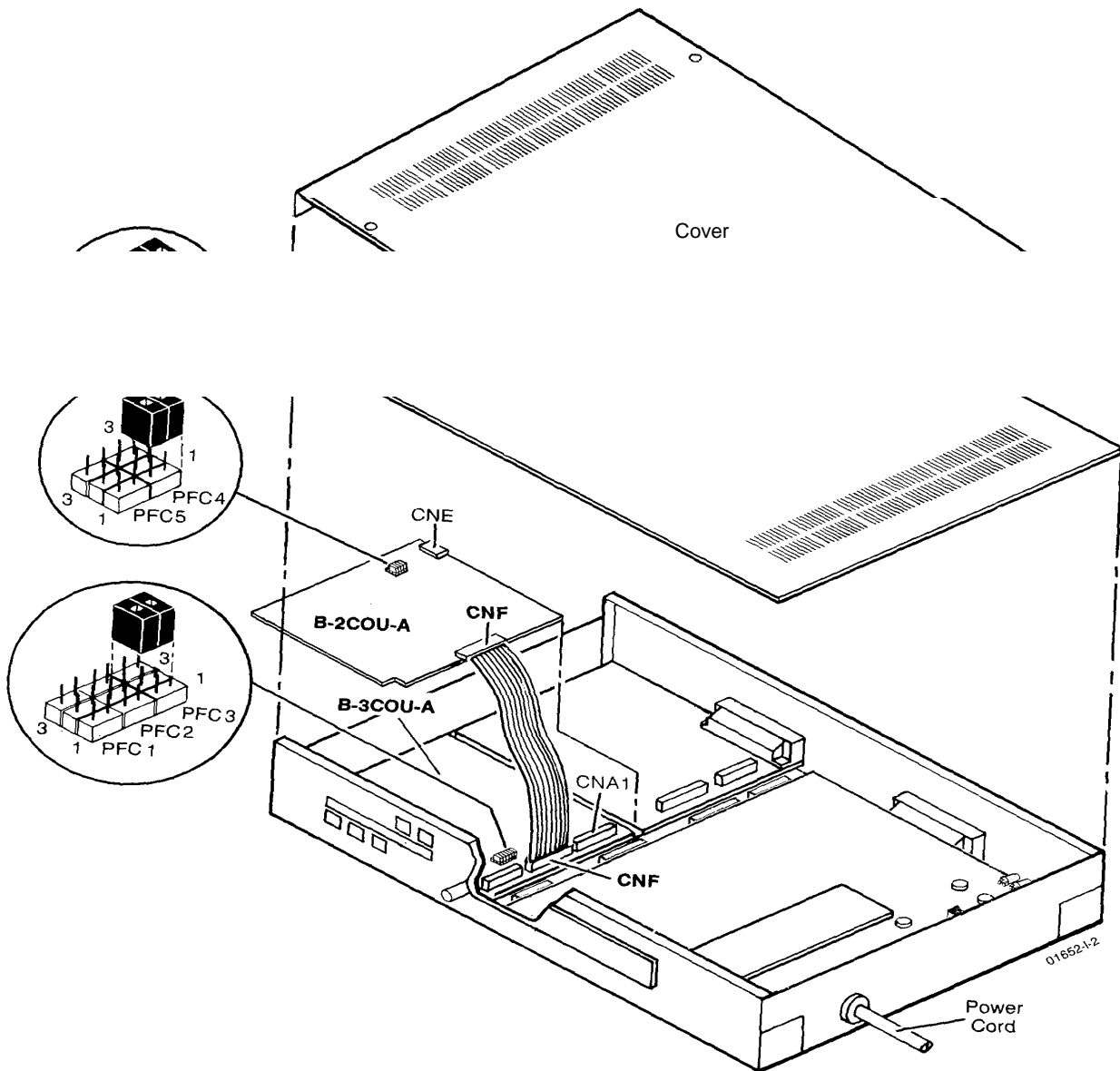


FIGURE 2-8 INSTALLING THE B-2COU-A PCB,
BUSINESSCOM PLUS 8/12

Inserting **PCBs** in the BUSINESSCOM PLUS **24/36/64**

Setting WR Set the WR switch on the B-MPU- PCB to the initial position.

Setting
SW1, B-TSU-A To select internal or external Music On Hold on a BUSINESSCOM PLUS **24/36/64**, set SW1 on the B-TSU-A PCB as follows:

<u>Feature</u>	<u>SW1 Setting</u>
Internal MOH	Position 1
External MOH	Opposite end of Position 1

Potentiometer
Adjustments

Potentiometer **VR1** on the B-TSU-A PCB is used to adjust the background level for MOH.

(For installation of optional **PCBs**, see INSTALLING OPTIONAL EQUIPMENT)

Measuring
DC Voltage

After all the **PCBs** have been checked but before the stations are connected, measure the DC voltage at each 625-type station jack. Start your measurements from the first station.

<u>Connect Voltmeter</u> <u>(+/-)</u>	<u>Approximate</u> <u>Voltage</u>
Green/Red	13 VDC
Black/Yellow	28 VDC

If your voltage readings do not match those in the table, check the station cabling and wiring from the Main Distribution Frame **66M1-50** block against the information shown on the **cutdown** sheets at the end of this section.

Normal
Voltages

When the telephone is installed, the following are the normal voltages at the AT/AR pair located on the B Block or 625-type jack:

<u>VDC</u>	<u>Status</u>
12.8	on hook
7.4	off hook

INSTALLING OPTIONAL EQUIPMENT

This section provides information on equipment and accessories required to use optional features.

Installing the B-LBR-A PCB for Loud Bell Relay Operation

Refer to Figure 2-9 Installation of B-TBU-D PCB for B-LBR-A Operation.

1. Unplug the telephone, if previously installed.
2. Remove two screws from bottom of telephone, and open it.
3. Remove the existing B-TBU-A/B/C or B-SPDU-A PCB, and replace it with the B-TBU-D PCB.
4. Remove the existing 4-conductor modular jack.
5. Replace it with the 6-conductor modular jack from the kit.

Installation

1. Connect:
 - a. the white lead of the 6-conductor jack to terminal C on the B-TBU-D PCB
 - b. the blue lead to terminal **E** on the B-TBU-D PCB
 - c. the plastic connector of the 6-wire modular jack to the CNL connector on the B-ANU-A/B PCB.
2. Install the 4-conductor jumper cable between the CNO connector on the B-ANU-A/B PCB and the CN2 connector on the B-TBU-D PCB.
3. Reassemble the telephone.
4. Label the set to show that a B-TBU-D is installed.

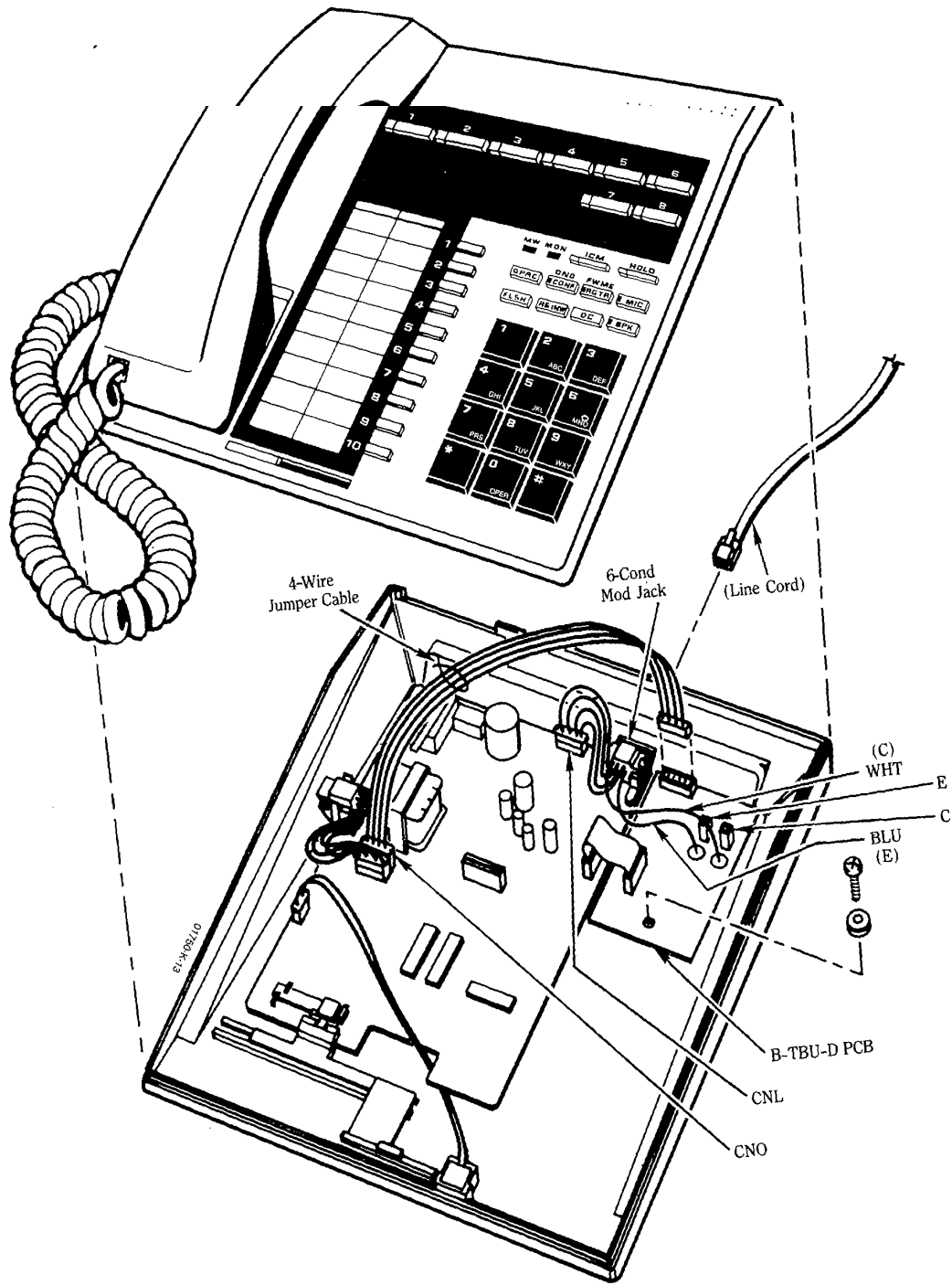
Refer to Figure 2-10 BUSINESSCOM PLUS Loud Bell Relay Wiring:

1. Replace the standard 1-conductor modular line cord with a 6-conductor modular line cord.
2. Replace the 4-conductor modular jack with a 6-conductor modular jack (not supplied with interface kit).
3. Connect 3-pair twisted station cable between the 6-wire modular jack and the station block (**B** Block) at the MDF.

Terminate the 3-pair twisted cable conductors to the jack as follows:

<u>Cable Conductor</u>	<u>Conductor</u>
WHT/BLU	GRN
BLU/WHT	RED
WHT/ORN	BLR
ORN/WHT	YEL
WHT/GRN	WHT
GRN/WHT	BLU

INSTALLING OPTIONAL EQUIPMENT



FOR B-LBR-A OPERATION

FIGURE 2-9 INSTALLATION OF B-TBU-D PCB

INSTALLING OPTIONAL EQUIPMENT

For any station position

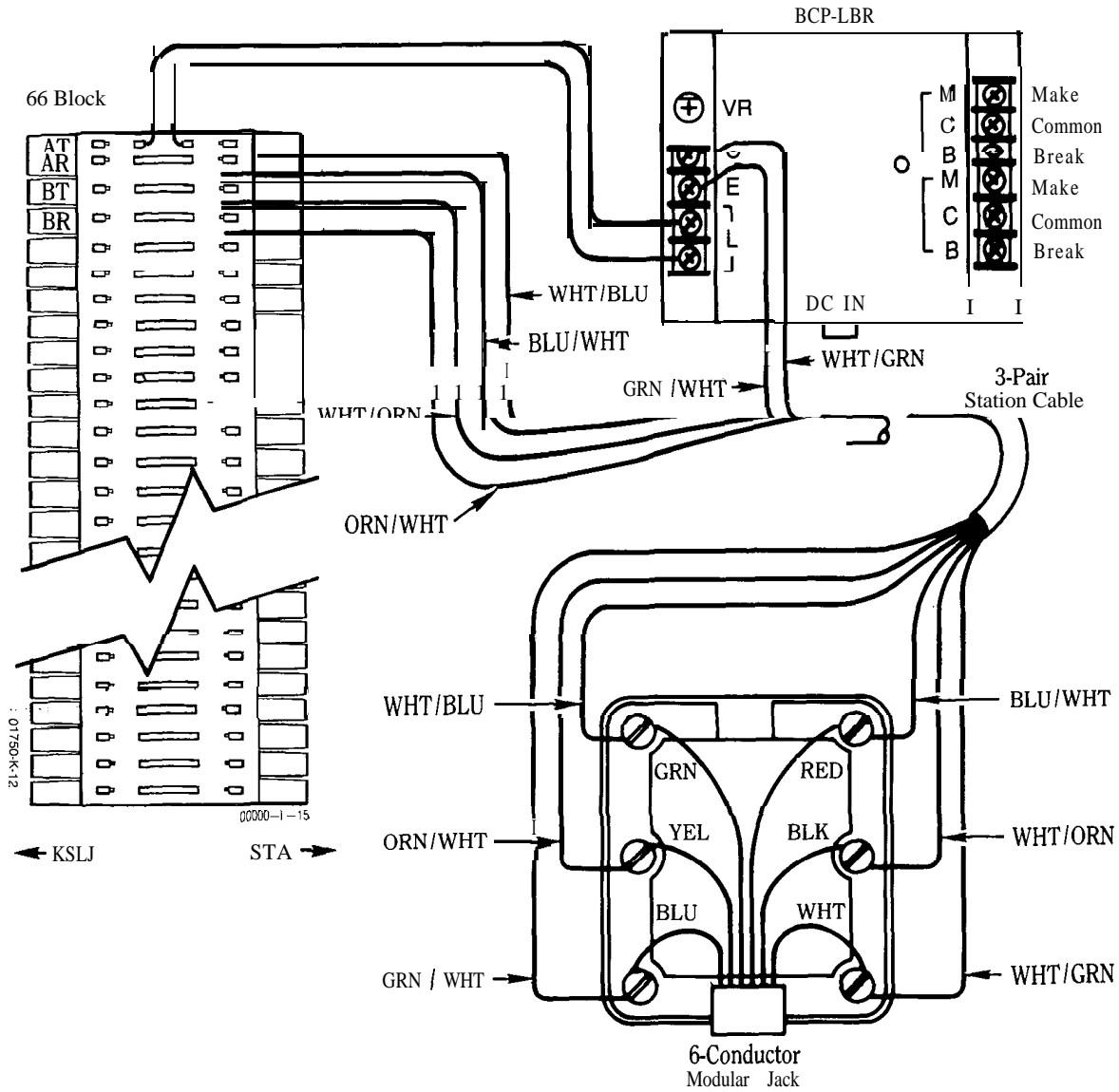


FIGURE 2-10 BUSINESSCOM PLUS LOUD BELL RELAY WIRING

 Installing the B-LBR-A PCB for Loud Bell Relay Operation (**cont'd**)

Refer to Figure 2-10 BUSINESSCOM PLUS Loud Bell Relay Wiring.

At the Station (**B**) Block end:

1. Terminate the **WH/BL** and **WH/OR** pairs normally. Do not install bridging clips.
2. Connect:
 - o the **WH/GN** lead to screw terminal C on the B-LBR-A box
 - o the **GN/WH** lead on terminal E.
 - o one pair of cross-connect cabling between the two L terminals on the B-LBR-A box and each side of the AT station leads on the B Block, for this extension.
3. Install bridging clips for the AT, BT, and BR clips on the B Block.
4. Plug the modular line cord into the 6-conductor modular jack.
5. Check that the telephone functions.

Two sets of relay connections use terminals M, C, and B. These sets of connections operate simultaneously. The relay contacts are rated at 1.25 amps at 24 VDC for resistive loads. These low power contacts can be used for an audio source, amplifier-enable contacts, or other visual or audible indicators.

M = MAKE = Normally Open
 B = BREAK = Normally Closed
 c = COMMON

Refer to Figure 2-11 Using the B-LBR-A PCB to Control an Audio Loud Bell:

1. Connect the **18-Volt** AC/DC Adaptor to the connector marked "DC IN" on the B-LBR-A box.
2. Plug in the adaptor to a **120-Volt** AC outlet.
3. Keeping in mind the operation and adjustment considerations listed below, test the operation of the Loud Bell Relay Unit:
 - o Whenever the telephone rings, the Loud Bell Relay activates.
 - o Intercom calls in the Handsfree Answerback Mode do not activate the B-LBR-A unit.
 - o Use variable resistor VR on the B-LBR-A unit to adjust the duration of the B-LBR-A activation.
 - o When the B-MPU-C PCB (main processor) is installed in the system, program the extension equipped with the B-LBR-A Unit for Ringing Intercom Calls (Program 59 - Headset Intercom Option: Ext. No. = XX - 1).
 - o When a ringing signal activates the B-LBR-A, the LED on the B-LBR-A lights.

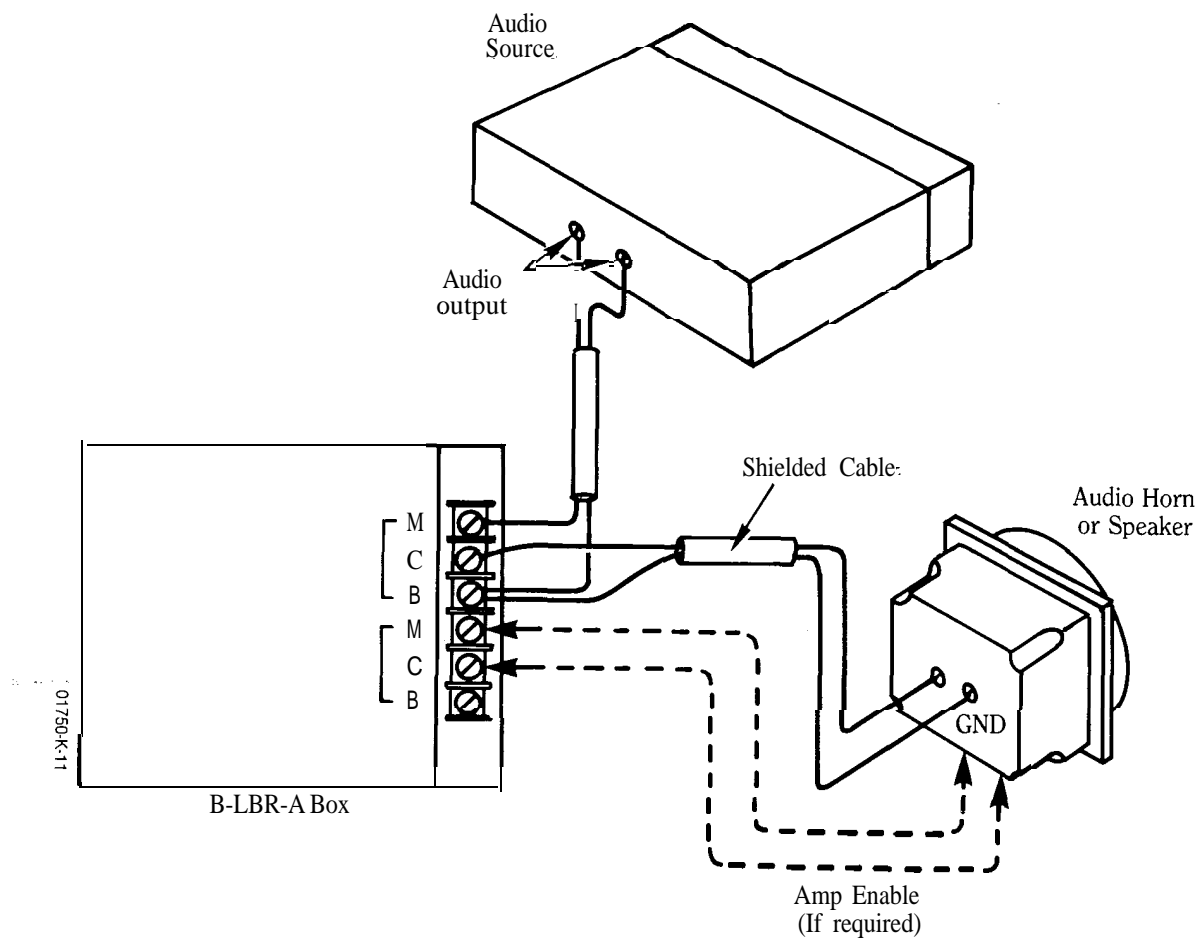


FIGURE 2-11 USING THE B-LBR-A PCB TO CONTROL AN AUDIO LOUD BELL

INSTALLING OPTIONAL EQUIPMENT

Installing

Background Music This section provides information on installing Background Music (**BGM**) in the BUSINESSCOM PLUS System.

Specifications

BGM (all systems)

Input Impedance: 600 ohms
 Input Level: Nominal 250 mV (-10dBm)
 Maximum Input: 1 Vrms

BGM Installation, BUSINESSCOM PLUS 8/12

Refer to Figure 2-12 Installation of Background Music, BUSINESSCOM PLUS 8/12:

1. Connect BGM source inputs to clips **43,44** of the **B1** Block. (If BGM source is also used as a source for MOH, cross connect clips **43,44** to clips 45, 46, respectively.)
2. Adjust BGM level with VR2, on the **B-CP8SU- PCB**.
3. Program required information in Programs 18 and 26.

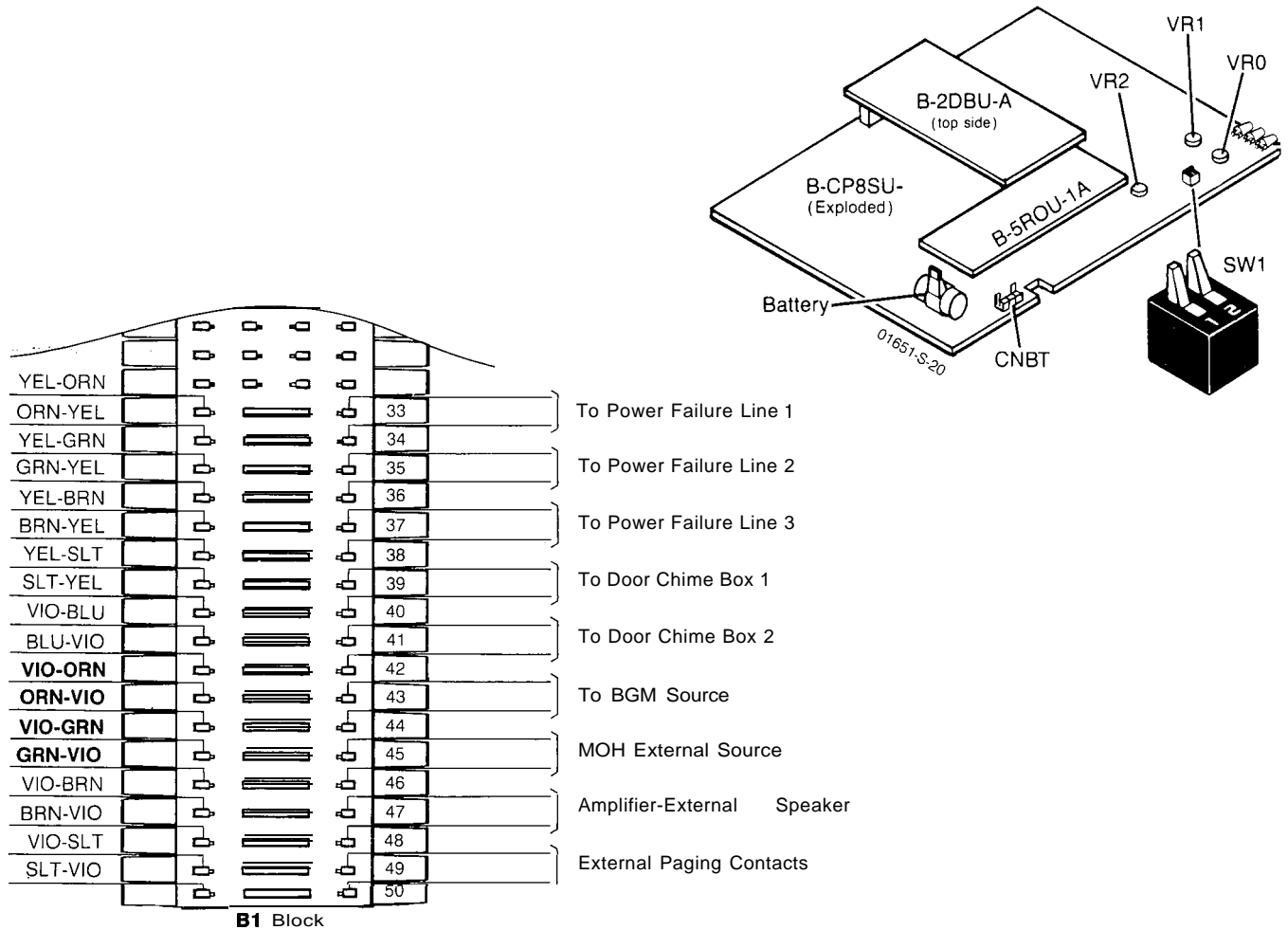


FIGURE 2-12 INSTALLATION OF BACKGROUND MUSIC, BUSINESSCOM PLUS 8/12

INSTALLING OPTIONAL EQUIPMENT

BGM Installation, BUSINESSCOM PLUS **24/36/64**

Refer to Figure 2-13 Installation of Background Music, BUSINESSCOM PLUS **24/36/64**:

1. Connect inputs from BGM source to clips **21, 22** of the **D1** Block. If the BGM source is not used as a source for MOH, proceed to step 3.
2. If BGM source is also used as a source for MOH:
 - a. Overlap approximately four inches of wire, and punch down the wire approximately four inches from the end.
 - b. Punch down overlap from wire connected at clip 21 to clip 9.
 - c. Punch down overlap from wire connected at clip 22 to clip 10.
3. Adjust the BGM level with **VR1** on the B-HBU-A PCB.
4. Program required information in Program 26.

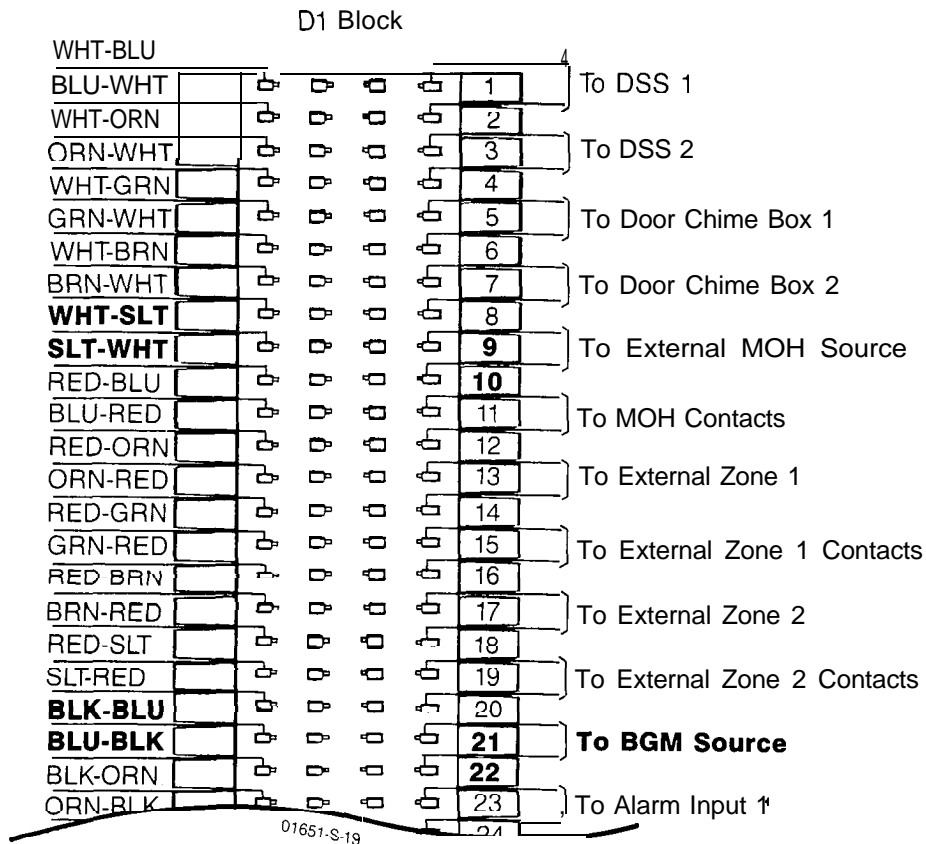


FIGURE 2-13 INSTALLATION OF BACKGROUND MUSIC,
BUSINESSCOM PLUS **24/36/64**

INSTALLING OPTIONAL EQUIPMENT

Installing External Music On Hold (MOH)

External MOH An external music source can serve as a substitute for the internally-synthesized MOH that is available.

Specifications

BGM (all **systems**) Input Impedance: 600 ohms
 Input Level: Nominal 250 mV (-10dBm)
 Maximum Input: 1 Vrms

MOH Installation, BUSINESSCOM PLUS 8/12

Refer to Figure 2-14 Installation of External Source of Music On Hold, BUSINESSCOM PLUS 8/12:

1. Connect inputs from an external MOH source to clips 45,46 on the B1 Block.
2. Move switch 2 on the B-CP8SU- PCB in the KSU to opposite the 2 designation. Use SW1 on switch 2 to select either internal MOH or external MOH.
3. Adjust the MOH level with VR0 on the B-CP8SU- PCB.

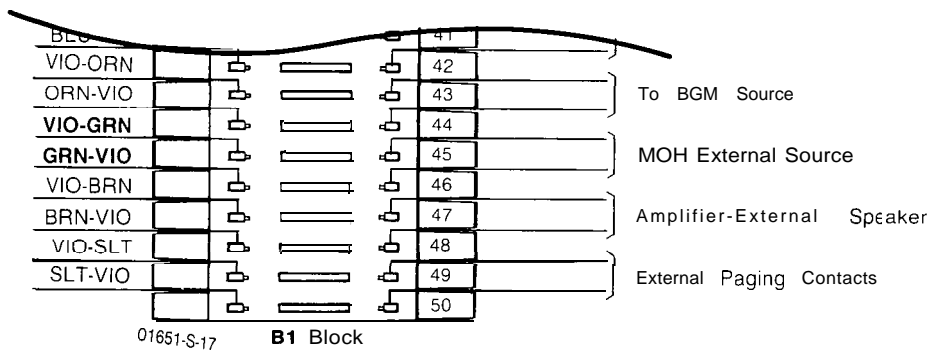
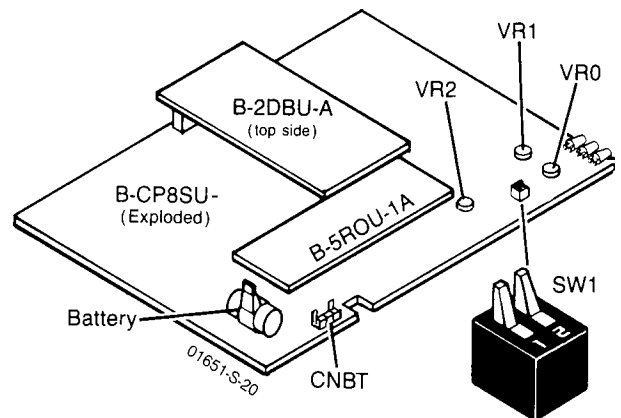


FIGURE 2-14 INSTALLATION OF EXTERNAL SOURCE OF MUSIC ON HOLD, BUSINESSCOM PLUS 8/12

INSTALLING OPTIONAL EQUIPMENT

MOH Installation, BUSINESSCOM PLUS **24/36/64**

Refer to Figure 2-15 Installation of External Source of Music On Hold in a BUSINESSCOM PLUS **24/36/64**:

1. Connect inputs from external MOH to clip **9,10** on the **D1** Block.
2. To select external MOH, move SW1 on the B-TSU-A PCB to the opposite position of that marked 1. (The 1 position is used to select internal MOH.)
3. Adjust the audio level of MOH with **VR1** on the B-TSU-A PCB.

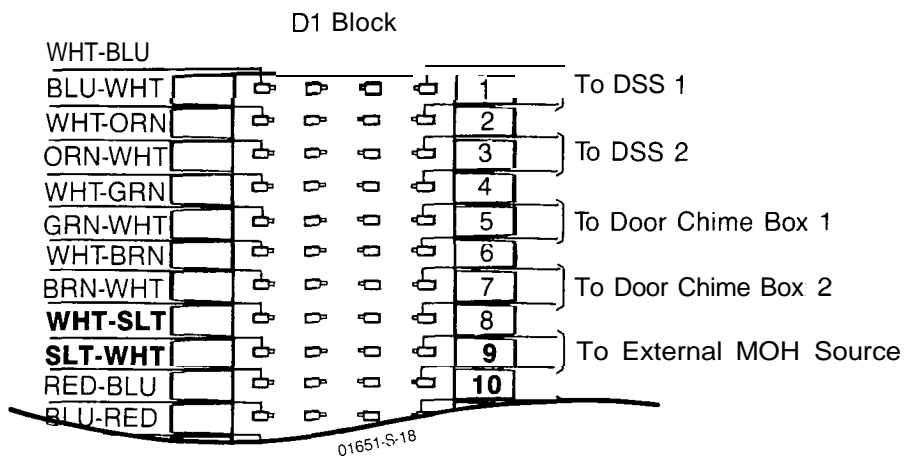


FIGURE 2-15 INSTALLATION OF EXTERNAL SOURCE OF MUSIC ON HOLD,
BUSINESSCOM PLUS **24/36/64**

INSTALLING OPTIONAL EQUIPMENT

Installing Music On Hold (MOH) Contacts

MOH Contacts,
BUSINESSCOM PLUS **24/36/64**

This section provides information on installing an external device to MOH Contacts. The B-HBU-A PCB has an auxiliary relay for MOH that is energized when a call is placed on Hold. The energized relay provides a closure for control of an audio source.

Specifications
MOH Contacts

Current Rating: 1.25 amps for 24 VDC resistive loads

Installation

- Refer to Figure 2-16 Music On Hold Contacts Wiring:
1. Connect wires to clips **11,12** on the **D1** Block.
 2. Connect the other ends of the wires to the device.

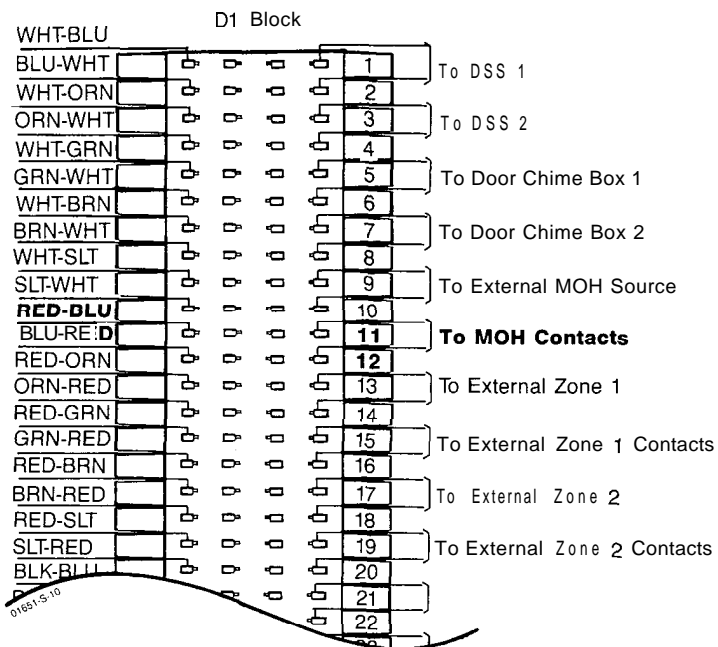


FIGURE 2-16 MUSIC ON HOLD CONTACTS WIRING

INSTALLING OPTIONAL EQUIPMENT

Installing Paging Equipment

External Paging Contacts

External zones have normally open contacts. If a zone is activated, the contacts close. When a zone receives BGM, the contacts become continually closed.

The relays for each zone are energized when Paging amplifiers are in use, including CO audible and BGM (if programmed). The relay is on the **B-CP8SU-** PCB in the BUSINESSCOM PLUS **8/12**. The relays are on the B-GCU-A PCB, a daughter board on the tone sender PCB (B-TSU-A) in the BUSINESSCOM PLUS **24/36/64**.

Specifications Current Rating: 1.25 amps for 24 VDC resistive loads

Installation, BUSINESSCOM PLUS **8/12**

Refer to Figure 2-17 External Paging Contacts Wiring on a BUSINESSCOM PLUS **8/12**:

1. Connect wires to clips **49,50** on the **B1** Block.
2. Connect the other ends of the wires to the device.

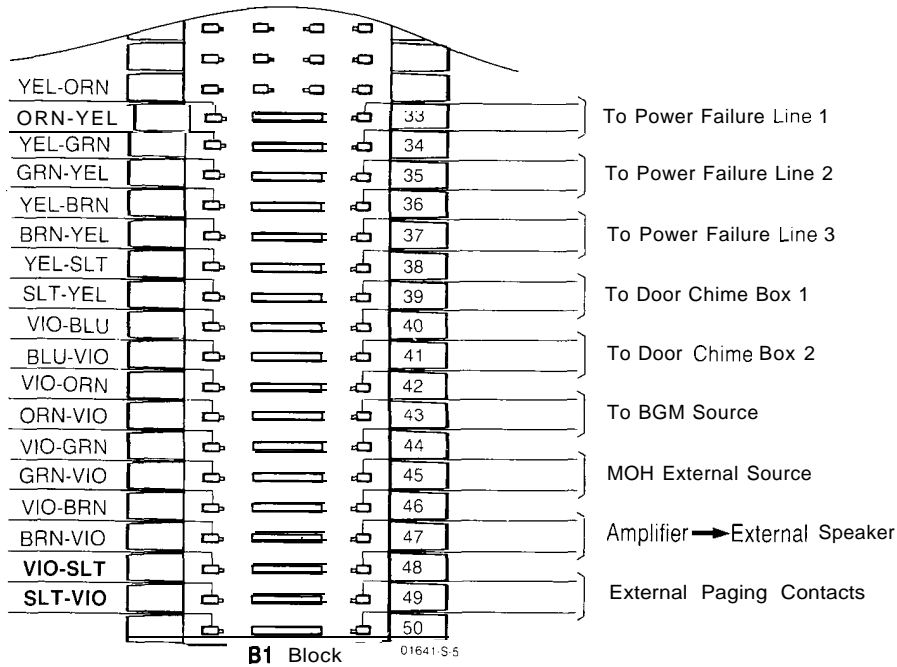


FIGURE 2-17 EXTERNAL PAGING CONTACTS WIRING, BUSINESSCOM PLUS **8/12**

INSTALLING OPTIONAL EQUIPMENT

Installation

BUSINESSCOM PLUS 24/36/64

Refer to Figure 2-18 External Paging Contact Wiring, BUSINESSCOM PLUS 24/36/64:

1. Connect wires to clips **15,16** on the **D1** Block for the first set of External Paging Contacts
2. Connect the other ends to the device.
3. Connect wires to clips **19,20** on the **D1** Block for the second set of External Paging Contacts, and connect the other ends to the device.

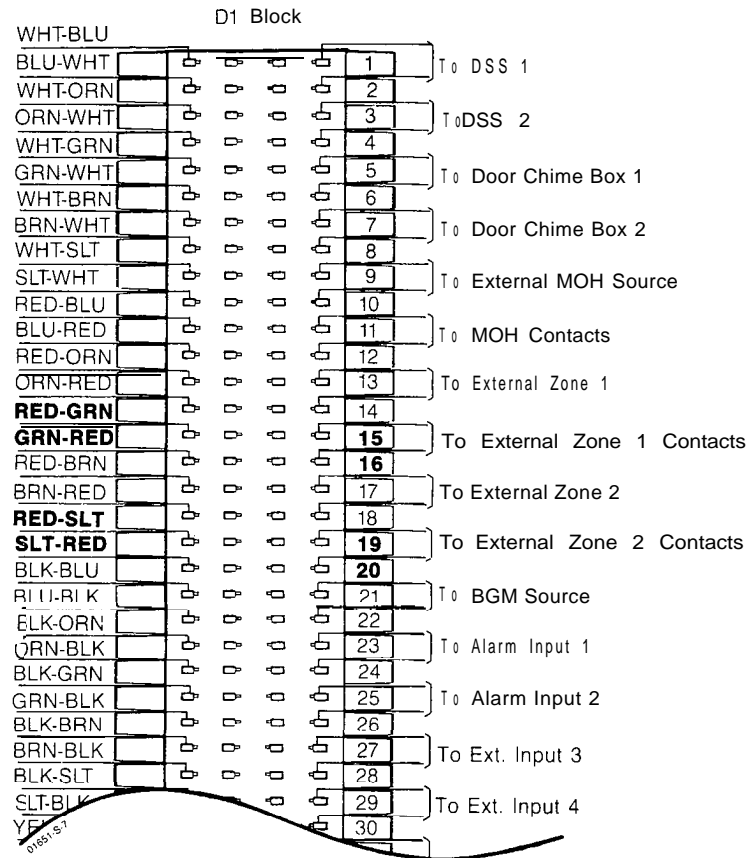


FIGURE 2-18 EXTERNAL PAGING CONTACTS WIRING, BUSINESSCOM PLUS 24/36/64

INSTALLING OPTIONAL EQUIPMENT

Installing External Paging Output

This section provides information on the installation of external devices to the external zone(s). Each zone can receive CO Audible, BGM, External Alarm Signals, and Paging. Speakers can be used to broadcast these signals at the zone. External page zones can be used to provide talk-back paging.

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

Installation of External Devices, BUSINESSCOM PLUS 8/12

Refer to Figure 2-19 External Paging Output Wiring, BUSINESSCOM PLUS 8/12:

1. Connect wires from clips **47, 48** on the **B1** Block to an amplifier. The amplifier inputs must match the above specifications. Attach the speaker to the amplifier.
2. Program required information in Programs 2, 18, 26, and 28.
3. Adjust the zone volume level with **VR1** on the **B-CP8SU-PCB**.

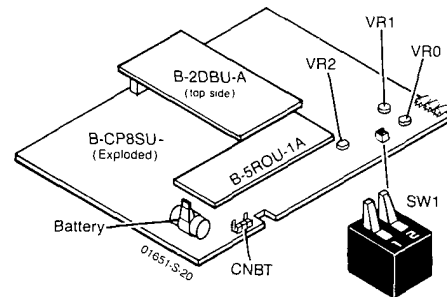
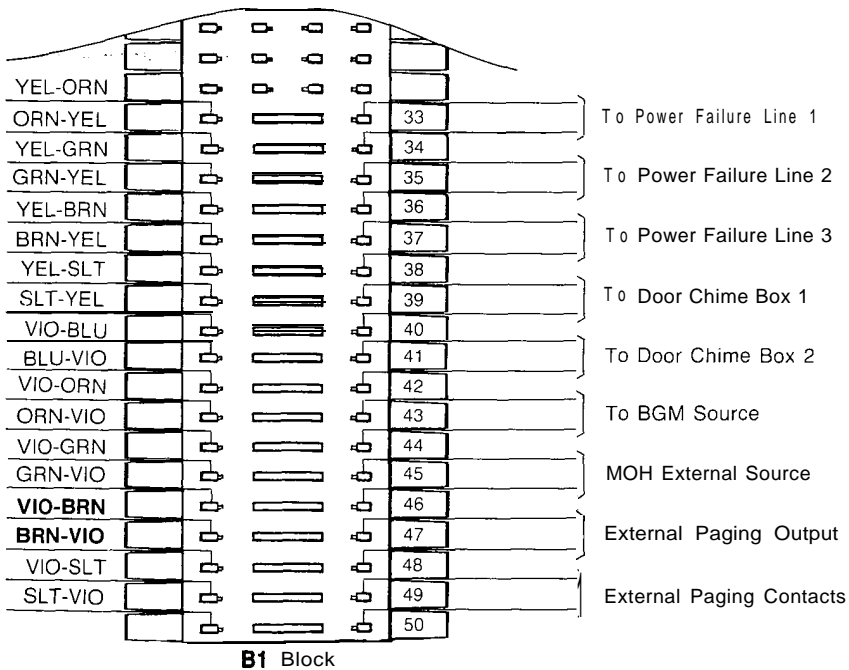


FIGURE 2-19 EXTERNAL PAGING OUTPUT WIRING, BUSINESSCOM PLUS 8/12

INSTALLING OPTIONAL EQUIPMENT

Installation of External Devices, BUSINESSCOM PLUS **24/36/64**

Refer to Figure 2-20, External Paging Output Wiring on a BUSINESSCOM PLUS **24/36/64**:

1. Connect wires from clips **13,14** on the **D1** Block to an amplifier for External Zone 1. The amplifier inputs must match the specifications above. Attach the speaker to your amplifier.
2. Connect wires from clips **17,18** on the **D1** Block to an amplifier for External Zone 2. The amplifier inputs must match specifications above. Attach the speaker to your amplifier.
3. Program the necessary information on Programs 2, **18**, 26, and 28.
4. Adjust the volume level of External Zone 1 with **VR1** on the B-GCU-A PCB.
5. Adjust the volume level of External Zone 2 with **VR2** on the B-GCU-A PCB.

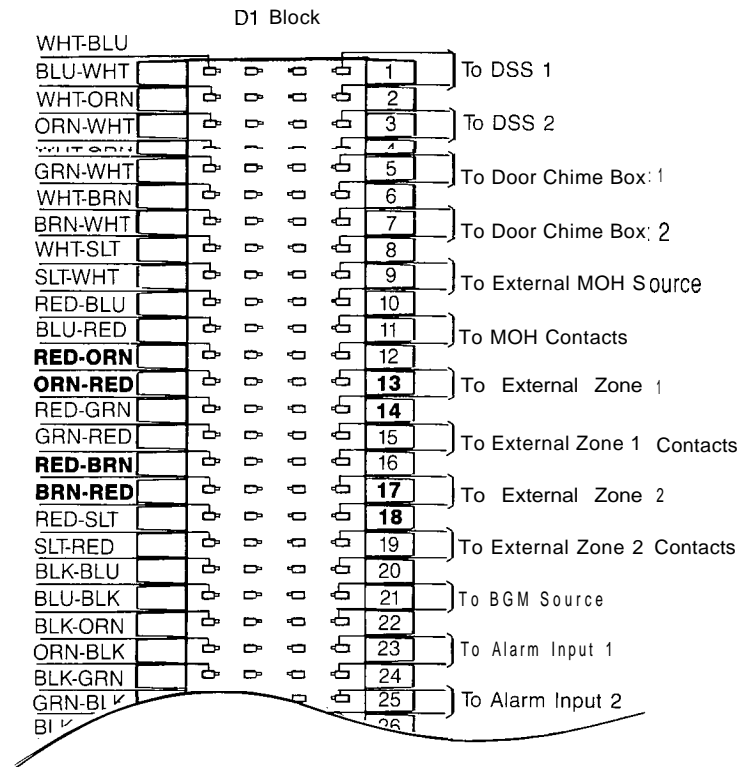


FIGURE 2-20 EXTERNAL PAGING OUTPUT WIRING,
BUSINESSCOM PLUS **24/36/64**

INSTALLING OPTIONAL EQUIPMENT

Installing External Alarm Signals to Stations

This section provides information on the installation of an external alarm. Two alarms can be connected to the system. Programming determines if the alarm inputs require an open or a closed circuit.

Specifications Loop Resistance: 1000 ohms max.
The BUSINESSCOM PLUS **24/36/64** requires a B-HBU-A PCB of Series 3 or later.

Installation

BUSINESSCOM PLUS **8/12**

Refer to Figure 2-21 Installation of External Alarm Signals to Station, BUSINESSCOM PLUS **8/12**:

1. Connect wires from External Alarm 1 to clips **37, 38** on the B2 Block.
2. Connect wires from External Alarm 2 to clips **39, 40** on the B2 Block.
3. Program the necessary information in Programs 18, 28, and 53.

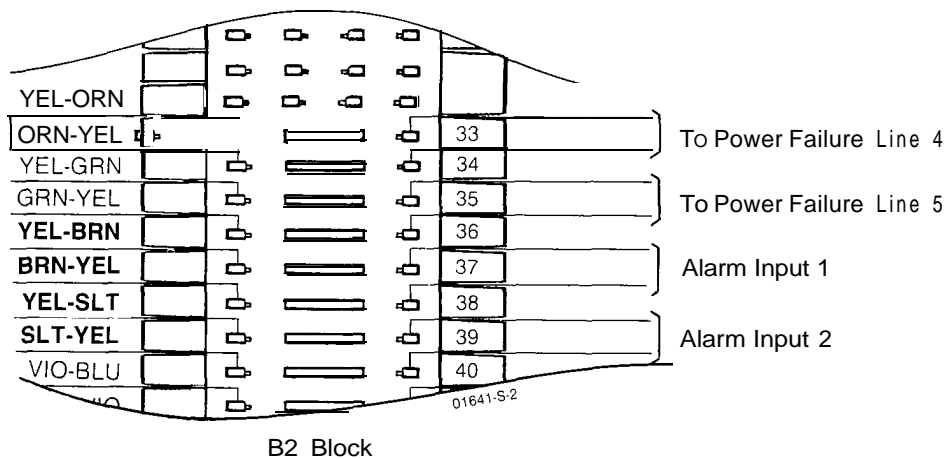


FIGURE 2-21 INSTALLATION OF EXTERNAL ALARM SIGNALS TO STATIONS, BUSINESSCOM PLUS **8/12**

INSTALLING OPTIONAL EQUIPMENT

Installation, BUSINESSCOM PLUS **24/36/64**

Refer to Figure 2-21 Installation of External Alarm Signals to Stations, BUSINESSCOM PLUS **24/36/64**:

1. Connect wires from External Alarm 1 to clips **23,24**.
2. Connect wires from External Alarm 2 to clips **25,26**.
3. Program necessary information in Programs 18, 28, and 53.

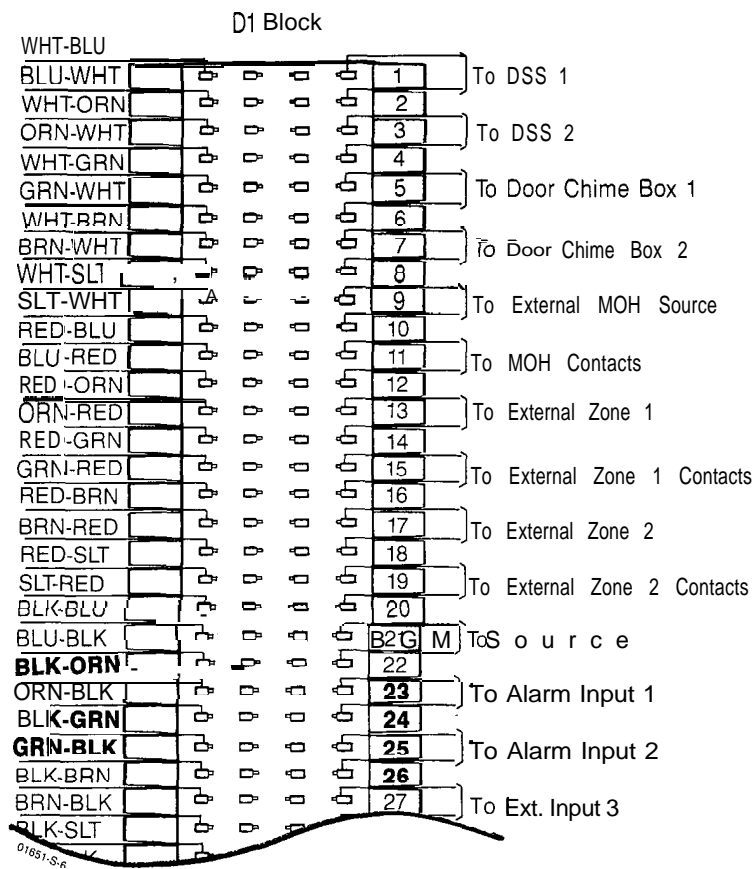


FIGURE 2-22 INSTALLATION OF EXTERNAL ALARM SIGNALS TO STATIONS, BUSINESSCOM PLUS **24/36/64**

INSTALLING OPTIONAL EQUIPMENT

----- Installing Power Failure External Bells

These customer-supplied bells provide ringing for incoming calls during an AC power failure only. Power failure single line (500/2500) sets can be used in place of power failure bells. Only FCC-certified installers are permitted to install Power Failure Bells.

Installation, BUSINESSCOM PLUS 8

Refer to Figure 2-23 Installation of Power Failure External Bells, BUSINESSCOM PLUS 8/12:

1. Connect external bell wires to the B1 Block at:
 - o Clips 33,34 for PF line 1
 - o Clips 35,36 for PF line 2
 - o Clips 37,38 for PF line 3
2. The B-3COU-A PCB in the KSU has six PFC straps. Two of these straps are designated for each of three PFC lines, for a total of three pairs of straps. These straps are designated as PFC1, PFC2, and PFC3.
 - Bridge PFC1, PFC2, and PFC3 to position 1,2 for power failure operation on PF lines 1, 2, and 3, respectively,
 - or
 - Bridge PFC1, PFC2, and PFC3 to position 2,3 for no power failure operation on the respective lines.

Installation, BUSINESSCOM PLUS 12

Refer to Figure 2-22:

1. Follow steps 1 and 2 above.
2. Connect external bell wires to the B2 Block at:
 - o Clips 33,34 for PF line 4
 - o Clips 35,36 for PF line 5
3. Bridge PFC4 and PFC5 on the B-2COU-A PCB in the KSU to position 1,2 for power failure operation on PF lines 4 and 5, respectively,
 - or
 - bridge to position 2,3 for no power failure operation on the respective lines.

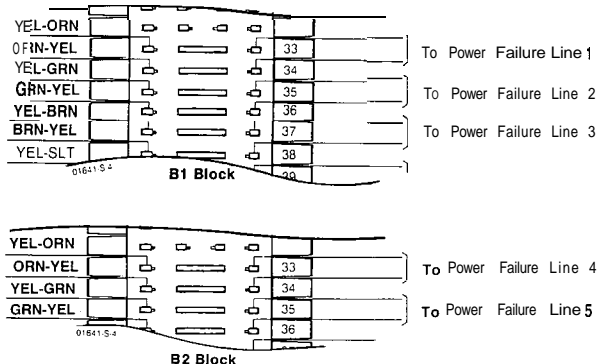


FIGURE 2-23 INSTALLATION OF POWER FAILURE EXTERNAL BELLS, BUSINESSCOM PLUS 8/12

INSTALLING OPTIONAL EQUIPMENT

 Installing Power Failure External Bells (cont'd)

Installation,
 BUSINESSCOM PLUS 24/36/64

Refer to Figure 2-24 BUSINESSCOM PLUS 64 B-PFU-A PCB
 Power Failure Straps:

1. Connect external bell wires to the C1 Block at:
 - o Clips 1,2 for PF line 1
 - o Clips 3,4 for PF line 2
 - o Clips 5,6 for PF line 3, etc.
2. PFC straps are located on the B-8MDU-A, B-12MDU-A, and B-PFU-A PCBs in the KSU of the BUSINESSCOM PLUS 24/36/64, respectively. For each line that is installed, bridge PFC straps in the 1,2 position. Strappings are:

BOARD 1		BOARD 2*	
<u>Strap</u>	<u>Line</u>	<u>Strap</u>	<u>Line</u>
PFC 1,2	1	PFC 1,2	13
PFC 3,4	2	PFC 3,4	14
PFC 5,6	3	PFC 5,6	15
PFC 7,8	4	PFC 7,8	16
PFC 9,10	5	PFC 9,10	17
PFC 11,12	6	PFC 11,12	18
PFC 13,14	7	PFC 13,14	19
PFC 15,16	8	PFC 15,16	20
PFC 17,18	9	PFC 17,18	21
PFC 19,20	10	PFC 19,20	22
PFC 21,22	11	PFC 21,22	23
PFC 23,24	12	PFC 23,24	24

*B-PFU-A PCB for BUSINESSCOM 64 KSU (P/N 15300) only.

Cut Through
 Power Failure
 Operation

In power failure operation on a BUSINESSCOM PLUS 8/12,
 lines cut through the following ports:

<u>Line</u>	<u>Port</u>
1	10
2	11
3	12
4	18
5	19

In power failure operation on a BUSINESSCOM PLUS
 24/36/64, lines cut through the following ports:

<u>Line</u>	<u>Port</u>	<u>Line</u>	<u>Port</u>
1	10	5	14
2	11	6	15
3	12	7	16
4	13	8	17

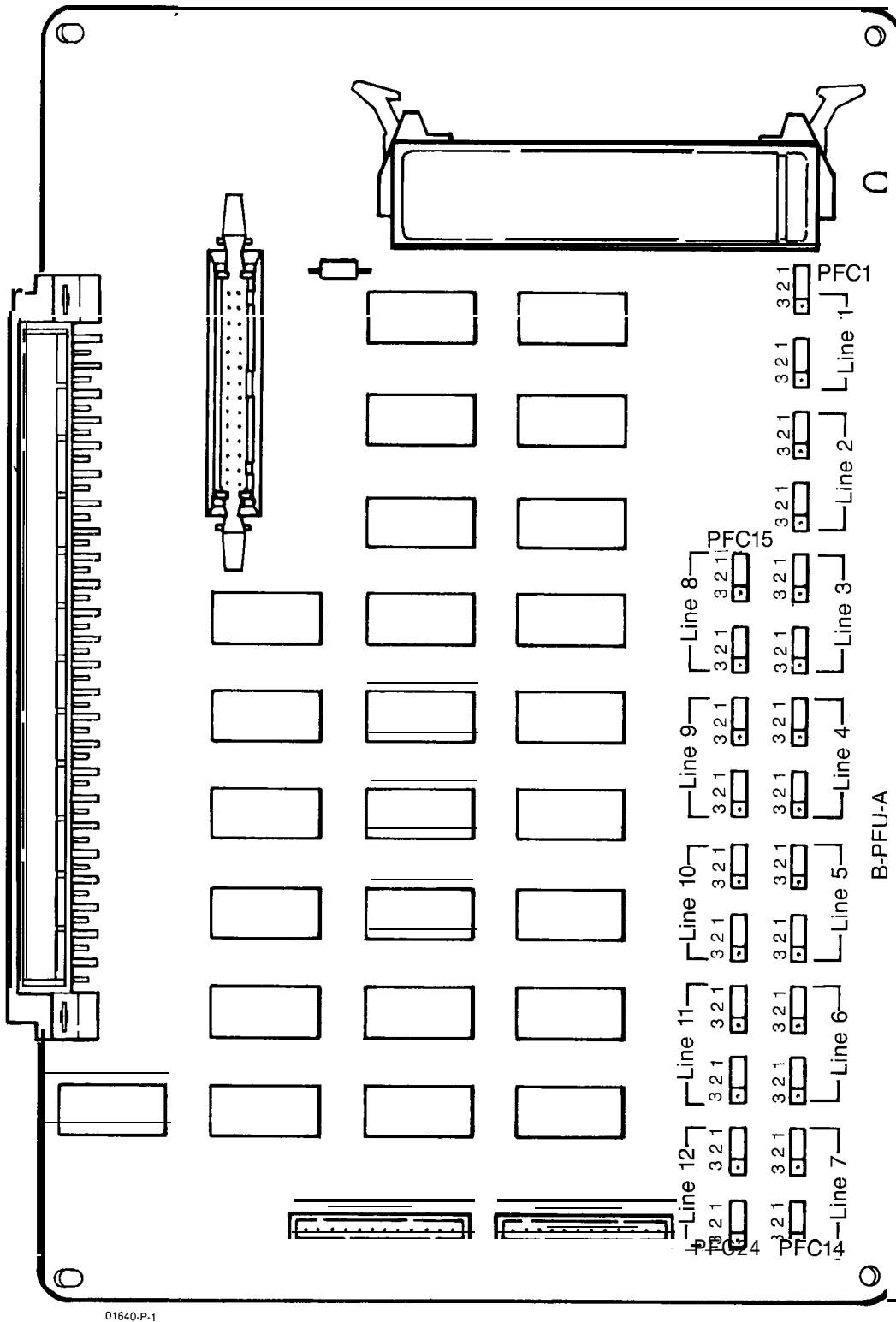


FIGURE 2-24 BUSINESSCOM PLUS 64 B-PFU-A PCB POWER FAILURE STRAPS

INSTALLING OPTIONAL EQUIPMENT

Installing Power Failure External Bells (cont'd)

' Only lines 9 - 12 and corresponding ports 18 - 21 are provided in KSU P/N 15200.

The following lines and ports are provided in KSU P/N 15300 only:

<u>Line</u>	<u>Port</u>	<u>Line</u>	<u>Port</u>
9	18	17	26
10	19	18	27
11	20	19	28
12	21	20	29
13	22	21	30
14	23	22	31
15	24	23	32
16	25	24	33

During a power failure, BUSINESSCOM PLUS key telephones can provide answer-only operation. Power Failure External Bells or ringers are required to provide an indication of an incoming call. Since a key telephone used for answer-only power failure service is connected to one specific line during power failure, none of its keys or indications functions.

A standard **500/2500-type** single line set, which is temporarily installed, can provide incoming and outgoing power failure operation at a power failure port. Power failure bells can be replaced with standard **500/2500-type** single line sets for permanent power failure-only operation, but a call is lost if it is in progress when the power returns.

INSTALLING OPTIONAL EQUIPMENT

Installing the Door Chime Box

This section provides information on installing the Door Chime Boxes (P/N 15040) in a BUSINESSCOM PLUS System.

Specifications 500 **ft.** (152.4 **m**) wire maximum of 24 AWG

Installation,
BUSINESSCOM PLUS

8/12

Refer to Figure 2-25 Installation of Door Chime in a BUSINESSCOM PLUS **8/12**:

1. Connect a wire to the **terminal** marked R on the back of the box, and connect the other end to clip 39 on the **B1** Block for Box 1 or clip 41 for Box 2.
2. Connect a wire to the terminal marked C on the back of the box; connect the other end to clip 40 on the **B1** Block for Box 1 or clip 42 for Box 2.
3. Switches 1 and 2 are located on SW. SW on the **B-2DBU-A** PCB must be in the proper position for the boxes to function.
 - o For Box 1, move switch 1 to the position opposite 1.
 - o For Box 2, move switch 2 to the position opposite 2.
 - o If both boxes are used, move both switch 1 and switch 2 to the positions opposite 1 and 2, respectively.
4. Adjust the audio level with **VR1** on the **B-2DBU-A** PCB in the KSU.
5. Program the necessary information in Programs 12 and 32.

INSTALLING OPTIONAL EQUIPMENT

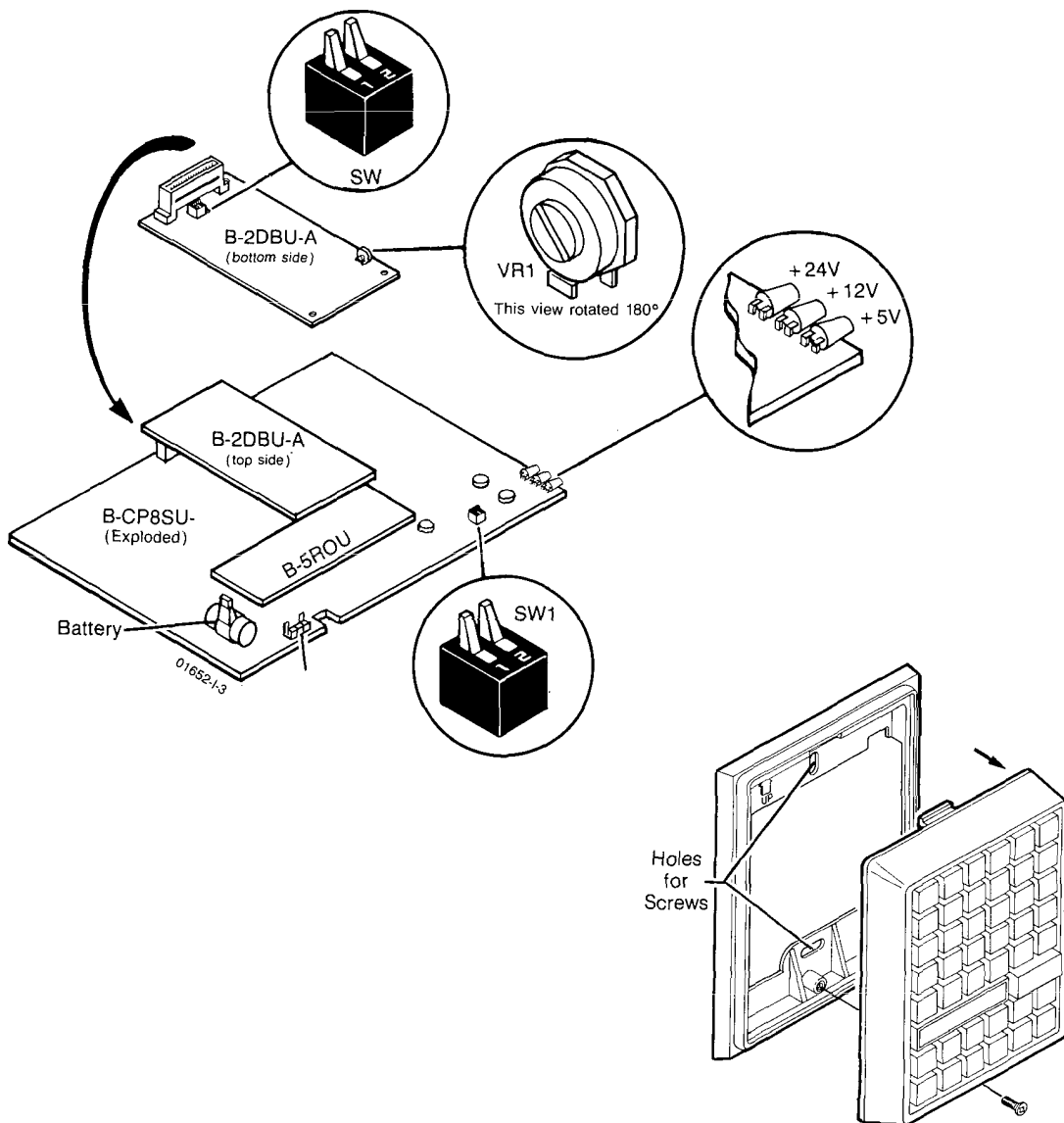
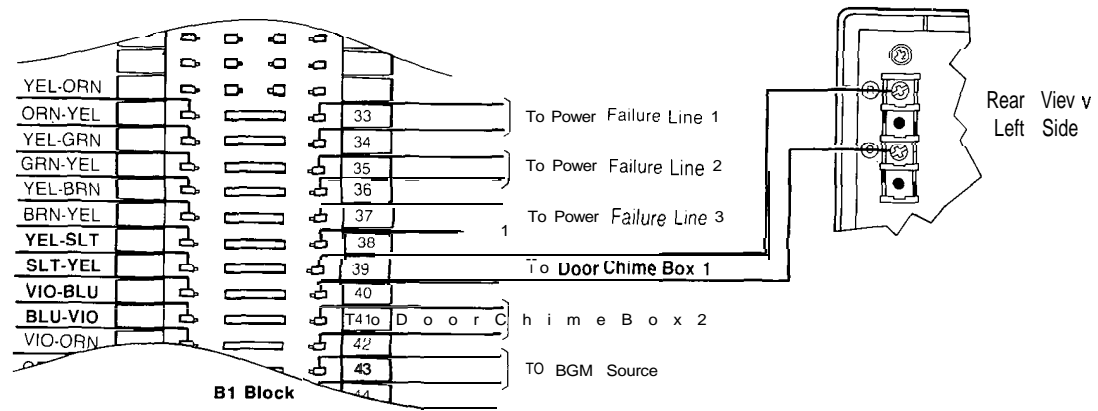


FIGURE 2-25 INSTALLATION OF DOOR CHIME BOX, BUSINESSCOM PLUS **8/12**

INSTALLING OPTIONAL EQUIPMENT

Installation, BUSINESSCOM PLUS **24/36/64**

Refer to Figure 2-26 Installation of Door Chime Box in a BUSINESSCOM PLUS **24/36/64**:

1. Connect a wire to the terminal marked R on the back of the box, and connect the other end to clip 5 on the **D1** Block for Box 1 or to clip 7 for Box 2.
2. Connect a wire to the terminal marked C on the back of the box, and connect the other end to clip 6 on the **D1** Block for Box 1 or to clip 8 for Box 2.
3. Switches **D1** and **D2** are located on **SW1**. **SW1** on the B-DDU-A PCB must be in the proper position for the boxes to function.
 - o For Box 1, move switch **D1** to the position **L1**.
 - o For Box 2, move switch **D2** to the position **L1**.
 - o For both boxes, move **D1** and **D2** to position **L1**.
4. Adjust the audio level with **VR1** on the B-DDU-A PCB.
5. Program the necessary information in Programs 12 and 32.

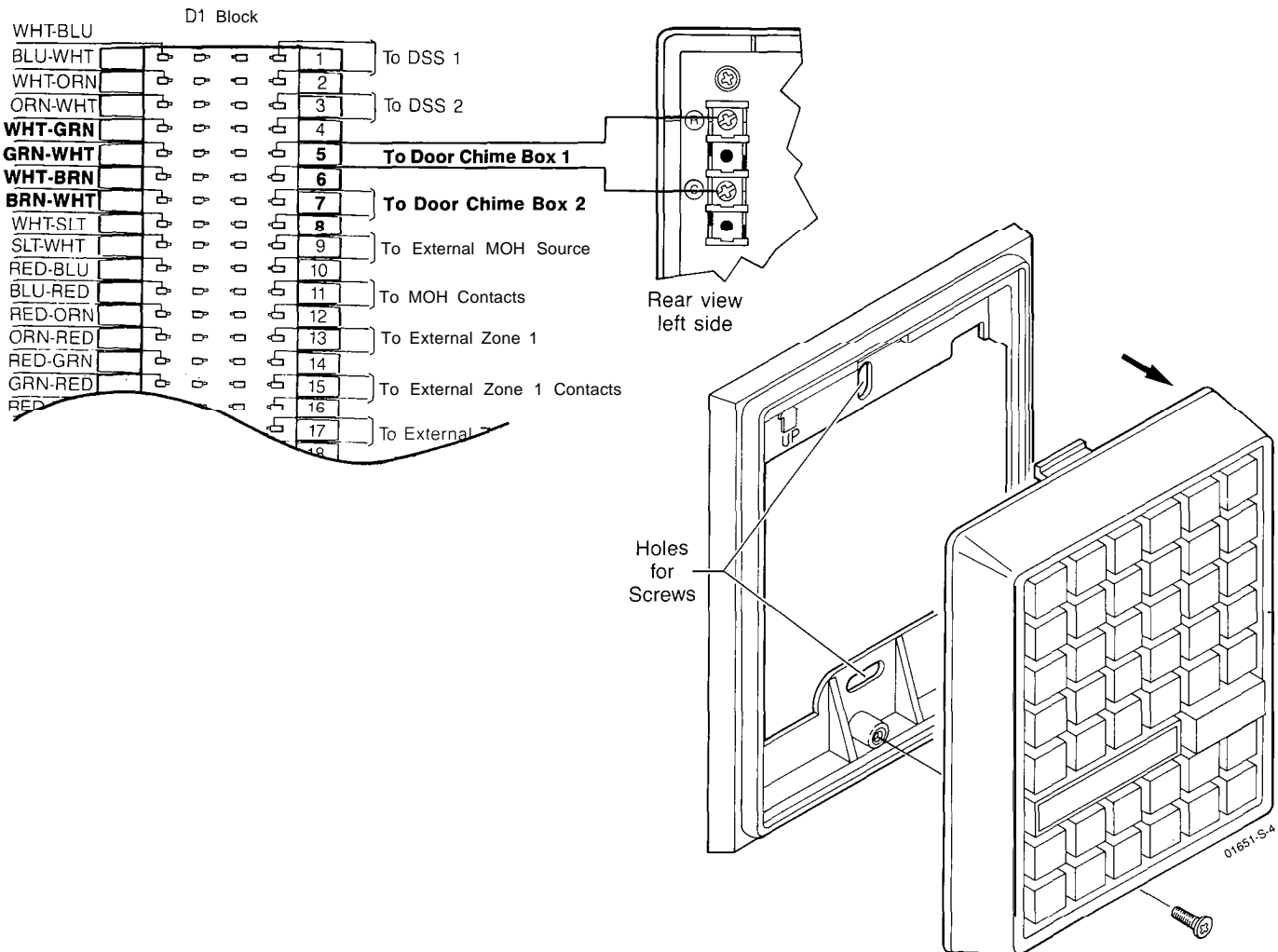


FIGURE 2-26 INSTALLATION OF DOOR CHIME BOX,
BUSINESSCOM PLUS **24/36/64**

 Installing the DSS Console

A BUSINESSCOM PLUS **24/36/64** system can accommodate more than one DSS Console of Series 2 or higher per hook-up position on the **D1** Block (see Figure 2-27 DSS Consoles). The DSS Console wiring is non-standard.

Due to strapping options on the Console's internal PCB, the Console can be used as an externally-powered BLF unit, an internally-powered unit or as a DSS Console. This section provides information on installing one, two, or three DSS Consoles in a BUSINESSCOM PLUS **24/36/64**.

Specifications 1,000 **ft.** (304.8 **m**) maximum of 24 AWG
 500 **ft.** (152.4 **m**) maximum of 24 AWG if more than one console is used.

A Console hook-up position on the **D1** Block (i.e., clips **1,2** and clips **3,4**) can accommodate one, two or three Consoles in the following combinations:

- o One DSS Console
- o One BLF unit which can operate using internal (**KSU**) power
- o One DSS Console and one BLF unit
 (The BLF unit can operate using internal power.)
- o One DSS Console and two BLF units
 (The first BLF unit can use internal power. The second BLF unit must be externally-powered. The customer provides the external power source which must supply 18 VDC @ 200 mA. The Nitsuko **18-volt** adaptor [P/N 30869 or P/N 851691 can be modified for use as the local external power source.)

Strapping Options

Straps **TB1**, TB2 and TB3 on the Console's internal PCB (**B-DSU-A**) must be set according to the Console's use:

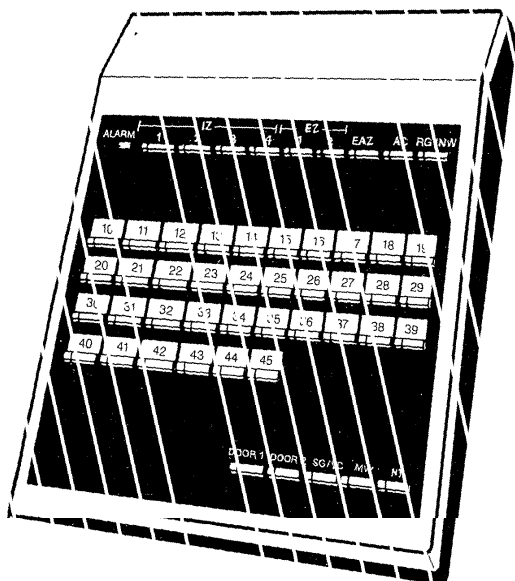
DSS Console

1. The Console is already factory-strapped for DSS Console operation. Set all straps to 1-2.
2. Install as described below.
3. Be sure to make entries in Programs 13 and 39.

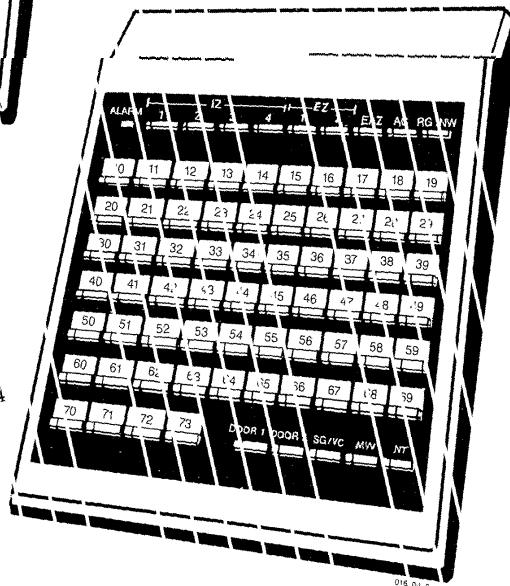
Internally-Powered BLF

1. The strap setting depends on whether the BLF unit is accompanied by a DSS Console on the hook-up position:
 - o If the BLF unit is accompanied by a DSS Console, set **TB1** to 2-3, and set TB2 and TB3 to 1-2.
 - o If the BLF unit is the only device on the hook-up position, set all straps to 1-2.
2. Cable unit as described below. Do not make entries in Programs 13 and 39 for BLF-only.

INSTALLING OPTIONAL EQUIPMENT



BUSINESSCOM PLUS 2436
DSS Console
(P/N 15151)



BUSINESSCOM PLUS 64
DSS Console
(P/N 15351)

FIGURE 2-27 DSS CONSOLES

Externally-

Powered BLF

1. Set all straps to 2-3.
2. Cable unit as described below.
3. Connect the external power supply to the BLF modular jack as follows: **+18** VDC to YELLOW terminal and ground to BLACK terminal.

Installation

When installing more than one Console per hook-up position:

1. Remove the bridging clips.
2. Punch down the wires on the center terminals.
3. Replace the bridging clips.

Do not double punch the connections on the **D1** Block.

Refer to Figure 2-28 Installation of DSS Consoles, and Figure 2-29 DSS Console (Series 2) Strap Detail:

1. Strap **TB1**, TB2, and TB3 as follows:

<u>Strap</u>	<u>Use</u>	<u>Position</u>
TB1	DSS Console	1-2
	Either type BLF unit	2-3
TB2/3	Internally-powered unit	1-2
	Externally-powered unit	2-3

External power is supplied on **BK/YL** leads at modular jack.

2. Connect two-pair twisted cable wires (WHT-BLU, BLU-WHT wires only) to the **D1** Block at clips **1,2** for DSS Console 1, and connect two-pair twisted cable wires (WHT-BLU, BLU-WHT wires only) to the **D1** Block at clips **3,4** for DSS Console 2.
3. At the modular jack for the Console, connect the WHT-BLU conductor to the RED jack terminal, and connect the BLU-WHT conductor to the GREEN jack terminal. For externally-powered BLF unit, connect an external **+18** VDC source to the YELLOW terminal, and connect the **18-volt (-)** lead to the BLACK terminal.
4. Cabling for additional DSS Consoles used as BLF units is connected in parallel to the **D1** Block position for the DSS Console. No more than three DSS Consoles should be connected to either DSS Console port.
5. Plug one end of a line cord into a DSS Console and the other end into the appropriate modular jack.
6. Program the necessary information in Programs 13 and 39.

INSTALLING OPTIONAL EQUIPMENT

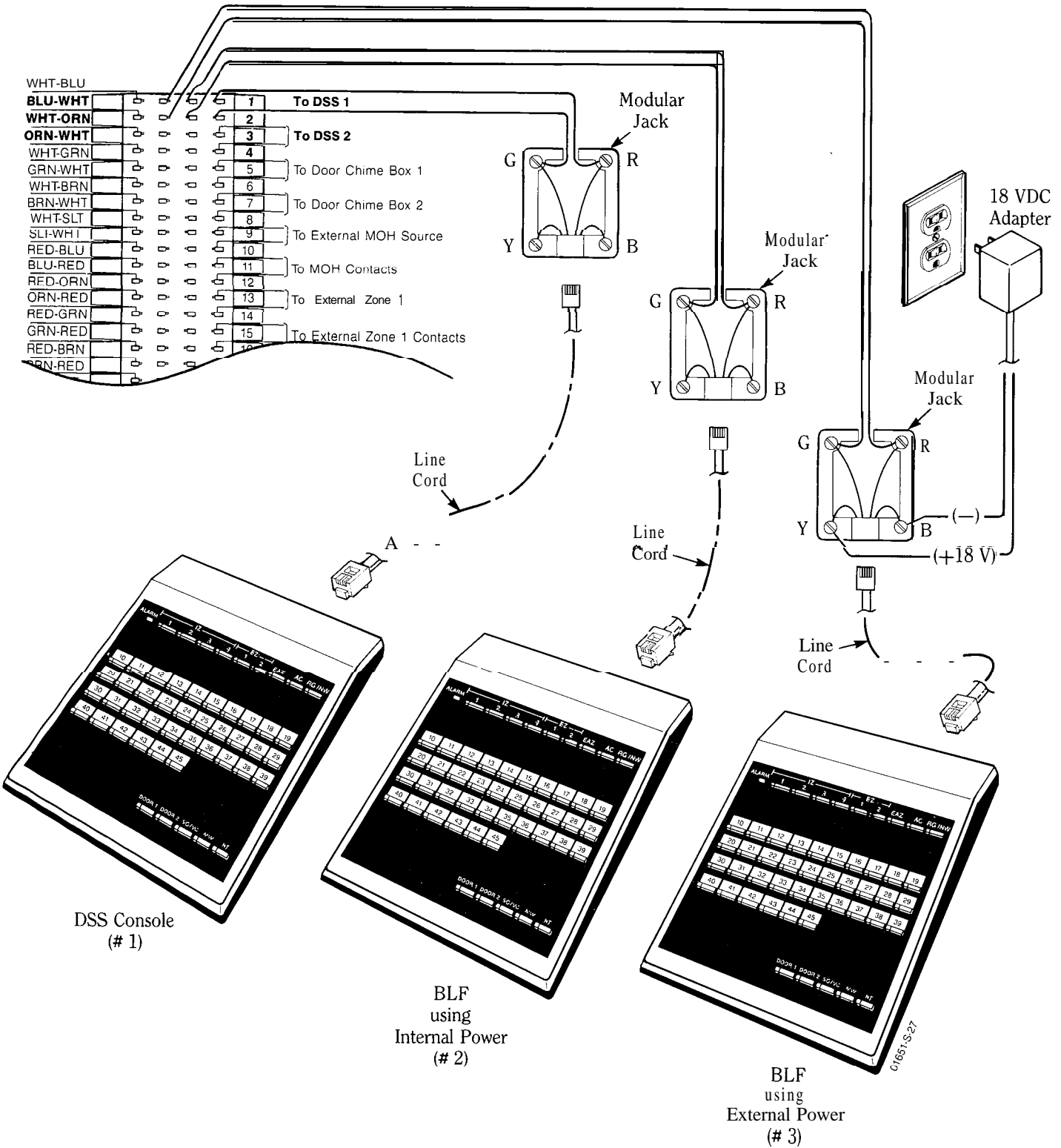


FIGURE 2-28 INSTALLATION OF DSS CONSOLES

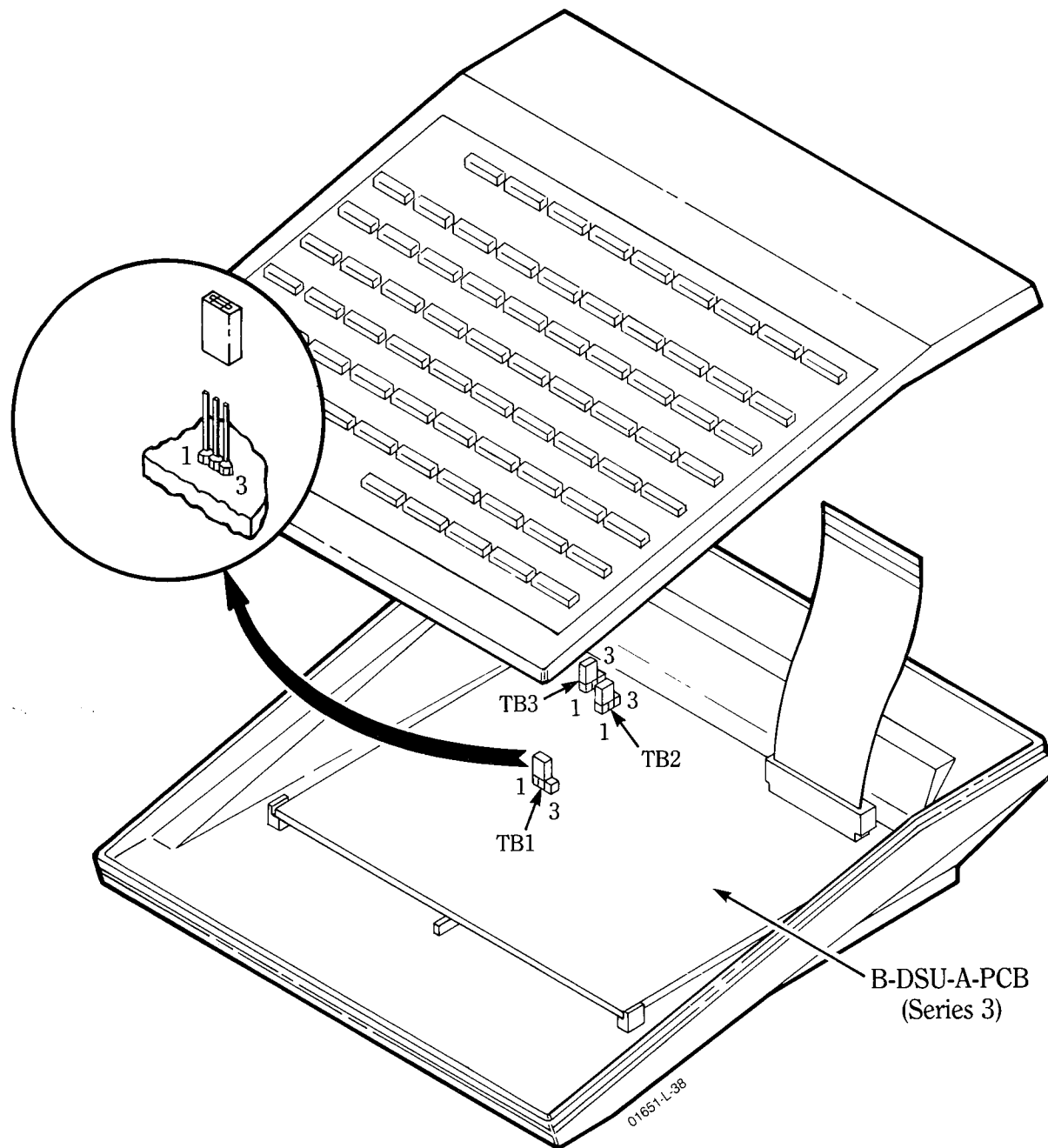


FIGURE 2-29 DSS CONSOLE (SERIES 2) STRAP DETAIL

 Installing the Remote Busy Line Indication (FAX)

The Remote Busy Line Indication interface provides:
 o busy line key indication
 o exclusion of the line
 whenever a remote device (e.g., a 'FAX' machine) in the off-hook state uses one of the lines connected to the system.

Specifications

For the BUSINESSCOM PLUS **8/12**:

- o B-CP8SU- PCB with B-5ROU-1B of Series 2 or higher
 or a B-CP8SU-B with B-5ROU- of any series
- o B-4STU-A or B-22SU-B (expansion card)

For BUSINESSCOM PLUS **24/36/64**:

- o B-MPU-B PCB of Series 2 or higher, or a B-MPU-C PCB
- o B-HBU-A PCB (P/N 15140) of Series 3 or higher

In addition, for use with any BUSINESSCOM PLUS system, either the FAX machine must provide a contact-closure when it is on-line, or the customer must provide a suitable telephone line loop-sense relay to supply that contact.

Installing FAX,
 BUSINESSCOM PLUS **8/12**

Refer to Figure 2-30 Installation of Remote Busy Line Indication (FAX), BUSINESSCOM PLUS **8/12**:

1. Connect contact-closure or customer-supplied equipment to clips **37,38** on the B2 Block.
2. Provide a parallel connection on the CO line circuit to be used for the FAX device. This connection must be made in between the **RJ11C** jack and the CO line connector on the side of the KSU.
3. Program the necessary information in Programs 3 and 28.

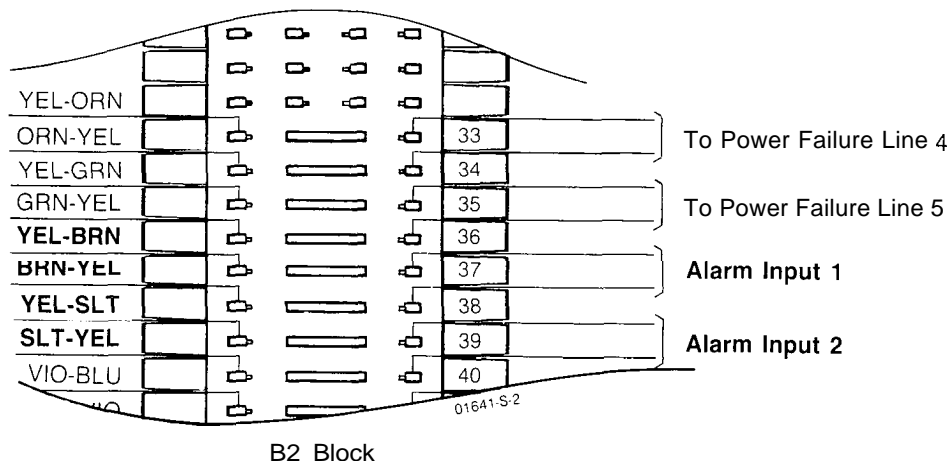


FIGURE 2-30 INSTALLATION OF REMOTE BUSY LINE INDICATION (FAX), BUSINESSCOM PLUS **8/12**

Installation,
 BUSINESSCOM PLUS **24/36/64**

Refer to Figure 2-31 Installation of Remote Busy Line Indication (FAX), BUSINESSCOM PLUS **24/36/64**:

1. Connect contact-closure or customer-supplied equipment to ALARM INPUT or EXT. INPUT on the **D1** Block. (Position will vary with programming.)
2. Provide a parallel connection on the CO line circuit to be used for the FAX device. This connection must be made on the A1 or A2 Block, and not on the **telco RJ21X** jack.
3. Program the necessary information in Programs 3 and 28.

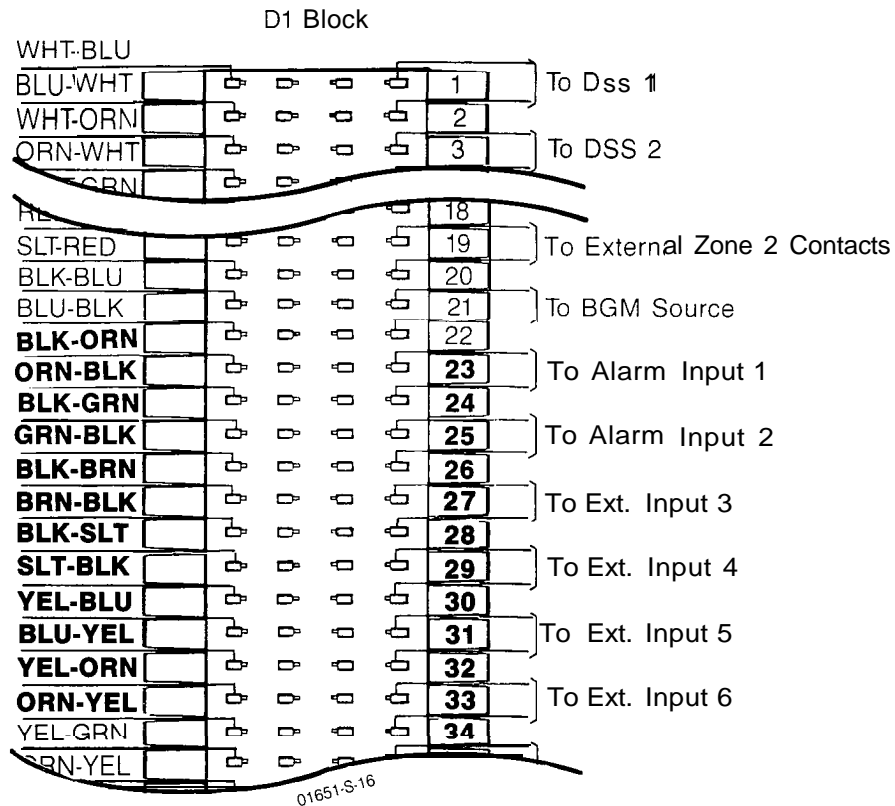


FIGURE 2-31 INSTALLATION OF REMOTE BUSY LINE INDICATION (FAX), BUSINESSCOM PLUS **24/36/64**

INSTALLING OPTIONAL EQUIPMENT

Installing the Wall-Mounting Kit

This section provides information on installing the Wall-Mounting Kit (P/N 15412) to BUSINESSCOM PLUS telephones (see Figure 2-32 Wall-Mounting Installation).

Installing a Telephone without AT&T Wall Plate

1. Mark and drill pilot holes for wall-mounting housing.
2. Insert the wood screws, and screw housing to wall.
3. Connect the six-wire line cord (supplied) to the station jack.
4. Mount the telephone on the four snap connectors.
5. Insert the wall-mount hook in the handset cradle, and connect the modular cord to the telephone.

Installing a Telephone to AT&T Plate

1. Install the metal wall-mounting bracket, and anchor the bracket to the housing with the four machine screws (supplied).
2. Insert the housing into the base of the telephone, and secure with four snap connectors.
3. Connect line cord (supplied) to the telephone on one end and the wall receptacle on the other.
4. Align telephone housing with two mounting pins on the wall plate.
5. Pull down slightly to secure on pins.

INSTALLING OPTIONAL EQUIPMENT

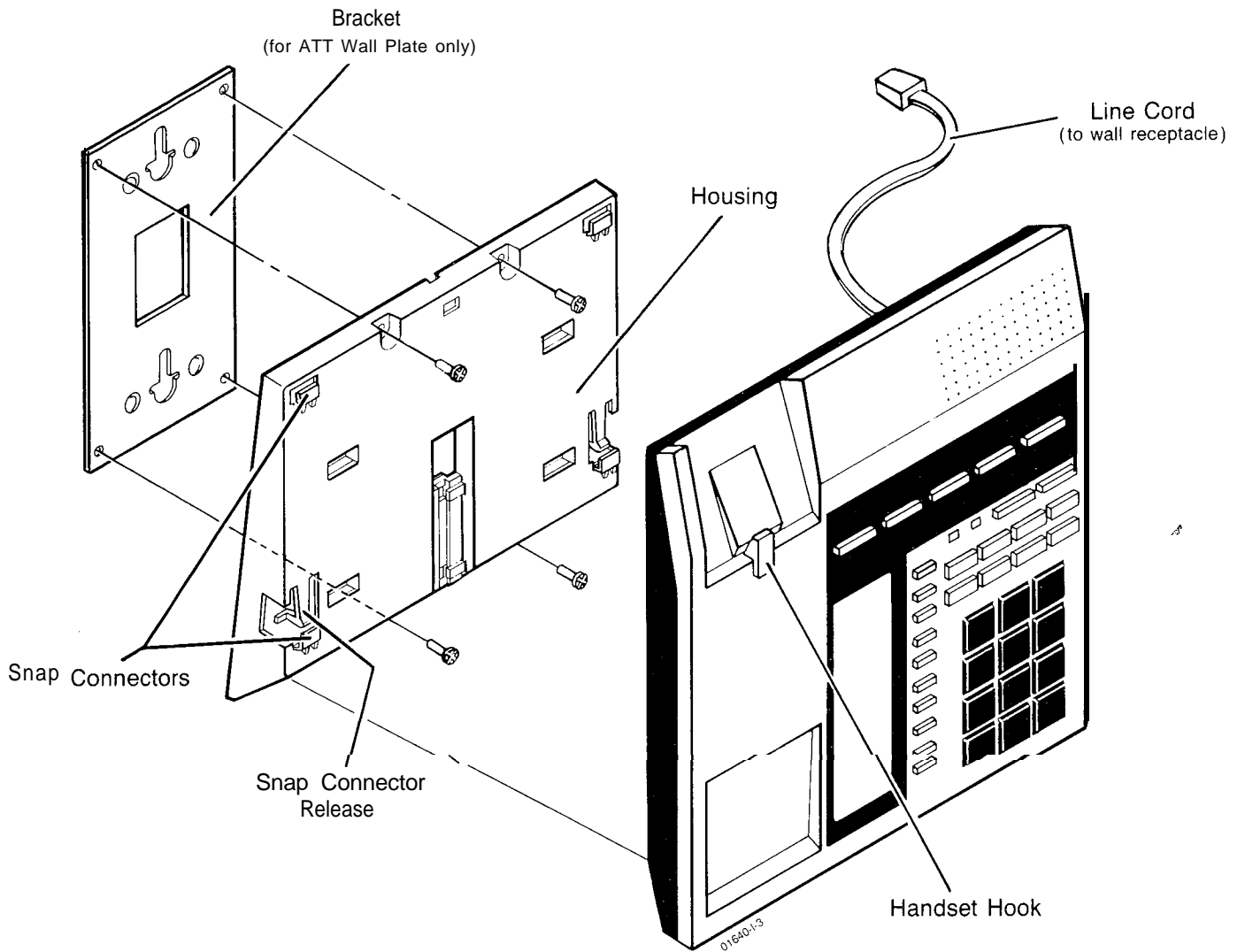


FIGURE 2-32 WALL-MOUNTING INSTALLATION

INSTALLING OPTIONAL EQUIPMENT

Installing the Speakerphone Module (B-SPDU-A PCB)

Executive Display telephones are factory-equipped with speakerphones. A Speakerphone can be installed in a Standard telephone which is not otherwise so equipped.

Since the room acoustics (e.g., high ceilings, room material) and background noise can affect speakerphone operation, carefully select the location of the Speakerphone units.

The maximum numbers of Speakerphones permitted are:

<u>System</u>	<u>Max.</u>
BUSINESSCOM PLUS 8/12/24/36	12
BUSINESSCOM PLUS 64	24

Installing the Speakerphone

Refer to Figure 2-33 Installation of Speakerphone PCB:

1. Remove the two screws on the bottom of the telephone.
2. Remove retaining screw and ribbon cable from connector C1 on the B-TBU-A PCB in order to remove the board.
3. Insert B-SPDU-A board, and replace retaining screw.
4. Insert ribbon cable into connector **CN1** on B-SPDU-A PCB.
5. Replace top of telephone and screws on bottom.

INSTALLING OPTIONAL EQUIPMENT

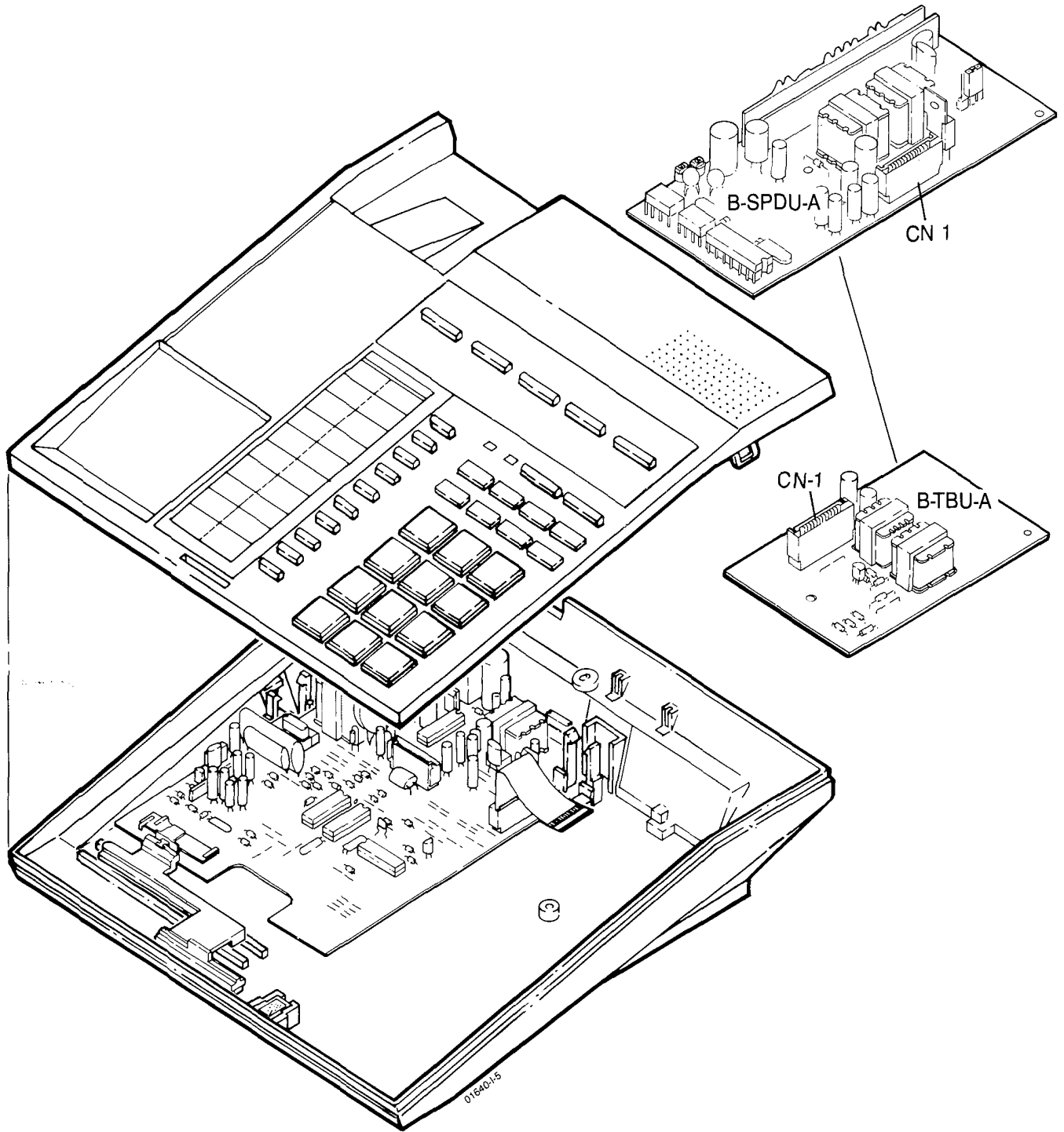


FIGURE 2-33 INSTALLATION OF SPEAKERPHONE PCB

Installing the Modular Adaptor

The Modular Adaptor (P/N 62598) simplifies the installation of stations in a BUSINESSCOM PLUS **8/12** only. Two connectors are recommended for each system. This section provides information on installing a Modular Adaptor.

Refer to Figure 2-34 Modular Adaptor Installation:

1. The **female connector** on the back of the adaptor is connected to either **B1** or **B2** on the side of the KSU. The screws on the adaptor are screwed into predrilled holes in the KSU.
2. Mount the wall-mounting brackets on **the KSU** so as to offset the KSU from the wall.
3. The numbers on the block correspond to the column marked "Modular Adaptor Number" on the **cutdown** block illustrations for the system (see Table 2-1, BUSINESSCOM PLUS **8/12** Cut Down Block, and Table 2-2, BUSINESSCOM PLUS 12 Cut Down Block).

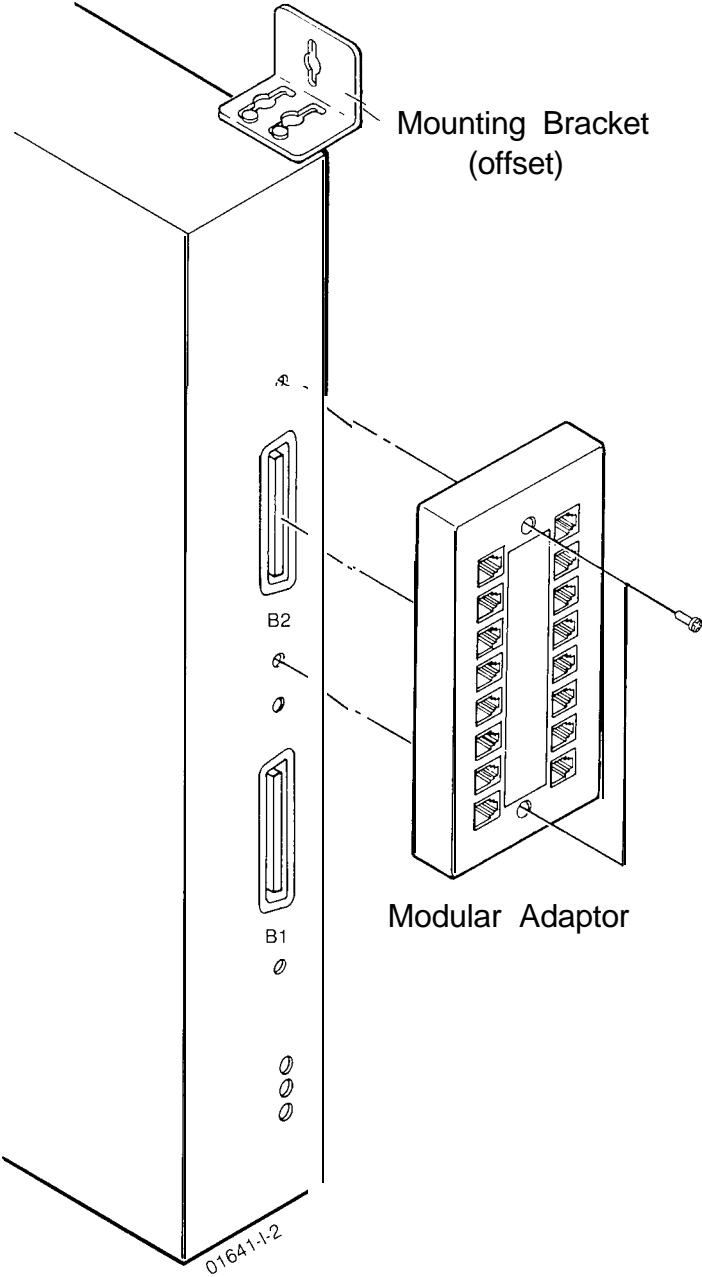


FIGURE 2-34 MODULAR ADAPTOR INSTALLATION



INSTALLING OPTIONAL EQUIPMENT

Installing **OPXs** and DISA Ports

This section provides information on installing the **B-22SU-B** PCB in a BUSINESSCOM PLUS 8/12 or the B-STU-D PCB in a BUSINESSCOM PLUS 24/36/64. Both **PCBs** are used for Off-Premises Extensions and DISA ports.

External Ring Generator

Use of the **B-22SU-B** or B-STU-D **PCBs** for **OPXs** requires an External Ring Generator power source in order to provide non-interrupted ring generator output in the range of 90 VAC at a nominal frequency of 20 Hz.

External Talk Battery

The **B-22SU-B** or B-STU-D **PCBs** for On-Premise Single-Line sets or DISA ports may use the internal talk battery source from the system power supply.

An external Talk Battery supply must be used with these **PCBs** for Off-Premise Extensions (**OPXs**). The Talk Battery supply must correspond with the Telco OPX requirements and be either 24 VDC or 48 VDC output. Neither Talk Battery output may be lead-grounded.

Ground Connection for **OPXs**

When the **B-22SU-B** or B-STU-D **PCBs** are used for **OPXs** or served by an External Talk Battery source, they must be grounded to the CWP ground.

The GND connection to the OPX card, located on the station B Block, provides the OPX Reference Ground for Telco OPX circuits.

The ETH connection to the OPX card, located on the station B Block, provides Protective Ground to the OPX card (**MOV** protection) from power surges.

The GND and ETH leads should be connected to the same CWP ground source.

B-22SU-B Specifications

Electrical:

Dial Pulse Rate: 10 or 20 Pulses Per Second \pm 3PPS

Make/Break Ratio: **33/67 \pm** 10%

Cable Requirements:

On-Premises Single Line Telephone, Internal Battery:

Loop Limit (max.) 300 ohms:

22 AWG, 8,000 ft. (2.4 km)

24 AWG, 5,000 ft. (1.5 km)

Off-Premises Station thru Telco Equipment, Ext.

Battery:

24-Volt Battery, **OL13B** Interface

48-Volt Battery, **OL13C** Interface

Installing the
B-22SU-B PCB,
 BUSINESSCOM **PLUS 8/12**

The **B-22SU-B** PCB is inserted in place of the **B-4STU-A** PCB.

Refer to Figure 2-7 BUSINESSCOM **8/12** KSU (P/N 15000 or P/N 15001 and Figure 2-35 Installation of **B-22SU-B** PCB:

1. Strapping on the **B-22SU-B** PCB:
 - o Strap **S1** and S-2 1-2 for Internal Talk Battery or 2-3 for External Talk Battery.
 - o Strap **S3** and **S5** 1-2 for Port 20 to be used as an OPX port or 2-3 for a DISA port.
 - o Strap **S4** and **S6** 1-2 for Port 21 to be used as an OPX port or 2-3 for a DISA port.
2. Strapping on the **B-CP8SU-** PCB:

When the **B-22SU-B** is installed, strap **JO** 2-3 and reinitialize the system

or

When the **B-22SU-B** is not installed, strap **JO** 1-2.
3. For DTMF OPX ports and DISA ports, plug a **B-MFRU-B** PCB into **CM1** for Port 20 and **CM2** for Port 21, as required.
4. Insert the **B-22SU-B** into the KSU.
5. Connect ribbon cable from **CNB1** and **CNB2** to the **B-CP8SU-** PCB.

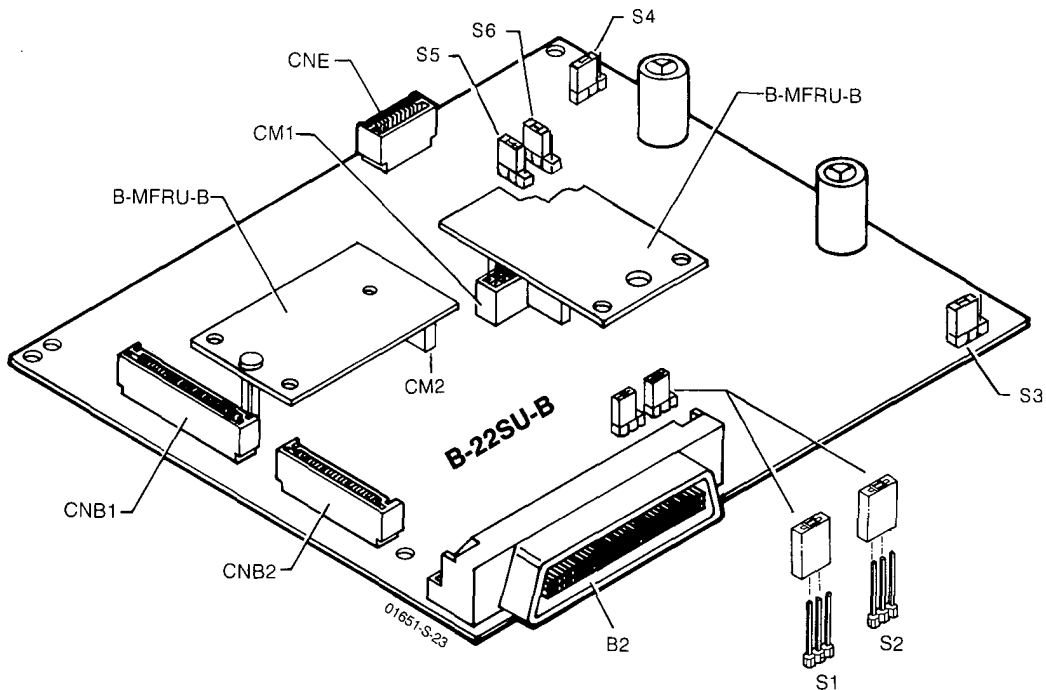


FIGURE 2-35 INSTALLATION OF **B-22SU-B** PCB

INSTALLING OPTIONAL EQUIPMENT

Station-to-MDF Connection

To connect each single line station to the Main Distribution Frame (**MDF**) at the HSU (see Figure 2-36 and Table 2-4, BUSINESSCOM PLUS **8/12** B2 Block Connections):

1. Connect the pair of wires from the station to the D clips of the AT/AR pair on the B Block corresponding to the station number being installed.
2. Install bridging clips.

TIE Ring Generator Connections

Each **B-22SU-B** PCB must be connected to a ring generator source. Connect the TIE Ring Generator (P/N 12185) to the MDF as follows (see Figure 2-36 and Table 2-4):

1. Connect the output terminals from the Ring Generator to the B2 Block, D clips **17,18** (the RED-BRN, BRN-RED pair).
2. Install bridging clips.
3. Connect the input terminals designated + from the RG to the B2 Block, D clip 19, the RED-SLT wire.
4. Connect the input terminal designated G from the RG to the B2 Block, D clip 20, the SLT-RED wire.
5. Install bridging clips.
(To connect the B-STU-D PCB to a ring generator source, see "Ring Generator Connection" in "Installing the B-STU-D PCB.")

Earth Ground Connection

Whenever a **B-22SU-B** PCB is installed in a BUSINESSCOM PLUS **8/12** using a **telco** facility, an earth ground is required.

To connect the earth ground (see Figure 2-36 and Table **2-4**):

1. Connect a wire from the B2 Block, D clips **21,22** (BLK-BLU, BLU-BLK pair) to an earth ground.
2. Install bridging clips.

External Battery Connection

To connect an external battery (see Table **2-4**):

1. Connect a wire from clip 23 on the B2 Block to the external battery positive terminal.
2. Connect a wire from clip 24 on the B2 Block to the negative terminal.

MAKE SURE THAT NEITHER BATTERY TERMINAL
IS GROUNDED.

3. Install bridging clips.

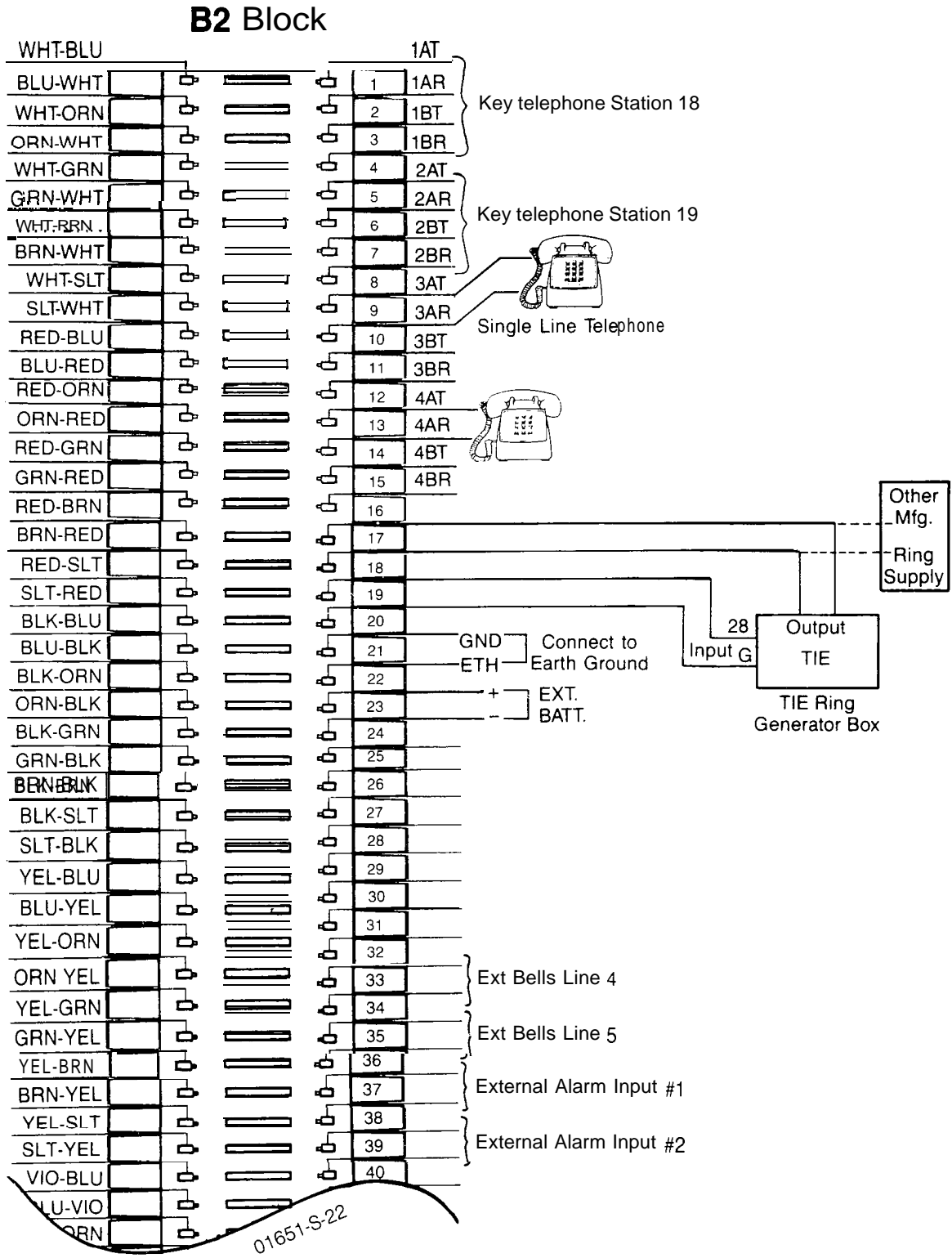


FIGURE 2-36 OFF-PREMISES EXTENSION CONNECTIONS, BUSINESSCOM PLUS 8/12

INSTALLING OPTIONAL EQUIPMENT

TABLE 2-4 BUSINESSCOM PLUS 8/12 B2 BLOCK CONNECTIONS

25 Pair Cable		Connecting Block B2		Modular Adaptor Number			
Conn Pin	Color Code	Block Term.	Function				
26 1	WHT-BLU BLU-WHT	STATION 18	1 2	T9AT TSAR			
27 2	WHT-ORN ORN-WHT		3 4	T9BT T9BR			
28 3	WHT-GRN GRN-WHT		STATION 19	5 6		T10AT T10AR	
29 4	WHT-BRN BRN-WHT			7 a		T10BT T10BR	
30 5	WHT-SLT SLT-WHT	STATION 20		9 10	T11AT T11AR		
31 6	RED-BLU BLU-RED		11 12	T11BT T11BR			
32 7	RED-ORN ORN-RED		STATION 21	13 14	T12AT T12AR		
33 a	RED-GRN GRN-RED	15 16		T12BT T12BR			
34 9	RED-BRN BRN-RED	TH-28V 1		17 18	OPX Ring Gen Input		
35 10	RED-SLT SLT-RED			19 20	+ OPX Ring Gen. Suppl		
36 11	BLK-BLU BLU-BLK	TH-48V	21 22	Earth Ground	6		
37 12	BLK-ORN ORN-BLK		23 24	+ Ext. Batt. - Input			
38 13	BLK-GRN GRN-BLK		25 26				
39 14	BLK-BRN BRN-BLK		27 28				
40 15	BLK-SLT SLT-BLK		29 30				
41 16	YEL-BLU BLU-YEL		31 32				
42 17	YEL-ORN ORN-YEL		PF 5 PF 4	33 34		Power Failure	9
43 1a	YEL-GRN GRN-YEL			35 36		Ext Bells	10
44 19	YEL-BRN BRN-YEL	37 38		Ext Alarm Input # 1	12		
45 20	YEL-SLT SLTYEL	39 40		Ext Alarm Input # 2			
46 21	VIO-BLU BLU-VIO		41 42				
47 22	VIO-ORN ORN-VIO		43 44				
48 23	VIO-GRN GRN-VIO		45 46				
49 24	VIO-BRN BRN-VIO		47 48				
50 25	VIO-SLT SLTVIO		49 50				

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INSTALLING OPTIONAL EQUIPMENT

Installing the B-STU-D PCB

This section provides information for installing the B-STU-D PCB in a BUSINESSCOM PLUS **24/36/64** used for **OPXs** or DISA.

B-STU-D

Specifications

Electrical:

Dial Pulse Rate: 10 or 20 Pulses Per Second **+3PPS**

Make/Break Ratio: **33/37+10** %

Cable Requirements:

On-Premises Single Line Telephone, Internal Battery:

Loop Limit (max.) 300 ohms:

22 AWG, 8,000 ft. (2.4 km)

24 AWG, 5,000 ft. (1.5 km)

Off-Premises Station thru **Telco** Equipment, Ext. Battery:

24-Volt Battery, **OL13B** Interface

48-Volt Battery, **OL13C** Interface

B-STU-D

Installation

Refer to Figure 2-37 B-STU-D Printed Circuit Board and Figure 2-38 Off-Premises Extension Connections, BUSINESSCOM PLUS **24/36/64**:

1. Strapping on each B-STU-D PCB:
 - o Strap **S1** and **S2** 1-2 for Internal Talk Battery or 2-3 for External Talk Battery
 - o Strap **S3** and **S7** 1-2 for the first port to be used as an OPX or 2-3 for a DISA port
 - o Strap **S4** and **S8** 1-2 for the second port to be used as an OPX or 2-3 for a DISA port
 - o Strap **S5** and **S9** 1-2 for the third port to be used as an OPX or 2-3 for a DISA port
 - o Strap **S6** and **S10** 1-2 for the fourth port to be used as an OPX or 2-3 for a DISA port
2. For DTMF OPX ports and DISA ports, plug a B-MFRU-B PCB into the CN connector for the DTMF port. **CN1** is the first port, and **CN2** is the second, etc.
3. Insert the B-STU-D PCB into STU slots 2 - 16. (The first STU slot serves the Port 10 Display telephone for programming).

Station to MDF Connection

To connect each single line station to the Main Distribution Frame (**MDF**) at the KSU location (see Figure 2-38, Table 2-5 B-STU-D Station Block Connections, and Table 2-6 "**B**" Block Station Locations):

1. Connect the pair of wires from the station to the D clips of the AT/AR pair on the B Block corresponding to the station number being installed.
2. Install bridging clips.

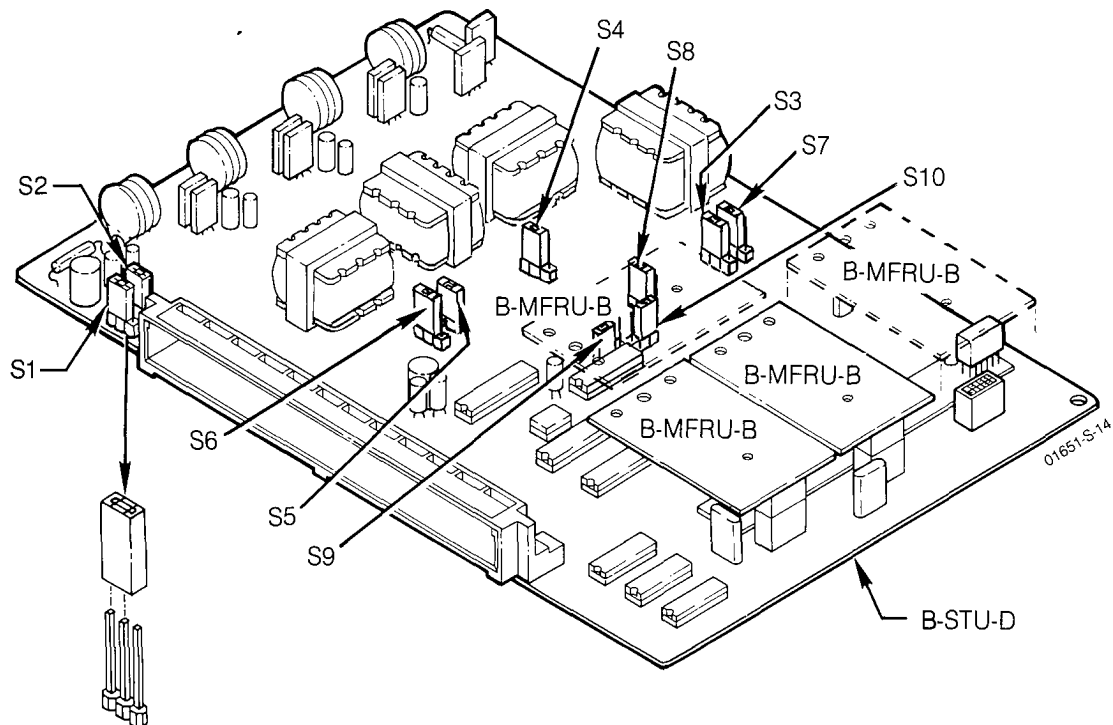


FIGURE 2-37 B-STU-D PRINTED CIRCUIT BOARD

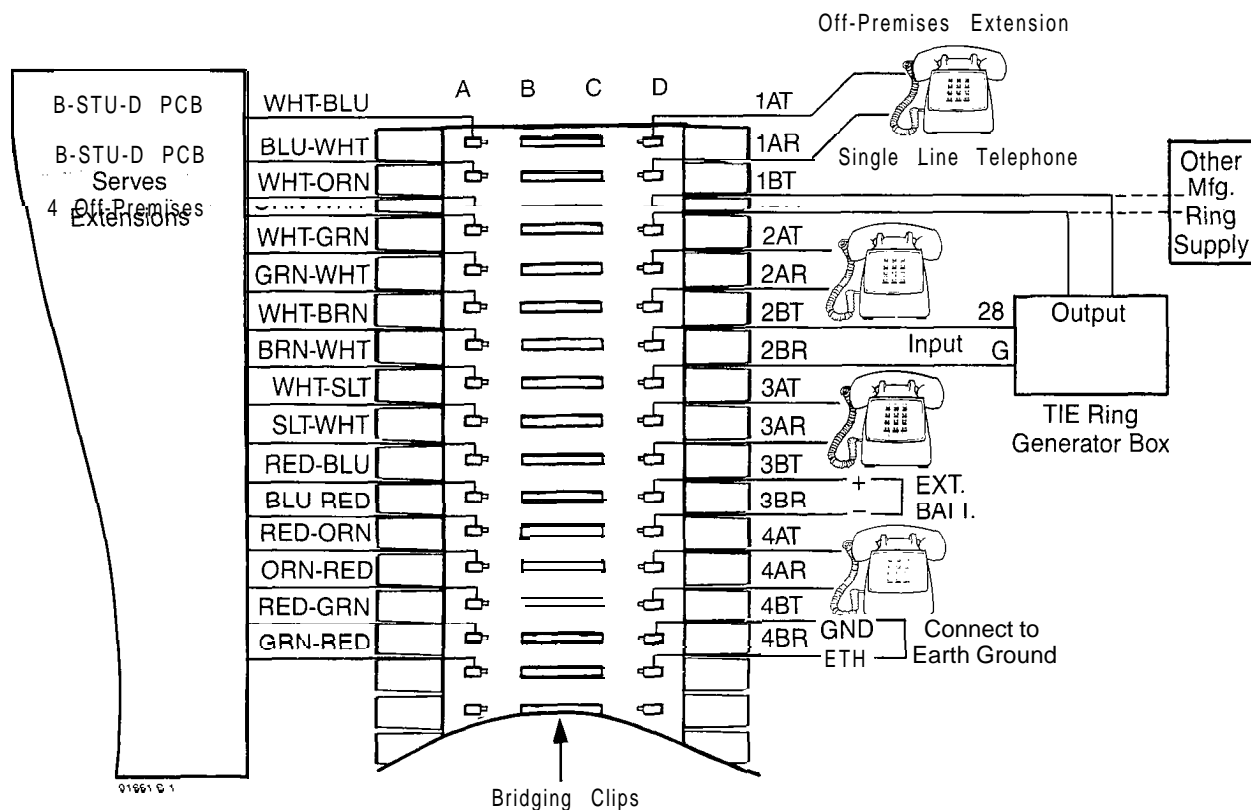


FIGURE 2-38 OFF-PREMISES CONNECTIONS, BUSINESSCOM PLUS 24/36/64

INSTALLING OPTIONAL EQUIPMENT

Ring Generator Connection

Each B-STU-D PCB must be connected to the ring generator source. Connect to the MDF as follows (see Figure 2-38, Table 2-5, and Table 2-6):

1. Connect the output terminals from the Ring Generator to the D clips of the first circuit (**BT/BR**) pair on the B Block.
2. Install bridging clips.

For TIE Ring Generator only:

1. Connect the input terminal designated + from the RG to the second circuit (**BT**) clip.
2. Connect the input terminal designated G from the RG to the second circuit (**BR**) clip.
3. Install bridging clips.

Earth Ground Connection

An earth ground is required whenever a B-STU-D PCB is installed in a BUSINESSCOM PLUS **24/36/64** using a **telcc** facility.

To connect an earth ground (see Figure 2-38):

1. Connect a wire from the third circuit (BT clip) to the external battery positive terminal and a wire from the third circuit (**BR** clip) to the negative terminal.

MAKE SURE THAT NEITHER BATTERY TERMINAL IS
GROUNDED.

2. Install bridging clips.

External 'Talk Battery Connection

To connect external battery (see Table 2-5):

1. Connect a wire from the third BT clip serving the installed B-STU-D PCB on the appropriate B Block to the positive terminal of the external battery source.
2. Connect a wire from the third BR clip serving the installed B-STU-D PCB on the appropriate B Block to the negative terminal of the external battery source.

MADE SURE THAT NEITHER BATTERY TERMINAL IS
GROUNDED.

3. Install bridging clips.

Each OPX key should be identified at the DSS Console to remind the attendant that call announcing is not possible at an OPX and that it is not possible to override an OPX.

INSTALLING OPTIONAL EQUIPMENT

TABLE 2-5 B-STU-D STATION BLOCK CONNECTIONS

25 PAIR CABLE		"B" CONNECTING BLOCKS		CIRCUIT
Conn Pin	Color Code	Block Term.	Function	Function
26	WHT-BLU	1	AT	TIP Circuit 1
1	BLU-WHT	2	AR	RING Circuit 1
27	WHT-ORN	3	BT	RING Signal In
2	ORN-WHT	4	BR	RING Signal In
28	WHT-GRN	5	AT	TIP Circuit 2
3	GRN-WHT	6	AR	RING Circuit 2
29	WHT-BRN	7	BT	+ 28 V DC
4	BRN-WHT	8	BR	- OUT
30	WHT-SLT	9	AT	TIP circuit 3
5	SLT-WHT	10	AR	RING Circuit 3
31	RED-BLU	11	BT	+ EX. 48V
6	BLU-RED	12	BR	- EX. GND
32	RED-ORN	13	AT	TIP Circuit 4
7	ORN-RED	14	AR	RING Circuit 4
33	RED-GRN	15	BT	GND
8	GRN-RED	16	BR	ETH
34	RED-BRN	17	AT	TIP Circuit 1
9	BRN-RED	18	AR	RING Circuit 1
10	RED-BLT	19	BT	RING Signal In
36	ELK-BLU	21	AT	TIP Circuit 2
11	BLU-BLK	22	AR	RING Circuit 2
37	BLK-ORN	23	BT	+ 28 V DC
12	ORN-BLK	24	BR	- OUT
38	BLK-GRN	25	AT	TIP Circuit 3
13	GRN-BLK	26	AR	RING Circuit 3
39	BLK-BRN	27	ET	+ EX. 48V
14	BRN-BLK	28	BR	- EX. GND
40	BLK-SLT	29	AT	TIP Circuit 4
15	SLT-BLK	30	AR	RING Circuit 4
41	YEL-BLU	31	BT	GND
16	BLU-YEL	32	BR	ETH
42	YEL-ORN	33	AT	TIP Circuit 1
17	ORN-YEL	34	AR	RING Circuit 1
43	YEL-GRN	35	BT	RING Signal In
18	GRN-YEL	36	BR	RING Signal In
44	YEL-BRN	37	AT	TIP Circuit 2
19	BRN-YEL	38	AR	RING Circuit 2
45	YEL-SLT	39	BT	+ 28 V DC
20	SLT-YEL	40	BR	- OUT
46	VIO-BLU	41	AT	TIP Circuit 3
21	BLU-VIO	42	AR	RING Circuit 3
47	VIO-ORN	43	BT	+ EX. 48V
22	ORN-VIO	44	BR	- EX. GND
48	VIO-GRN	45	AT	TIP Circuit 4
23	GRN-VIO	46	AR	RING Circuit 4
49	VIO-BRN	47	BT	GND
24	BRN-VIO	48	BR	ETH
50	VIO-SLT	49		
25	SLT-VIO	50		

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INSTALLING OPTIONAL EQUIPMENT

TABLE 2-6 "B" BLOCK STATION LOCATIONS

PCB POSITION	BLOCK	FOR STATIONS
STU1 STU2 STU3	B1	10 • 13 14 • 17 18 • 21
STU4 STU5 STU6	B2	22 • 25 26 • 29 30 • 33
STU7 STU8 STU9	B3	34 • 37 38 • 41 42 • 45
STU10 STU11 STU12	B4	46 • 49 50 • 53 54 • 57
STU13 STU14 STU15	B5	58 • 61 62 • 65 66 • 69
STU16	B6	70 • 73

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Installing the B-TBU-C PCB

The B-TBU-C PCB provides Headset operation to the telephone in which it is installed. The customer must supply the modularly-connected carbon headset.

This section provides information on installing the B-TBU-C PCB in any Series 2 telephone in the system (see Figure 2-39 Installation of B-TBU-C PCB).

To prepare the telephone for headset operation:

1. Remove the two screws on the base of the phone.
2. Separate the top of the telephone from the base.
Do not connect the cables between the top and the base.
3. Strap SW1 and SW2 1 to 2 on the B-ANU-A/B PCB.
4. To remove the B-SPDU-A PCB or B-TBU-A PCB:
 - o Unplug the ribbon cable from the **CN1** connector on the PCB
 - o Remove the retaining screw.

To install the B-TBU-C PCB:

1. Insert the B-TBU-C PCB in the vacant position.
2. Plug the loose end of the ribbon cable into connector **CN1**, and make sure that the blue stripe on the cable faces out when reinstalling either end.
3. Replace the retaining screw.
4. Screw together the top and base of the telephone.

To install the headset:

1. Unplug the cord from the handset.
2. Leave the handset in the cradle.
3. Plug the cord into the headset modular jack.

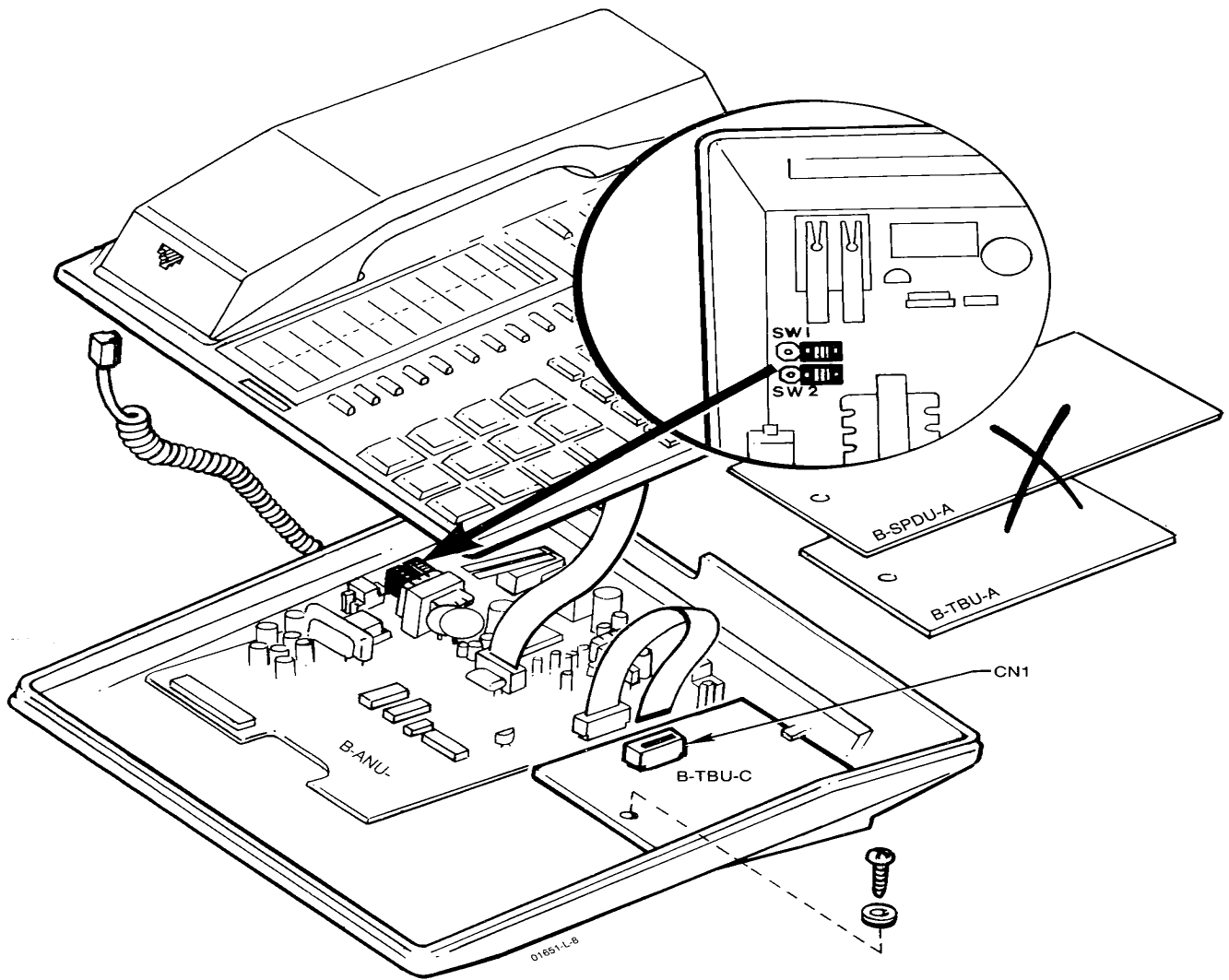


FIGURE 2-39 INSTALLATION OF B-TBU-C PCB

INSTALLING OPTIONAL EQUIPMENT

Installing the SMDR PCB

For use of the Station Message Detail Recording feature, either PCB must be installed in the system:

<u>System</u>	<u>PCB</u>	<u>P/N</u>
BUSINESSCOM PLUS 8/12	B-SMDR-SA	15075
BUSINESSCOM PLUS 24/36/64	B-SMDR-LA	15345

Each SMDR PCB has three option switches that must be set (see Figures 2-40 and 2-41).

Option Switch SW1

Option Switch SW1 contains eight toggles that select SMDR options. Select options from the chart below, and set each toggle to the proper position:

<u>Switch</u>	<u>Option</u>	<u>Position</u>
SW1-1	Dial Digits	OFF: Does not print if number is 7 digits or less. ON: Prints regardless of number length.
* SW1-2	Call Duration	OFF: Does not print if call duration is less than 1 minute. ON: Prints regardless of duration of call.
* SW1-3	Call Timing Start	OFF: Starts after 1 second. ON: Starts after 5 seconds.
+ SW1-4	Account Code	OFF: An Account Code <u>must</u> be entered before dialing. ON: An Account Code can be entered
SW1-5	Incoming Call	OFF: Prints only when an Account Code is entered. ON: Always prints.
SW1-6	Barred Outgoing	OFF: Prints attempted restricted calls. ON: Does not print attempted restricted calls.
SW1-7	OPX Account Code	OFF: OPX users <u>can</u> enter Account Codes. ON: OPX users <u>cannot</u> enter Account Codes.
SW1-8	Not Used	OFF: Switch must be set in this position.
* Toggles SW1-2 and SW1-3 are used only in systems with: B-5ROU-1B/2A for the BUSINESSCOM PLUS 8/12 B-MPU-B for the BUSINESSCOM PLUS 24/36/64.		

+ Account Code Entry from an OPX telephone is optional even if this toggle is set to OFF.

Switch SW2

Switch SW2 contains eight toggles (**SW2-1** to **SW2-8**) that are not used. Set each toggle to OFF.

INSTALLING OPTIONAL EQUIPMENT

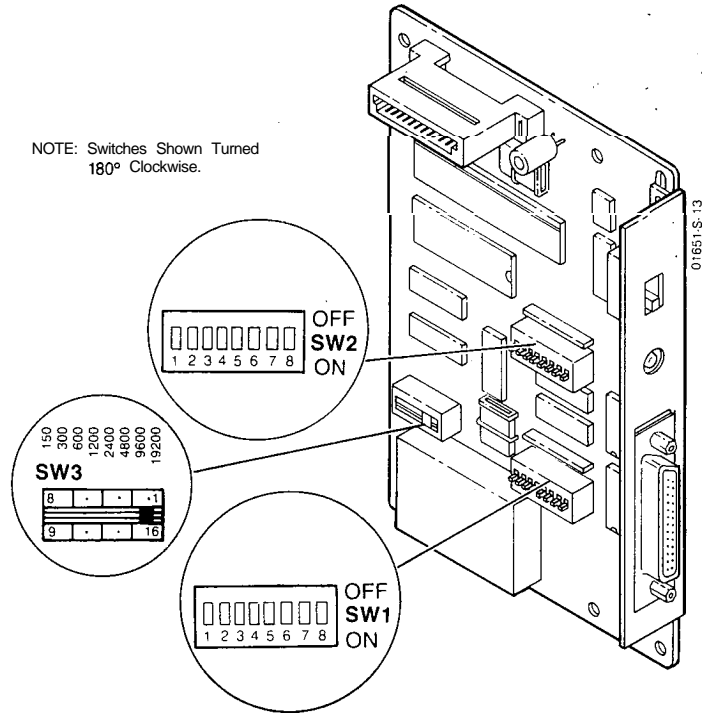


FIGURE 2-40 B-SMDR-SA PCB (P/N 150751,
BUSINESSCOM PLUS **8/12**)

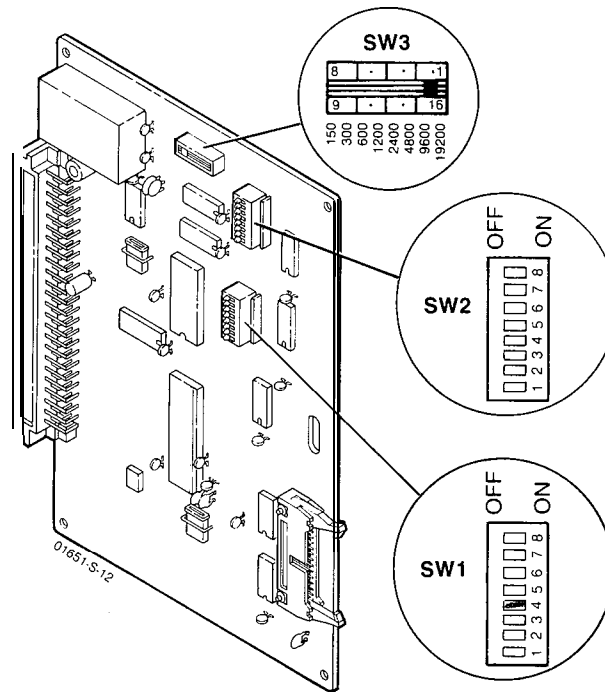


FIGURE 2-41 B-SMDR-LA PCB (P/N 153451,
BUSINESSCOM PLUS **24/36/64**)

INSTALLING OPTIONAL EQUIPMENT

Installing the SMDR PCB (cont'd)

Baud Rate
Switch SW3

Slide Switch SW3 sets the Baud Rate for transmitting SMDR data to the printer. Set the switch to the proper Baud Rate position: a Baud Rate of 2400 or less is preferable.

B-SMDR-SA Installation

Refer to Figure 2-42 B-SMDR-SA PCB Assembly and Figure 2-41 B-SMDR-SA Installation.

To prepare the KSU for installation:

1. Remove the KSU cover.
2. Remove the rectangular piece of black metal located **below** the ground lug (**G**) on the left side of the KSU.

To install the B-SMDR-SA PCB:

1. Insert the B-SMDR-SA PCB into the KSU with the components facing inward:
 - o The CND connector on the B-SMDR-SA PCB fits into the CND connector on the **B-CP8SU-A/B** PCB.
 - o The RS-232 connector on the B-SMDR-SA PCB should protrude through the rectangular opening on the left side of the KSU.
2. Screw the B-SMDR-SA PCB in place.

To install the SMDR recording device:

1. Plug the desired SMDR recording device into the RS-232 connector (**B3**) on the B-SMDR-SA PCB.
2. If necessary, replace the **B-5ROU-** PCB with proper version. Components must face inward with connectors **CNR1** to **CNR1** and CNR2 to CNR2. If the **B-5ROU-** has been changed, reinitialize the system.
3. Replace the KSU cover.
4. Set the printer status switch to OUT OF SERVICE.
5. Using the RS-232-C cable, connect the printer to the B3 connector on the B-SMDR-SA.

INSTALLING OPTIONAL EQUIPMENT

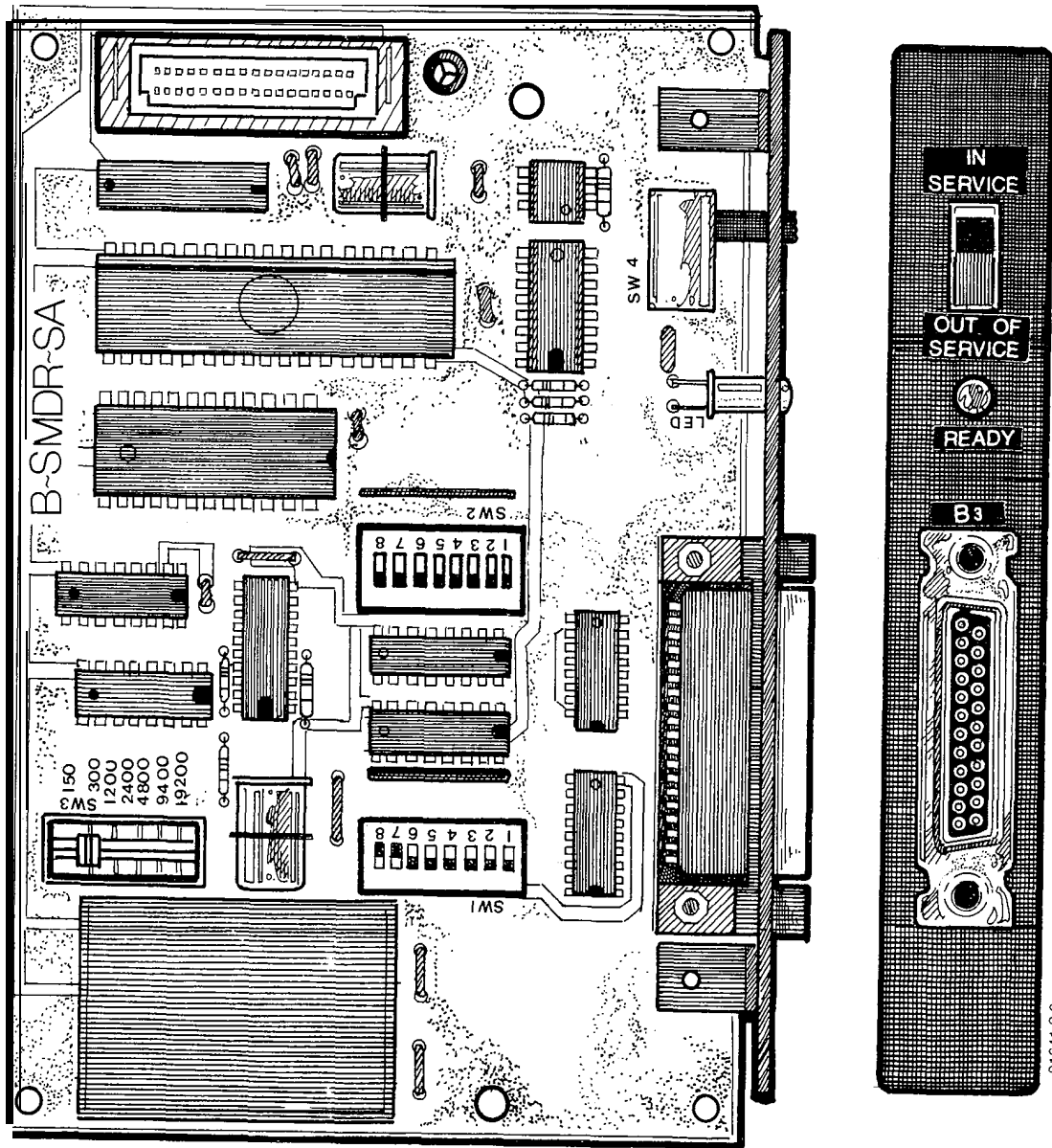


FIGURE 2-42 B-SMDR-SA PCB ASSEMBLY

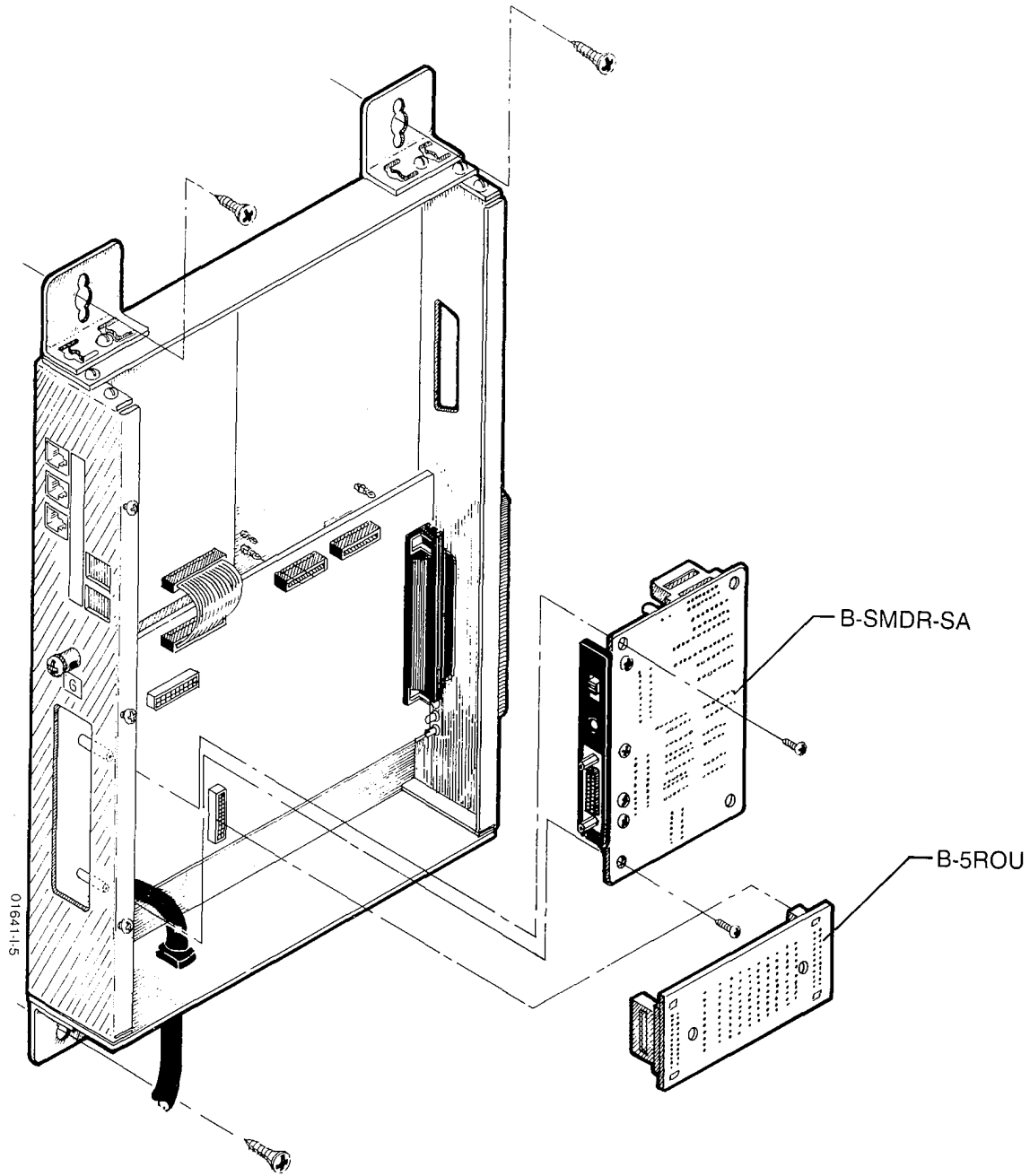


FIGURE 2-43 B-SMDR-SA INSTALLATION

B-SMDR-LA

Installation

To install the B-SMDR-LA (P/N 15345) in the KSU of the BUSINESSCOM PLUS **24/36/64** (see Figure 2-44 B-SMDR-LA Installation, BUSINESSCOM PLUS **24/36/64**):

1. Remove KSU cover.
2. With components facing left, insert the B-SMDR-LA PCB into the MISC slot.
3. With components facing left, insert the B-MPU-B/C PCB into the MPU slot.
4. Mount the SMDR Jack and Cable Assembly on the backboard.
5. With the red wire on top, insert the ribbon cable on the Assembly into the **CN1** connector on the B-SMDR-LA PCB.

After installing the B-SMDR-LA PCB:

1. Replace the KSU cover.
2. Set the printer status switch on the Assembly to OUT OF SERVICE.
3. Using the RS-232-C cable, plug the printer into the Assembly.

INSTALLING OPTIONAL EQUIPMENT

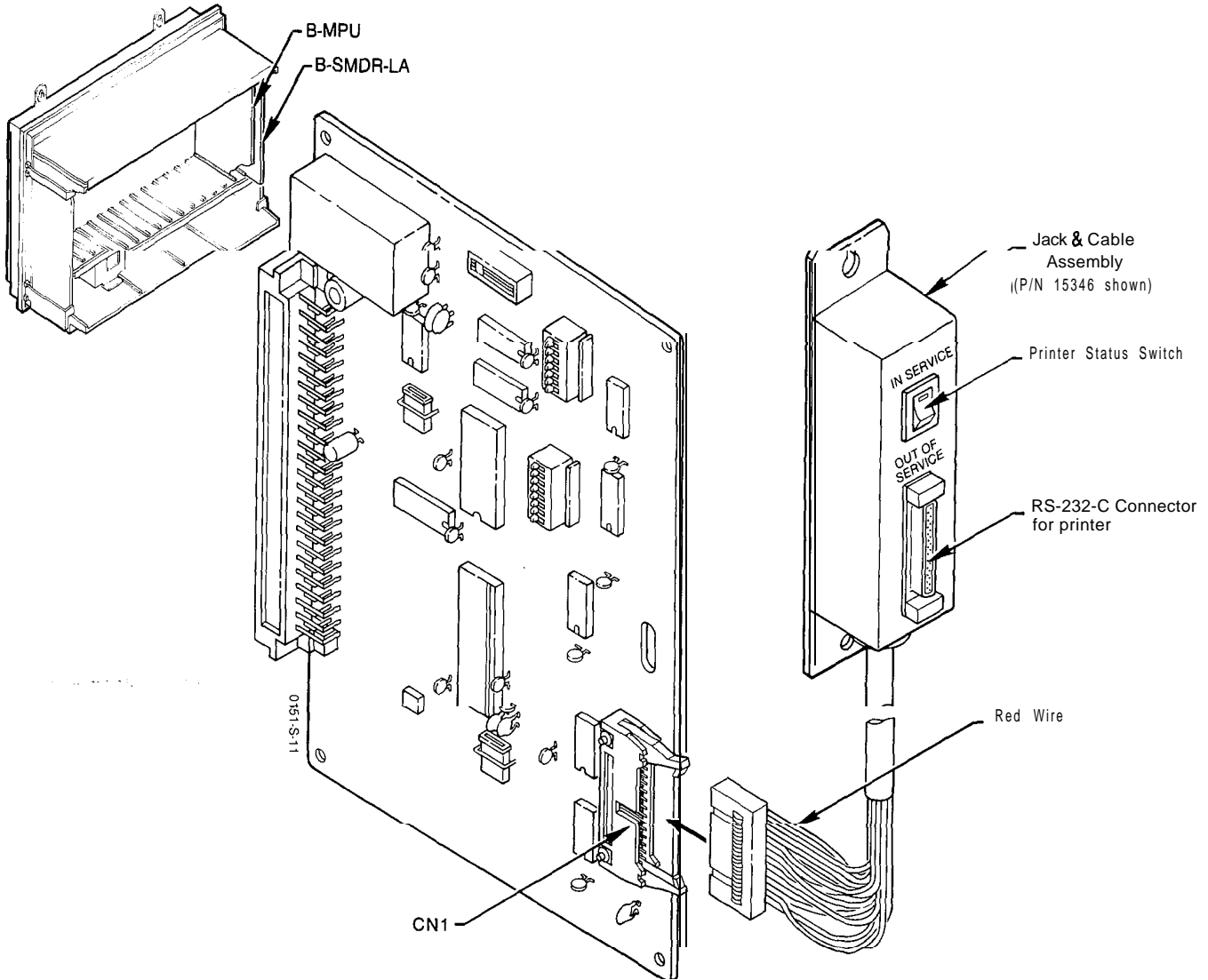


FIGURE 2-44 B-SMDR-LA INSTALLATION

INSTALLING OPTIONAL EQUIPMENT

Installing the Battery Backup Box (BBB)

The Battery Backup Box provides power during a power failure. See Figure 2-45 Battery Backup Box and Figure 2-46 Battery Backup Box (Uncovered).

BBB Specifications

Physical Size: 24 in. (**61.0cm**) long x 8 in. (**20.3cm**) wide x 9 in. (**22.9cm**) high
Weight: Approximately 80 **lbs.** (36 kg) with batteries
Batteries: Two gelled electrolyte maintenance-free batteries, rated at 12 volts, 38 **amp-** hours. Both must be of the same type from the list below:
o Eagle Pitcher **CFM12V33**
o Yuasa **NP38-12**
o Powersonic **PS12400**
o Technicell EP-123840
Backup Duration 0 - 2 hrs. (depending on traffic)

Installation

WARNING:

- o DO NOT SMOKE NEAR BATTERY BOX.
 - o DO NOT PLACE BOX NEAR FLAME.
 - o DO NOT PLACE BOX DIRECTLY UNDER POWER SUPPLY OR KSU.
-

The Battery Backup Box may be wall- or floor-mounted. For either type of mounting, follow these steps:

1. Position the empty battery box on either side of the KSU and within three feet of the KSU Power **Supply.**
2. For wall-mounting:
 - o mark the location of the center of each of the four mounting holes.For floor-mounting:
 - o mark the location of the two upper holes.
3. Attach box with appropriate fasteners at the marked locations.

INSTALLING OPTIONAL EQUIPMENT

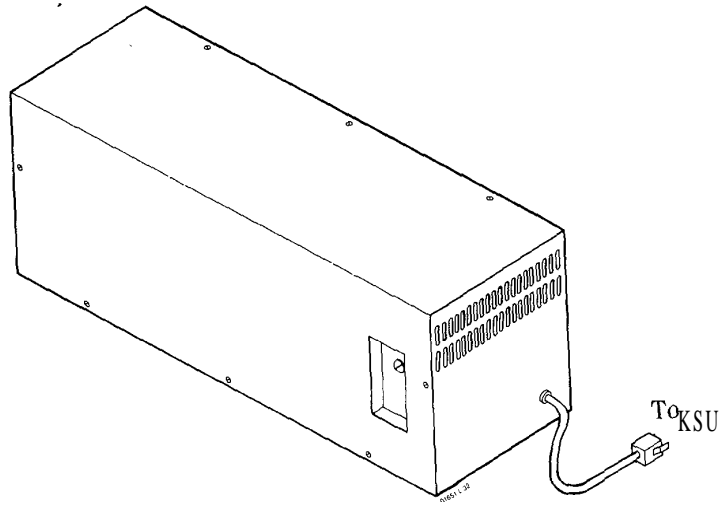


FIGURE 2-45 BATTERY BACKUP BOX (P/N **15321H**)

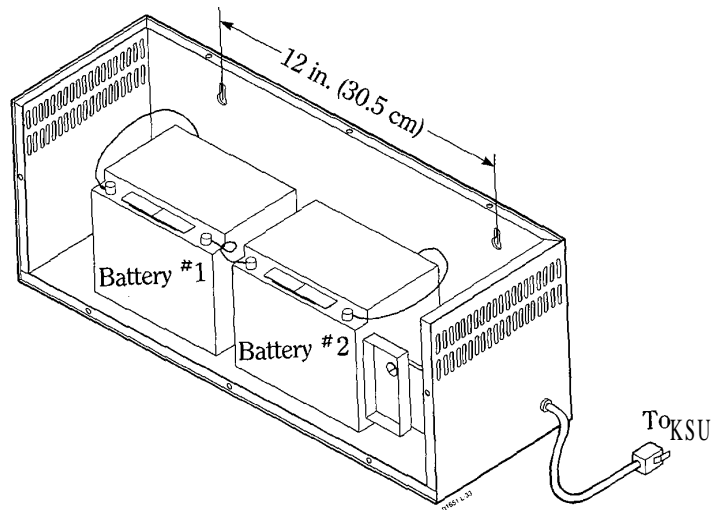


FIGURE 2-46 BATTERY BACKUP BOX (**UNCOVERED**)

Refer to Figure 2-47, Battery Backup Box Schematic.

After mounting Battery Backup Box:

1. Insert one pair of batteries. (Batteries should always be installed and replaced in pairs).
2. Secure batteries with tie-wraps supplied.
3. Using battery terminal screws, connect the wiring to the battery terminals. Use the red wire (indicated in Figure **2-45**) to connect the positive terminal of one battery to the negative terminal of the other battery.
4. With 4-wire connecting cable, connect Battery Backup Box to KSU Power Supply (see Figure 2-46, Side View of the KSU Power Supply for Battery Backup Box).

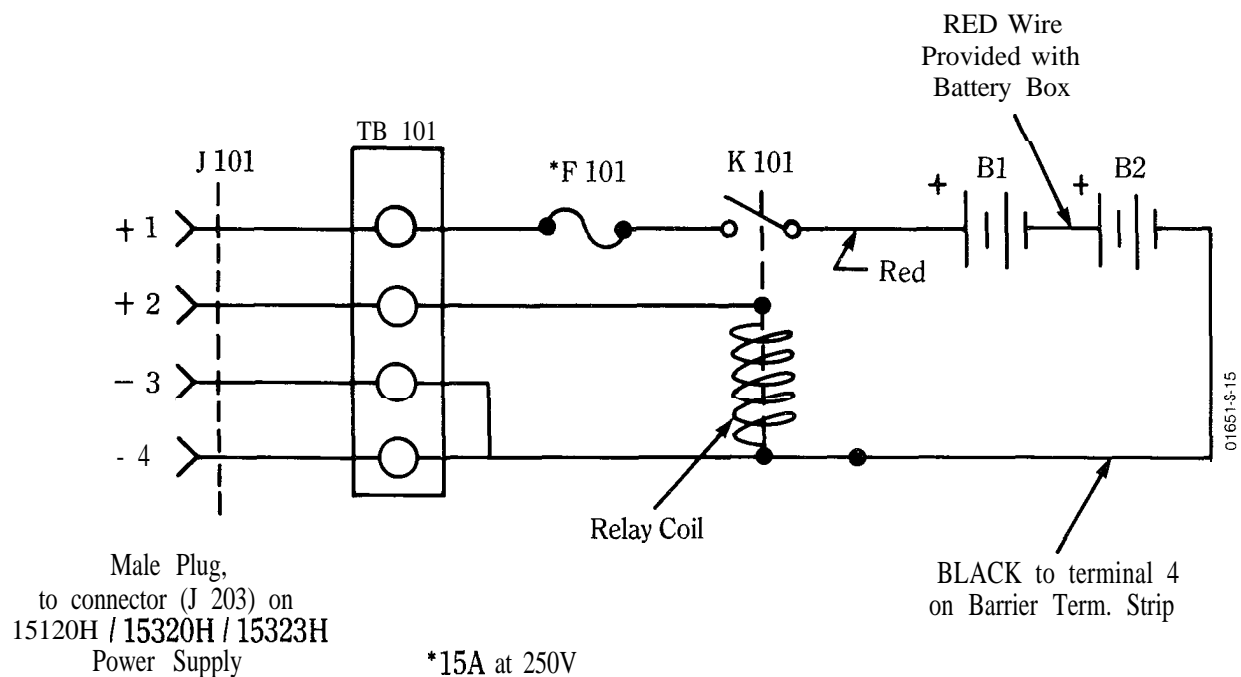


FIGURE 2-47 BATTERY BACKUP BOX SCHEMATIC

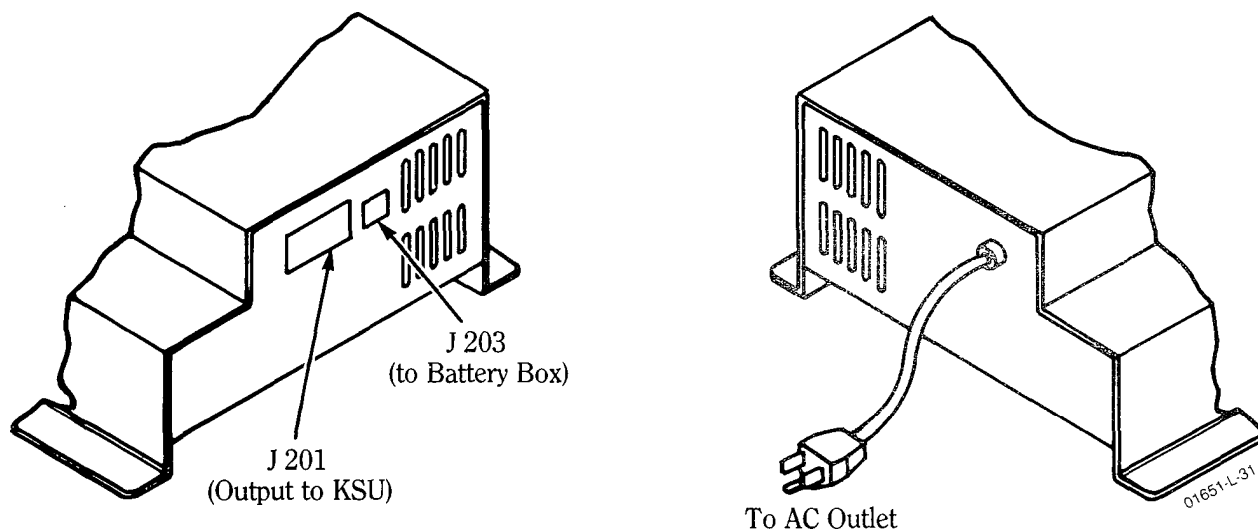


FIGURE 2-48 SIDE VIEW OF KSU POWER SUPPLY FOR BATTERY BACKUP BOX

PART 3 MAINTENANCE AND TROUBLESHOOTING

INTRODUCTION

This section explains how to keep the BUSINESSCOM PLUS System operating properly. It also shows how to prevent or minimize operating problems, avoid system failures, and extend the time between service calls.

o TELEPHONE TROUBLESHOOTING

The Telephone Test Procedure serves as an aid to troubleshooting, and the Troubleshooting Guide suggests common causes of system malfunctions.

o SYSTEM TROUBLESHOOTING

explains in greater detail the procedures required to determine and correct specific system problems.

o POWER SUPPLY FUSES

The Power Supply Fuses table shows the function and corresponding indications of failure for each fuse in the system's power supply.

Maintenance and Preventive Maintenance

All system **PCBs** use long-life components that do not require regular, scheduled maintenance or cleaning, but several preventive maintenance procedures will help to keep the telephones and the system in good working order:

- o Do not install the system in an environment that promotes accumulation of dust, carbon or metal particles, harmful vapors or contaminants: such an environment may shorten the life of these components.
- o Before disconnecting or connecting power supply to KSU and before installing or removing **PCBs**, be sure that the power is OFF.
- o The system uses a non-rechargeable lithium battery to support system memory. Replace this battery after three years of service or if system memory becomes altered without cause.

WARNING: DO NOT ATTEMPT TO RECHARGE THIS BATTERY.
PERSONAL INJURY MAY RESULT.

TELEPHONE TROUBLESHOOTING

Although testing is a helpful aid to troubleshooting, it is not necessary to test each individual telephone with this procedure.

Complete the following steps in order:

TABLE 3-1 TELEPHONE TEST PROCEDURE (1/2)

<u>No.</u>	<u>Item</u>	<u>Operation</u>	<u>Indication</u>
1.	Power On	Plug in modular connector while depressing programming switch	OK: Tone A (600/450/16 Hz) NG: Tone C (600 Hz) or no tone, and selftest does not advance
2.	Off-hook	Raise handset	Tone A: stop
3.	CO Line key	Press CO key	Corresponding Red LED: on
		Press CO key after pressing TIMER key *	Corresponding Red LED: on
		Press CO key after pressing CLOCK key *	Corresponding Green LED: on
4.	DSS key (1-10)	Press DSS keys (1-10)	Binary-coded indication on CO1-CO4 LEDs
5.	Dial key	Press keys 1 - 7	Binary-coded indication on CO1-CO4 LEDs + Indicate on LCD *
		Press key 8	Tone B (450/16 Hz)
		Press key 9	Tone C (600 Hz)
		Press key *	Mute Tone C
		Press key 0	Tone C
		Press key #	Tone off
6.	ALARM key	Press ALARM	All LCD segments: on
7.	CHECK key	Press CHECK	All LCD segments: on

+ Omit this step for Standard telephones (non-Display).

++ **LEDs** on Standard telephones light.
Display telephone LEDS do not light.

TABLE 3-1 TELEPHONE TEST PROCEDURE (1/2)

<u>No.</u>	<u>Item</u>	<u>Operation</u>	<u>Indication</u>
8.	Function keys check	Press MIC	MIC LED: on
		Press RG-INW	MON LED: on
		Press CONF	DND LED: on
		Press RG-TR	RG TR LED: on
		Press DC	RG TR LED: off
		Press ICM	ICM LED: on
		Press HOLD	HOLD LED: on
		Press OPAC	MW LED: on
		Press SPK	SPK LED: on
		Press FLASH	SPK LED: off

At end of procedure, be sure to unplug the telephone.
Replug before normal use.

TELEPHONE TROUBLESHOOTING

After Telephone Test Procedure

Once you have finished the Telephone Test Procedure if you are still experiencing trouble, follow these steps:

Station Troubleshooting

1. Verify that the telephone set is connected to the correct modular jack.
2. Using a voltmeter, measure the voltages at station jack as described in INSTALLING THE **PCBs** AND CHECKING THE WIRING.
3. Disconnect the telephone from its modular jack, and temporarily connect directly to MDF block in the equipment room.
4. Temporarily try a similar telephone in the modular jack for the telephone.

Station Cabling Troubleshooting

1. Verify the proper installation of the telephone's **PCBs**, such as the speakerphone PCB.
2. Using a voltmeter, individually verify each station cable lead.
3. Verify that the telephone cabling used is two-pair twisted station cable.
4. Move station cable runs away from AC power lines and data or computer-equipment cabling by at least several inches.

Environmental Troubleshooting

1. Use commercially-available in-line chokes and filters to remedy Radio Frequency Interference. (For a definition of Radio Frequency Interference, see FCC and **Telco** Requirements in GENERAL INFORMATION.)
2. Check that all key telephone sets are installed on-premises, using cable runs that are not exposed to environmental hazards.
3. Check that OPX telephones are installed with additional secondary protection, such as lightning protectors, near the MDF.

TABLE 3-2 **TROUBLESHOOTING** GUIDE FOR SYSTEM INSTALLATIONS

<u>Symptoms</u>	<u>Possible Cause</u>
No LEDs light on phone. Phone will not function. Talk battery in handset.	Pairs reversed (jack wires)
No LEDs light on phone. Phone will not function. Talk battery in handset.	Pairs split (BLK-GRN reversed)
No LEDs light on phone. Phone will not function. Talk battery in handset.	Pairs split (RED-YEL reversed)
Phone functions but cannot be called handsfree. Handset mode works fine.	GRN-RED (reversed) Note: Audio pair is polarity-sensitive.
No sidetone or audio in handset or speaker. All keys and LEDs functional.	GRN-RED (open)
Talk battery in handset. Keys and LEDs not functional.	BLK-YEL (reversed or open)

Basic System Operation

Visible symptoms with power on:

1. Examine and record any improper indications on all telephones, including key depression as well as lamp and LED displays.
2. Locate the Port 10 Display telephone, and check to see if the hyphen in the Clock display is flashing (**1/2 sec. on, 1/2 sec off**). If the hyphen is not flashing or there is no display, the phone is not operating or the system MPU/CPU card clock is not running.
3. Check Clock LED on MPU/CPU card. Normal condition is fast flashing, not necessarily at a constant rate.

Power-related Symptoms

1. Meter voltage at AC outlet for power supply: check power supply indicators and switch position. If AC power is present:
 - a. Turn off power supply switch, or pull the plug.
 - b. Wait 15 seconds.
 - c. Turn on supply again.
2. Turn power supply off. Remove all power supply fuses, and measure each fuse for continuity. Do not rely on visual appearances of fuses. Replace a blown fuse only with same type and power rating.
3. With power supply turned off, disconnect DC power cable from KSU connector.
4. Turn on power supply, and check LED status of all **LEDs** on the power supply unit.
5. Remove all cards from the KSU of a BUSINESSCOM PLUS **24/36/64** except the MPU card,
or
Restore the BUSINESSCOM PLUS **8/12** to its minimum configuration.

System-related Hardware Condition

1. Using a voltmeter, measure for continuity the CO Line tip and ring protection fuses on the system backplane.
2. On the BUSINESSCOM PLUS 64, verify that the Matrix Expansion B-XPU-A **PCBs** are installed as needed.
3. Check that power supply cable is completely plugged in.
4. Turn off power supply. Remove and firmly reinsert all **PCBs**.
5. Verify that all cable connections are secure and correct.

Problem Related to One Card or One Group of Telephones/Lines

1. Remove and firmly reinsert the PCB experiencing the condition.
2. Temporarily swap this PCB with another similar PCB in a different KSU location.
3. Remove all **PCBs** of a similar type from the KSU (i.e., all station **PCBs** or all CO Line **PCBs**), and replace them one at a time. Check system operation after inserting each PCB. A problem on one circuit card can affect the operation of another PCB in the system.
4. Temporarily swap the station cables between similar station groups (i.e., **B1** and **B2**) to verify that the condition is not a wiring problem.

Problem Procedure for Non-Hardware Troubleshooting

Programming-related conditions:

1. Verify that the system options are properly programmed as specified in the BUSINESSCOM PLUS Software Manual for your system.
2. Verify that all of the extension programming options for operating the feature have been followed according to the User Guide for the appropriate software version and Operational Specifications in the manual for the correct system-operating software.
3. If the problem exists on one instrument, try the same steps on a similar instrument. If a problem exists on one particular function (e.g., Intercom Calls), try the same steps simultaneously on several instruments and at several locations.
4. If the problem occurs during a specific procedure (e.g., the system is Toll Restricted when it is not supposed to be), try the steps one key at a time and note the results.

Memory-related conditions:

1. Turn off system power supply, wait 15 seconds, and then turn on power again. This removes undesirable data and volatile memory features such as LND and Message Waiting indications.
2. Reinitialize the system (see Reinitializing the System in INSTALLING THE KSU AND POWER SUPPLY).
3. Entirely reinitialize the system (see Initializing the System in INSTALLING THE KSU AND POWER SUPPLY).
4. Turn on the power supply, and check system status. If conditions remain the same, replace the MPU PCB with a new MPU PCB. Replace the power supply or replace the KSU itself.

Problems Related to **Telco** Lines

1. Disconnect system from CO Line input, and meter CO Line protection fuses to verify continuity.
2. Verify that necessary CO Line Expansion and Matrix expansion cards are installed in the correct positions.
3. Measure Loop Current of all lines, as well as Ringing Voltage, On-Hook and Off-Hook Voltages.
4. Verify that each telephone number is associated with the line connection that is indicated.
5. Verify that the connections between the **telco** registered jacks and the KSU are made with the correct interconnecting cables.

Problems Involving Interference

Locating a source of interference:

1. Turn off optional equipment, one item at a time.
2. Turn off other equipment in the area of the main equipment.
3. To detect the presence of improper grounding through wiring:
Disconnect optional equipment, such as Music Source or Paging Equipment, by removing all electrical connections to the system.
4. Try to observe a pattern to the interference, such as AC hum, interference at a certain time of day, or every time that some other device is turned on or off.
5. Try a **different** AC branch circuit for system optional equipment.

Ground-related interference:

1. Verify that the system is properly grounded.
2. Verify that the power supply is properly grounded to the system ground.
3. To determine whether the ground provided is the source of interference:
Temporarily remove the CWP ground connection from the system. If it is the source of the interference, remove it and replace it with a better ground source. (The system must not be operated without a suitable ground: see Site Requirements in Part 2, PREPARING FOR INSTALLATION.)

III-3 POWER SUPPLY FUSES

 Be sure to replace a blown fuse only with one of the same type and power requirement.

TABLE 3-3 POWER SUPPLY FUSES FOR BUSINESSCOM PLUS SYSTEMS (1/3)

<u>Fuse</u>	<u>Function</u>	<u>Indication of Failure</u>
NITSUKO POWER SUPPLY FOR THE BUSINESSCOM PLUS 8/12 (V4S , P/N 62505 or P/N 15420)		
4.0A (F1)	Power Supply Protection	Red LED off
NITSUKO POWER SUPPLY FOR THE BUSINESSCOM PLUS 24/36 (V4M , P/N 15120)		
3.0A (F0)	Power Supply Protection	Green Neon Lamp off All Power Supply LEDs off
0.3A (F1)	Transformer Thermal Fuse Protection (located in Control Circuit)	All Power Supply LEDs off
3.0A (F2)	Battery Protection	BAT LED off
1.6A (F3)	5-Volt Supply Protection	5V LED off
0.5A (F4)	12-Volt Supply Protection	12V LED off
1.6A (F5)	28-Volt Supply Protection for Audio	A28V LED off
3.0A (F6)	28-Volt Supply Protection for Telephones (1)	1-T28V LED off
3.0A (F7)	28-Volt Supply Protection for Telephones (2)	2-T28V LED off
HARMER SIMMONS POWER SUPPLY FOR THE BUSINESSCOM PLUS 24/36 (HS117, P/N 15120H)		
4.0A *	Applied AC Switch On	Green AC NORMAL LED on and all voltage LEDs off
	+5V output functional	+5V red LED off
	+12V output functional	+12V red LED off
	28V output functional	28V red LED on
	Battery Backup Box supplies power for system operation during AC power failure	BATT OP red LED off out under normal AC power

* Circuit breaker replaces fuse.

TABLE 3-3 POWER SUPPLY FUSES FOR THE BUSINESSCOM PLUS SYSTEM (2/3)

<u>Fuse</u>	<u>Function</u>	<u>Indication of Failure</u>
NITSUKO POWER SUPPLY FOR THE BUSINESSCOM PLUS 64 (V4L, P/N 15320)		
6.0A (F0)	Power Supply Protection	Green Neon Lamp and all Power Supply LEDs off
1.0A (F1)	Transformer Thermal Fuse Protection (located in Control Circuit)	All Power Supply LEDs off
3.0A (F2)	Battery Protection	BAT LED off
1.6A (F3)	5-Volt Supply Protection	5V LED off
3.0A (F4)	12-Volt Supply Protection	12V LED off
3.0A (F5)	28-Volt Supply Protection for Audio	A28V LED off
3.0A (F6)	28-Volt Supply Protection for Telephones (1)	1-T28V LED off
3.0A (F7)	28-Volt Supply Protection for Telephones (2)	2-T28V LED off
3.0A (F8)	28-Volt Supply Protection for Telephones (3)	3-T28V LED off
3.0A (F9)	28-Volt Supply Protection for Telephones (4)	4-T28V LED off



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 TABLE 3-3 POWER SUPPLY FUSES FOR BUSINESSCOM PLUS SYSTEMS (3/3)

<u>Fuse</u>	<u>Function</u>	<u>Indication of Failure</u>
HARMER SIMMON POWER SUPPLY FOR THE BUSINESSCOM PLUS 64 (HS118A, P/N 15323H or HS118, P/N 15320H)		
8.0A (F101) @ 250 VAC	Applied AC switch on	Green AC NORMAL LED on and all voltage LEDs off
	+5V output functional	+5V red LED off
	+12V output functional	+12V red LED off
	28V output functional	28V red LED off
	Battery Backup Box supplies power for system operation	BATT OP red LED off out under normal AC power
HARMER SIMMONS BATTERY BACKUP BOX (HS130, P/N 15321H)		
15.0A (F101)	Battery Backup Box over- current protection	Upon power failure, Battery Backup Box does not support system operation

BUSINESSCOM

PLUSTM

Software Manual

BUSINESSCOM PLUS''

Software Manual

BUSINESSCOM PLUS''

Software Manual

Software Release 3
(Enhanced Software Package)

System Practice 01652 **SWB01**
Issue 1-1 August 21, 1987

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

TIE/communications, Inc.
8 Progress Drive
Shelton, CT 06484

Attention: Manager, Technical Publications

all

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CONTENTS

Preface

ABOUT THIS MANUAL

The preface states the general focus of the manual and lists other related BUSINESSCOM PLUS documents.

Section 1

STANDARD FEATURES

This section describes the telephone features that do not require system programming. Each feature includes operating instructions from a BUSINESSCOM PLUS key telephone.

Section 2

PROGRAMMABLE FEATURES/SOFTWARE OPTIONS

This section describes all the software options (programs) and all the features that require programming. Each program includes instructions on how to select an entry code for an option, how to fill in the entry codes on the Program Record Form, and then how to enter the codes into memory. Each programmable telephone feature includes operating instructions from a BUSINESSCOM PLUS key telephone.

Appendix A

OFF PREMISES EXTENSION (OPX) FEATURE OPERATION

This appendix provides feature operating instructions from an OPX telephone. Some of the BUSINESSCOM PLUS key telephone features are not available to an OPX telephone.

Index

Manual Focus

The BUSINESSCOM PLUS Software Manual describes all the features and programs included in the BUSINESSCOM PLUS Enhancement Software Package (ESP).

Other Related Documents

The BUSINESSCOM PLUS Software Manual is a companion manual to the following BUSINESSCOM PLUS documents:

- ▷ **BUSINESSCOM PLUS Hardware Manual**
Part Number 01652HWB01
This manual provides installation instructions for basic and optional equipment. It also provides a system overview and guidelines for ordering equipment.
- ▷ **BUSINESSCOM PLUS Program Record Form**
Part Number 01652PRF01
This form (optional) provides a grid on which to record the software options selected in Section 2 of the Software Manual. The Program Record Form (PRF) also includes step-by-step instructions on how to enter the recorded data into system memory.
- ▷ **BUSINESSCOM PLUS Telephone Feature Handbooks**
Multibutton and Executive/BLF Display, Part Number 01652MBB01
Attendant Console, Part Number 01652ACB01
Off Premises Extension (OPX), Part Number 01652OPX01
A handbook provides a short description of each telephone feature and step-by-step operating instructions. A QUICK REFERENCE card is also included. The Feature Checklist at the beginning of a handbook must be filled out by the installer during system programming. This way, the users know which features are available to them.

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HOW THIS SECTION IS ORGANIZED

The Standard Features are presented alphabetically, one feature per page. Even though Standard Features do not require system programming, they may be affected by programming. For instance, the Standard Feature *Callback* is disabled when the automatic *Call Waiting* feature is enabled in programming.

A Sample Standard Feature

CALLBACK

Feature

Callback automatically redials a busy extension. An extension user activates Callback by dialing a code after calling a busy extension. When the busy extension becomes free, Callback signals (rings) the extension that activated it. When the Callback signal is answered, an Intercom call is automatically placed to the previously busy extension. Calls can be placed while waiting for the Callback signal and Callback can be activated for more than one busy extension at a time.

▾ Conditions

- a. Callback cannot be used by an extension that is programmed for automatic Intercom Call Waiting Signals (Program 23).
- b. Callback cannot be activated when the DSS Console is used to call a busy extension.
- c. The Callback signal must be answered within 20 seconds or the Callback is canceled.
- d. An extension user can cancel Callback before receiving the Callback signal.
- e. Camp-On requests have priority over Callback requests.
- f. Callback can be activated after calling a busy Hunting Group (see Group Hunt and Group Hunt Transfer features). An extension receives the Callback signal as soon as first extension programmed into the group becomes available.
- g. Callback is not available to OPX extensions.

Feature description — includes conditions which affect feature operation.

Operation

To activate Callback:

1. Place Intercom call. Hear busy tone.
2. Dial *. Busy tone stops. One beep sounds over the speaker as confirmation.
3. Hang up.

To answer the Callback signal:

- The signal sounds like an Intercom ring, but the ICM key does not flash.
1. Lift handset. ICM lights and the extension is called. Ringing is heard in the handset.

To cancel Callback:

1. Lift handset.
2. Dial *.
3. Dial 1.
4. Hang up.

Feature operation

Feature

The Alarm Clock feature lets Display phone users set two alarms at their phones as a reminder for appointments, meetings, etc. The alarms sound every day at the set time unless they are canceled.

- ▶ Conditions
- None

Operation

To set an alarm:

1. Lift handset.
2. Press ALARM.
3. Dial 1 to set first alarm OR dial 2 to set second alarm. The alarm symbol and number light.
4. Dial time in terms of 24 hour clock. For example, dial 1545 for 3:45 PM.
5. Dial *.
6. Hang up. When the alarm sounds, the alarm symbol flashes.

To check an alarm setting:

1. Lift handset.
2. Press ALARM.
3. Dial 1 to check first alarm OR dial 2 to check second alarm. The set time displays.
4. Hang up.

To stop the alarm tone:

1. Press ALARM.

To cancel an alarm:

1. Lift handset.
2. Press ALARM.
3. Dial 1 to cancel first alarm OR dial 2 to cancel second alarm.
4. Dial *.
5. Hang up. Alarm number extinguishes.

BUSY LAMP FIELD

Feature

The Busy Lamp Field (BLF) feature provides a light (LED) indication under a Direct Station Selection (DSS) key to indicate the status (mode) of the associated extension. This feature applies to the DSS keys on a DSS Console, the 12 DSS keys on a 5-Line BLF telephone, and the 10 DSS/Function keys on BUSINESSCOM PLUS 8-, 12- and 24-Line phones (if those keys are equipped with LEDs). The light indications and corresponding extension modes are as follows:

DSS Light Indication	Extension Mode
Unlit	Idle
Steadily Lit	Busy (Off-Hook)
Slow Flash (At Console only)	The extension has received a Message Waiting indication from the Console.
Medium Flash (At Console only)	Busy (The extension is engaged in a voice announced Intercom call.)
Fast Flash (At Console only)	In Do Not Disturb

► Conditions

- a. The first two light indications (above) apply to phones with LED-equipped Function keys only if a B-STU-G PCB is installed for those phones and the proper entry is made in Program 50.
- b. These light indications also apply to a Console installed as a BLF unit only (that is, one that is not assigned a port in Program 13).

Operation

N/A

Feature

Call Forward reroutes incoming Intercom calls from one extension to another. When leaving the office, for example, an extension user can forward Intercom calls to a co-worker's phone. The Follow-Me allows the forwarded calls to be re-forwarded to yet another extension. Follow-Me can be activated at the originating extension or at the extension receiving the forwarded calls (the destination extension).

► Conditions

- a. Executive Call Forward (for Intercom calls) overrides Call Forward with Follow-Me.
- b. Intercom calls cannot be forwarded to an extension that has activated Do Not Disturb for Intercom calls.
- c. Call Forward with Follow-Me is not available to OPX extensions.

Operation

To activate Call Forward:

- Do not lift handset.
1. Press RG TR key.
 2. Dial originating extension number.
 3. Dial destination extension number.
 4. Press RG TR. One short beep sounds as confirmation. RG TR flashes intermittently at the originating extension and fast at the destination extension. One long beep means the destination extension is in DND.

To activate Follow-Me:

- Do not lift handset.
1. Press RG TR.
 2. Dial original extension number.
 3. Dial new destination extension number.
 4. Press RG TR. One short beep sounds as confirmation. RG TR extinguishes at the old destination extension and flashes fast at the new one. One long beep means the destination extension is in DND.

To cancel Call Forward or Follow-Me (it can only be canceled at the originating extension):

- Do not lift handset.
1. Press RG TR.
 2. Dial originating extension number.
 3. Press RG TR.

CALL MONITOR

Feature

Call Monitor, a feature of Standard phones and the BLF 5-Line Display telephone, lets a user dial a call without lifting the handset — a single key is pressed instead. When the call goes through, the user must lift the handset to talk. Call Monitor also allows an extension user to replace the handset while on Hold and listen to the call over the speaker. When the party on the line returns, the handset must be lifted to talk.

▼ Conditions

- a. Standard/5-Line BLF Display phones can be specially equipped with a Speakerphone PCB, in which case, the Speakerphone feature applies instead of Call Monitor. For installation information on Speakerphone PCBs, see the Optional Equipment section of the Installation Manual.

Operation

To dial a call using Call Monitor:

1. Press SPK. SPK lights. When Single Step Access is programmed, this step can be skipped.
2. Obtain Intercom or outside dial tone in the usual way. Dial tone is heard over the speaker.
3. Dial number.
4. Lift handset to talk.

To change to Call Monitor during a call:

1. Press SPK key. SPK lights.
2. Replace handset.

To change to the handset during Call Monitor:

1. Lift handset. SPK extinguishes.

To terminate a call while using Call Monitor (handset is already on-hook):

1. Press SPK. SPK extinguishes.

Feature

Call Pickup provides two distinct functions: one function applies to Intercom calls and the other to outside calls.

- Call Pickup allows the extension users to answer each other's Intercom calls. An Intercom call that is ringing (or voice-announced) at a particular extension can be answered from any other extension in the system.
- Call Pickup also allows an outside call on System Hold to be retrieved from an extension that does not have a Line key for the held call.

▶ Conditions

- a. In order to pick up someone else's Intercom call, an extension user must know the number of the extension that is ringing. If the ringing and answering extensions are in the same Internal Page Zone (Program 8), the # key can be used to pick up the Intercom call.
- b. When Flexible Line Appearance is enabled, Call Pickup retrieves a nonappearing line on Hold only if the retrieving extension and the extension that put the call on Hold have access to the same Line Group.
- c. Call Pickup for Intercom calls is not available to OPX extensions.

Operation**To use Call Pickup to answer an Intercom call:**

1. Lift handset. Do not press SPK instead.
2. Dial extension number of ringing phone.

OR

Dial #. If more than one extension is ringing, this code answers the call at lowest extension number.

To use Call Pickup to retrieve a call on System Hold:

1. Lift handset.
2. Press ICM.
3. Dial 99.
4. Dial the number of the extension that placed the call on Hold.

CALLBACK

Feature

Callback automatically redials a busy extension. An extension user activates Callback by dialing a code after calling a busy extension. When the busy extension becomes free, Callback signals (rings) the extension that activated it. When the Callback signal is answered, an Intercom call is automatically placed to the previously busy extension. Calls can be placed while waiting for the Callback signal and Callback can be activated for more than one busy extension at a time.

▽ Conditions

- a. Callback cannot be used by an extension that is programmed for automatic Intercom Call Waiting Signals (Program 23).
- b. Callback cannot be activated when the DSS Console is used to call a busy extension.
- c. The Callback signal must be answered within 20 seconds or the Callback is canceled.
- d. An extension user can cancel Callback before receiving the Callback signal.
- e. Camp-On requests have priority over Callback requests.
- f. Callback can be activated after calling a busy Hunting Group (see Group Hunt and Group Hunt Transfer features). An extension receives the Callback signal as soon as first extension programmed into the group becomes available.
- g. Callback is not available to OPX extensions.

Operation

To activate Callback:

1. Place Intercom call. Hear busy tone.
2. Dial *. Busy tone stops. One beep sounds over the speaker as confirmation.
3. Hang up.

To answer the Callback signal:

The signal sounds like an Intercom ring, but the ICM key does not flash.

1. Lift handset. ICM lights and the extension is called. Ringing is heard in the handset.

To cancel Callback:

1. Lift handset.
2. Dial *.
3. Dial 1.
4. Hang up.

Feature

Instead of hanging up after calling a busy extension, Camp-On lets an extension user dial a code and wait off-hook until the extension becomes available. As soon as the extension becomes free, the call automatically goes through.

► Conditions

- a. Camp-On cannot be activated by an extension that is programmed for automatic Intercom Call Waiting signals (Program 23).
- b. Camp-On cannot be activated when the DSS Console is used to call an extension.
- c. Camp-On requests have priority over Callback requests.
- d. Camp-On can also be activated when a user calls a busy Hunting Group (see Group Hunt or Group Hunt Transfer). Camp-On connects the user to the first extension programmed into the group as soon as it becomes available.
- e. When activated, Camp-On uses an Intercom link. Therefore, the number of Camp-Ons is limited by the number of Intercom links.

Operation

To activate Camp-On:

1. Place Intercom call. Hear busy tone.
2. Dial 2. Busy tone stops.
3. Do not hang up.
4. Wait for the call to go through. Ringing is heard as soon as the extension becomes free.

CONFERENCE, ADD-ON

Feature

Add-On Conference lets an extension user establish an outside call and then add up to five other inside parties to the conversation.

► Conditions

- a. If Multi-Line Conference is enabled in programming, a second outside call can be added to the conversation.

Operation

To establish an Add-On Conference:

1. Establish outside call.
2. Press CONF.
3. Press ICM.
4. Dial extension number of invited inside party. This party must answer using the handset.
5. Press CONF. Conference established. To add more inside parties, repeat steps 2-5.

To join an Add-On Conference when invited:

1. Lift handset.

Feature

Internal Conference allows a multiple-party Intercom conversation. An extension user can establish an Internal Conference with up to five other extension users (i.e., for a total of six internal parties).

▽ Conditions

- a. Internal Conference is not available to OPX extensions.
- b. When Program 66 is enabled, Internal Conference is unavailable to all extensions.

Operation

To establish an Internal Conference:

1. Establish Intercom call. The called party must answer using the handset.
2. Press CONF. Hear dial tone.
3. Dial extension number of next internal party. The called party must answer using the handset.
4. Press CONF. Conference is established. To add more internal parties, repeat steps 2-4.

To join an Internal Conference when invited:

1. Lift handset and wait. The Internal Conference is established by the Conference initiator.

DIRECT STATION SELECTION

Feature

Direct Station Selection (DSS) provides an extension user with one-button access to other extensions in the system. Each of the ten Function keys on a key telephone can be programmed to call a particular extension. On a BLF 5-Line Display telephone, the 12 DSS keys (underneath the Line keys) automatically call extensions 10-21 and cannot be reprogrammed. The DSS keys light on the 5-Line BLF phone and on some models of 8-, 12-, and 24-Line phones (see Busy Lamp Field in this section). On Display phones, the display can be used to check which extension a DSS-Function key is programmed to call.

- ▶ When Program 91 is activated, Function keys 1-9 are automatically programmed to call extensions 10-18 and key 10 is programmed for All Call Page (80). See Program 91. The keys can be reprogrammed using the steps below.
- ▶ **Conditions**
 - a. The Function keys can also be programmed to access any Page Zone (see Paging) or Door Chime Box using the steps below.
 - b. The 12 DSS keys on the 5-Line BLF Display phone can also be used to transfer a call (see Unannounced/Announced Transfer in Section 2).
 - c. DSS is not available to OPX extensions.

Operation

To program a Function key for DSS:

1. Lift handset.
2. Press DC.
3. Dial #.
4. Press Function key.
5. Dial extension number. Or, to program a Page Zone, dial 80-87; to program a Door Chime Box, dial 88 or 89.
6. To program more keys, repeat steps 2-5.
7. Hang up.

To use a DSS key:

1. Lift handset. If Single Step Access is programmed and the phone is equipped with a Speakerphone, this step can be skipped.
2. Press DSS key.

To display the number programmed under a DSS/Function key:

- Do not lift handset.
- 1. Press CHECK.
- 2. Press ICM.
- 3. Press Function key. Key number displays, then stored number.
- 4. Press CLOCK to return to normal display.

Feature

DSS Off-Hook Signaling lets the attendant (24/36/64 system) use the DSS Console to send a signal to a busy (off-hook) extension, then wait for a reply. (A DSS Console key is steadily lit when an extension is off-hook.)

▶ Conditions

- a. DSS Off-Hook Signaling can also be used to transfer a call to a busy extension.

Operation

To use DSS Off-Hook Signaling:

1. Lift handset.
2. Press steadily lit DSS key. Two short bursts of tone are sent. An outside call in progress is automatically put on Hold.
3. Wait for a reply. Press SG/VC to send more tones.

LAST NUMBER DIALED

Feature

Last Number Dialed (LND) stores the last telephone number manually dialed at an extension so that the number can be redialed with a few touches.

▶ **Conditions**

- a. LND does not store Speed Dial numbers.
- b. The last telephone number manually dialed is erased from memory when Line Queuing is used.
- c. If the Flash (FLSH) key is used to terminate a call, that call cannot be redialed using LND. LND will only redial calls that were terminated by hanging up.
- d. LND is not available to OPX extensions.

Operation

To activate LND:

1. Lift handset.
2. Press Line key.
3. Press DC.
4. Dial *.

Note: The Function key initialization feature (see Program 91) provides another way to activate LND.

Feature

When an extension user makes an Intercom call and receives a busy signal or no answer, Message Waiting lets this user leave a visual indication (flashing MW light) at the busy/unattended phone requesting a return call. An extension user can leave Message Waiting indications at several different extensions.

▼ Conditions

- a. In the 8/12 system, an extension can accept one Message Waiting. In the 24/36/64 systems, it can accept three: one from each attendant and one from another phone. The attendant position can accept only one.
- b. A Display phone can show the extension number that left a Message Waiting.
- c. A Message Waiting indication can be canceled after it is left.
- d. Message Waiting is not available to OPX extensions.

Operation

To leave a Message Waiting using the telephone:

1. Place Intercom call. Busy or no answer.
2. Dial 0. MW flashes intermittently as confirmation.
3. Hang up.

To leave a Message Waiting using the DSS Console:

1. Lift handset.
2. Press DSS key. Busy or no answer.
3. Press MW. MW flashes intermittently as confirmation.
4. Hang up.

To call the extension that left a Message Waiting indication:

1. Lift handset.
2. Press ICM.
3. Dial *. The extension is called. If busy or unattended, dial 0 to leave a Message Waiting there. It can then be canceled, if desired.

To cancel all Message Waiting indications:

1. Lift handset.
2. Dial *, 0, *.
3. Hang up.

To cancel an individual Message Waiting using the telephone:

1. Lift handset.
2. Dial *, extension number, *.
3. Hang up.

To cancel a Message Waiting indication using the DSS Console:

- Do not lift handset.
- 1. Press MW.
- 2. Press DSS key for the desired indication.

To display the extension number that left a Message Waiting:

- Do not lift handset.
- 1. Press CHECK.
- 2. Dial *. Extension number (s) displays.
- 3. Press CLOCK to return to normal display.

MUSIC ON HOLD, SYNTHESIZED

Feature

Synthesized Music On Hold (MOH) sends synthesized music to an outside party on System or Exclusive Hold. The system provides two synthesized melodies: GREENSLEEVES and HOME ON THE RANGE. The port 10 telephone can be used to select which melody plays. The system is initially set up to play GREENSLEEVES.

▼ Conditions

- a. Synthesized MOH requires a switch setting: SW1 on the B-TSU-A PCB must be set next to the number 1. To turn synthesized MOH off, set SW1 to the opposite position.
- b. An external MOH music source (e.g., radio, tape player) can be used instead (see the Optional Equipment section in the Installation Manual).

Operation

To select a synthesized MOH melody:

1. Lift handset.
2. Press OPAC.
3. Press HOLD.
4. Dial 1 for GREENSLEEVES.
OR
Dial 2 for HOME ON THE RANGE.
5. Hang up.

Feature

The Privacy feature ensures that all outside and Intercom calls are private.

▶ **Conditions**

- a. An extension programmed for Executive Override can override the Privacy feature and break into an outside call in progress at another extension.

Operation

N/A

RING TRANSFER

Feature

Ring Transfer reroutes an extension user's incoming outside calls so they ring at a different extension. An extension user who activates Ring Transfer does not lose access to incoming calls. Incoming access is **shared** with the receiving (destination) extension, but only the destination extension rings.

► Conditions

- a. A maximum of three extensions can reroute outside calls to the same destination extension.
- b. Calls cannot be rerouted to an extension in Do Not Disturb.
- c. If Flexible Line Appearance is enabled, incoming calls can only be rerouted to extensions that normally have access to those calls.
- d. Executive Call Forward and Night Transfer override Ring Transfer.
- e. Ring Transfer is not available to OPX extensions.

Operation

To activate Ring Transfer:

1. Lift handset.
2. Press RG TR.
3. Dial destination extension number.
4. Dial *. One short beep sounds as confirmation. RG TR flashes slowly at this phone and fast at the destination extension. One long beep means calls cannot be rerouted to that extension.
5. Hang up.

To cancel Ring Transfer (it can only be canceled at the originating extension):

1. Lift handset.
2. Press RG TR twice. RG TR extinguishes.
3. Hang up.

Feature

Save lets an extension user store a telephone number in memory for quick dialing at a later time. The saved number stays in memory until a new one is saved in its place.

▽ Conditions

- a. A number that is manually dialed after using a Speed Dial key cannot be saved.
- b. If a call is terminated by pressing the Flash (FLSH) key (which provides new dial tone) and a number is saved using the new dial tone, the number of the terminated call plus the Flash are stored with the saved number. To prevent this, the call should have been terminated by hanging up the handset.
- c. Save is not available to OPX extensions.

Operation

To store a number for Save:

1. Lift handset.
2. Access an outside line. Hear dial tone.
3. Dial number to be stored.
4. Press OPAC.
5. Press DC.
6. Hang up.

To call a saved number:

1. Lift handset.
2. Access an outside line. Hear dial tone.
3. Press DC.
4. Dial #.

Note: The Function key initialization feature (see Program 91) provides another way to store and call a Save number.

SETTING DATE AND TIME

Feature

A Display phone connected to port 10 can be used to set the date and time for all Display phones in the system and for SMDR.

▶ **Conditions**

- a. The procedure below cannot be activated while the port 10 telephone is in the Transfer Recall Display mode (see that feature).

Operation

To set the date and time (the entire procedure must be performed):

1. Lift handset.
2. Press OPAC.
3. Press CLOCK.

The Year

4. Dial four digits for the year. For example, 1987.
5. Dial *.

The Date

6. Dial two digits (01-12) for the month. Jan.=01, Feb.=02, etc.
7. Dial two digits (01-31) for the date.
8. Dial *.

The Day

9. Dial a single digit (0-6) for the day. Sun.=0, Mon.=1, etc.
10. Dial *.

The Time

11. Dial four digits for the time (24 hour clock). For example, dial 1305 for 1:05 PM.
12. Dial *.
13. Hang up. The display shows the new date and time.

Feature

Speakerphone, a feature of Display phones (except the 5-Line BLF Display phone), allows a user to place calls and answer ringing calls without lifting the handset — a key is pressed instead. To converse on a Speakerphone call, an extension user just speaks toward the phone; the phone's microphone picks up the extension user's voice (also see Microphone On/Off). A user can also change to the Speakerphone during a handset call.

► Conditions

- a. A 5-Line BLF Display or Standard phone (which is normally equipped for Call Monitor, not Speakerphone) can be specially equipped with a Speakerphone PCB (see the Optional Equipment section of the Installation Manual).

Operation

To place a call using Speakerphone:

1. Press SPK. SPK lights. If Single Step Access is programmed, this step can be skipped.
2. Obtain outside or Intercom dial tone in usual way. Dial tone is heard over the speaker.
3. Dial number.
4. Speak toward phone when call is established.

To answer an outside call using Speakerphone:

1. Press SPK. SPK lights. If Ringing Line Preference is programmed, this single step answers the call.
2. Press flashing Line key.
3. Speak toward the phone.

To answer a ringing Intercom call using Speakerphone:

1. Press SPK. SPK lights.
2. Speak toward the phone.

To change to Speakerphone during a handset call:

1. Press SPK. SPK lights.
2. Replace handset.

To hang up a Speakerphone call:

1. Press SPK.

To change to the handset during a Speakerphone call:

1. Lift handset. SPK extinguishes.

Note: For almost any feature instruction that says, "Lift handset," the SPK key can be pressed instead (exceptions noted where appropriate). SPK must be pressed again to hang up.

STEP CALLING

Feature

When an extension user makes an Intercom call and receives a busy signal or no answer, Step Calling lets the user call the other extensions, in ascending order, by just dialing a code. For example, if extension 12 is busy, Step Calling tries extension 13. If there is no answer at extension 13, Step Calling tries extension 14, and so on.

▷ Conditions

- a. Step Calling is canceled if it reaches an extension that is not installed.
- b. Step Calling is not available to OPX extensions.

Operation

To activate Step Calling:

1. Place Intercom call. Receive busy tone or no answer.
2. Dial #. Next extension is automatically called. To call the next extension, dial # again.

Feature

The clock on a Display phone can be used as a Stopwatch to time events. For example, the Stopwatch can be used to time the duration of a phone call.

▶ Conditions

- a. If a call is put on Hold while it is being timed, the Stopwatch resets to zero and the date and time display.

Operation

To activate the Stopwatch:

1. Press **TIMER** to start timing.
2. Press **TIMER** again to stop timing. The **TIMER** key can be pressed again to restart the timing.
3. Press **CLOCK** to return to the date and time.

TRANSFER RECALL DISPLAY

Feature

When an unanswered transferred call re-rings an attendant position (Display telephone plus DSS Console), the Transfer Recall Display feature displays the line number of the call and the extension number to which it was transferred. For example, if a transferred call on line 01 recalls from extension 14, the display shows:

L-01	S-14	L=line S=station (extension)
------	------	---------------------------------

If more than one call returns at a time, the display rotates to show each re-ringing call.

▾ Conditions

- a. Transfer Recall Display only displays re-ringing calls that were transferred using the DSS Console.
- b. When Transfer Recall Display is activated, no other display will show in the window (e.g., the date and time).

Operation

To activate Transfer Recall Display:

- Do not lift handset.
1. Press OPAC.
 2. Press RG INW at the Console. The HOLD key lights. The HOLD key can still be used in the usual way while Transfer Recall Display is activated.

To cancel Transfer Recall Display:

- Do not lift handset.
1. Press OPAC.
 2. Press RG INW at the Console. The HOLD key extinguishes.

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HOW THIS SECTION IS ORGANIZED

The BUSINESSCOM PLUS software options are provided through a series of numbered programs. Each program is related to one or more system/telephone features. This section presents the programs in numerical order on the right-hand pages. Across from each program, on the facing left-hand page, is the related feature (s). In other words, this section pairs a program with its related feature: program on the right, feature on the left.

To locate a program, refer to the program listing at the beginning of this section.
To find a feature, refer to the Index.

An example of a feature/program partnership is shown on the following two pages.

HOW THIS SECTION IS ORGANIZED

A Sample Feature/ Program Partnership

LINE QUEUING, a telephone feature, requires that an entry be made in the QUEUE GROUP field of PROGRAM 1. LINE QUEUING is on the left-hand page, the QUEUE GROUP field of PROGRAM 1 is on the right-hand page (see the example below). Sometimes feature and program names match. For instance, the system feature, LINE GROUPS, requires PROGRAM 2—LINE GROUPS.

The Feature Partner

Capitalized reference to the partner program. This reference appears when feature and program names do not match.

LINE QUEUING

Feature

Feature description — includes conditions which affect feature operation and additional programming requirements (see the facing page for the corresponding program numbers).

When all lines in a particular QUEUE GROUP are busy, Line Queuing puts an extension user on a “waiting list” for an available line in the group. As soon as a line becomes free, the user’s phone rings and a Line key flashes. Up to eight extension users can activate Line Queuing for the same Queue Group.

Conditions

- a. An extension must be programmed for outward access to the lines in a Queue Group unless the lines are Common Use Lines.
- b. In order to use Line Queuing for a Queue Group that does not appear on the Line keys, an extension must be programmed for Recall Line Preference.
- c. When signaled, the user must answer within 20 seconds or the line rings the next person on the “waiting list.”

Operation

Feature operation — system features do not have operating instructions (shown as N/A).

To use Line Queuing:

1. Lift handset.
2. Press HOLD. Hear dial tone.
3. Dial Queue Group number (1-6). HOLD flashes and dial tone stops as confirmation. Busy tone means the extension cannot use Line Queuing for that group.
4. Hang up.

When Line Queuing rings an extension:

1. Lift handset. If Recall Line Preference is programmed, this single step provides outside dial tone (and the HOLD key extinguishes). If it is not programmed, Step 2 is necessary.
2. Press flashing Line key. Hear dial tone. HOLD extinguishes.

When a feature has telephone operating instructions (as in the example above), the feature description should be read first, then the program information, then operating instructions. This is because a programmable telephone feature operates as described only when the related software option has been programmed.

HOW THIS SECTION IS ORGANIZED

The Program Partner

When a program contains more than one field, such as PROGRAM 1 below, only one field is discussed per right-hand page.

Program field under discussion (bold).
Fields in light type are discussed on the previous or following right-hand pages.

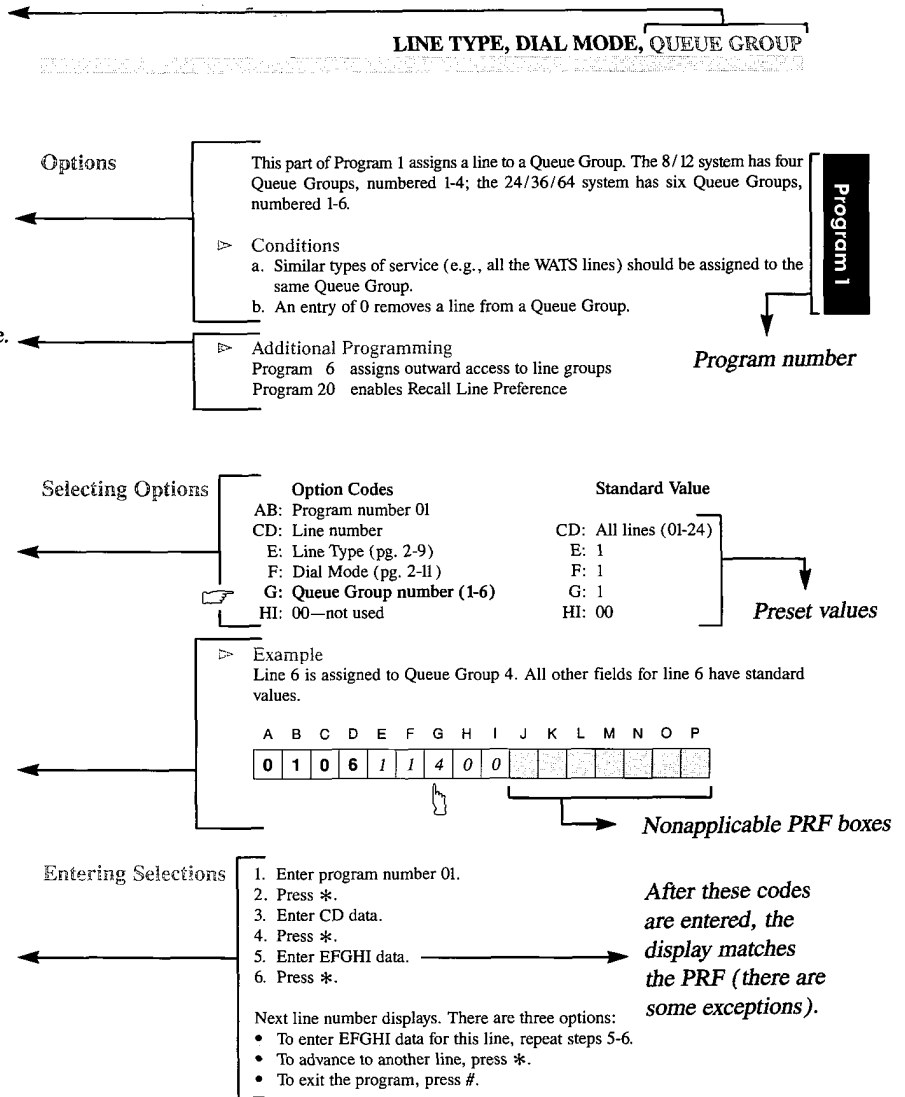
Program description — includes conditions which affect the options and their corresponding entry codes.

Other programs that must be considered for proper operation of the partner feature.

How to fill out the Program Record Form (PRF) boxes (A→P) with the proper entry codes. In programs with multiple fields, a pointer (hand) indicates which PRF box corresponds to the field under discussion. Boxes that represent constant values, such as program number, line number, etc., are already filled in (bold).

A sample selection and the corresponding entry on the PRF. Entries in italics are the option codes that must be filled in by the installer.

How to enter the option codes into system memory from the port 10 Display phone. See PROGRAMMING THE SYSTEM on the following page.



The option codes do not have to be filled in on the Program Record Form (PRF). They can be entered directly into memory using the instructions under ENTERING SELECTIONS. After the codes are entered into memory, the Feature Checklist and Charts sections of each Feature Handbook should be filled out. This way, the extension users know which features they have.

PROGRAMMING THE SYSTEM

The system is programmed from a Display phone connected to port 10. When the system is first installed, the System Initialization procedure (below) must be run before the system is put into the programming mode. The System Initialization procedure does not need to be run if program options are changed at a later date; however, it can be run if necessary.

Caution: The System Initialization procedure sets all program options to their standard (preset) values.

System Initialization

To initialize the system when it is first installed:

1. Turn system power OFF.
2. Disconnect the lithium battery from the CNBT/CN1 connector on the B-CP8SU-B or B-MPU-C (Figure 2-1).
3. Set the initialization switch (Figure 2-1):
 - On the B-CP8SU-B, set #1 toggle to the position opposite the number 1.
 - On the B-MPU-C, set WR toggle to position I (initial).
4. Turn system power ON. Wait approximately 10 seconds.
5. Set the initialization switch to the opposite position.
6. Plug in the lithium battery. The battery prevents memory loss. When the battery is weak or disconnected, BAT flashes on all Display phones.

To reinitialize the system at a later date:

1. Use the procedure above, skipping steps 2 and 6. Leaving the battery connected saves Speed Dial data and Function Key assignments.

Entering The Programming Mode

To enter the programming mode (Figure 2-2):

1. Remove the access door on the port 10 Display phone.
2. Press the programming button with a paper clip. The display shows 00. Data can be entered into memory.

Program Entry Notes

- Run PROGRAM 91 when the system is first installed.
- If an "E" displays, see PROGRAM 90 - ERROR CHECK.
- If a "C" displays, the initialization switch is in wrong position.
- If a dash flashes after an entry is made, that entry is not compatible with the parameters of the program.
- If data entries must be erased after they are entered, see PROGRAM 99 - PROGRAM BUFFER CANCELATION.
- When entering data for a series of lines, ports, etc., the Standard Value can be retained for any one in the series by pressing *; the next one in the series automatically displays.

Exiting The Programming Mode

To exit the programming mode:

1. Press the programming button when the display shows 00.
The display changes to the date and time.
2. Replace the programming access door.

PROGRAMMING THE SYSTEM

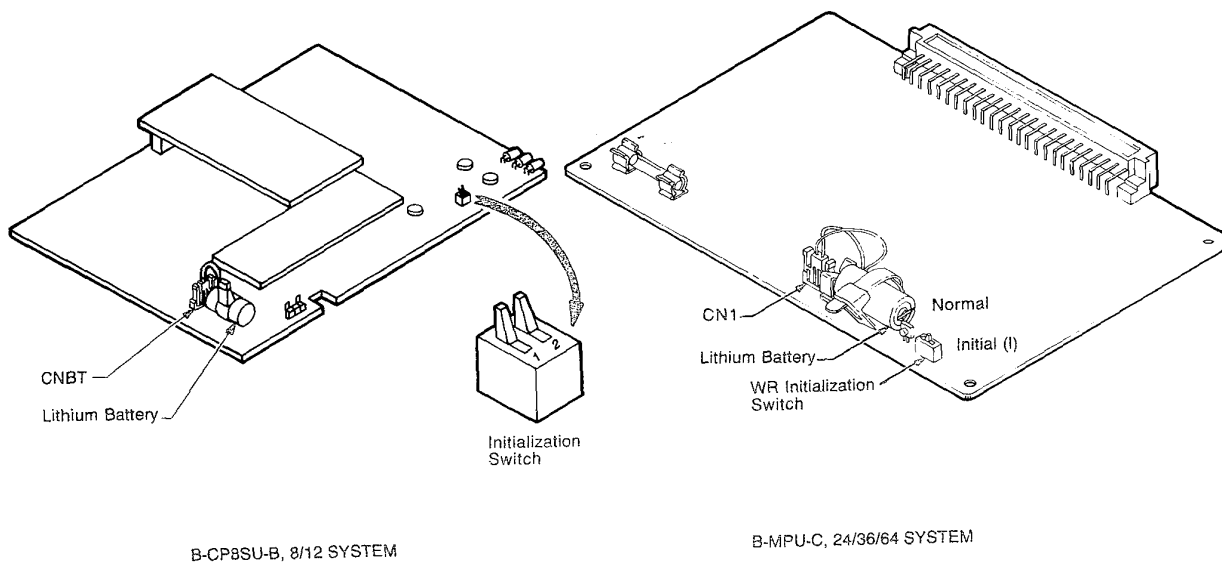


Figure 2-1 LITHIUM BATTERY AND INITIALIZATION SWITCHES

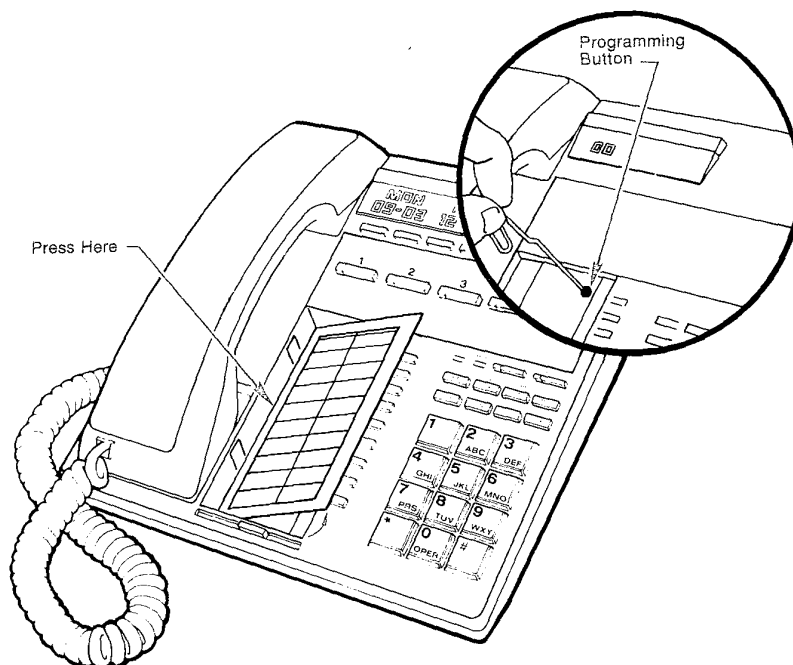


Figure 2-2 ENTERING THE PROGRAMMING MODE

LINE TYPE

Feature

Line Type defines the type of outside lines connected to the system. The system can accommodate Central Office (CO) lines or lines from a Private Branch Exchange (PBX) already installed at the customer site. The lines are similar in the way incoming calls are answered, but different in the way outgoing calls are placed—an outgoing call on a PBX line requires an access code before dialing, while an outgoing call on a CO line does not. System/telephone features are available to both types of lines, and PBX features are available to the PBX lines via the FLSH key (see Flash).

► Conditions

- a. The required PBX access codes must be entered in programming.
- b. A Flash timing for CO and/or PBX lines must be selected in programming.
- c. Centrex lines from a Central Office should be programmed as PBX type.

Operation

N/A

Options

This part of Program 1 assigns a Line Type to each outside line: CO or PBX.

▼ **Conditions**


None

▼ **Additional Programming**

Program 43 selects access codes for the PBX lines

Program 56 selects the Flash timing for CO/PBX lines

Selecting Options

Option Codes	Standard Value
AB: Program number 01	
CD: Line number	CD: All lines (01-24)
 E: 0—no line installed 1—CO line 3—PBX line	E: 1
F: Dial Mode (pg. 2-11)	F: 1
G: Queue Group (pg. 2-13)	G: 1
HI: 00—not used	HI: 00

▼ **Example**

Line 6 is a PBX line. All other fields for line 6 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	1	0	6	3	1	1	0	0							



Entering Selections

Options must be selected for E through I before the data for a line can be entered (H and I are always 0). The entry procedure is given in the Queue Group part of Program 1.

PULSE TO TONE CONVERSION

Feature

Pulse to Tone Conversion lets an extension user temporarily convert the DIAL MODE of a line from pulse (Dial Pulse) to tone (DTMF) while dialing an outside call. This way, pulse lines can be used to access computer services that require tone dialing. A converted line reverts to pulse when the user hangs up or puts the call on Hold. A Pulse to Tone Conversion can also be stored with a Speed Dial number.

- ▶ **Conditions**
None

Operation

To convert from pulse to tone while dialing an outside call:

1. Dial #. No signal (tone) is heard. Digits dialed before # are dialed as pulse; after #, as tones.

Options

This part of Program 1 assigns a Dial Mode to an outside line: Pulse or DTMF.

- ▶ Conditions
 - a. The assigned Dial Mode must conform to the Dial Mode of the CO lines ordered from the telco or the Dial Mode of the PBX.
- ▶ Additional Programming
 - Program 57 selects the rate at which Dial Pulses are sent
 - Program 58 selects make/break ratio for Dial Pulse lines

Selecting Options

	Option Codes	Standard Value
	AB: Program number 01	
	CD: Line number	CD: All lines (01-24)
	E: Line Type (pg. 2-9)	E: 1
▶	F: 0—Pulse 1—DTMF	F: 1
	G: Queue Group (pg. 2-13)	G: 1
	HI: 00—not used	HI: 00

- ▶ Example

Line 6 uses pulse dialing. All other fields for line 6 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	1	0	6	1	0	1	0	0							



Entering Selections

Options must be selected for E through I before the data for a line can be entered (H and I are always 0). The entry procedure is given in the Queue Group part of Program 1.

LINE QUEUING

Feature

When all lines in a particular QUEUE GROUP are busy, Line Queuing puts an extension user on a “waiting list” for an available line in the group. As soon as a line becomes free, the user’s phone rings and a Line key flashes. Up to eight extension users can activate Line Queuing for the same Queue Group.

▶ Conditions

- a. An extension must be programmed for outward access to the lines in a Queue Group unless the lines are Common Use Lines.
- b. In order to use Line Queuing for a Queue Group that does not appear on the Line keys, an extension must be programmed for Recall Line Preference.
- c. When signaled, the user must answer within 20 seconds or the line rings the next person on the “waiting list.”

Operation

To use Line Queuing:

1. Lift handset.
2. Press HOLD. Hear dial tone.
3. Dial Queue Group number (1-6). HOLD flashes and dial tone stops as confirmation. Busy tone means the extension cannot use Line Queuing for that group.
4. Hang up.

When Line Queuing rings an extension:

1. Lift handset. If Recall Line Preference is programmed, this single step provides outside dial tone (and the HOLD key extinguishes). If it is not programmed, Step 2 is necessary.
2. Press flashing Line key. Hear dial tone. HOLD extinguishes.

Options

This part of Program 1 assigns a line to a Queue Group. The 8/12 system has four Queue Groups, numbered 1-4; the 24/36/64 system has six Queue Groups, numbered 1-6.

- ▶ **Conditions**
 - a. Similar types of service (e.g., all the WATS lines) should be assigned to the same Queue Group.
 - b. An entry of 0 removes a line from a Queue Group.
- ▶ **Additional Programming**
 - Program 6 assigns outward access to line groups
 - Program 20 enables Recall Line Preference

Selecting Options

Option Codes	Standard Value
AB: Program number 01	
CD: Line number	CD: All lines (01-24)
E: Line Type (pg. 2-9)	E: 1
F: Dial Mode (pg. 2-11)	F: 1
G: Queue Group number (1-6)	G: 1
HI: 00—not used	HI: 00

- ▶ **Example**
Line 6 is assigned to Queue Group 4. All other fields for line 6 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	1	0	6	1	1	4	0	0							

Entering Selections

1. Enter program number 01.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFGHI data.
6. Press *.

Next line number displays. There are three options:

- To enter EFGHI data for this line, repeat steps 5-6.
- To advance to another line, press *.
- To exit the program, press #.

LINE GROUPS

Feature

The Line Groups feature puts the CO/PBX lines into groups. These groups are commonly formed for different departments, for the type of service they provide (e.g., WATS, DID, FX), or for Tenant Service use. Once lines are grouped, the line groups can be assigned to an extension for the purpose of placing and answering outside calls. (A line group intended for a particular extension can contain more lines than the extension has keys because a line does not have to appear on a key in order to be used for placing and answering calls.)

▼ Conditions

- a. A line does not have to be put into a line group if it is designated for the Common Use Line feature.
- b. An extension must be programmed for outgoing/incoming access to a line group in order to place/answer calls on that group.

Operation

N/A

Options

This program assigns CO/PBX lines to line groups. The 8/12 system has eight line groups, 01-08; the 24/36/64 has thirty, 01-30. A line group can contain any number of lines.

- ▶ **Conditions**
 - a. Only consecutive lines can be grouped (e.g., lines 3,4,5).
 - b. Lines in one group can overlap with lines in another.
- ▶ **Additional Programming**
 - Program 1 assigns a Line Type (CO/PBX) to an outside line
 - Program 6 assigns extensions outgoing access to line groups
 - Program 7 assigns extensions incoming access to line groups

Selecting Options

Option Codes	Standard Value
AB: Program number 02	
CD: Line group number	CD: 01
EF: Lowest numbered line in group (00—no line)	EF: 01
GH: Highest numbered line in group (00—no line)	GH: XX (XX = maximum number of lines in system)

- ▶ **Example**
Line group 4 contains lines 2-6.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	2	0	4	0	2	0	6								

Entering Selections

1. Enter program number 02.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.
7. Enter GH data.
8. Press *.

Next line group number displays. There are three options:

- To enter EFGH data for this group, repeat steps 5-8.
- To advance to another group, press *.
- To exit the program, press #.

DIRECT INWARD SYSTEM ACCESS (DISA)

Feature

Direct Inward System Access (DISA) lets someone outside the system call in on a DISA LINE and directly access an extension, place a call on a system line, or access the Group Hunt feature—in each case, bypassing the system operator. A security code is required to place an outside call, and the Class of Service assigned to a security code determines the type of calls that can be placed. Access to a DISA line can be restricted, for example, to night use only, and unanswered or unanswered calls on the DISA line are automatically terminated within 30 seconds.

▼ Conditions

- a. The DISA caller must use a DTMF telephone.
- b. Release of Abandoned Calls on Hold must be enabled in programming.
- c. An extension user can use a DISA line for outgoing calls if the extension is programmed for outgoing access to the line.
- d. The system must be programmed for the Group Hunt feature.
- e. Systems with SMDR can be programmed to print DISA-originated outside calls and Account Codes can be assigned to these calls.

Operation

A. To use DISA to call an extension or access Group Hunt:

1. Call the DISA line. The system answers with dial tone.
2. Dial desired extension number OR dial 8, then the Hunting Group number (0-9). Music on Hold plays or there is silence until the user answers.

To answer a call on a DISA Line (the DISA Line key flashes fast because the call is on Exclusive Hold):

1. Lift handset. If Recall Line Preference is programmed, Step 2 is not required.
2. Press flashing Line key.

B. To use DISA to place a call on a system line:

1. Call the DISA line. The system answers with dial tone.
2. Dial #.
3. Dial DISA security code. Receive confirmation tone.
4. Dial Queue Group number (1-6) for desired line OR dial 9, then two-digit line number. If busy tone is heard, use either procedure below to disconnect.
5. Dial telephone number including PBX Access Code if required.
6. To enter an Account Code: Dial *, Dial Account Code, Dial *.
7. Dial #. The call rings through.

To hang up the outside call and reuse the DISA line:

1. Dial *, #, *. Hear dial tone.
2. Repeat steps 2-7 in procedure B or Step 2 in A.

To disconnect both the DISA line and the system line:

1. Dial *, #, #. This procedure must be used before hanging up.

Options

This part of Program 3 designates a system line as an incoming line used for DISA. A DISA line is automatically assigned to each extension. The 8/12 system allows two DISA lines; the 24/36/64 allows all lines to be DISA lines.

▼ Conditions

- a. Each DISA line requires an unused OPX port, and the OPX port must be programmed for DISA in Program 8.
- b. If Flexible Line Appearance is enabled, a DISA line must be assigned to each extension in Program 7.
- c. If a DISA line does not appear on an extension's Line keys, the extension must be programmed for Ringing Line Preference (Program 20).

▼ Additional Programming

- Program 6 can assign outgoing access to the DISA line
- Program 8 assigns DISA to an OPX port
- Program 54 enables Release of Abandoned Calls on Hold
- Program 68 selects day/night access to DISA
- Program 70 selects DISA security codes
- Program 71 enables SMDR to print DISA calls
- Program 72 assigns a Class of Service to DISA codes

Selecting Options

	Option Codes	Standard Value
	AB: Program number 03	
	CD: Line number	CD: All lines (01-24)
☞	E: 0—disable DISA line 1—enable DISA line	E: 0
	F: FAX Line (pg. 2-19)	F: 0
	G: Common Use Line (pg. 2-21)	G: 0

▼ Example

Line 7 is a DISA line (enter 0 for FAX and Common Use).

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	3	0	7	1	0	0									



Entering Selections

1. Enter program number 03.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFG data.
6. Press *.

Next line number displays. There are three options:

- To enter EFG data for this line, repeat steps 5-6.
- To advance to another line, press *.
- To exit program, press #.

FAX LINE

Feature

The FAX Line feature assigns a system line to a FAX machine or any other ancillary device connected to the system (e.g., a modem). When the device is in use, the associated Line key lights at all phones. For installation information, see FAX (Remote Busy Line Indication) in the Optional Equipment section of the Installation Manual and Technical Bulletin 86-0048.

▶ Conditions

- a. The device must provide a contact closure when on-line.
- b. An extension can use a FAX Line for outgoing calls if the extension is programmed for outgoing access to the line.

Operation

N/A

Options

This part of Program 3 allows a line to be designated for a FAX machine or other ancillary device. The 8/12 system can accommodate up to two FAX lines (using alarm inputs 1 & 2). The 24/36/64 system can accommodate up to six FAX lines (using alarm inputs 1 & 2 and external inputs 3 to 6).

► Conditions

- a. If the two alarm inputs on the D1 block in the 24/36/64 system are used for alarms, only four FAX lines can be assigned.
- b. If an alarm input is used for a FAX line, then 0 must be entered in Program 28 for that alarm.

► Additional Programming

Program 6 can assign outgoing access to a FAX line

Program 28 disables an alarm so that the alarm input can be used for FAX

Selecting Options

	Option Codes	Standard Value
	AB: Program number 03	
	CD: Line number	CD: All lines (01-24)
	E: DISA Line (pg. 2-17)	E: 0
☞	F: 0—disable FAX line 1—enable FAX line	F: 0
	G: Common Use Line (pg. 2-21)	G: 0

► Example

Line 4 is a FAX line (enter 0 for DISA and Common Use).

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	3	0	4	0	1	0									



Entering Selections

1. Enter program number 03.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFG data.
6. Press *.

Next line number displays. There are three options:

- To enter EFG data for this line, repeat steps 5-6.
- To advance to another line, press *.
- To exit the program, press #.

COMMON USE LINE

Feature

The Common Use Line feature designates a line as incoming and outgoing and automatically assigns it to every extension in the system.

▶ Conditions

- a. Common Use Lines are unavailable when Flexible Line Appearance is enabled.
- b. A Common Use Line is subject to the Class of Service (COS) of an extension.
- c. An extension with COS 8 cannot access a Common Use Line.
- d. An incoming call on a Common Use Line does not ring at any extension. An extension can receive ringing on a Common Use Line only if the extension is programmed with incoming access and audible (Program 7) to a line group which contains the Common Use Line (Program 2).
- e. In order to answer calls on a Common Use Line that does not appear under a Line key, an extension must be programmed for Ringing Line Preference.

Operation

Calls are placed and answered on a Common Use Line as they are on any other line. See *Placing Outside Calls* and *Answering Outside Calls*.

Options

This part of Program 3 allows a line to be designated as a Common Use Line. Any number of lines can be designated as Common Use Lines.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
 - Program 2 puts a Common Use Line into a line group (when ringing is desired)
 - Program 7 assigns an extension incoming access/audible to the group that contains the Common Use Line
 - Program 20 enables Ringing Line Preference for extensions with nonappearing Common Use Lines

Selecting Options

	Option Codes	Standard Value
	AB: Program number 03	
	CD: Line number	CD: All lines (01-24)
	E: DISA Line (pg. 2-17)	E: 0
	F: FAX Line (pg. 2-19)	F: 0
▶	G: 0—disable Common Use Line 1—enable Common Use Line	G: 0

▶ **Example**

Line 1 is a Common Use Line (enter 0 for DISA and FAX).

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	3	0	1	0	0	1									



Entering Selections

1. Enter program number 03.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFG data.
6. Press *.

Next line number displays. There are three options:

- To enter EFG data for this line, repeat steps 5-6.
- To advance to another line, press *.
- To exit the program, press #.

EXECUTIVE OVERRIDE

Feature

Executive Override lets an extension user override the system's privacy feature — a user can break into an outside call at another extension, including a call on a Private Line. The intrusion may or may not be preceded by a warning tone, depending on programming, and the warning tone comes over the speaker of both extensions.

Caution: Unauthorized monitoring of calls using the Executive Override feature may be interpreted as an invasion of privacy.

► Conditions

- a. Up to five extension users can break into a single call.
- b. An extension user can only break into a call that appears on a Line key.
- c. The warning tone is not heard during a Speakerphone call.
- d. Executive Override cannot break into an Unsupervised Conference, a call on Exclusive Hold, a DISA (Direct Inward System Access) line, or an outside line that was accessed via the DISA line.
- e. Executive Override can break into a Multi-Line Conference only when the number of internal Conference members, including those who break in, does not exceed six.
- f. Executive Override is not available to OPX extensions.

Operation

To use Executive Override:

1. Lift handset.
2. Press steadily lit Line key. This breaks into the telephone conversation on that line. On Display phones, the Line key turns green.

Options

This program enables or disables Executive Override for an extension. Executive Override can be enabled with or without a warning tone.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 04	
CD: Port number	CD: All ports (10-73)
E: 0—disable Exec. Override	E: 0
1—enable with warning tone	
2—enable without warning tone	

- ▼ **Example**
Port 11 can use Executive Override with a warning tone.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	4	1	1	1											

Entering Selections

1. Enter program number 04.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

UNSUPERVISED CONFERENCE

Feature

Unsupervised Conference allows an extension user to establish a Conference with two outside parties, then hang up, leaving the outside parties connected. The extension user can later join the Unsupervised Conference if desired. The system can accommodate more than one Unsupervised Conference at a time, and each Unsupervised Conference must be assigned an unused key telephone port in the partner program, UNSUPERVISED CONFERENCE PORT.

▼ Conditions

- a. The 8/12 system can accommodate up to two Unsupervised Conferences, the 24/36/64 can accommodate up to four.
- b. Outside lines used for Unsupervised Conference must provide open loop disconnect supervision.
- c. Multi-Line Conference and Release of Abandoned Calls on Hold must be enabled in programming.
- d. Unsupervised Conference is not available to OPX extensions.

Operation

To establish an Unsupervised Conference:

1. Establish first outside call.
2. Press CONF. The call is put on Hold.
3. Establish second outside call.
4. Press CONF. Three-party Conference is established.
5. Press CONF. Both outside parties are put on Hold.
6. Hang up. Unsupervised Conference is established.

To later join an Unsupervised Conference:

1. Lift handset.
2. Press either Line key of the Conference.

To leave after joining:

1. Press CONF.
2. Hang up.

Options

This program assigns a key telephone port to an Unsupervised Conference circuit. In the 8/12 system, the Unsupervised Conference circuits are numbered 01-02; in the 24/36/64 system they are numbered 01-04.

- ▶ **Conditions**
 - a. An OPX port cannot be assigned to an Unsupervised Conference.
 - b. The station PCB for each Unsupervised Conference port must be installed, but the port must not be terminated with a phone.
 - c. A resistor must be punched down across the AT/AR pair of each Unsupervised Conference port on the B block.
 - d. If the system has All Call Paging, then the Unsupervised Conference ports must be programmed with 0 for Paging Groups in Program 8.

- ▶ **Additional Programming**
 - Program 30 enables Multi-Line Conference
 - Program 54 enables Release of Abandoned Calls on Hold

Selecting Options

Option Codes	Standard Value
AB: Program number 05	
CD: Unsup. Conference number (01-04)	CD: All Unsup. Conferences (01-04)
EF: Port number	EF: 00 (Unassigned)

- ▶ **Example**
Unsupervised Conference 02 is assigned to port 15.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	5	0	2	1	5										

Entering Selections

1. Enter program number 05.
2. Press *. Unsup. Conference number 01 displays.
3. Enter EF data.
4. Press *.

Next Unsup. Conference number displays. There are three options:

- To enter EF data for this Unsup. Conference, repeat steps 3-4.
- To advance to another Unsup. Conference number, press *.
- To exit the program, press #.

PLACING OUTSIDE CALLS

Feature

An extension user can place outside calls on a particular line group only if the extension has **OUTGOING LINE ACCESS** to that group. When an extension is assigned outgoing access to a line group, the lines in the group appear under the Line keys with the same number (e.g., line 1 appears under key 1). If desired, an extension can be assigned a line group that contains more lines than the extension has keys; a line does not have to appear under a key in order to be accessed. The way an extension user accesses an outgoing line depends on the type of line—CO or PBX—and whether the line appears under a Line key.

► Conditions

- a. Line groups must be selected in programming.
- b. If the customer wants the lines to appear under different keys, see **Flexible Line Appearance**.
- c. The **Class of Service (COS)** and **Night COS** features determine the type of calls that can be placed from each extension.
- d. In addition to outgoing line groups, the extensions can be assigned the **Common Use Line** feature for placing calls.

Operation

To place a call on a CO line:

1. Lift handset.
2. Press Line key. Hear dial tone. Key lights red on Multibutton phones, green on Display phones.

OR

When the line does not appear under a Line key:

Press ICM, dial 9, dial two-digit line number. Hear dial tone.

3. Dial telephone number.

To place a call on a PBX line:

1. Lift handset.
2. Press Line key. Hear dial tone. Key lights red on Multibutton phones, green on Display phones

OR

When the line does not appear under a Line key:

Press ICM, dial 9, dial two-digit line number. Hear dial tone.

3. Dial 9. Hear new dial tone.
4. Dial telephone number.

Note: The **Automatic Line Access**, **Speakerphone**, **Call Monitor** and **Single Step Access** features provide other ways to place calls.

Options

This program selects the line groups each extension can use for outgoing calls. Up to two outgoing line groups can be assigned to an extension.

- ▶ **Conditions**
 - a. When Flexible Line Appearance is requested, do not make entries in this program (any data entered is disregarded).
- ▶ **Additional Programming**
Program 2 forms line groups

Selecting Options

Option Codes	Standard Value
AB: Program number 06	
CD: Port number	CD: All ports (10-73)
EF: 1st line group number (00—no group)	EF: 01
GH: 2nd line group number (00—no group)	GH: 00

- ▶ **Example**
Port 12 has outgoing access to line groups 3 and 4.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	6	1	2	0	3	0	4								

Entering Selections

1. Enter program number 06.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.
7. Enter GH data.
8. Press *.

Next port number displays. There are three options:

- To enter EFGH data for this port, repeat steps 5-8.
- To advance to another port, press *.
- To exit program, press #.

ANSWERING OUTSIDE CALLS

Feature

An extension user can answer an incoming call on a particular line group only if the extension has **INCOMING LINE ACCESS** to that group. When an extension is assigned incoming access to a line group, the lines in the group appear under the Line keys with the same number (e.g., line 1 appears under key 1). If desired, an extension can be assigned incoming access to a line group that has more lines than the extension has keys; a line does not have to appear under a key in order to answer a call on that line.

After an incoming line group is assigned to an extension, one of four types of **INCOMING AUDIBLE** (ringing) is assigned to that line group. A line group can be programmed to ring an extension while the system is in the night mode (**Night Transfer feature ON**), day mode (**Night Transfer feature OFF**), during both modes, or not at all.

► Conditions

- a. Line groups must be selected in programming.
- b. If the customer wants the lines to appear under different keys, see **Flexible Line Appearance**.
- c. Line groups that contain nonappearing lines must be programmed for audible.
- d. Multibutton extensions that are assigned nonappearing lines must be programmed for **Ring Line Preference**.
- e. In addition to incoming line groups, the extensions can be assigned the **Common Use Line** feature for answering calls.

Operation

When a call comes in on a Line key, the key flashes red. When the call is answered, the Line key stops flashing, and on a Display phone, it turns green.

To answer an outside call:

1. Lift handset. If **Ring Line Preference** is enabled in programming, this single step answers the call.
2. Press flashing Line key.

Note: The **Speakerphone** and **Single Step Access** features provide ways to answer calls without lifting the handset.

Options

This program selects the line groups each extension can access for incoming calls and the audible assignments (day and/or night mode ringing) for the extensions. Up to two incoming line groups can be assigned to an extension.

- ▶ **Conditions**
 - a. When Flexible Line Appearance is enabled, Program 7 provides an extension with incoming access/audible **and** outgoing access to the first line group and disregards the second.
- ▶ **Additional Programming**
 - Program 2 forms line groups
 - Program 20 enables Ringing Line Preference

Selecting Options

Option Codes	Standard Value
AB: Program number 07	
CD: Port number	CD: All ports (10-73)
E: Bin number 1	
FG: 1st line group number (00—no group)	FG: 01
H: 0—no ringing 1—Day ringing 2—Night ringing 3—Day/Night ringing	H: 3 for port 10; 0 for others
I: Bin number 2	
JK: 2nd line group number (00—no group)	JK: 00
L: Select 0,1,2, or 3—see H	L: 0

- ▶ **Example**
Port 14 has incoming access to line group 3 with night ringing, and line group 6 with day/night ringing.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	7	1	4	1	0	3	2	2	0	6	3				

Entering Selections

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Enter program number 07. 2. Press *. 3. Enter CD data. 4. Press *. Bin number 1 displays. 5. Enter FGH data. 6. Press *. Bin number 2 displays. 7. Enter JKL data. 8. Press *. | <p>Next port and bin 1 display. There are three options:</p> <ul style="list-style-type: none"> • To enter FGHJKL data for this port, repeat steps 5-8. • To advance to another port, press * until desired port displays. • To exit the program, press #. |
|--|---|

NIGHT CLASS OF SERVICE

Feature

The Night Class of Service feature assigns the same Class of Service (COS) level to all extensions that are put in the night mode (see Night Transfer). When the night mode is canceled, the normal (day) COS level of each of those extensions is automatically reinstated.

▶ **Conditions**

- a. The night COS level must be selected in programming.

Operation

Night Class of Service automatically goes into effect for an extension when that extension is put into the night mode via the Night Transfer feature.

Options

This part of Program 8 determines whether Night Class of Service (COS) feature goes into effect for an extension when it is put into the night mode.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
Program 48 selects the night COS level

Selecting Options

Option Codes	Standard Value
AB: Program number 08	
CD: Port number	CD: All ports (10-73)
E: 0—disable Night COS 1—enable Night COS	E: 0
F: Confirmation Tone (pg. 2-33)	F: 0
G: Instrument Type (pg. 2-35)	G: 0
H: Do Not Disturb (pg. 2-37)	H: 0
I: Internal Page Zone (pg. 2-39)	I: 1

- ▼ **Example**
Port 16 has Night COS enabled. All other fields for port 16 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	8	1	6	1	0	0	0	1							



Entering Selections

Options must be selected for E through I before the data for a port can be entered. The entry procedure is given in the Internal Page Zone part of Program 8.

CONFIRMATION TONE

Feature

The Confirmation Tone feature allows a tone to be emitted each time a Line, Function, or dial pad key is pressed. The tone confirms the key was fully pressed.

▼ Conditions

- a. Confirmation Tone is not available to OPX extensions.

Operation

To activate Confirmation Tone:

- Do not lift handset.
1. Dial *.

To cancel Confirmation Tone:

- Do not lift handset.
1. Dial *. Final Confirmation Tone is heard.

Options

This part of Program 8 enables or disables the Confirmation Tone feature for an extension.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
None

Selecting Options

Option Codes

Standard Value

AB: Program number 08	
CD: Port number	CD: All ports (10-73)
E: Night COS (pg. 2-31)	E: 0
F: 0—enable Confirm. Tone 1—disable Confirm. Tone	F: 0
G: Instrument Type (pg. 2-35)	G: 0
H: Do Not Disturb (pg. 2-37)	H: 0
I: Internal Page Zone (pg. 2-39)	I: 1

▼ **Example**

Port 16 has Confirmation Tone disabled. All other fields for port 16 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	8	1	6	0	1	0	0	1							



Entering Selections

Options must be selected for E through I before the data for a port can be entered. The entry procedure is given in the Internal Page Zone part of Program 8.

INSTRUMENT TYPE

Feature

Instrument Type identifies the type of telephone instrument (or feature) assigned to the ports on a key station PCB (B-STU-A/B) and the ports on an OPX station PCB (B-STU-D).

- ▶ Conditions
- None

Operation

N/A

Options

This part of Program 8 assigns an Instrument Type to each port. Only a key telephone can be assigned to a key telephone port. An OPX port can, however, accommodate a pulse or DTMF single line telephone (500/2500-type), or it can be designated for the DISA feature.

▶ **Conditions**

a. When DISA is assigned to an OPX port, the OPX PCB for that port must be installed, but the port must not be terminated with a phone (NOTE: If DISA is assigned to more than one port, the lowest numbered DISA line selected in Program 3 uses the lowest numbered port selected in this program, the next highest line uses the next highest port, etc.). The OPX PCB must also be properly strapped and DTMF Receiver PCBs must be installed for the DISA ports (see Technical Bulletin 86-0075 for the 8/12 system; a Technical Bulletin is being issued for the 24/36/64 system).

▶ **Additional Programming**

Program 3 assigns DISA lines

Selecting Options

	Option Codes	Standard Value
	AB: Program number 08	
	CD: Port number	CD: All ports (10-73)
	E: Night COS (pg. 2-31)	E: 0
	F: Confirmation Tone (pg. 2-33)	F: 0
☞	G: 0—key telephone	G: 0
	1—DISA	
	2—Pulse (500-type) phone	
	3—DTMF (2500-type) phone	
	H: Do Not Disturb (pg. 2-37)	H: 0
	I: Internal Page Zone (pg. 2-39)	I: 1

▶ **Example**

Port 16 is a DTMF single line phone. All other fields for port 16 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	8	1	6	0	0	3	0	1							



Entering Selections

Options must be selected for E through I before the data for a port can be entered. The entry procedure is given in the Internal Page Zone part of Program 8.

DO NOT DISTURB

Feature

Do Not Disturb (DND) blocks incoming calls and Call Waiting signals. An extension user can activate DND while on a call or while the extension is idle. There are four levels of DND:

- Level 0—No DND capability
- Level 1—Blocks CO audible (ringing)
- Level 2—Blocks CO audible and Intercom calls
- Level 3—Blocks CO audible and Intercom calls **OR** just CO audible

An extension user can still place calls and answer outside calls while the phone is in DND. Outside calls can be answered since access to the line is not blocked and the Line key still flashes.

▼ Conditions

- a. In the 24/36/64 system, the attendant can override DND.
- b. A DND level that blocks Intercom calls also blocks paged announcements.
- c. When Executive Call Forward is activated, any DND condition at the secretary extension is automatically canceled.
- d. Do Not Disturb is not available to OPX extensions.

Operation

A. To activate DND while the phone is idle:

- Do not lift handset.
 - 1. For level 1: Press DND once. DND flashes.
For level 2: Press DND once. DND lights steadily.
For level 3: Press DND once to block CO audible and Intercom calls.
DND lights steadily.
- OR
- Press DND twice to block just CO audible. DND flashes.

To cancel DND while the phone is idle:

- Do not lift handset.
- 1. Press DND once or twice—whichever makes DND extinguish.

B. To activate DND while on a call:

1. Use the instructions in A with one exception:
press the OPAC key before pressing the DND key.

To cancel DND while on a call:

1. Use the canceling instructions in A with one exception:
press the OPAC key before pressing the DND key.

Options

This part of Program 8 assigns one of four Do Not Disturb (DND) levels to an extension.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
Program 55 allows the attendant to override DND

Selecting Options

Option Codes	Standard Value
AB: Program number 08	
CD: Port number	CD: All ports (10-73)
E: Night COS (pg. 2-31)	E: 0
F: Confirmation Tone (pg. 2-33)	F: 0
G: Instrument Type (pg. 2-35)	G: 0
H: 0—disable DND	H: 0
1—Level 1 DND	
2—Level 2 DND	
3—Level 3 DND	
I: Internal Page Zone (pg. 2-39)	I: 1

▶ **Example**

Port 16 has DND level 3. All other fields for port 16 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	8	1	6	0	0	0	3	1							



Entering Selections

Options must be selected for E through I before the data for a port can be entered. The entry procedure is given in the Internal Page Zone part of Program 8.

INTERNAL PAGING – INTERNAL ZONE, ALL CALL, MEET-ME ANSWER/CONFERENCE

Feature

Internal Paging lets an extension user make a paged announcement over the speaker of the other telephones in the system. Any extension can make a page, but only key telephones that are assigned to an INTERNAL PAGE ZONE can receive a page. There are four types of Internal Paging:

- *Internal Zone Paging* lets an extension user page all the telephones assigned to a particular Internal Page Zone.
- *All Call Paging* lets an extension user page all Internal Page Zones.
- *Meet-Me Answer/Conference Paging* allows an extension user to page one or more persons, then reserve an Intercom circuit for 30 seconds so that the paged party/parties can reply. Meet-Me Answer lets one party reply, while Meet-Me Conference lets up to five people reply and jointly converse.

▼ Conditions

- a. A double beep precedes a page unless disabled in programming.
- b. A Do Not Disturb that blocks Intercom calls also blocks pages.
- c. The system can be programmed to broadcast All Call Paging over external speakers.
- d. When Meet-Me Answer/Conference Paging is initiated, the zone that was paged and All Call Paging are unavailable for 30 seconds.
- e. An OPX phone cannot initiate Meet-Me Conference nor be used to reply to a Meet-Me Answer/Conference.

Operation

To make an Internal Zone or All Call page:

1. Lift handset.
2. Press ICM, dial code 81-84 for zones 1-4; 80 for All Call (also see Program 91).

OR

At the Console: press IZ1-IZ4 for zones 1-4; AC for All Call.

3. Make announcement.
4. Hang up.

To initiate Meet-Me Answer or Meet-Me Conference:

1. Lift handset.
2. Press ICM, dial code 81-84 for zones 1-4; 80 for All Call.
3. Page person, announce reply code: # for Meet-Me Answer; CONF key for Meet-Me Conference.
4. Dial # or press CONF key for Meet-Me Answer/Conference, respectively. This reserves the Intercom reply circuit.
5. Do not hang up. Wait for a reply.

To reply to Meet-Me Answer or Meet-Me Conference:

1. Lift handset (do not press SPK) at a phone that received the page, wait five seconds.
2. Dial # for Meet-Me Answer or press CONF key for Meet-Me Conference.

Options

This part of Program 8 assigns an extension to a particular Internal Page Zone. The 8/12 system has two zones, numbered 1-2; the 24/36/64 system has four zones, numbered 1-4. An extension receives all pages that are made to its assigned zone.

- ▶ **Conditions**
 - a. An extension can be assigned to only one zone.
- ▶ **Additional Programming**
 - Program 19 allows external speakers to receive All Call Paging
 - Program 52 disables the double beep which precedes pages

Selecting Options

Option Codes	Standard Value
AB: Program number 08	
CD: Port number	CD: All ports (10-73)
E: Night COS (pg. 2-31)	E: 0
F: Confirmation Tone (pg. 2-33)	F: 0
G: Instrument Type (pg. 2-35)	G: 0
H: Do Not Disturb (pg. 2-37)	H: 0
I: 0—does not receive paging 1,2,3,4—Zones 1-4	I: 1

- ▶ **Example**
Port 16 is in Internal Page Zone 3. All other fields for port 16 have standard values.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	8	1	6	0	0	0	0	3							

Entering Selections

1. Enter program number 08.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFGHI data.
6. Press *.

Next port number displays. There are three options:

- To enter EFGHI data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

EXECUTIVE CALL FORWARD

Feature

Executive Call Forward allows two extensions to be specially paired for the purpose of forwarding calls. The extension designated as the “executive” can forward its incoming calls to the extension designated as the “secretary.”

▶ Conditions

- a. The executive extension must be programmed for a level of Do Not Disturb (DND). If, for example, DND level 1 is selected (CO audible blocked), the executive extension can forward its CO calls—access and audible—to the secretary extension.
- b. The secretary extension can reach the executive extension even while Executive Call Forward is activated.
- c. When activated, Executive Call Forward automatically cancels a DND condition at the secretary extension so that calls can be forwarded there.
- d. Secretary extensions that do not have Line keys for the forwarded lines must be programmed for Ringing Line Preference.
- e. Executive Call Forward is not available to OPX extensions.

Operation

To activate Executive Call Forward:

- Do not lift handset.
1. For level 1: Press DND once. DND flashes.
CO calls are forwarded.
For level 2: Press DND once. DND lights steadily.
CO and Intercom calls are forwarded.
For level 3: Press DND once. DND lights steadily.
CO and Intercom calls are forwarded.
OR
Press DND twice. DND flashes.
Just CO calls are forwarded.

To cancel Executive Call Forward:

- Do not lift handset.
1. Press DND once or twice—whichever makes the DND key extinguish.

Options

This program assigns “executive/secretary” pairs for the Executive Call Forward feature. Up to eight such pairs can be formed. Up to all eight executive extensions can be paired with the same secretary extension, if desired.

- ▶ **Conditions**
 - a. An executive extension cannot be programmed as a secretary extension for a different pair.
 - b. An OPX extension can be a secretary, but not executive, extension.
- ▶ **Additional Programming**
Program 8 assigns DND levels

Selecting Options

Option Codes	Standard Value
AB: Program number 09	
C: Bin number	
DE: Executive port number	DE: 00 (Unassigned)
FG: Secretary port number	FG: 0 (Unassigned)

- ▶ **Example**
Two executive/secretary pairs are assigned: executive port 12 is paired with secretary port 14, and executive port 15 is paired with secretary port 17.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	9	1	1	2	1	4									
0	9	2	1	5	1	7									

Entering Selections

1. Enter program number 09.
2. Press *. Bin number 1 displays.
3. Enter DE data.
4. Press *.
5. Enter FG data.
6. Press *.

- Next bin number displays. There are three options:
- To enter DEFG data for this bin, repeat steps 3-6.
 - To advance to another bin, press *.
 - To exit the program, press #.

DUAL HANDSFREE HOTLINE

Feature

Dual Handsfree Hotline allows one extension to simultaneously call two other extensions. The “secretary” extension can make a voice announced Intercom call over the speaker of both “executive” extensions. The users at the executive extensions can reply Handsfree (i.e., by just speaking toward the phone) and all three parties can converse.

► Conditions

- a. The simultaneous call goes through only if both executive extensions are idle and an executive extension has not forwarded Intercom calls.
- b. In order to reply Handsfree, the microphone at an executive extension must be on (see Microphone On/Off).
- c. When an executive replies by lifting the handset, the other executive is disconnected.
- d. The secretary can make a ringing Intercom call to both executives; however, an executive must lift the handset (or press SPK) to reply, which disconnects the other executive.

Operation

To activate Dual Handsfree Hotline:

1. Lift handset at secretary extension.
2. Press ICM.
3. Dial either executive extension number. Both are called. If ringing is heard, the secretary can dial 1 to convert the call into a voice announced call. If busy tone is heard, the secretary can still contact the other executive by repeating steps 2-3 using the other executive extension number.

Options

This program assigns “secretary/executive” partnerships for Dual Handsfree Hotline. Up to four such partnerships can be assigned.

- ▶ **Conditions**
 - a. A secretary extension can be assigned to more than one pair of executive extensions (e.g., secretary 13 can be assigned to executive pair 14 & 15 and executive pair 16 & 17).
 - b. An OPX extension can be a secretary, but not executive, extension.
- ▶ **Additional Programming**
 Program 24 assigns voice announced Intercom calls systemwide

Selecting Options

Option Codes	Standard Value
AB: Program number 10	
CD: Secretary port number	CD: 00 (Unassigned)
EF: First executive port number	EF: 00 (Unassigned)
GH: Second executive port number	GH: 00 (Unassigned)

- ▶ **Example**
 Secretary port 13 is assigned to executive ports 21 and 22.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	0	1	3	2	1	2	2								

Entering Selections

1. Enter program number 10.
 2. Press *.
 3. Enter CD data.
 4. Press *.
 5. Enter EF data.
 6. Press *.
 7. Enter GH data.
 8. Press *.
- To enter CDEFGH data for more partnerships, repeat steps 3-8.
 - To exit the program, press #.

GROUP HUNT AND GROUP HUNT TRANSFER

Feature

Group Hunt searches for an idle extension among all the extensions in a particular HUNTING GROUP. Extensions are assigned to Hunting Groups in programming—for example, all the extensions in a sales department might be assigned to Hunting Group 7. When an extension user dials a Hunting Group number, the Group Hunt feature checks the first extension programmed into that group, then the second, third, etc., and automatically calls the first idle one it finds.

Group Hunt Transfer lets an extension user transfer an outside call to the first idle extension in a Hunting Group.

▶ Conditions

- a. When all extensions in a Hunting Group are busy, a user receives busy tone and can activate Callback or Camp-On. These features automatically connect the user to the first extension programmed into that group as soon as it becomes available.
- b. When Group Hunt Transfer is used and the transferred call is not answered, the call re-rings (recalls) the transferring extension according to the recall timers set in programming.

Operation

To activate Group Hunt:

1. Lift handset.
2. Press ICM.
3. Dial #.
4. Dial Hunting Group number. First idle extension is called. If there is no answer, the user can dial # again to call the next idle extension.

To activate Group Hunt Transfer:

1. Establish outside call.
2. Press ICM. Call is automatically put on Hold.
3. Dial #.
4. Dial Hunting Group number. First idle extension is called. If there is no answer, the user can dial # again to call the next idle extension.
5. Announce the call. If the person does not accept, press the flashing Line key to return to call or dial # for the next idle extension.
6. Press RG INW. The call is sent.
7. Hang up.

Options

This program assigns extensions to Hunting Groups for the Group Hunt and Group Hunt Transfer features. Up to ten Hunting Groups can be formed, numbered 0 to 9, with a maximum of eight extensions per group.

- ▶ **Conditions**
 - a. An extension can be assigned to any or all Hunting Groups.
- ▶ **Additional Programming**
 - Program 38 sets the recall time for an Unannounced Transfer
 - Program 39 sets the recall time for an Announced Transfer

Selecting Options

Option Codes	Standard Value
AB: Program number 11	
C: Hunting Group number	C: Unassigned
D: Bin number	
EF: Port number	EF: 00 (Unassigned)

- ▶ **Example**
Hunting Group 5 contains ports 12, 15, and 16.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	1	5	1	1	2										
1	1	5	2	1	5										
1	1	5	3	1	6										

Entering Selections

1. Enter program number 11.
2. Press *.
3. Enter C data.
4. Press *. Bin number 1 displays.
5. Enter EF data.
6. Press *.

Next bin displays. There are three options:

- To enter EF data for this bin, repeat steps 5-6.
- To advance to another bin or Hunting Group, press * until desired bin or Hunting Group number displays.
- To exit the program, press #.

DOOR CHIME BOX

Feature

A Door Chime Box, usually placed next to an entrance door, is a combination doorbell and Intercom. When someone presses the CALL button on the box, chime tones are sent to designated extensions. When an extension user answers the chimes, a two-way conversation is possible with the person at the door. An extension user can also call a Door Chime Box.

For installation information on the Door Chime Box, see the Optional Equipment section of the Installation Manual.

► Conditions

- a. The system can accommodate up to two Door Chime Boxes; both boxes cannot be used at the same time.
- b. The duration of the chime tones is programmable.
- c. If programmed, a single alert sounds when someone calls either box.
- d. Door Box 1 sends different types of chime tones than Door Box 2.
- e. When the chime is answered, an Intercom link is used.
- f. A customer-provided door unlock device can be installed with a Door Chime Box (see Door Unlock feature).
- g. An OPX extension cannot call a Door Chime Box nor answer the chime tones.

Operation

To answer the chime tones from a phone that receives them:

1. Lift handset. Connection established.

To answer the chime tones from a phone that does not receive them:

1. Lift handset.
2. Dial 9. ICM key lights and connection is established.

To call a Door Chime Box:

1. Lift handset.
2. Press ICM, then dial 88 for box 1, 89 for box 2.

OR

At Console: press DOOR 1 for box 1, DOOR 2 for box 2.

Options

This program selects the extensions to receive the chime tones from a Door Chime Box. Up to ten extensions can receive the chimes from both boxes.

- ▶ **Conditions**
 - a. An OPX extension cannot receive the chimes.
- ▶ **Additional Programming**
 - Program 32 selects the duration of the chimes at the extensions
 - Program 62 enables the alert tone at both Door Chime Boxes

Selecting Options

Option Codes	Standard Value
AB: Program number 12	
CD: Bin number	
EF: Port number	EF: 00 (Unassigned)

- ▶ **Example**
Ports 10, 11, and 12 receive chime tones.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	2	0	1	1	0										
1	2	0	2	1	1										
1	2	0	3	1	2										

Entering Selections

1. Enter program number 12.
2. Press *. Bin 01 (CD data) displays.
3. Enter EF data.
4. Press *.

Next bin displays. There are three options:

- To enter EF data for this bin, repeat steps 3-4.
- To advance to another bin, press *.
- To exit the program, press #.

DIRECT STATION SELECTION CONSOLE

Feature

The Direct Station Selection (DSS) Console is an optional piece of equipment that can be used with a key telephone in the 24/36/64 system (usually the attendant phone). It allows single-key access to other extensions and some features. The DSS keys, which represent the extensions in the system, also light or flash to indicate the status of the extensions (see Busy Lamp Field). A DSS Console must have a DSS CONSOLE PORT ASSIGNMENT in programming in order to access extensions/features. Without a port assignment, a Console only acts as a Busy Lamp Field unit. The system can accommodate up to two DSS Consoles and four Busy Lamp Field units.

For installation information, see DSS Console in the Optional Equipment section of the Installation Manual and Technical Bulletin 86-0067.

► Conditions

- a. The first DSS Console, when assigned a port in programming, is also automatically assigned a dedicated Intercom link, reducing the number of available Intercom links by one. The second DSS Console only occupies an Intercom link when in use.

Operation

See the following features:

- Alarm
- Busy Lamp Field
- DND Override
- Door Chime Box
- DSS Off-Hook Signaling
- Hold, System
- Intercom Calls
- Message Waiting
- Night Transfer
- Paging, Internal
- Paging, External
- Transfer, Announced
- Transfer, Unannounced

DSS CONSOLE PORT ASSIGNMENT (24/36/64 System only)

Options

This program identifies which key telephone can use a DSS Console by assigning the port number of the key telephone to the DSS Console. The system can accommodate two DSS Consoles.

- ▼ Conditions
 - a. An OPX port cannot be assigned to a DSS Console.
- ▼ Additional Programming
 - None

Selecting Options

Option Codes	Standard Value
AB: Program number 13	
CD: Console number (01 or 02)	CD: Both Consoles (01 and 02)
EF: Port number of telephone to use the Console	EF: 00 (Unassigned)

- ▼ Example
 - DSS Console #2 can be used by the port 10 telephone.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	3	0	2	1	0										

Entering Selections

1. Enter program number 13.
2. Press *. Console 01 (CD data) displays.
3. Enter EF data.
4. Press *.

Console number 02 displays. There are two options:

- To enter EF data for this Console, repeat steps 3-4.
- To exit the program, press #.

FLEXIBLE STATION NUMBERING

Feature

Flexible Station Numbering allows any extension number, within a specific range, to be assigned to each telephone port in the system. Originally, extension numbers match telephone port numbers. Refer to the chart below for the range of extension numbers available to the telephone ports.

SYSTEM	PORT	AVAILABLE EXTENSION NUMBERS
8	10-17	10-79
12	10-21	10-79
24	10-33	10-79
36	10-45	10-79
64	10-73	10-79

▾ **Conditions**
None

Operation

N/A

Options

This program assigns an extension number to a telephone port.

▶ **Conditions**

- a. An extension number can be assigned to only one telephone port. For example, if the customer wants extension number 15 assigned to port 10, then extension 15 cannot also be assigned to port 15. Since extension number 15 is originally assigned to port 15, then the extension number for port 15 must be changed.

▶ **Additional Programming**

None

Selecting Options

Option Codes

Standard Value

AB: Program number 14

CD: Port number

EF: Extension number

CD: All ports (10-73)

EF: 10-73

▶ **Example**

Extension number 33 is assigned to port 11.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	4	1	1	3	3										

Entering Selections

1. Enter program number 14.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.

Next port number displays. There are three options:

- To enter EF data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

FLEXIBLE LINE APPEARANCE

Feature

Flexible Line Appearance allows a line group to shift appearance so that the lowest numbered line in the group (regardless of the number) appears under Line key 1, and the rest follow on keys 2, 3, 4, etc. For example, a line group containing lines 6-10 can appear under Line keys 1-5. Flexible Line Appearance shifts exactly one line group at every extension and automatically provides each extension with both incoming and outgoing access to that line group.

Caution: Flexible Line Appearance lets each extension user access exactly one line group—the incoming/outgoing shifted group. An extension user cannot access two line groups as usual.

▼ Conditions

- a. Line groups must be selected in programming.
- b. The line group intended for the shift at an extension must be entered as the first line group in Program 7 for that extension. Any entries made for the second group in Program 7 or for either group in Program 6 are disregarded.
- c. Common Use Lines cannot be assigned and Recall Line Preference cannot be disabled (even if 0 is entered in Program 20).
- d. Ring Transfer (CO Call Forwarding) can only be used if the forwarding and receiving extension have access to the same line group.

Operation

N/A

Options

This program enables or disables Flexible Line Appearance.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
Program 2 forms line groups
Program 7 assigns to each extension the line group that will shift appearance

Selecting Options

Option Codes	Standard Value
AB: Program number 15	
C: 0—disable Flexible Line Appearance	C: 0
1—enable Flexible Line Appearance	

- ▼ **Example**
Flexible Line Appearance is enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	5	1													

Entering Selections

1. Enter program number 15.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit the program.

CO CALL WAITING

Feature

CO Call Waiting provides an extension user with an audible indication of an incoming CO call while already on a call: the busy extension user hears muted ringing if on a handset call or one short burst of tones if on a Handsfree Answerback Intercom call. (The incoming CO call also shows a flashing Line key, as usual.) No signal is heard if the busy extension user is on a Speakerphone call.

▶ Conditions

- a. If CO Call Waiting is disabled, the audible signals are not heard, but the Line key still flashes and the call can be answered.
- b. Do Not Disturb (all levels) blocks CO Call Waiting signals.
- c. In order for an extension to receive CO Call Waiting signals for a particular line group, the extension must be programmed with audible for that line group.
- d. An OPX extension cannot receive CO Call Waiting signals.

Operation

To answer a CO Call Waiting signal:

1. Press HOLD to put an outside call in progress on Hold OR hang up the call in progress. Intercom calls must be hung up since they cannot be put on Hold.
2. Press the flashing Line key.

Options

This program enables or disables CO Call Waiting signals for an extension.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
Program 7 assigns incoming audible to line groups

Selecting Options

Option Codes	Standard Value
AB: Program number 16	
CD: Port number	CD: All ports (10-73)
E: 0—disable CO Call Waiting signals	E: 1
1—enable CO Call Waiting signals	

- ▼ **Example**
Port 17 does not receive CO Call Waiting signals.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	6	1	7	0											

Entering Selections

1. Enter program number 16.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

NIGHT TRANSFER

Feature

Night Transfer puts the night audible (ringing) assignments (Program 7) into effect. That is, incoming calls on a specific line group will ring at extensions that are assigned night audible for that line group.

Two Night Transfer (NT) modes are available:

1. Night audible assignments go into effect at each extension in the system. Day audible assignments are ignored. This NT mode can be activated by either DSS Console or, if no DSS Consoles are installed, by the port 10 telephone.
2. Night audible assignments go into effect for all extensions that have the same primary incoming line group as the extension that activates NT. Extensions with a different primary incoming line group (than the activating extension) receive ringing according to their day audible assignments. Any extension or DSS Console can activate this mode.

▶ Conditions

- a. When Night Transfer is enabled, all extensions in the night mode that are programmed for Night Class of Service take on the Class of Service level selected in Program 48.

Operation

When NT mode 1 is enabled, the RG TR key lights steadily at all phones. When NT mode 2 is enabled, the RG TR key lights steadily at the activating extension (unless the associated Console was used to activate it) and at all other phones with the same primary incoming line group.

To activate or cancel Night Transfer using the DSS Console:

- Do not lift handset.
- 1. Press NT. NT lights steadily and RG TR lights as described above.

To activate Night Transfer using the telephone:

1. Lift handset.
2. Press RG TR.
3. Dial #. RG TR lights as described above.
4. Hang up.

To cancel Night Transfer using the telephone:

1. Lift handset.
2. Press RG TR twice. RG TR extinguishes.
3. Hang up.

Options

This program selects the Night Transfer mode that is used in the system.

▶ **Conditions**

None

▶ **Additional Programming**

Program 7 selects day/night audible for incoming line groups

Program 8 enables Night Class of Service

Program 48 selects a COS level for the Night Class of Service feature

Selecting Options

Option Codes

Standard Value

AB: Program number 17

C: 0—Night mode 1
(all extensions)

C: 0

1—Night mode 2
(extensions with same
primary incoming line
group)

▶ **Example**

Each extension can activate Night Transfer for itself and all other extensions with the same primary incoming line group.

A B C D E F G H I J K L M N O P

1	7	1														
---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Entering Selections

1. Enter program number 17.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

EXTERNAL PAGING OUTPUT

Feature

External Paging Output allows incoming CO audible, Background Music (BGM) from an external source, and/or alarm signals to be broadcast over speakers that are installed in the external page zone (s).

See BGM and Alarm for feature descriptions. Also see External Paging Output/Contacts under Optional Equipment in the Installation Manual.

▶ Conditions

- a. One external page zone is available in the 8/12 system, two in the 24/36/64.
- b. Incoming CO audible from a programmed line group is sent to the speakers regardless of the mode (day/night) the system is in.
- c. In order for the speakers to receive Background Music, Program 26 must also be enabled.
- d. If BGM is sent to the speakers, it plays all the time except when interrupted by incoming CO audible or alarm signals.

Operation

N/A

Options

This program assigns CO audible, Background Music, and/or alarm signals to an external page zone.

▼ **Conditions**

None

▼ **Additional Programming**

Program 2 assigns line groups

Program 26 identifies Background Music as being installed

Selecting Options

Option Codes	Standard Value
AB: Program number 18	
C: External zone (1 or 2)	C: All zones (1-2)
DE: Line group (01-30) to send audible	DE: 00 (Unassigned)
F: 0—disable BGM 1—enable BGM	F: 0
G: 0—disable alarm signals 1—enable alarm signals	G: 0

▼ **Example**

External zone 1 receives audible from line group 03, and Background Music.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	8	1	0	3	1	0									

Entering Selections

1. Enter program number 18.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DE data.
6. Press *.
7. Enter FG data.
8. Press *

Next zone displays. There are two options:

- To enter DEFG data for this zone, repeat steps 5-8.
- To exit the program, press #.

EXTERNAL ZONE PAGING

Feature

External Zone Paging allows customer-provided paging equipment (speakers, amplifiers, etc.) to be installed in large, noisy areas (zones) so that extension users can make paged announcements to these zones. In the 8/12 system, one external page zone is available, while in the 24/36/64 system there are two. The ALL CALL TO EXTERNAL ZONE program allows an All Call Page (see Paging, All Call) to be sent to external zones.

For installation information, see External Speakers/Contacts in the Optional Equipment section of the Installation Manual.

Note: A B-GCU-A PCB must be installed on the B-TSU-A PCB.

► Conditions

- a. When an external page is made, an Intercom link is used.
- b. A double splash tone, if programmed, precedes a paged announcement.
- c. An external page zone can also be programmed to receive Background Music (BGM), CO audible, and Alarm signals.

Operation

To page an external zone in the 24/36/64 system:

1. Lift handset.
2. Press ICM, then dial 86 for zone 1 or 87 for zone 2.

OR

At the Console: press EZ1 for zone 1 or EZ2 for zone 2.

3. Make announcement.
4. Hang up.

To page the external zone in the 8/12 system or both zones in the 24/36/64 system:

1. Lift handset.
2. Press ICM, then dial 85.

OR

At the Console: press EAZ.

3. Make announcement.
4. Hang up.

Options

This program enables or disables All Call Paging to one and/or both external page zones (one zone in the 8/12, two zones in the 24/36/64).

- ▼ **Conditions**
None
- ▼ **Additional Programming**
 Program 18 sends BGM, CO audible and/or Alarm signal to the zones
 Program 52 enables/disables the double splash tone that precedes a page

Selecting Options

Option Codes	Standard Value
AB: Program number 19	
C: 0—disable All Call to external zones	C: 1
1—enable All Call to zone 1 in 24/36/64 or to the one external zone in the 8/12	
2—enable All Call to zone 2 in 24/36/64	
3—enable All Call to zones 1 and 2 in 24/36/64	

- ▼ **Example**
No external page zones receive All Call Pages.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	9	0													

Entering Selections

1. Enter program number 19.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

RINGING/RECALL LINE PREFERENCE

Feature

Ringing Line Preference allows a ringing outside call to be answered by just lifting the handset; a Line key does not have to be pressed.

Recall Line Preference lets a recalling (re-ringing) line be answered by just lifting the handset. Recall Line Preference applies to a recalling line in the following features: Hold (System and Exclusive), Transfer (Unannounced and Announced), Line Queuing, and incoming DISA calls (because they appear as recalling lines on Exclusive Hold).

▶ Conditions

- a. When more than one call is ringing or recalling, this feature answers the one that rang first unless a user pre-selects a Line key before lifting the handset.

Operation

To answer an outside call or a recalling line using Ringing/Recall Line Preference:

1. Lift handset. Also see the Speakerphone feature.

RINGING/RECALL LINE PREFERENCE

Options

This program enables or disables Ringing/Recall Line Preference for an extension.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 20	
CD: Port number	CD: All ports (10-73)
E: 0—disable Ringing/Recall Line Preference	E: 0
1—enable Ringing/Recall Line Preference	

- ▶ **Example**
Port 14 has Ringing/Recall Line Preference enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	0	1	4	1											

Entering Selections

1. Enter program number 20.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

AUTOMATIC LINE ACCESS

Feature

Automatic Line Access lets an extension user access an outgoing line without pressing a Line key or dialing a two-digit line number. A single-digit code automatically accesses an outgoing outside line, and there are two distinct codes:

- One code accesses the first available line assigned to an extension.
- The other code accesses the first available line in a particular Queue Group assigned to an extension. Automatic Line Access does not prevent the user from accessing lines in the usual way (using Line keys or Line numbers).

▶ Conditions

- a. In order to use Automatic Line Access for a particular line group, an extension must be programmed for outgoing access to that line group.
- b. In order to use the Queue Group code, outside lines must be programmed into Queue Groups.
- c. Automatic Line Access is not available to OPX extensions.

Operation

To access the first available outgoing line:

Method 1

- Do not lift handset.
1. Press SPK.
 2. Dial 0. A line is seized and dial tone comes over the speaker.

Method 2

- Do not lift handset.
1. Dial 0. SPK lights, a line is seized, and dial tone comes over the speaker.

To access the first available line in a Queue Group:

- Do not lift handset.
1. Press SPK.
 2. Dial Queue Group number (1-6). A line is seized and dial tone comes over the speaker.

Options

This program enables or disables Automatic Line Access for all extensions in the system. One, two or all of the procedures listed under OPERATION (pg 2-64) can be enabled.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
 Program 1 assigns Queue Group numbers to outside lines
 Program 6 assigns outgoing line groups to an extension

Selecting Options

Option Codes	Standard Value
AB: Program number 21	
C: 0—disable Automatic Line Access	C: 0
1—enable SPK/dial 0 and SPK/dial Queue Group	
2—enable dial 0 only	
3—enable all procedures	

- ▶ **Example**
All three procedures for Automatic Line Access are enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	1	3													

Entering Selections

1. Enter program number 21.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

EXCLUSIVE HOLD

Feature

Exclusive Hold puts an outside call on Hold at an extension so that it can only be picked up from that extension.

▼ Conditions

- a. If not picked up within a programmed interval of time, a call on Exclusive Hold recalls (re-rings) the extension that placed it on Hold (this requires two programs: Exclusive Hold Recall and Exclusive Hold Recall Duration).
- b. If the recall is not answered, the call reverts to System Hold and can be picked up from any extension that has incoming and/or outgoing access to that line.
- c. Intercom calls cannot be put on Exclusive Hold.
- d. If the system is set up for Music on Hold, the outside party hears music while waiting.
- e. Exclusive Hold is not available to OPX extensions.

Operation

To put an outside call on Exclusive Hold:

1. Press HOLD key twice.
2. Hang up. Line key flashes fast. At all other extensions, the Line key is steadily lit (busy).

To retrieve a call on Exclusive Hold:

1. Lift handset. If the call is recalling and Recall Line Preference is programmed, this single step retrieves the call.
2. Press flashing Line key.

Options

This program enables or disables Exclusive Hold for all extensions in the system.

- ▼ **Conditions**
 - a. If Exclusive Hold is enabled, Programs 35 and 36 must have values other than 000.
- ▼ **Additional Programming**
 - Program 35 sets the timer for Exclusive Hold Recall
 - Program 36 sets the duration of the Exclusive Hold Recall signal

Selecting Options

Option Codes	Standard Value
AB: Program number 22	
C: 0—disable Exclusive Hold	C: 1
1—enable Exclusive Hold	

- ▼ **Example**

Exclusive Hold is disabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	2	0													

Entering Selections

1. Enter program number 22.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

INTERCOM CALL WAITING

Feature

Intercom Call Waiting lets an extension user send a signal to a busy extension, then wait for a reply. The signal is one short burst of tones, which comes over the speaker of the busy extension. In addition, the ICM key at the busy extension flashes. The busy extension user can choose not to reply to the signal if it is inconvenient to do so.

An extension can be programmed to send Intercom Call Waiting signals in one of two ways: manually or automatically. The manual-type requires the user to dial a code to send the signal, while the automatic-type sends the signal automatically any time a user calls a busy extension.

▼ Conditions

- a. Intercom Call Waiting signals cannot be sent to a busy extension when it is using Handsfree Answerback.
- b. Do Not Disturb (level 2 or 3) blocks the signals.
- c. OPX telephones can send, but not receive, the signals.
- d. Extensions programmed for automatic Intercom Call Waiting cannot use the Callback or Camp-On features.
- e. The attendant can use the DSS Off-Hook Signaling feature, which does not require programming, to send a signal (two tone bursts) to a busy extension.

Operation

To manually send Intercom Call Waiting signals:

1. Place Intercom call. Hear busy tone.
2. Dial 1. Hear one short burst of tones.
3. Wait for a reply. To send more tones, dial 1 again.

To use automatic Intercom Call Waiting:

1. Place Intercom call. When the called extension is busy, one short burst of tones is heard instead of busy tone.
2. Wait for a reply. To manually send more tones, dial 1.

To answer an Intercom Call Waiting signal (one or two tone bursts):

1. Press flashing ICM. This answers the waiting call and puts an outside call in progress on Hold. This step will, however, terminate an Intercom call in progress; Intercom calls cannot be put on Hold.

Options

This program allows an extension user to send Intercom Call Waiting signals in one of two ways—manually or automatically.

- ▼ Conditions
None
- ▼ Additional Programming
None

Selecting Options

Option Codes	Standard Value
AB: Program number 23	
CD: Port number	CD: All ports (10-73)
E: 0—cannot send signals	E: 1
1—enable manual signals	
2—enable automatic signals	

- ▼ Example
Port 15 is programmed for automatic Intercom Call Waiting.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	3	1	5	2											

Entering Selections

1. Enter program number 23.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

INTERCOM CALLS (Includes Automatic Intercom Answer and Handsfree Answerback)

Feature

The Intercom allows extension-to-extension calling. The system can be programmed for one of two INTERCOM SIGNALING modes: ringing or voice announce. When voice announce is programmed, an Intercom call signals the called extension with a beep (not ringing). After the beep sounds, the caller can make a voice announcement over the speaker of the called extension.

- *Automatic Intercom Answer* lets an extension user answer either type of Intercom call in a single step.
- *Handsfree Answerback* lets an extension user answer a voice announced Intercom call without touching the phone.

Regardless of the signaling mode programmed, an extension user can change it on a per call basis. For example, a ringing Intercom call can be changed to a voice announced call by dialing a code or pressing a key.

► Conditions

- a. When the system is programmed for voice announced Intercom calls, individual extensions can be programmed for ringing instead.
- b. The standard number of Intercom links in the 8/12 system is two and in the 24/36/64 system is six. Program 66 can, however, increase the links.
- c. A DSS Console (only one) and Background Music each use an Intercom link when enabled in programming. Door Chime Box, Room Monitor, Callback, Camp-On, Paging and the other DSS Console use an Intercom link when activated.
- d. The Direct Station Selection (DSS) feature provides one-touch Intercom calls. Dual Handsfree Hotline allows two extensions to be called simultaneously.
- e. A Display phone displays the extension number of an incoming Intercom call.

Operation

To place an Intercom call:

1. Lift handset.
2. Press ICM key, wait for dial tone, then dial extension number (0 for attendant #1) **OR** press DSS Console key for desired extension. To convert a ringing call into a voice announced call, or vice versa, dial 1 if using the phone or press SG/VC if using the Console.

To answer an Intercom call using Automatic Intercom Answer:

1. Lift handset.

To answer a voice announced call using Handsfree Answerback:

1. Speak toward the phone. The microphone must be on (see Microphone On/Off).

Note: Call Monitor, Speakerphone and Single Step Access provide ways to place and/or answer Intercom Calls without lifting the handset.

Options

This program determines whether the system has ringing or voice announced Intercom calls.

▼ **Conditions**

None

▼ **Additional Programming**

Program 59 allows an extension to receive ringing calls when the system is programmed for voice announce

Program 66 increases the number of Intercom links

Selecting Options

Option Codes	Standard Value
AB: Program number 24	
C: 0—Voice announced calls 1—Ringing calls	C: 0

▼ **Example**

The system has ringing Intercom calls.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	4	1													

Entering Selections

1. Enter program number 24.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

MICROPHONE ON/OFF

Feature

Microphone On/Off lets an extension user turn the phone's microphone on or off. The microphone can be turned on or off while an extension is idle or during a Speakerphone/Handsfree (not handset) call.

- When the microphone is on, a user can conduct a Speakerphone/ Handsfree conversation as usual—by just speaking toward the phone—and the microphone picks up the user's voice.
- When a user turns the microphone off during a Speakerphone/ Handsfree call, the microphone will not pick up the user's voice. This prevents the party on the line from hearing the user, but does not prevent the user from hearing the party on the line.
- When a user turns the microphone off while the extension is idle, this prevents an Intercom caller, whose voice comes over the speaker, from being able to hear a conversation taking place in the vicinity of the extension at the moment the call comes through.

► Conditions

- a. The microphone must be on in order to converse over the speaker.
- b. When an Intercom call is made to an extension that has the microphone off, two signal beeps are heard instead of one.

Operation

If the Microphone On/Off feature is programmed for “normally on”, the MIC key LED is initially off at all phones. If the Microphone On/Off feature is programmed for “normally off”, the MIC key LED is initially on at all phones.

To turn the microphone on or off:

- Do not lift handset.
1. Press MIC. MIC key lights to indicate OFF and extinguishes to indicate ON.

Options

This program determines whether the microphone is “normally on” or “normally off” at all extensions in the system.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 25	
C: 0—Microphone normally on	C: 0
1—Microphone normally off	

- ▼ **Example**
The microphone is normally off at every extension.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	5	1													

Entering Selections

1. Enter program number 25.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

BACKGROUND MUSIC

Feature

Background Music (BGM), from a customer-provided music source such as radio, can be broadcast over the speakers of the extensions. BGM can play while an extension is not in use.

See BGM in the Optional Equipment section of the Installation Manual for information on how to install the music source.

Note: A B-HBU-A PCB must be installed on the B-TSU-A PCB.

▶ Conditions

- a. BGM is interrupted when an extension is used (for example, when a call comes in).
- b. When Program 18 is enabled, BGM can also be broadcast over speakers in the external page zones.
- c. The external music source can also be used for Music On Hold (MOH). See MOH in the Optional Equipment section of the Installation Manual.
- d. BGM cannot play at an OPX extension.

Operation

To turn BGM on or off while an extension is not in use:

- Do not lift handset.
 1. Press #.

Options

This program allows or denies the use of an external music source for Background Music (BGM) and/or Music on Hold.

- ▼ **Conditions**
 - a. In the 24/36/64 system, BGM is assigned a dedicated Intercom link.
- ▼ **Additional Programming**
 - Program 18 allows external zones to receive BGM

Selecting Options

Option Codes	Standard Value
AB: Program number 26	
C: 0—deny BGM	C: 0
1—allow BGM	

- ▼ **Example**
BGM is allowed.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	6	1													

Entering Selections

1. Enter program number 26.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

ROOM MONITOR

Feature

Room Monitor lets one extension monitor (listen to) the environmental sounds in an area or room containing another extension.

▼ Conditions

- a. Several extensions can monitor the same extension; however, a single extension cannot monitor more than one extension at a time.
- b. If an extension is used while Room Monitor is activated, Room Monitor is temporarily disabled.
- c. Room Monitor must be activated (and canceled) at the extension to be monitored and at the extension doing the monitoring.
- d. Room Monitor uses an Intercom link while in use.
- e. Room Monitor is not available to OPX extensions.

Operation

To activate or cancel Room Monitor at the extension to be monitored:

1. Lift handset.
2. Press OPAC.
3. Press FLSH. MON flashes fast while Room Monitor is activated.
4. Hang up.

To activate or cancel Room Monitor at the monitoring extension:

- Do not lift handset.
- 1. Press OPAC.
- 2. Press FLSH. MON flashes intermittently while Room Monitor is activated.

Options

This program enables or disables Room Monitor for all extensions in the system.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 27	
C: 0—disable Room Monitor	C: 1
1—enable Room Monitor	

- ▼ **Example**
Room Monitor is disabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	7	0													

Entering Selections

1. Enter program number 27.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

ALARM SENSOR

Feature

Alarm Sensor provides contacts for each security alarm (or FAX machine) that is connected to the system (See Alarm, FAX Line).

- ▶ Conditions
None

Operation

N/A

Options

This program selects normally open or normally closed contacts for each Alarm input on the D1 block.

▼ Conditions

- a. The type of contacts selected must conform to the requirements of the device connected to them.
- b. If a FAX machine is connected to an Alarm input, then 0 must be entered in the D box.

▼ Additional Programming

None

Selecting Options

Option Codes	Standard Value
AB: Program number 28	
C: Alarm input (1 or 2)	C: Both Alarm inputs (1 & 2)
D: 0—Alarm not installed 1—Alarm installed	D: 0
E: 0—Normally open contacts 1—Normally closed contacts	E: 0

▼ Example

Alarm input 1 has normally open contacts.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	8	1	1	0											

Entering Selections

1. Enter program number 28.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter D data.
6. Press *.
7. Enter E data.
8. Press *.

Next Alarm input displays. There are two options:

- To enter DE data for this input, repeat steps 5-8.
- To exit the program, press #.

MULTI-LINE CONFERENCE

Feature

Multi-Line Conference allows an extension user to establish an outside call and then add another outside party to the conversation.

▶ Conditions

- a. If desired, the user can add five more inside parties to the conversation (for a total of six inside and two outside parties).
- b. Another extension user can join (break into) the Conference using Executive Override as long as the total number of inside parties does not exceed six.
- c. Multi-Line Conference is not available to OPX extensions.

Operation

To establish a Multi-Line Conference:

1. Establish first outside call.
2. Press CONF. Call is put on Hold.
3. Establish second outside call.
4. Press CONF. Conference is established.

To add inside parties to a Multi-Line Conference:

1. Press CONF. Conference is put on Hold.
2. Press ICM. Hear dial tone.
3. Dial extension number. Called party must lift the handset to answer.
4. Press CONF. Conference is re-established.

Options

This program enables or disables Multi-Line Conference for all extensions in the system.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 30	
C: 0—disable Multi-Line Conference 1—enable Multi-Line Conference	C: 1

- ▶ **Example**
Multi-Line Conference is disabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	0	0													

Entering Selections

1. Enter program number 30.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

THREE MINUTE WARNING TONE

Feature

Three Minute Warning Tone is a signal reminder that sounds every three minutes while an extension is on an outgoing outside call. The signal reminder is a series of three short tones that sound over the speaker of the phone.

▶ Conditions

- a. The warning tone does not sound at OPX extensions.

Operation

N/A

Options

This program enables or disables Three Minute Warning Tone for all extensions in the system.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 31	
C: 0—disable Three Minute Warning Tone	C: 0
1—enable Three Minute Warning Tone	

- ▶ **Example**
Three Minute Warning Tone is enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	1	1													

Entering Selections

1. Enter program number 31.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit the program.

DOOR CHIME TONE DURATION

Feature

When the CALL button on the Door Chime Box is pressed, chime tones are sent to designated extensions. The Door Chime Tone Duration feature determines how long the chime tones signal the extensions.

- ▷ Conditions
- None

Operation

N/A

DOOR CHIME TONE DURATION

Options

This program sets the timer for the Door Chime Tone Duration feature. The timer can be set for four or 30 seconds.

- ▼ Conditions
None
- ▼ Additional Programming
Program 12 selects the extensions to receive chime tones

Selecting Options

Option Codes	Standard Value
AB: Program number 32	
C: 0—four seconds 1—30 seconds	C: 0

- ▼ Example
The chime tones signal the extensions for 30 seconds.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	2	1													

Entering Selections

1. Enter program number 32.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit the program.

SINGLE STEP ACCESS

Feature

Single Step Access allows an extension user to obtain outside or Intercom dial tone for an outgoing call in a single step, without lifting the handset or pressing the SPK key.

▼ Conditions

- a. An extension must be programmed for outgoing access to a line in order to get outside dial tone using Single Step Access.
- b. When an outgoing call is established using Single Step Access, the handset must be lifted to talk unless the extension is Speakerphone-equipped.
- c. Single Step Access provides Speakerphone extensions with extra capabilities (see below).
- d. Single Step Access is not available to OPX extensions.

Operation

To obtain outside dial tone using Single Step Access:

- Do not lift handset.
1. Press Line key. Line and SPK keys light. Dial tone comes over the speaker.

To obtain Intercom dial tone using Single Step access:

- Do not lift handset.
1. Press ICM key. ICM and SPK keys light. Dial tone comes over the speaker.

▼ Extra Capabilities For Speakerphone Extensions

To place a DSS Intercom call using Single Step Access:

- Do not lift handset.
1. Press DSS key. SPK key lights and extension is called.
 2. Speak toward phone.

To answer an outside call or ringing Intercom call using Single Step Access:

- Do not lift handset.
1. Press flashing Line key or ICM key. This step assumes that the extension is programmed for incoming access to the outside line.
 2. Speak toward phone.

Options

This program enables or disables Single Step Access for all extensions in the system.

▼ **Conditions**
None

▼ **Additional Programming**
Program 6 assigns outgoing access to a line group
Program 7 assigns incoming access to a line group

Selecting Options

Option Codes	Standard Value
AB: Program number 33	
C: 0—disable Single Step Access	C: 0
1—enable Single Step Access	

▼ **Example**
Single Step Access is enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	3	1													

Entering Selections

1. Enter program number 33.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

AUTOMATIC HOLD

Feature

Automatic Hold lets the attendant telephone (24/36/64 system) put an outside call on System Hold without pressing the HOLD key. Automatic Hold is intended to be used when the attendant must quickly put an outside call on System Hold in order to place or answer another outside call.

▶ Conditions

- a. Automatic Hold is only available to an attendant extension that is programmed with a DSS Console. The attendant extension does not, however, have to be equipped with a DSS Console.

Operation

To put an outside call on System Hold using Automatic Hold:

1. Press the Line key for the next incoming or outgoing call. The call in progress is automatically put on Hold. This procedure can be used for any number of calls.

Options

This program enables or disables Automatic Hold for attendant extensions.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
Program 13 assigns a DSS Console to an extension (which makes it an "attendant" extension)

Selecting Options

Option Codes	Standard Value
AB: Program number 34	
C: 0—disable Automatic Hold 1—enable Automatic Hold	C: 0

- ▼ **Example**
Automatic Hold is enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	4	1													

Entering Selections

1. Enter program number 34.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit the program.

EXCLUSIVE HOLD RECALL

Feature

Exclusive Hold Recall is the interval of time a call stays on Exclusive Hold before it recalls (re-rings) the extension.

▶ **Conditions**

- a. Exclusive Hold must be enabled in programming.
- b. Exclusive Hold Recall Duration must be enabled in programming.

Operation

N/A

Options

This program sets the timer for Exclusive Hold Recall. The timer can be set in 10 second intervals, up to 2550 seconds.

▶ **Conditions**

- a. The desired recall time must be divided by 10 and shown as three digits. For example, a recall time of 30 seconds divided by 10 is 3. The required entry is 003.

Caution: Do not enter a recall time of 000.

▶ **Additional Programming**

- Program 22 enables Exclusive Hold
- Program 36 sets the timer for Exclusive Hold Recall Duration

Selecting Options

Option Codes	Standard Value
AB: Program number 35	
CDE: Exclusive Hold Recall timer (001-255)	CD: 006

▶ **Example**

A call stays on Exclusive Hold for 40 seconds before recalling the extension.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	5	0	0	4											

Entering Selections

1. Enter program number 35.
2. Press *.
3. Enter CDE data
4. Press *.
5. Press # to exit program.

EXCLUSIVE HOLD RECALL DURATION

Feature	Exclusive Hold Recall Duration determines how long the Exclusive Hold Recall signal lasts.
	<ul style="list-style-type: none">▼ Conditions<ul style="list-style-type: none">a. Exclusive Hold must be enabled in programming.b. Exclusive Hold Recall must be enabled in programming.
Operation	N/A

Options

This program sets the timer for the Exclusive Hold Recall Duration. The timer can be set in 10 second intervals, up to 2550 seconds.

▼ **Conditions**

- a. The desired recall signal duration must be divided by 10 and shown as three digits. For example, a recall signal duration of 30 seconds divided by 10 is 3. The required entry is 003.

Caution: Do not enter a recall signal duration of 000.

▼ **Additional Programming**

- Program 22 enables Exclusive Hold
- Program 35 enables Exclusive Hold Recall

Selecting Options

Option Codes	Standard Value
AB: Program number 36	
CDE: Exclusive Hold Recall Duration timer (001-255)	CDE: 001

▼ **Example**

The Exclusive Hold Recall signal lasts for 20 seconds.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	6	0	0	2											

Entering Selections

1. Enter program number 36.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

SYSTEM HOLD

Feature

System Hold puts an outside call on Hold so that it can be picked up from any extension in the system. If the SYSTEM HOLD RECALL program is enabled, a call left on System Hold longer than a programmed period of time re-rings the extension that placed it on Hold.

► Conditions

- a. Intercom calls cannot be put on System Hold.
- b. A call on Hold at an OPX extension will not re-ring that extension (even if the SYSTEM HOLD RECALL program is enabled).
- c. If the system is set up for Music On Hold, an outside party on Hold hears music while waiting.

Operation

To put a call on System Hold:

1. Press HOLD.
2. Hang up. Line key flashes fast at this extension and slowly at the other extensions in the system.

Note: A call is automatically put on System Hold when a DSS, Paging, or DOOR key is pressed on the DSS Console. Also see the Automatic Hold feature.

To retrieve a call on System Hold:

1. Lift handset. If the call is re-ringing and Ringing/Recall Line Preference is programmed, this single step retrieves the call.
2. Press flashing Line key. If the held call does not appear on a Line key, use Call Pickup to retrieve it.

Options

This program sets two timers for the System Hold feature:

1. **The Recall Timer** selects the interval of time a call stays on System Hold before it recalls (re-rings) the extension that placed it on Hold. This timer can be set for 10 second intervals, up to 2550 seconds.
2. **The Duration Timer** determines how long the System Hold Recall signal lasts. This timer can be set for a maximum of 255 seconds.

▼ Conditions

- a. To disable the recall signal, enter zero for the Recall Timer.
- b. If a nonzero value is entered for the Recall Timer, then a nonzero value must be entered for the Duration Timer.
- c. The desired recall time must be divided by 10 and shown as three digits. For example, a recall time of 30 seconds divided by 10 is 3. The required entry is 003.
- d. The recall signal duration must be shown as three digits. For example, a recall duration of 25 seconds is 025.

▼ Additional Programming

None

Selecting Options

Option Codes	Standard Value
AB: Program number 37	
C: Timer number 1	
DEF: Recall Timer (000-255)	DEF: 000 (Disabled)
G: Timer number 2	
HIJ: Duration Timer (000-255)	HIJ: 000 (Disabled)

▼ Example

A call stays on System Hold for 30 seconds before recalling the extension, and the recall signal lasts for 10 seconds.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	7	1	0	0	3	2	0	1	0						

Entering Selections

1. Enter program number 37.
2. Press *.
3. Enter 1 (C data).
4. Press *.
5. Enter DEF data.
6. Press *. Timer 2 (G data) displays.
7. Enter HIJ data.
8. Press *.
9. Press # to exit program.

UNANNOUNCED TRANSFER

Feature

Unannounced Transfer lets an extension user transfer (send) a call directly to another extension—that is, without first notifying the receiving extension of the call. An Unannounced Transfer rings the receiving extension. If the receiving extension does not answer within the UNANNOUNCED TRANSFER RECALL interval, the call recalls (re-rings) the transferring extension.

► Conditions

- a. In order to receive a recall signal, System Hold Recall must be enabled in programming.
- b. The attendant can activate the Transfer Recall Display feature to show the line and extension number of a recalling transfer.
- c. If the system is programmed with Hunting Groups, Group Hunt Transfer can be used to make an Unannounced Transfer.

Operation

To make an Unannounced Transfer:

1. Press ICM, then dial extension number.

OR

Press DSS Console key or DSS key on 5-Line BLF Display phone. Line key flashes.

2. Press RG INW. Line key lights steadily. Call is sent. If using the phone, press RG INW on the phone; if using the Console, press RG INW on the Console.
3. Hang up.

To receive an Unannounced Transfer (a fast ringing signal is heard):

1. Lift handset. If Ringing/Recall Line Preference is programmed, this single step answers the call.
2. Press flashing Line key (key flashes green on Display phones).

Options

This program determines how long an Unannounced Transfer rings the receiving extension before recalling the transferring extension. The timer can be set for multiples of 10 seconds, up to 2550 seconds.

▶ Conditions

- a. The desired recall time must be divided by 10 and shown as three digits. For example, a recall time of 50 seconds divided by 10 is 5. The required entry is 005.

Caution: Do not enter a recall time of 000.

▶ Additional Programming

- Program 11 sets up Hunting Groups for Group Hunt Transfer
- Program 37 enables System Hold Recall, which in turn enables the recall signal for an unanswered Transfer

Selecting Options

Option Codes	Standard Value
AB: Program number 38	
CDE: Unannounced Transfer	CDE: 003
Recall time (001-255)	

▶ Example

An Unannounced Transfer rings an extension for 20 seconds before recalling the extension that transferred it.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	8	0	0	2											

Entering Selections

1. Enter program number 38.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

ANNOUNCED TRANSFER

Feature

The Transfer feature, in a general sense, lets an extension user send an outside call to a co-worker's extension. Announced Transfer automatically puts the call on System *Hold* so that the transferring extension can notify the receiving extension before actually sending the call. Both the transferring and receiving extensions receive a "fast flash" Hold indication, making the call easy to identify, while all other extensions see a "slow flash." If the call is not sent within the ANNOUNCED TRANSFER RECALL interval, the call then shows a "slow flash" at the receiving extension, and re-rings the transferring extension.

► Conditions

- a. In order to receive a recall signal, System Hold Recall must be enabled in programming.
- b. The attendant can activate the Transfer Recall Display feature to show the line and extension number of a recalling transfer.
- c. If the system is programmed with Hunting Groups, Group Hunt Transfer can be used to make an Announced Transfer.

Operation

To make an Announced Transfer:

1. Press ICM, then dial extension number.

OR

Press DSS Console key or DSS key on 5-Line BLF Display phone. Call is automatically put on System Hold.

2. Announce the call. To return to the call, press the flashing Line key or use Call Pickup.
3. Press RG INW to send the call. If using the phone, press RG INW on the phone; if using the Console, press RG INW on the Console. The Line key lights steadily.
4. Hang up.

To receive an Announced Transfer:

1. Lift handset when notified of the call.
2. Just wait on the line to be automatically connected to the transferred caller. If the notification is voice announced over the speaker, the call can be accepted by just speaking toward the phone (instead of lifting the handset in Step 1). The transferred call then rings in and is answered as follows: Lift handset, press flashing Line key. If, however, Ringing/Recall Line Preference is programmed, the ringing transfer is answered by just lifting the handset.

Options

This program determines how long an Announced Transfer stays on System Hold before recalling the transferring extension. The timer can be set in 10 second intervals, up to 2550 seconds.

► Conditions

- a. The desired recall time must be divided by 10 and shown as three digits. For example, a recall of 30 seconds divided by 10 is 3. The required entry is 003.

Caution: Do not enter a recall time of 000.

► Additional Programming

- Program 11 sets up Hunting Groups for Group Hunt Transfer
- Program 37 enables System Hold Recall, which in turn enables the recall signal for a recalling Transfer

Selecting Options

Option Codes	Standard Value
AB: Program number 39	
CDE: Announced Transfer	CDE: 006
Recall time (001-255)	

► Example

An Announced Transfer stays on System Hold for 70 seconds before recalling the transferring extension.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	9	0	0	7											

Entering Selections

1. Enter program number 39.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

CLASS OF SERVICE

Feature

Class of Service (COS) determines the type of calls that can be dialed in the system. Each extension can be assigned one of the eight COSs listed below:

- COSs 0 and 1—No dialing restrictions
- COS 2— Can dial Permitted Codes and Common Unrestricted Codes
- COS 3— Can dial Permitted Codes, Common Unrestricted Codes and 7-digit local numbers
- COS 4— Can dial Permitted Codes, Local Permitted Codes, Common Unrestricted Codes, 7-digit local numbers, and 1 + 7-digit toll numbers
- COS 5— Can dial Local Permitted Codes, Common Unrestricted Codes, 7-digit local numbers, and 1 + 7-digit toll numbers
- COS 6— Can dial Common Unrestricted Codes, and 7-digit local numbers
- COS 7— Can dial Common Unrestricted Codes
- COS 8— Can dial Intercom calls only

When an extension user dials a call that is not allowed by the assigned COS, the system automatically disconnects the line.

► Conditions

- a. An extension must be programmed for outgoing access to a line group in order to dial an outside call on that line group.
- b. Permitted Codes, Local Permitted Codes, and Common Unrestricted Codes must be entered in programming.
- c. COS restrictions are not applied to lines programmed as Nonrestricted Lines.
- d. If an extension is programmed for the Night COS feature, the Night COS level replaces the COS level when that extension is put into the night mode via Night Transfer.
- e. COS restrictions may or may not apply to System Speed Dial numbers depending on programming.
- f. If there are PBX lines, PBX access codes must be assigned in programming in order for COS restrictions to be properly applied. (COS restrictions are applied after the PBX access code is dialed.)
- g. Depending on the type of Central Office and the type of local exchange codes used in the area, the Digit Absorbing and/or Second Digit Restriction programs may have to be considered.
- h. COS 8 does not allow emergency numbers (e.g., 911) to be dialed.

Operation

N/A

Options

This program assigns a Class of Service (COS) level (0-8) to each extension.

▷ Conditions
None

▷ Additional Programming

- Program 6 assigns outgoing access to line groups
- Program 8 enables/disables Night COS
- Program 41 selects Permitted Codes
- Program 43 selects PBX access codes
- Program 44 selects Common Unrestricted Codes
- Program 45 enables/disables Digit Absorbing
- Program 46 enables/disables Second Digit Restriction
- Program 49 enables/disables COS restrictions for System Speed Dial
- Program 64 selects Local Permitted Codes
- Program 65 designates Nonrestricted Lines

Selecting Options

Option Codes	Standard Value
AB: Program number 40	
CD: Port number	CD: All ports (10-73)
E: COS level (0-8)	E: 0

▷ Example
Port 15 has COS 3.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	0	1	5	3											

Entering Selections

1. Enter program number 40.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PERMITTED CODES

Feature

Permitted Codes are specific telephone numbers that extensions with Classes of Service (COS) 2-4 can dial (in addition to the other types of numbers allowed by those COSs). When a customer, for example, has a branch office in another state, a good choice for a Permitted Code would be the telephone number for the branch office (in other words, a number that would otherwise be restricted by COS 2-4). When a user dials a number that matches the Permitted Code digits, any number of digits can be dialed afterward.

▶ **Conditions**

- a. A COS level must be assigned to an extension in programming.
- b. Program 42 can set a maximum on the total number of digits that can be dialed on a Permitted Code call (that is, Permitted Code digits plus any digits dialed afterward).

Operation

N/A

Options

This program selects up to 30 Permitted Codes, numbered 01-30. A Permitted Code can contain up to the first 12 digits of the desired telephone number.

▼ **Conditions**

- a. If a maximum of 11 or less is selected in Program 42, only that number of digits can be entered as a Permitted Code.
- b. The DC key can represent any digit (0-9). For example, 1-DC-DC-DC-555-1212 allows directory assistance in any area code.
- c. Do not use "0" or "DC" as the first digit (this allows access to the telco operator and, therefore, toll calls).
- d. Permitted Codes should not contain PBX access code digits.

▼ **Additional Programming**

Program 40 assigns a COS level to each extension

Program 42 sets a maximum on the number of digits in a Permitted Code call

Selecting Options

Option Codes

Standard Value

- AB: Program number 41
- CD: Permitted Code (01-30)
- E→P: Permitted Code digits
- CD: All codes (01-30)
- E→P: Unassigned

▼ **Example**

Permitted Code 02 allows 1-800 + any seven-digit number.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	1	0	2	1	8	0	0	DC	DC	DC	DC	DC	DC	DC	

Entering Selections

1. Enter program number 41.
2. Press *.
3. Enter CD data.
4. Press *. Display clears.
5. Enter EFGHIJKLMNOP data (only 8 digits display at a time).
 - To erase this data, press OPAC.
6. Press *.

Next code number displays. There are three options:

- To enter EFGHIJKLMNOP data for this code, repeat steps 5-6.
- To advance to another code number, press *.
- To exit the program, press #.

PERMITTED CODE DIGIT LIMIT

Feature

Permitted Code Digit Limit sets a maximum on the total number of digits that can be dialed on a Permitted Code call (that is, Permitted Code digits plus any digits that are dialed afterward). This feature also applies to Local Permitted Code calls.

▶ **Conditions**

- a. Permitted Codes and Local Permitted Codes are selected in programming.

Operation

N/A

Options

This program enables or disables the Permitted Code Digit Limit feature. If enabled, the maximum number of digits per Permitted Code call can range from 1 to 30.

- ▶ **Conditions**
 - a. An entry of 00 disables the feature (that is, 00 allows any number of digits to be dialed).
- ▶ **Additional Programming**
 - Program 41 selects Permitted Codes
 - Program 64 selects Local Permitted Codes

Selecting Options

Option Codes	Standard Value
AB: Program number 42	
CD: Maximum number of digits (00-30)	CD: 00 (No limit)

- ▶ **Example**
The maximum number of digits in a Permitted Code call is 8.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	2	0	8												

Entering Selections

1. Enter program number 42.
2. Press *.
3. Enter CD data.
4. Press *.
5. Press # to exit program.

PBX ACCESS CODES

Feature

A PBX Access Code is a code that must be dialed on a PBX line in order to gain access to a telco line for an outside call.

▼ **Conditions**

- a. A PBX line must be identified in programming.

Operation

N/A

Options

This program selects up to four different PBX Access Codes, numbered 1-4. A PBX Access Code can be one or two digits long.

▼ **Conditions**

- a. The DC key can represent any digit (0-9). For example, if all numbers from 80-89 must be designated as PBX Access Codes, enter 8-DC.
- b. Do not use "0" or "DC" as the first digit (this would allow access to the telco operator and, therefore, toll calls).
- c. If a PBX access code is a single digit, enter the digit in the D box and leave the E box empty.

▼ **Additional Programming**

Program 1 assigns PBX lines

Selecting Options

Option Codes	Standard Value
AB: Program number 43	
C: PBX Access Code number (1-4)	C: All codes (1-4)
DE: PBX Access Code digits	DE: Unassigned

▼ **Example**

There are two PBX Access Codes: 9 and 82.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	3	1	9												
4	3	2	8	2											

Entering Selections

1. Enter program number 43.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DE data.
 - To erase this data, press OPAC.
6. Press *.

Next PBX Access Code number displays. There are three options:

- To enter DE data for this code, repeat steps 5-6.
- To advance to another code number, press *.
- To exit the program, press #.

COMMON UNRESTRICTED CODES

Feature

Common Unrestricted Codes are special numbers, such as emergency medical service, information, etc., that can be dialed by an extension with a Class of Service (COS) 2-7 (in addition to the other types of numbers allowed by those COSs).

▼ **Conditions**

- a. A COS level must be assigned to an extension in programming.

Operation

N/A

Options

This program selects up to four Common Unrestricted Codes, numbered 1-4. A Common Unrestricted Code can be up to four digits long.

- ▶ **Conditions**
 - a. The DC key can be used to represent any digit (0-9).
 - b. Do not use "0" or "DC" as the first digit (this would allow access to the telco operator and, therefore, to toll calls that might be restricted by COSs 2-7).
- ▶ **Additional Programming**
 Program 40 assigns a COS to each extension

Selecting Options

Option Codes	Standard Value
AB: Program number 44	
C: Code number (1-4)	C: All codes (1-4)
DEFG: Common Unrestricted Code digits	DEFG: Unassigned

- ▶ **Example**
 There are three Common Unrestricted Codes: 911, 1411, and 611.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	4	1	9	1	1										
4	4	2	1	4	1	1									
4	4	3	6	1	1										

Entering Selections

1. Enter program number 44.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEFG data.
 - To erase this data, press OPAC.
6. Press *.

Next code number displays. There are three options:

- To enter DEFG data for this code, repeat steps 5-6.
- To advance to another code, press *.
- To exit the program, press #.

DIGIT ABSORBING

Feature

Some electromechanical Central Offices require that a user dial a single-digit access code before placing a call—for example, perhaps 7 before a local call and a 6 before a long distance call. The Digit Absorbing feature allows the system to ignore such digits (“Absorb Digits”) when dialed as the first digit, and begin applying Class of Service (COS) restrictions when the second digit is dialed.

▶ Conditions

- a. The system also ignores any repeated dialing of an “Absorb Digit.”
- b. This feature does not apply to electronic COs.

Operation

N/A

Options

This program identifies the “Absorb Digits” for the Digit Absorbing feature. Up to four single-digit codes, identified by the numbers 1-4, can be designated as “Absorb Digits.”

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 45	
C: Absorb Digit identification number (1-4)	C: All numbers (1-4)
D: Single digit to be absorbed	D: Unassigned

- ▶ **Example**
Two digits must be absorbed by the system: 3 and 8.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	5	1	3												
4	5	2	8												

Entering Selections

1. Enter program number 45.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter D data.
To erase this data, press OPAC.
6. Press *.

Next Absorb Digit identification number displays. There are three options:

- To enter D data for this number, repeat steps 5-6.
- To advance to another number, press *.
- To exit the program, press #.

SECOND DIGIT RESTRICTION

Feature

Second Digit Restriction prevents an extension with Class of Service (COS) 3-6 from completing any call that has 0 or 1 as the second digit. As soon as a 0 or 1 is dialed as a second digit, the system disconnects the line.

▾ Conditions

- a. The only time this restriction should be overridden (that is, disabled in programming) is in areas where the local exchange codes (the first three digits of a seven-digit number) have 0 or 1 as the second digit. For example, the Los Angeles area code 818 contains 409 as a local exchange. If Second Digit Restriction feature is enabled in this Los Angeles area, an extension with COS 3-6, which can normally place seven-digit local calls, would not be able to place a seven-digit local call to the 409 exchange.
- b. An extension must be assigned a COS Level in programming.

Operation

N/A

Options

This program enables or disables the Second Digit Restriction feature.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
Program 40 assigns a COS level to an extension

Selecting Options

Option Codes	Standard Value
AB: Program number 46	
C: 0—enable Second Digit Restriction	C: 0
1—disable Second Digit Restriction	

- ▼ **Example**
Second Digit Restriction is disabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	6	1													

Entering Selections

1. Enter program number 46.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

NIGHT CLASS OF SERVICE LEVEL

Feature

Night Class of Service Level is the Class of Service level that is used for the Night Class of Service feature.

▼ **Conditions**

- a. The Night Class of Service feature must be enabled in programming.

Operation

N/A

Options

This program selects a Night Class of Service level (0-8).

▼ **Conditions**
None

▼ **Additional Programming**
Program 8 enables Night Class of Service for an extension
Program 40 describes Class of Service levels for reference

Selecting Options

Option Codes	Standard Value
AB: Program number 48	
C: Night Class of Service level (0-8)	C: 7

▼ **Example**
The Night Class of Service level is 6.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	8	6													

Entering Selections

1. Enter program number 48.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

SYSTEM SPEED DIAL

Feature

System Speed Dial allows up to 100 telephone numbers to be stored under two-digit codes (00-99) so that any extension can call the numbers using the codes. Only a Display phone at port 10 can store the numbers, and each number can contain up to 18 digits. Class of Service (COS) restrictions are not applied to these numbers unless the SYSTEM SPEED DIAL RESTRICTION program is enabled.

Four Special Entries

A pause, stop, pulse to tone conversion (pg. 2-10) and/or flash (pg. 2-128) can be stored with a number, and each entry counts as a digit. Pauses/stops are most frequently needed after storing a PBX Access Code.

▶ Conditions

- a. Extensions with COS 7 or 8 and OPX extensions cannot access System Speed Dial numbers.
- b. A number longer than 18 digits should be stored under two codes.
- c. The port 10 Display phone can check stored numbers on the display.
- d. A manually dialed number or an Extension Speed Dial number can be used before or after calling a System Speed Dial number.
- e. Program 91 can erase all System Speed Dial numbers from memory.

Operation

To store a System Speed Dial number:

1. Lift handset.
2. Press DC. Hear dial tone.
3. Dial *. Dial tone stops.
4. Dial a two-digit code (00-99).
5. Dial number to be stored, including special entries.
 - To insert a three-second pause, press RG INW.
 - To insert a stop, press CONF.
 - To insert a pulse to tone conversion, press #.
 - To insert a flash, press FLSH.
6. Hang up.

To call a System Speed Dial number:

1. Access an outside line.
2. Press DC.
3. Dial two-digit code (00-99). If the number is stored under two codes, wait until the first part dials out, then repeat steps 2-3. To link an Extension Speed Dial number, press the Function key. If a number contains a stop or pulse to tone conversion, the automatic dialing stops—dial * to restart it.

To display a System Speed Dial number:

- Do not lift handset.
1. Press CHECK, then press DC.
 2. Dial 00-99. Up to 10 digits display. To view more, press *.
 3. Press CLOCK to return to date/time.

Options

This program enables or disables COS restrictions for System Speed Dial numbers.

- ▶ **Conditions**
 - a. This program applies COS restrictions for extensions with COS 2-6. Extensions with COS 7 or 8 are automatically restricted regardless of the entry made here.
 - b. COS restrictions are applied to manually dialed or Extension Speed Dial numbers that may follow a System Speed Dial number even if this program is disabled.
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 49	
C: 0—disable COS restrictions for System Speed Dial	C: 0
1—enable COS restrictions for System Speed Dial	

- ▶ **Example**
COS restrictions will be applied to all System Speed Dial numbers.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	9	1													

Entering Selections

1. Enter program number 49.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

CALL DURATION TIMER

Feature

Call Duration Timer is an automatic stopwatch feature that times outgoing outside calls on Display phones. The display changes to a stopwatch (XX-XX-XX = hrs., min., sec.) at the programmed CALL DURATION START TIME and the timing stops when the extension user hangs up. The display shows the duration of the call for approximately five seconds, then changes to the date and time.

► Conditions

- a. When a call is put on Hold, the Call Duration Timer stops and the display changes to the date and time. The timer does not begin again when the held call is retrieved.

Operation

N/A

Options

This program enables or disables the Call Duration Timer feature. If enabled, the Call Duration Timer can be programmed to start from 1 to 255 seconds after a line is accessed.

- ▶ **Conditions**
 - a. The start time must be shown as three digits. For example, a start time of 12 seconds must be expressed as 012.
 - b. An entry of 000 disables the Call Duration Timer feature.
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 51	
CDE: Start time (000-255)	CDE: 000 (Disabled)

- ▶ **Example**
The Call Duration Timer starts 9 seconds after a line is accessed.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	1	0	0	9											

Entering Selections

1. Enter program number 51.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

PAGING SPLASH TONE

Feature

Paging Splash Tone is a double beep that precedes internal or external pages. When a page is made, the double beep sounds over the speaker of the paged telephones and/or external paging speakers.

- ▶ Conditions
None

Operation

N/A

Options

This program enables or disables Paging Splash Tone.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 52	
C: 0—disable Paging Splash Tone	C: 1
1—enable Paging Splash Tone	

- ▼ **Example**
Paging Splash Tone is disabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	2	0													

Entering Selections

1. Enter program number 52.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

ALARM

Feature

The Alarm feature allows a customer-provided alarm to be connected to the system so that when it is tripped, signals (repeated alert tones) are sent to designated extensions. Two Alarms can be connected to the system. For installation information see External Alarm Signals to Stations in the Optional Equipment section of the Installation Manual.

▶ Conditions

- a. This feature is not available to the 8 system.
- b. The Alarm inputs on the D1 block must be programmed for normally open or normally closed contacts.
- c. External page zones can also be programmed to receive Alarm signals.
- d. When an Alarm is tripped, the ALARM LED at the DSS Console flashes.
- e. The Alarm signals at the extensions stop when the Alarm is reset; the Alarm signals cannot be reset from the telephone.
- f. Alarm signals are not sent to OPX extensions.

Operation

N/A

Options

This program selects the extensions to receive signal tones from an Alarm.

- ▶ **Conditions**
 - a. An OPX extension cannot receive Alarm signals.
- ▶ **Additional Programming**
 - Program 28 selects the type of contacts for the Alarm inputs
 - Program 18 lets external page zones receive Alarm signals

Selecting Options

Option Codes	Standard Value
AB: Program number 53	
CD: Port number	CD: All ports (10-73)
E: 0—disable Alarm signals	E: 0
1—enable Alarm signals	

- ▶ **Example**
Port 16 receives Alarm signals.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	3	1	6	1											

Entering Selections

1. Enter program number 53.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

RELEASE OF ABANDONED CALLS ON HOLD

Feature

If an outside party on Hold hangs up, Release of Abandoned Calls on Hold releases the line, making it available for other calls. The Central Office sends a disconnect signal (i.e., an open) to the system when the outside party hangs up, and the duration of the signal depends on the type of Central Office. Electromechanical Central Offices send signals of 20 to 90 ms while electronic Central Offices send 400 to 600 ms signals. The system must be programmed to recognize one of these durations.

▶ Conditions

- a. The Central Office must provide disconnect supervision.
- b. For PBX lines, the PBX must provide Called Party Control.
- c. If lines of both types (electromechanical and electronic) are used in the system, then the longer time interval (electronic) should be enabled in programming.

Operation

N/A

RELEASE OF ABANDONED CALLS ON HOLD

Options

This program enables or disables Release of Abandoned Calls on Hold. If enabled, the system can be programmed to recognize disconnect signals from an electromechanical or electronic CO.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 54	
C: 0—disable Release of Abandoned Calls on Hold	C: 0
1—enable for electromechanical COs	
2—enable for electronic COs	

- ▶ **Example**
Release of Abandoned Calls on Hold is enabled for an electronic Central Office.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	4	2													

Entering Selections

1. Enter program number 54.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

DO NOT DISTURB OVERRIDE

Feature

Do Not Disturb (DND) Override lets the attendant (24/36/64 system) contact an extension that has activated DND for all calls (Intercom and outside). The DSS Console is used to override DND.

▶ Conditions

- a. The DSS Console must be assigned to a port in programming.
- b. DND Override applies to both DSS Consoles.
- c. DND Override cannot be activated from the attendant telephone.

Operation

To activate DND Override (a Console key flashes fast when an extension has activated DND for all calls):

1. Lift handset.
2. Press flashing DSS Console key. Contact is established.

DO NOT DISTURB OVERRIDE (24/36/64 System only)

Options

This program enables or disables Do Not Disturb Override.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
Program 13 assigns the DSS Console to a port

Selecting Options

Option Codes	Standard Value
AB: Program number 55	
C: 0—disable DND Override	C: 0
1—enable DND Override	

- ▶ **Example**
DND Override is enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	5	1													

Entering Selections

1. Enter program number 55.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

FLASH

Feature

Flash provides a momentary interruption (open loop) on a CO/PBX line that is in use. This open loop allows an extension user who is busy on an outside call to do the following:

- Obtain a new dial tone on the same line (to place another call) without hanging up and starting over
- Access telco “Custom Calling” options or Centrex features (if available)
- Access PBX features, such as PBX Transfer, when the system is installed behind a PBX

The duration of the open loop flash is selected in the FLASH TIMER program: one duration for CO lines, another for PBX lines.

▼ Conditions

- a. A ground flash is not available.
- b. If Flash is used to disconnect a call to get new dial tone, the LND feature will not function for that call. LND only functions for calls that are disconnected by hanging up.
- c. CO/PBX lines must be identified in programming

Operation

To use Flash:

1. Press FLSH.

Options

This program sets the duration of the open loop flash used for the Flash feature. One duration is available for CO lines and another for PBX lines. A flash duration can range from .5 to 25.5 seconds.

Caution: System software provides a flash duration that is actually .2 seconds longer than the selected entry (e.g., an entry of .5 seconds yields a flash duration of .7 seconds).

- ▶ **Conditions**
 - a. The flash duration must conform to the requirements of the CO/PBX.
 - b. The desired Flash time must be multiplied by 10 and shown as three digits. For example, a Flash time of .8 seconds multiplied by 10 is 8. The required entry is 008.
- ▶ **Additional Programming**
 Program 1 assigns a Line Type (CO/PBX) to each line

Selecting Options

Option Codes	Standard Value
AB: Program number 56	
C: Flash timer number	
1—for CO lines	
2—for PBX lines	
DEF: Flash duration (005-255)	DEF: CO-015 (1.5+.2 sec.) PBX-007 (.7+.2 sec.)

- ▶ **Example**
 The flash duration for CO lines is .9 seconds and for PBX lines is 2 seconds (the entries below disregard the .2 sec. discrepancy).

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	6	1	0	0	9										
5	6	2	0	2	0										

Entering Selections

1. Enter program number 56.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEF data.
6. Press *.

Next flash timer number displays. There are two options:

- To enter DEF data for this timer, repeat steps 5-6.
- To exit the program, press #.

DIAL PULSE SENDER SPEED

Feature

Dial Pulse Sender Speed determines the rate at which pulses are sent to the Central Office or PBX when a call is dialed on a pulse line.

▶ **Conditions**

- a. Pulse lines must be identified in programming.
- b. A Make/Break Ratio must also be programmed for pulse lines.

Operation

N/A

Options

This program assigns a Dial Pulse Sender Speed to each pulse line. Two Dial Pulse Sender Speeds are available: 10 or 20 pulses per second (pps).

- ▼ **Conditions**
 - a. The sender speed must conform to the requirements of the Central Office or PBX.
- ▼ **Additional Programming**
 - Program 1 assigns a Dial Mode (pulse or tone) to each line
 - Program 58 assigns a Make/Break Ratio to pulse lines

Selecting Options

Option Codes	Standard Value
AB: Program number 57	
CD: Line number	CD: All lines (01-24)
E: 0—10 pps	E: 0
1—20 pps	

- ▼ **Example**
Pulse line 6 has a Dial Pulse Sender Speed of 20 pps.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	7	0	6	1											

Entering Selections

1. Enter program number 57.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next line number displays. There are three options:

- To enter E data for this line, repeat steps 5-6.
- To advance to another line, press *.
- To exit the program, press #.

MAKE/BREAK RATIO

Feature

The Make/Break Ratio is the close/open ratio of the relays used for pulse lines.

▷ Conditions

- a. Pulse lines must be identified in programming.
- b. A Dial Pulse Sender Speed must be programmed for each pulse line.

Operation

N/A

Options

This program assigns a Make/Break Ratio to all pulse lines in the system. Two Make/Break Ratios are available: 33%/67% or 39%/61%.

- ▼ Conditions
 - a. The Make/Break Ratio must conform to the requirements of the Central Office or PBX.
- ▼ Additional Programming
 - Program 1 assigns a Dial Mode (pulse/tone) to a line
 - Program 57 assigns a Dial Pulse Sender Speed to each pulse line

Selecting Options

Option Codes	Standard Value
AB: Program number 58	
C: 0—33%/67%	C: 1
1—39%/61%	

- ▼ Example

The Make/Break Ratio for all pulse lines is 33%/67%.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	8	0													

Entering Selections

1. Enter program number 58.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit the program.

HEADSET

Feature

Any Series 2 telephone, or any telephone with a Series 4 internal PCB (B-ANU-A/B PCB) can be equipped with a Headset instead of a handset for quicker, easier, call processing. A headset extension can receive ringing Intercom calls while the other extensions receive voice announced calls if so programmed in the HEADSET INTERCOM OPTION.

▶ Conditions

- a. The Headset PCB (B-TBU-C) must be installed on the B-ANU-A/B (inside the phone). See Appendix E, Addendum to the Installation Manual, for details.

Operation

Appendix E also contains information on how to use the headset.

Options

This program determines how the headset extension receives Intercom calls:

1. Voice announced over the earpiece of the headset
2. With ringing

▶ **Conditions**

- a. When the system is programmed for voice announced Intercom calls (Program 24 = 0), Program 59 can be set to voice announce or ringing. This allows the headset extension to receive ringing Intercom calls while all others receive voice announced calls.
- b. When Program 24 = 1, Intercom calls will ring at every extension, including the headset extension, regardless of the entry made in Program 59.
- c. Although mainly intended for headset extensions, this program can also be used for non-headset extensions. That is, when the system is programmed for voice announced calls, Program 59 can be used to enable ringing Intercom calls at non-headset extensions.

▶ **Additional Programming**

None

Selecting Options

Option Codes	Standard Value
AB: Program number 59	
CD: Port number	CD: All ports (10-73)
E: 0—Voice announce 1—Ringing	E: 0

▶ **Example**

Headset port 15 receives ringing Intercom calls.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	9	1	5	1											

Entering Selections

1. Enter program number 59.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to another port, press *.
- To exit the program, press #.

DOOR ALERT TONE

Feature

Door Alert Tone is a single tone that is broadcast over the speaker of the Door Chime Box when someone calls it.

▼ **Conditions**
None

Operation

N/A

Options

This program enables or disables the Door Alert Tone feature for both Door Chime Boxes.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program 62	
C: 0—disable Door Alert Tone	C: 0
1—enable Door Alert Tone	

- ▶ **Example**
Door Alert Tone is enabled.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	2	1													

Entering Selections

1. Enter program number 62.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

DOOR UNLOCK

Feature

A customer-provided Door Unlock device can be installed with one of the Door Chime Boxes so that the extension users can unlock that door using their phones. The door can be unlocked after an extension user answers chimes from that box or calls that box. DOOR UNLOCK RELAY CONTACTS must be programmed for the device.

▶ Conditions

- a. One set of external page zone relay contacts on the D1 block must be available for the Door Unlock device. The device must be connected to these contacts, and a B-GCU-A PCB must be installed on the B-TSU-A PCB.

Operation

To unlock the door after contacting the Door Chime Box:

1. Press FLSH.

Options

This program assigns one set of external page zone relay contacts to the Door Unlock device. External page zone 1 contacts (clips 15 & 16 on the D1 block) or external page zone 2 contacts (clips 19 & 20 on the D1 block) can be assigned. These contacts provide normally open, single-pole single-throw contacts.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

Option Codes	Standard Value
AB: Program number 63	
C: 0—disable Door Unlock relay contacts	C: 0
1—enable ext. page zone 1 contacts for Door Unlock	
2—enable ext. page zone 2 contacts for Door Unlock	

- ▶ **Example**
External page zone 2 contacts are used for the Door Unlock device.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	3	2													

Entering Selections

1. Enter program number 63.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

LOCAL PERMITTED CODES

Feature

Local Permitted Codes are specific telephone numbers that extensions with Class of Service (COS) 4 or 5 can dial (in addition to the other types of numbers allowed by those COSs). When an extension user dials a number that matches a Local Permitted Code, any number of digits can be dialed afterward.

The intent of the Local Permitted Code feature is to give extensions with COS 4 or 5 a few more dialing options beyond the Permitted Codes feature. For example, in areas where Equal Access Dialing is available, a five-digit Equal Access code (10 + XXX) to a Common Carrier such as SPRINT, MCI, etc., plus the three-digit home area code can be designated as a Local Permitted Code. This way, 1 + 7-digit toll numbers, which are normally allowed by COS 4 and 5, can be dialed on a carrier other than the default carrier. Consult the carrier for details on the types of access codes required.

▼ Conditions

- a. A COS level must be assigned to an extension in programming.
- b. Program 42 sets a maximum on the total number of digits that can be dialed on a Local Permitted Code call (that is, Local Permitted Code digits plus any digits dialed afterward).

Operation

N/A

Options

This program selects up to four Local Permitted Codes, numbered 01-04. A Local Permitted Code can contain up to the first 12 digits of the desired telephone number.

- ▼ Conditions
 - a. If a maximum of 11 or less is selected in Program 42, only that number of digits can be entered as a Local Permitted Code.
 - b. The DC key represents any digit (e.g., 1-212-735-DC-DC-DC-DC allows calls to the 735 exchange of the 212 area code).
 - c. Do not use "DC" or "0" as the first digit (this allows access to the telco operator and, therefore, toll calls).
 - d. Local Permitted Codes should not include PBX Access Code digits.
- ▼ Additional Programming
 - Program 40 assigns a Class of Service to an extension.
 - Program 42 limits the total number of digits that can be dialed

Selecting Options

Option Codes	Standard Value
AB: Program number 64	
CD: Code number (01-04)	CD: All codes (01-04)
E→P: Loc. Perm. Code digits	E→P: Unassigned

- ▼ Example

Local Permitted Code 04 is 10235201.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	4	0	4	1	0	2	3	5	2	0	1				

Entering Selections

1. Enter program number 64.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFGHIJKLMNOP data (only 8 digits display at a time).
 - To erase this data, press OPAC.
6. Press *.

Next code number displays. There are three options:

- To enter EFGHIJKLMNOP data, repeat steps 5-6.
- To advance to another code, press *.
- To exit the program, press #.

NONRESTRICTED LINE

Feature

The Nonrestricted Line feature allows an outside line to be specially programmed so that COS restrictions are not applied to calls made on that line. The customer may want an outbound WATS line, for example, to be designated as a Nonrestricted Line.

▶ **Conditions**

- a. In order to place a call on a Nonrestricted line, an extension must be programmed for outgoing access to the line.

Operation

N/A

Options

This program designates an outside line as a Nonrestricted Line. Any number of lines can be designated as Nonrestricted Lines.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
Program 6 assigns an extension outgoing access to line groups

Selecting Options

Option Codes	Standard Value
AB: Program 65	
CD: Line number	CD: All lines (01-24)
E: 0—disable Nonrestricted Line	E: 0
1—enable Nonrestricted Line	

- ▶ **Example**
Line 2 is a Nonrestricted Line.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	5	0	2	1											

Entering Selections

1. Enter program number 65.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next line number displays. There are three options:

- To enter E data for this line, repeat steps 5-6.
- To advance to another line, press *.
- To exit the program, press #.

INTERCOM LINK INCREASE

Feature

Intercom Link Increase allows unused line circuits to be used as Intercom links, providing increased Intercom calling capabilities. For example, if only five lines in an 8-line system are being utilized, then the three unused line circuits can be used as Intercom links. This increases the number of Intercom links from six (which is the standard for an 8-line system) to nine.

▼ Conditions

- a. The Internal Conference feature is disabled when Intercom links are increased.
- b. In the 64 system, a B-XPU-A PCB must be installed when line circuits 13-24 are to be used as Intercom links. One B-XPU-A must be installed for systems with up to 32 extensions and two B-XPU-A PCBs must be installed for systems with more than 32 extensions. Otherwise, 12 minus n , where n is the number of lines installed, is the extra number of Intercom links available.
- c. CO Line PCBs do not have to be installed for the line circuit positions that are to be used as Intercom links.

Operation

N/A

Options

This program enables or disables the Intercom Link Increase feature.

Caution: If this program is enabled, the system takes a few seconds to do a software reset when the programming mode is exited (that is, when the programming button is pressed). All calls in progress are dropped.

▼ Conditions

a. When this program is enabled, the Line Type (Program 1) for each of the unused line positions is automatically set to 0 (not installed). In order to use these line positions for actual lines (e.g., at a later date), Program 66 must be changed, and entries must be re-made in Program 1.

▼ Additional Programming

None

Selecting Options

Option Codes

Standard Value

AB: Program number 66

CD: • To enable, enter the last line number to be used as an outside line.

• To disable after it has been enabled, enter 00.

CD: Unassigned (disabled)

▼ Example

In a 12-line system, 8 lines are installed and the rest are to be used as Intercom links.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	6	0	8												

Entering Selections

1. Enter program number 66.
2. Press *.
3. Enter CD data.
4. Press *.
5. Press # to exit program.

STATION MESSAGE DETAIL RECORDING (Includes Account Codes)

Feature

Station Message Detail Recording (SMDR) provides a printed record of the outside calls placed and answered at each extension in the system. The SMDR printout shows data such as class of call, date and time, line number, duration, extension number, and number dialed. The SMDR TIMERS program sets certain restrictions on the type of calls that can be recorded.

SMDR also provides an Account Code feature. An extension user can enter an eight-digit Account Code before or after dialing a call to identify and categorize calls (e.g., according to client). The Account Code prints with the other call information.

▶ Conditions

- a. SMDR requires a special PCB and a customer-provided printer. See Appendix D, an Addendum to the Installation Manual, for an equipment list, installation, and Account Code details.

Operation

SMDR operates automatically. Appendix D also contains information on how to enter Account Codes.

Options

This program sets two SMDR timers:

1. **Call Duration Timer** selects the minimum number of seconds (00-60) a call must last in order for it to be recorded on the SMDR printout.
2. **Call Start Timer** selects the number of seconds (00-60) which pass before SMDR starts timing a call.

▼ Conditions

- a. Switches SW1-2 and SW1-3 on the SMDR PCB must be set to OFF before entering the selections using the procedure below.

▼ Additional Programming

None

Selecting Options

Option Codes	Standard Value
AB: Program number 67	
CD: Timer number 01	
EF: Minimum duration (00-60)	EF: 00 (All calls recorded)
GH: Timer number 02	
IJ: Start time (00-60)	IJ: 00 (Timer starts immediately after a call is established)

▼ Example

A call must last for at least 30 seconds in order for it to be recorded on the SMDR printout, and SMDR starts timing a call 10 seconds after the call is established.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	7	0	1	3	0	0	2	1	0						

Entering Selections

1. Enter program number 67.
2. Press *. Timer number 01 (CD data) displays.
3. Enter EF data.
4. Press *. Timer number 02 (GH data) displays.
5. Enter IJ data.
6. Press *.
7. Press # to exit program.

DISA LINE ACCESS

Feature

The DISA Line Access feature determines how a DISA line can be used. A DISA line can be used to access extensions, or it can be used to access both extensions and system lines. This feature also determines when a DISA line can be used to access a system line: (a) during the night mode (Night Transfer feature ON); (b) during the day mode (Night Transfer feature OFF); (c) during either mode. (A DISA line can be used to access extensions during either mode.)

▼ Conditions

- a. When the Night Transfer feature is programmed with a 1 in Program 17, the DISA night options will function only when line group 1 is put into the night mode (that is, only when an extension that has line group 1 as its primary incoming line group activates Night Transfer).
- b. DISA lines must be selected in programming.

Operation

N/A

Options

This program determines how and when a DISA line can be used, according to the options described in the DISA Line Access feature.

▼ Conditions

None

▼ Additional Programming

Program 3 assigns DISA lines

Program 17 determines which Night Transfer mode is used in the system

Selecting Options

Option Codes

Standard Value

AB: Program number 68

CD: DISA line number

CD: 00 (Unassigned)

E: 0—Extension access only

E: 0

1—Extension access; line access, day

2—Extension access; line access, night

3—Extension access; line access, day/night

▼ Example

DISA line 8 can be used to access extensions and lines only during the night mode.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	8	0	8	2											

Entering Selections

1. Enter program number 68.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next line number displays. There are three options:

- To enter E data for this line, repeat steps 5-6.
- To advance to another line, press *.
- To exit program, press #.

DISA SECURITY CODES

Feature

A DISA Security Code allows someone outside the system to use a DISA line to access a system line. A DISA caller cannot access a system line without first dialing a DISA Security Code.

► Conditions

- a. DISA lines must be selected in programming.
- b. A Class of Service can be assigned to a security code to restrict the outside calls that can be placed using that code.

Operation

See Direct Inward System Access (DISA) for instructions on how to enter the security code.

Options

This program creates DISA Security Codes. Up to eight security codes can be created. The security codes are identified by the numbers 1-8, and each code is four digits long.

- ▼ **Conditions**
None
- ▼ **Additional Programming**
Program 3 assigns DISA lines
Program 72 assigns a Class of Service to a DISA Security Code

Selecting Options

Option Codes	Standard Value
AB: Program number 70	
C: Security code identification number (1-8)	C: 0 (Unassigned)
DEFG: Select any four digits	DEFG: No value

- ▼ **Example**
DISA Security Code 1 is 2345.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	0	1	2	3	4	5									

Entering Selections

1. Enter program number 70.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEFG data.
6. Press *.

Next security code number displays. There are three options:

- To enter DEFG data for this code, repeat steps 5-6.
- To advance to another code, press *.
- To exit the program, press #.

DISA PRINTOUT ON SMDR

Feature

When a system is equipped with Station Message Detail Recording (SMDR), an outside call placed through the DISA line can be recorded on the SMDR printout. In order to have a call print, a DISA Security Code must have a DISA SECURITY CODE EXTENSION ASSIGNMENT in programming. Then, an outside call placed using that security code prints next to the programmed extension. For example, if security code 1 is assigned to extension 12, then all calls placed using security code 1 print next to extension 12 on the SMDR printout.

▼ Conditions

- a. DISA Security Codes must be selected in programming.

Operation

Printout is automatic.

Options

This program assigns an extension number (10-79) to a DISA security code for SMDR.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
Program 70 creates DISA Security Codes

Selecting Options

Option Codes	Standard Value
AB: Program number 71	
C: DISA Security Code number (1-8)	C: 0 (No codes assigned)
DE: Extension number	DE: 10

- ▶ **Example**
DISA Security Code 4 is assigned to extension 11.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	1	4	1	1											

Entering Selections

1. Enter program number 71.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DE data.
6. Press *.

Next security code displays. There are three options;

- To enter DE data for this code, repeat steps 5-6.
- To advance to another code, press *.
- To exit the program, press #.

DISA CLASS OF SERVICE

Feature

A Class of Service (COS) can be assigned to a DISA Security Code to restrict the type of outside calls that can be placed using that code. No other COS assignments affect DISA Security Code calls.

▶ Conditions

- a. DISA Security Codes must be selected in programming.

Operation

N/A

Options

This program assigns a COS level (0-6) to a DISA Security Code.

▼ Conditions

None

▼ Additional Programming

Program 40 describes COS levels for reference

Program 70 creates DISA Security Codes

Selecting Options

Option Codes	Standard Value
AB: Program number 72	
C: DISA Security Code number (1-8)	C: 0 (No codes assigned)
D: COS level (0-6)	D: 0

▼ Example

DISA Security Code 1 has COS 3.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	2	1	3												

Entering Selections

1. Enter program number 72.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter D data.
6. Press *.

Next security code number displays. There are three options:

- To enter D data for this code, repeat steps 5-6.
- To advance to another code, press * .
- To exit program, press #.

ERROR CHECK

Feature

Error Check identifies errors/omissions in program entries. When the programming button on the port 10 telephone is pushed to exit the programming mode, an "E" appears on the display if an error has been made. Error Check can then be used to find out which program contains the error. Error Check can also be used at any other time to identify errors.

▶ Conditions

- a. Error Check does not identify all errors in programming.

Operation

N/A

Options

This program enables the Error Check feature.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

N/A

Entering Selections

If “E” appears when attempting to exit the programming mode, skip to step 3; otherwise:

1. Enter program number 90.
2. Press *. Display: E—error found
EO—no error found
3. If there is an error, press * to display the program number containing the error; otherwise, skip this step.
4. Press # to exit program 90.

FUNCTION KEY INITIALIZATION

Feature

Function Key Initialization sets up the Function keys on a Multibutton extension so they can be used to access the following features:

FEATURE	FUNCTION KEY NUMBER
• Extension Speed Dial	1-10
• Direct Station Selection (DSS) for extensions 10-18	1-9
• All Call Paging (access code 80)	10
• Save	9
• LND	10

Feature descriptions appear on pages 2-160 and 2-161.

► Conditions

- The Function Key Initialization feature must be enabled after installing the system.
- Function Key Initialization can also be enabled at a later date to erase all Speed Dial/Save data and to reset DSS keys (1-9) for extensions 10-18 and key 10 for All Call Page. Alarm Clock settings also get erased, but LND data does not.

Options

This program enables the Function Key Initialization feature.

- ▼ Conditions
None
- ▼ Additional Programming
None

Selecting Options

N/A

Entering Selections

1. Enter program number 91.
2. Press *. Display: 91 A
3. Press *.
4. Press # to exit program.

FUNCTION KEY INITIALIZATION (continued from page 158)

Speed Dial, Extension

Feature

Extension Speed Dial lets an extension user store a telephone number under a Function key so that when the key is pressed, the number is automatically dialed. Each extension can store 10 Extension Speed Dial numbers, one under each Function key, and each number can contain up to 18 digits.

Four Special Entries

A pause, stop, pulse to tone conversion (pg. 2-10) and/or flash (pg. 2-128) can be stored with a number, and each entry counts as a digit. Pauses/stops are needed when storing a PBX Access Code.

► Conditions

- a. A number longer than 18 digits should be stored under two keys.
- b. OPX extensions cannot use Extension Speed Dial numbers.
- c. Display phones can check a stored number on the display.
- d. The users may also have access to System Speed Dial numbers.
- e. A number can be manually dialed or a System Speed Dial number can be accessed before or after calling an Extension Speed Dial number.

Operation

To store an Extension Speed Dial number:

1. Lift handset.
2. Press DC. Hear dial tone.
3. Dial *. Dial tone stops.
4. Press Function key.
5. Dial number to be stored, including special entries.
 - To insert a three-second pause, press RG INW.
 - To insert a stop, press CONF.
 - To insert a pulse to tone conversion, press #.
 - To insert a flash, press FLSH.
6. Hang up.

To call an Extension Speed Dial number:

1. Access an outside line.
2. Press Function key. If the number is stored under two keys, wait until the first part dials out, then press the next key. Or, to link a System Speed Dial number: press DC, then dial (00-99). If the number contains a stop or pulse to tone conversion, the automatic dialing stops—dial * to restart it.

To display an Extension Speed Dial number:

- Do not lift handset.
1. Press CHECK, then press DC.
 2. Press Function key. Up to 10 digits display. To view more, press *.
 3. Press CLOCK to return to date/time.

Feature

Direct Station Selection (DSS) lets a user call another extension using a Function key. Keys 1-9 call extensions 10-18, respectively.

Save lets a user store a telephone number under Function key 9 so that it can be automatically dialed by pressing Function key 9.

Last Number Dialed (LND) automatically stores the last telephone number manually dialed under Function key 10 so that it can be redialed using Function key 10.

All Call Paging lets a user page all extensions using Function key 10.

A detailed feature description, conditions and alternate ways of activating DSS, Save, and LND can be found in Section 1. See page 2-38 for All Call Paging information.

► Conditions

- a. When an Extension Speed Dial number is stored under Function key 9 or 10, the key loses its Save/LND capability unless restored using the procedure below.

Operation

To use a Function key for DSS or All Call Paging:

1. Lift handset.
2. Press Function key.

To store a number under Function key 9 for Save:

1. Access an outside line.
2. Dial number.
3. Press Function key 9 anytime before hanging up.

To call a Save number or LND:

1. Access an outside line.
2. Press Function key 9 for Save or Function key 10 for LND.

To restore Function key 9 or 10 to Save or LND, respectively:

1. Lift handset.
2. Press DC.
3. Dial *.
4. Press Function key to be restored.
5. Press OPAC.
6. Dial # to restore Save or * to restore LND.
7. Hang up.

PROGRAM BUFFER CANCELTION

Feature

All data entered while programming the system is stored in buffer memory until the programming mode is exited (that is, until the programming button is pressed). The Program Buffer Cancellation feature erases all the data in the buffer and restores the previous values.

▶ **Conditions**

- a. Program Buffer Cancellation does not erase data after the programming is exited.

Operation

N/A

Options

This program erases data in system buffer memory.

- ▶ **Conditions**
None
- ▶ **Additional Programming**
None

Selecting Options

N/A

Entering Selections

1. Enter program number 99.
2. Press *. Display: 99 C
3. Press * to exit programming mode. That is the only time the * key is used to exit the programming mode.

PRIVATE LINE

Feature

The Private Line feature allows an incoming and/or outgoing outside line to be assigned to only one extension for exclusive use by that extension. Any outside line can be designated as a Private Line. All features involving outside lines apply to Private Lines as well—for example, calls are placed and answered on a Private Line as they are on any other line (see *Placing/Answering Outside Calls*).

▼ Conditions

- a. Private Line is assigned to an extension as follows:
 - A line group must be formed that contains only the Private Line. For example, if line 3 is to be used as a Private Line, line group XX must have the following entry in Program 2: 02-XX-03-03 (i.e., line 03 is the lowest and highest numbered line in the group).
 - The line group must be assigned to only one extension in Program 6 and/or Program 7 for outgoing and/or incoming access, respectively.
- b. An extension programmed for the Executive Override feature can break into a call on a Private Line.

Operation

N/A

Feature

Tenant Service allows two or more independent businesses to share the system. Each tenant can be assigned incoming and/or outgoing outside lines dedicated for its own use. No other features can be partitioned among the tenants.

▼ Conditions

- a. Programs 2, 6 and 7 must be used to assign lines to the extensions.
- b. Night Transfer can be independently used by each tenant if a 1 is entered in Program 17.

Operation

N/A



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Introduction

This appendix provides step-by-step instructions on how to operate the features available to an OPX telephone. Some features require a tone generating OPX telephone because the # and * keys are used. Feature descriptions (and programming requirements, if any) can be found in Section 1 or Section 2. To quickly find a feature, refer to the Index.

Account Codes

To assign an Account Code during an established outside call:

1. Press and release hookswitch. Call is put on Hold. Listen for dial tone.
2. Dial 9. Dial tone stops.
3. Dial Account Code (up to eight digits).
4. Press and release hookswitch. The call is re-established.

To enter an Account Code before dialing a call:

1. Establish outside dial tone using the Placing Outside Calls procedure.
2. Perform steps 2-4 above. Step 4 re-establishes outside dial tone.

Answering Outside Calls

To answer an outside call which rings at the OPX:

1. Lift handset.

Call Pickup

To pickup an outside call that was placed on Hold at another extension:

1. Lift handset.
2. Dial 99. Listen for dial tone.
3. Dial the number of the extension that placed the call on Hold.

Call Waiting

To manually send a Call Waiting signal:

1. Place Intercom call; hear busy tone.
2. Dial 1. Listen for a short burst of tones.
3. Wait for a reply. Do not hang up.

To automatically send a Call Waiting signal:

1. Listen for a short burst of tones when you make an Intercom call to an extension; these tones are the Call Waiting signal, indicating that the extension is busy.
2. Wait for a reply. Do not hang up.

Camp-On

To use Camp-On:

1. Place Intercom call; hear busy tone.
2. Dial 2. Busy tone stops.
3. Do not hang up. Listen for the ringing signal which indicates that the busy extension is available. To cancel Camp-On, hang up.

Conference

To establish a Conference call:

1. Establish an outside call according to the Placing Outside Calls procedure.
2. Press and release hookswitch. Call is put on Hold. Listen for dial tone.
3. Dial extension number of desired inside party. This party must answer by using the handset.
4. Press and release hookswitch. All parties are connected. Even if the other inside party hangs up, you will remain connected to the outside party until you hang up.

Direct Inward System Access (DISA)

A. To use DISA to call an extension user or access Group Hunt:

1. Call the DISA line. The system answers with dial tone.
2. Dial desired extension number OR dial 8, then the Hunting Group number (0-9). Music On Hold is heard or silence until the extension user answers.

(continued)

Direct Inward System Access (DISA) (cont'd)

B. To use DISA to place a call on a system line:

1. Call the DISA line. The system answers with dial tone.
2. Dial #.
3. Dial four-digit security code. Listen for confirmation tone.
4. Dial queue group number (1-6) OR dial 9, then the two-digit line number. If busy tone is heard, use either one of the following DISA procedures to disconnect.
5. Dial telephone number, including PBX Access Code if required.
6. To enter an Account Code: Dial *, Account Code, *.
7. Dial #. The call rings through.

To disconnect just the system line and place another outside call:

1. Dial *, #, *. Listen for dial tone.
2. Repeat steps 2-7 in the previous procedure.

To force disconnect both the DISA line and the system line:

1. Dial *, #, #. This procedure must be done before hanging up from procedure B.

Flash

To use Flash:

1. Press and release the hookswitch.

Group Hunt

To activate Group Hunt:

1. Lift handset. Listen for dial tone.
2. Dial 7. Listen for new dial tone.
3. Dial #.
4. Dial number of desired Hunting Group (0-9). The first available extension is called.

To call the next available extension in the group (in case of a no-response):

1. Dial #.

Group Hunt Transfer

To activate Group Hunt Transfer:

1. Establish an outside call according to the Placing Outside Calls Procedure.
2. Press and release hookswitch. Call is put on Hold. Listen for dial tone.
3. Dial #.
4. Dial desired Hunting Group number (0-9). If there is no answer, step 3 can be repeated to call the next available extension. To return to the outside call instead, press and release the hookswitch.
5. Announce call.
6. Hang up.

Hold

To put a call on Hold:

1. Press and release hookswitch.
2. Do not hang up; set handset beside telephone.

To return to a call on Hold (also see Call Pickup):

1. Press and release hookswitch.

Intercom Calls

To place an Intercom call:

1. Lift handset. Listen for dial tone.
2. Dial 7. Listen for new dial tone.
3. Dial desired extension number. To convert a ringing Intercom call into a voice announced one, or vice versa, dial 1 after the extension number. However, Intercom calls to other OPX extensions always ring; dialing 1 has no effect.

Line Queuing

To queue for an outside line after you have dialed the queue group number and received busy tone:

1. Dial the queue group number again. Dial tone indicates queue is accepted.
2. Hang up. The phone rings when a line is available; outside dial tone is heard when the ring is answered.

Paging

To All Call Page:

1. Lift handset.
2. Dial 7. Listen for dial tone.
3. Dial 80.
4. Make announcement.
5. Hang up.

To Zone Page:

1. Lift handset.
2. Dial 7. Listen for dial tone.
3. Dial the desired page zone code: 81-84 for internal zones 1-4, 85 for both external zones, 86-87 for external zones 1-2.
4. Make announcement.
5. Hang up.

(continued)

Paging (cont'd)

To initiate Meet-Me Answer Paging:

1. Lift handset. Listen for dial tone.
2. Dial 7. Listen for new dial tone.
3. Dial page zone code (80-84).
4. Page person and announce the pickup code, which is #.
5. Dial #.
6. Do not hang up. Wait for a reply.

Placing Outside Calls

To place an outside call:

1. Lift handset. Listen for dial tone.
2. Dial queue group number (1-6).
OR
Dial 9, then two-digit line number.
3. Dial telephone number.

Pulse to Tone Conversion

To convert the dialing mode from pulse to tone while dialing an outside call:

1. Dial #. The # may be dialed at any point while dialing the number. Only the digits dialed after # are dialed as tone.

Transfer

To transfer an outside call to another extension:

1. Press and release hookswitch. Listen for dial tone.
2. Dial desired extension number. To transfer the call directly, skip step 3.
3. Announce the call. To return to the outside call, for example, if there is no answer, press and release the hookswitch.
4. Hang up.

A reference in brackets (e.g.,[6]) is a program number.

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A reference in brackets (e.g., [6]) is a program number.

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A reference in brackets (e.g.,[6]) is a program number.

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A reference in brackets (e.g., [6]) is a program number.

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BUSINESSCOM PLUS™

Program Record Form

Customer: _____ Date: _____

Location: _____ No. Stations: _____

System Type: _____ No. Lines: _____

The Program Record Form is used to record the software options selected in Section 2 of the BUSINESSCOM PLUS Software Manual. This form should be completed and kept in a safe place. A copy of the form can be left at the customer site for future reference.

PROGRAM 1 - Line Type, Dial Mode, Queue Group

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	1	0	1												
0	1	0	2												
0	1	0	3												
0	1	0	4												
0	1	0	5												
0	1	0	6												
0	1	0	7												
0	1	0	8												
0	1	0	9												
0	1	1	0												
0	1	1	1												
0	1	1	2												
0	1	1	3												
0	1	1	4												
0	1	1	5												
0	1	1	6												
0	1	1	7												
0	1	1	8												
0	1	1	9												
0	1	2	0												
0	1	2	1												
0	1	2	2												
0	1	2	3												
0	1	2	4												

Entry:

1. Enter 01.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFGHI data.
6. Press *.

Next line [CD] displays:

- To enter EFGHI data, repeat 5-6.
- To advance to another line, press *.
- To exit the program, press #.

PROGRAM 2 - Line Groups

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	2	0	1												
0	2	0	2												
0	2	0	3												
0	2	0	4												
0	2	0	5												
0	2	0	6												
0	2	0	7												
0	2	0	8												
0	2	0	9												
0	2	1	0												
0	2	1	1												
0	2	1	2												
0	2	1	3												
0	2	1	4												
0	2	1	5												
0	2	1	6												
0	2	1	7												
0	2	1	8												
0	2	1	9												
0	2	2	0												
0	2	2	1												
0	2	2	2												
0	2	2	3												
0	2	2	4												
0	2	2	5												
0	2	2	6												
0	2	2	7												
0	2	2	8												
0	2	2	9												
0	2	3	0												

Entry:

1. Enter 02.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.
7. Enter GH data.
8. Press *.

Next Line Group [CD] displays:

- To enter EFGH data, repeat 5-8.
- To advance to another group, press *.
- To exit the program, press #.

PROGRAM 3 - DISA Line, FAX Line, Common Use Line

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	3	0	1												
0	3	0	2												
0	3	0	3												
0	3	0	4												
0	3	0	5												
0	3	0	6												
0	3	0	7												
0	3	0	8												
0	3	0	9												
0	3	1	0												
0	3	1	1												
0	3	1	2												
0	3	1	3												
0	3	1	4												
0	3	1	5												
0	3	1	6												
0	3	1	7												
0	3	1	8												
0	3	1	9												
0	3	2	0												
0	3	2	1												
0	3	2	2												
0	3	2	3												
0	3	2	4												

Entry:

1. Enter 03.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFG data.
6. Press *.

Next line [CD] displays:

- To enter EFG data, repeat 5-6.
- To advance to another line, press *.
- To exit program, press #.

PROGRAM 4 - Executive Override

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	4	1	0												
0	4	1	1												
0	4	1	2												
0	4	1	3												
0	4	1	4												
0	4	1	5												
0	4	1	6												
0	4	1	7												
0	4	1	8												
0	4	1	9												
0	4	2	0												
0	4	2	1												
0	4	2	2												
0	4	2	3												
0	4	2	4												
0	4	2	5												
0	4	2	6												
0	4	2	7												
0	4	2	8												
0	4	2	9												
0	4	3	0												
0	4	3	1												
0	4	3	2												
0	4	3	3												
0	4	3	4												
0	4	3	5												
0	4	3	6												
0	4	3	7												
0	4	3	8												
0	4	3	9												
0	4	4	0												
0	4	4	1												

Entry:

1. Enter 04.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 4 - Executive Override

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	4	4	2												
0	4	4	3												
0	4	4	4												
0	4	4	5												
0	4	4	6												
0	4	4	7												
0	4	4	8												
0	4	4	9												
0	4	5	0												
0	4	5	1												
0	4	5	2												
0	4	5	3												
0	4	5	4												
0	4	5	5												
0	4	5	6												
0	4	5	7												
0	4	5	8												
0	4	5	9												
0	4	6	0												
0	4	6	1												
0	4	6	2												
0	4	6	3												
0	4	6	4												
0	4	6	5												
0	4	6	6												
0	4	6	7												
0	4	6	8												
0	4	6	9												
0	4	7	0												
0	4	7	1												
0	4	7	2												
0	4	7	3												

Entry:

1. Enter 04.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 5 - Unsupervised Conference Port

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	5	0	1												
0	5	0	2												
0	5	0	3												
0	5	0	4												

Entry:

1. Enter 05.
2. Press *. Unsup. Conf. 01 [CD] displays.
3. Enter EF data.
4. Press *.

Next Unsup. Conf. [CD] displays:

- To enter EF data, repeat 3-4.
- To advance to another Unsup. Conf., press *.
- To exit the program, press #.

PROGRAM 6 - Outgoing Line Access

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	6	1	0												
0	6	1	1												
0	6	1	2												
0	6	1	3												
0	6	1	4												
0	6	1	5												
0	6	1	6												
0	6	1	7												
0	6	1	8												
0	6	1	9												
0	6	2	0												
0	6	2	1												
0	6	2	2												
0	6	2	3												
0	6	2	4												
0	6	2	5												
0	6	2	6												
0	6	2	7												
0	6	2	8												
0	6	2	9												
0	6	3	0												
0	6	3	1												
0	6	3	2												
0	6	3	3												
0	6	3	4												
0	6	3	5												
0	6	3	6												
0	6	3	7												
0	6	3	8												
0	6	3	9												
0	6	4	0												
0	6	4	1												

Entry:

1. Enter 06.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.
7. Enter GH data.
8. Press *.

Next port [CD] displays:

- To enter EFGH data, repeat 5-8.
- To advance to another port, press *.
- To exit program, press #.

(continued)

PROGRAM 6 - Outgoing Line Access (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	6	4	2												
0	6	4	3												
0	6	4	4												
0	6	4	5												
0	6	4	6												
0	6	4	7												
0	6	4	8												
0	6	4	9												
0	6	5	0												
0	6	5	1												
0	6	5	2												
0	6	5	3												
0	6	5	4												
0	6	5	5												
0	6	5	6												
0	6	5	7												
0	6	5	8												
0	6	5	9												
0	6	6	0												
0	6	6	1												
0	6	6	2												
0	6	6	3												
0	6	6	4												
0	6	6	5												
0	6	6	6												
0	6	6	7												
0	6	6	8												
0	6	6	9												
0	6	7	0												
0	6	7	1												
0	6	7	2												
0	6	7	3												

Entry:

1. Enter 06.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.
7. Enter GH data.
8. Press *.

Next port [CD] displays:

- To enter EFGH data, repeat 5-8.
- To advance to another port, press *.
- To exit program, press #.

PROGRAM 7 – Incoming Line Access/Audible

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	7	1	0	1				2							
0	7	1	1	1				2							
0	7	1	2	1				2							
0	7	1	3	1				2							
0	7	1	4	1				2							
0	7	1	5	1				2							
0	7	1	6	1				2							
0	7	1	7	1				2							
0	7	1	8	1				2							
0	7	1	9	1				2							
0	7	2	0	1				2							
0	7	2	1	1				2							
0	7	2	2	1				2							
0	7	2	3	1				2							
0	7	2	4	1				2							
0	7	2	5	1				2							
0	7	2	6	1				2							
0	7	2	7	1				2							
0	7	2	8	1				2							
0	7	2	9	1				2							
0	7	3	0	1				2							
0	7	3	1	1				2							
0	7	3	2	1				2							
0	7	3	3	1				2							
0	7	3	4	1				2							
0	7	3	5	1				2							
0	7	3	6	1				2							
0	7	3	7	1				2							
0	7	3	8	1				2							
0	7	3	9	1				2							
0	7	4	0	1				2							
0	7	4	1	1				2							

Entry:

1. Enter 07.
2. Press *.
3. Enter CD data.
4. Press *. Bin 1 [E data] displays.
5. Enter FGH data.
6. Press *. Bin 2 [I data] displays.
7. Enter JKL data.
8. Press *.

- Next port [CD] and bin 1 [E] display:
- To enter FGHJKL data, repeat 5-8.
 - To advance to another port, press * until desired port displays.
 - To exit the program, press #.

(continued)

PROGRAM 7 - Incoming Line Access/Audible (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	7	4	2	1				2							
0	7	4	3	1				2							
0	7	4	4	1				2							
0	7	4	5	1				2							
0	7	4	6	1				2							
0	7	4	7	1				2							
0	7	4	8	1				2							
0	7	4	9	1				2							
0	7	5	0	1				2							
0	7	5	1	1				2							
0	7	5	2	1				2							
0	7	5	3	1				2							
0	7	5	4	1				2							
0	7	5	5	1				2							
0	7	5	6	1				2							
0	7	5	7	1				2							
0	7	5	8	1				2							
0	7	5	9	1				2							
0	7	6	0	1				2							
0	7	6	1	1				2							
0	7	6	2	1				2							
0	7	6	3	1				2							
0	7	6	4	1				2							
0	7	6	5	1				2							
0	7	6	6	1				2							
0	7	6	7	1				2							
0	7	6	8	1				2							
0	7	6	9	1				2							
0	7	7	0	1				2							
0	7	7	1	1				2							
0	7	7	2	1				2							
0	7	7	3	1				2							

Entry:

1. Enter 07.
2. Press *.
3. Enter CD data.
4. Press *. Bin 1 [E data] displays.
5. Enter FGH data.
6. Press *. Bin 2 [I data] displays.
7. Enter JKL data.
8. Press *.

Next port [CD] and bin 1 [E] display:

- To enter FGHJKL data, repeat 5-8.
- To advance to another port, press * until desired port displays.
- To exit the program, press #.

**PROGRAM 8 - Night COS, Confirmation Tone, Instrument Type,
Do Not Disturb, Internal Page Zone**

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	8	1	0												
0	8	1	1												
0	8	1	2												
0	8	1	3												
0	8	1	4												
0	8	1	5												
0	8	1	6												
0	8	1	7												
0	8	1	8												
0	8	1	9												
0	8	2	0												
0	8	2	1												
0	8	2	2												
0	8	2	3												
0	8	2	4												
0	8	2	5												
0	8	2	6												
0	8	2	7												
0	8	2	8												
0	8	2	9												
0	8	3	0												
0	8	3	1												
0	8	3	2												
0	8	3	3												
0	8	3	4												
0	8	3	5												
0	8	3	6												
0	8	3	7												
0	8	3	8												
0	8	3	9												
0	8	4	0												
0	8	4	1												

Entry:

1. Enter 08.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFGHI data.
6. Press *.

Next port [CD] displays:

- To enter EFGHI data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

(continued)

**PROGRAM 8 - Night COS, Confirmation Tone, Instrument Type,
Do Not Disturb, Internal Page Zone (continued)**

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	8	4	2												
0	8	4	3												
0	8	4	4												
0	8	4	5												
0	8	4	6												
0	8	4	7												
0	8	4	8												
0	8	4	9												
0	8	5	0												
0	8	5	1												
0	8	5	2												
0	8	5	3												
0	8	5	4												
0	8	5	5												
0	8	5	6												
0	8	5	7												
0	8	5	8												
0	8	5	9												
0	8	6	0												
0	8	6	1												
0	8	6	2												
0	8	6	3												
0	8	6	4												
0	8	6	5												
0	8	6	6												
0	8	6	7												
0	8	6	8												
0	8	6	9												
0	8	7	0												
0	8	7	1												
0	8	7	2												
0	8	7	3												

Entry:

1. Enter 08.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFGHI data.
6. Press *.

Next port [CD] displays:

- To enter EFGHI data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 9 - Executive Call Forward

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	9	1													
0	9	2													
0	9	3													
0	9	4													
0	9	5													
0	9	6													
0	9	7													
0	9	8													

Entry:

1. Enter 09.
2. Press *. Bin 1 [C data] displays.
3. Enter DE data.
4. Press *.
5. Enter FG data.
6. Press *.

Next bin [C] displays:

- To enter DEFG data, repeat 3-6.
- To advance to another bin, press *.
- To exit the program, press #.

PROGRAM 10 - Dual Handsfree Hotline

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	0														
1	0														
1	0														
1	0														

Entry:

1. Enter 10.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.
7. Enter GH data.
8. Press *.

- To enter more CDEFGH data, repeat 3-8.
- To exit the program, press #.

PROGRAM 11 - Hunting Groups

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	1	0	1												
1	1	0	2												
1	1	0	3												
1	1	0	4												
1	1	0	5												
1	1	0	6												
1	1	0	7												
1	1	0	8												
1	1	1	1												
1	1	1	2												
1	1	1	3												
1	1	1	4												
1	1	1	5												
1	1	1	6												
1	1	1	7												
1	1	1	8												
1	1	2	1												
1	1	2	2												
1	1	2	3												
1	1	2	4												
1	1	2	5												
1	1	2	6												
1	1	2	7												
1	1	2	8												
1	1	3	1												
1	1	3	2												
1	1	3	3												
1	1	3	4												
1	1	3	5												
1	1	3	6												
1	1	3	7												
1	1	3	8												

Entry:

1. Enter 11.
2. Press *.
3. Enter C data.
4. Press *. Bin 1 [D data] displays.
5. Enter EF data.
6. Press *.

Next bin [D] displays:

- To enter EF data, repeat 5-6.
- To advance to another bin [D] or Hunting Group [C], press * until desired bin or Hunting Group number displays.
- To exit the program, press #.

PROGRAM 11 - Hunting Groups

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	1	4	1												
1	1	4	2												
1	1	4	3												
1	1	4	4												
1	1	4	5												
1	1	4	6												
1	1	4	7												
1	1	4	8												
1	1	5	1												
1	1	5	2												
1	1	5	3												
1	1	5	4												
1	1	5	5												
1	1	5	6												
1	1	5	7												
1	1	5	8												
1	1	6	1												
1	1	6	2												
1	1	6	3												
1	1	6	4												
1	1	6	5												
1	1	6	6												
1	1	6	7												
1	1	6	8												
1	1	7	1												
1	1	7	2												
1	1	7	3												
1	1	7	4												
1	1	7	5												
1	1	7	6												
1	1	7	7												
1	1	7	8												

Entry:

1. Enter 11.
2. Press *.
3. Enter C data.
4. Press *. Bin 1 [D data] displays.
5. Enter EF data.
6. Press *.

Next bin [D] displays:

- To enter EF data, repeat 5-6.
- To advance to another bin [D] or Hunting Group [C], press * until desired bin or Hunting Group number displays.
- To exit the program, press #.

(continued)

PROGRAM 11 - Hunting Groups (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	1	8	1												
1	1	8	2												
1	1	8	3												
1	1	8	4												
1	1	8	5												
1	1	8	6												
1	1	8	7												
1	1	8	8												
1	1	9	1												
1	1	9	2												
1	1	9	3												
1	1	9	4												
1	1	9	5												
1	1	9	6												
1	1	9	7												
1	1	9	8												

Entry:

1. Enter 11.
2. Press *.
3. Enter C data.
4. Press *. Bin 1 [D data] displays.
5. Enter EF data.
6. Press *.

Next bin [D] displays:

- To enter EF data, repeat 5-6.
- To advance to another bin [D] or Hunting Group [C], press * until desired bin or Hunting Group number displays.
- To exit the program, press #.

PROGRAM 12 - Door Chime Box

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	2	0	1												
1	2	0	2												
1	2	0	3												
1	2	0	4												
1	2	0	5												
1	2	0	6												
1	2	0	7												
1	2	0	8												
1	2	0	9												
1	2	1	0												

Entry:

1. Enter 12.
2. Press *. Bin 01 [CD data] displays.
3. Enter EF data.
4. Press *.

Next bin [CD] displays:

- To enter EF data, repeat 3-4.
- To advance to another bin, press *.
- To exit the program, press #.

PROGRAM 13 - DSS Console Port Assignment

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	3	0	1												
1	3	0	2												

Entry:

1. Enter 13.
2. Press *. Console 01 [CD data] displays.
3. Enter EF data.
4. Press *.

Console 02 [CD] displays:

- To enter EF data, repeat 3-4.
- To exit program, press #.

PROGRAM 14 - Flexible Station Numbering

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	4	1	0												
1	4	1	1												
1	4	1	2												
1	4	1	3												
1	4	1	4												
1	4	1	5												
1	4	1	6												
1	4	1	7												
1	4	1	8												
1	4	1	9												
1	4	2	0												
1	4	2	1												
1	4	2	2												
1	4	2	3												
1	4	2	4												
1	4	2	5												
1	4	2	6												
1	4	2	7												
1	4	2	8												
1	4	2	9												
1	4	3	0												
1	4	3	1												
1	4	3	2												
1	4	3	3												
1	4	3	4												
1	4	3	5												
1	4	3	6												
1	4	3	7												
1	4	3	8												
1	4	3	9												
1	4	4	0												
1	4	4	1												

Entry:

1. Enter 14.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.

Next port [CD] displays:

- To enter EF data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 14 - Flexible Station Numbering

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	4	4	2												
1	4	4	3												
1	4	4	4												
1	4	4	5												
1	4	4	6												
1	4	4	7												
1	4	4	8												
1	4	4	9												
1	4	5	0												
1	4	5	1												
1	4	5	2												
1	4	5	3												
1	4	5	4												
1	4	5	5												
1	4	5	6												
1	4	5	7												
1	4	5	8												
1	4	5	9												
1	4	6	0												
1	4	6	1												
1	4	6	2												
1	4	6	3												
1	4	6	4												
1	4	6	5												
1	4	6	6												
1	4	6	7												
1	4	6	8												
1	4	6	9												
1	4	7	0												
1	4	7	1												
1	4	7	2												
1	4	7	3												

Entry:

1. Enter 14.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EF data.
6. Press *.

Next port [CD] displays:

- To enter EF data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 15 – Flexible Line Appearance

A B C D E F G H I J K L M N O P

1	5																
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Entry:

1. Enter 15.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 16 – CO Call Waiting

A B C D E F G H I J K L M N O P

1	6	1	0														
1	6	1	1														
1	6	1	2														
1	6	1	3														
1	6	1	4														
1	6	1	5														
1	6	1	6														
1	6	1	7														
1	6	1	8														
1	6	1	9														
1	6	2	0														
1	6	2	1														
1	6	2	2														
1	6	2	3														
1	6	2	4														
1	6	2	5														
1	6	2	6														
1	6	2	7														
1	6	2	8														
1	6	2	9														
1	6	3	0														

Entry:

1. Enter 16.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 16 - CO Call Waiting

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	6	3	1												
1	6	3	2												
1	6	3	3												
1	6	3	4												
1	6	3	5												
1	6	3	6												
1	6	3	7												
1	6	3	8												
1	6	3	9												
1	6	4	0												
1	6	4	1												
1	6	4	2												
1	6	4	3												
1	6	4	4												
1	6	4	5												
1	6	4	6												
1	6	4	7												
1	6	4	8												
1	6	4	9												
1	6	5	0												
1	6	5	1												
1	6	5	2												
1	6	5	3												
1	6	5	4												
1	6	5	5												
1	6	5	6												
1	6	5	7												
1	6	5	8												
1	6	5	9												
1	6	6	0												

Entry:

1. Enter 16.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

(continued)

PROGRAM 16 – CO Call Waiting (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	6	6	1												
1	6	6	2												
1	6	6	3												
1	6	6	4												
1	6	6	5												
1	6	6	6												
1	6	6	7												
1	6	6	8												
1	6	6	9												
1	6	7	0												
1	6	7	1												
1	6	7	2												
1	6	7	3												

Entry:

1. Enter 16.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 17 – Night Transfer

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	7														

Entry:

1. Enter 17.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 18 - External Paging Output

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	8	1													
1	8	2													

Entry:

1. Enter 18.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DE data.
6. Press *.
7. Enter FG data.
8. Press *.

Next zone [C] displays:

- To enter DEFG data, repeat 5-8.
- To exit the program, press #.

PROGRAM 19 - All Call to External Zone

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	9														

Entry:

1. Enter 19.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 20 - Ringing/Recall Line Preference

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	0	1	0												
2	0	1	1												
2	0	1	2												
2	0	1	3												
2	0	1	4												
2	0	1	5												
2	0	1	6												
2	0	1	7												
2	0	1	8												
2	0	1	9												
2	0	2	0												
2	0	2	1												
2	0	2	2												
2	0	2	3												
2	0	2	4												
2	0	2	5												
2	0	2	6												
2	0	2	7												
2	0	2	8												
2	0	2	9												
2	0	3	0												
2	0	3	1												
2	0	3	2												
2	0	3	3												
2	0	3	4												
2	0	3	5												
2	0	3	6												
2	0	3	7												
2	0	3	8												
2	0	3	9												
2	0	4	0												
2	0	4	1												

Entry:

1. Enter 20.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 20 - Ringing/Recall Line Preference

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	0	4	2												
2	0	4	3												
2	0	4	4												
2	0	4	5												
2	0	4	6												
2	0	4	7												
2	0	4	8												
2	0	4	9												
2	0	5	0												
2	0	5	1												
2	0	5	2												
2	0	5	3												
2	0	5	4												
2	0	5	5												
2	0	5	6												
2	0	5	7												
2	0	5	8												
2	0	5	9												
2	0	6	0												
2	0	6	1												
2	0	6	2												
2	0	6	3												
2	0	6	4												
2	0	6	5												
2	0	6	6												
2	0	6	7												
2	0	6	8												
2	0	6	9												
2	0	7	0												
2	0	7	1												
2	0	7	2												
2	0	7	3												

Entry:

1. Enter 20.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 21 - Automatic Line Access

A B C D E F G H I J K L M N O P

2	1																
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Entry:

1. Enter 21.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 22 - Exclusive Hold

A B C D E F G H I J K L M N O P

2	2																
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Entry:

1. Enter 22.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 23 - Intercom Call Waiting

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	3	1	0												
2	3	1	1												
2	3	1	2												
2	3	1	3												
2	3	1	4												
2	3	1	5												
2	3	1	6												
2	3	1	7												
2	3	1	8												
2	3	1	9												
2	3	2	0												
2	3	2	1												
2	3	2	2												
2	3	2	3												
2	3	2	4												
2	3	2	5												
2	3	2	6												
2	3	2	7												
2	3	2	8												
2	3	2	9												
2	3	3	0												
2	3	3	1												
2	3	3	2												
2	3	3	3												
2	3	3	4												
2	3	3	5												
2	3	3	6												
2	3	3	7												
2	3	3	8												
2	3	3	9												
2	3	4	0												
2	3	4	1												

Entry:

1. Enter 23.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

(continued)

PROGRAM 23 - Intercom Call Waiting (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	3	4	2												
2	3	4	3												
2	3	4	4												
2	3	4	5												
2	3	4	6												
2	3	4	7												
2	3	4	8												
2	3	4	9												
2	3	5	0												
2	3	5	1												
2	3	5	2												
2	3	5	3												
2	3	5	4												
2	3	5	5												
2	3	5	6												
2	3	5	7												
2	3	5	8												
2	3	5	9												
2	3	6	0												
2	3	6	1												
2	3	6	2												
2	3	6	3												
2	3	6	4												
2	3	6	5												
2	3	6	6												
2	3	6	7												
2	3	6	8												
2	3	6	9												
2	3	7	0												
2	3	7	1												
2	3	7	2												
2	3	7	3												

Entry:

1. Enter 23.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 24 – Intercom Signaling

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	4														

Entry:

1. Enter 24.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 25 – Microphone On/Off

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	5														

Entry:

1. Enter 25.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 26 – Background Music

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	6														

Entry:

1. Enter 26.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 27 – Room Monitor

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	7														

Entry:

1. Enter 27.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 28 - Alarm Sensor

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2	8	1													
2	8	2													

Entry:

1. Enter 28.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter D data.
6. Press *.
7. Enter E data.
8. Press *.

Next alarm [C] displays:

- To enter DE data, repeat 5-8.
- To exit the program, press #.

PROGRAM 30 - Multi-Line Conference

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	0														

Entry:

1. Enter 30.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 31 - Three Minute Warning Tone

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	1														

Entry:

1. Enter 31.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit the program.

PROGRAM 32 – Door Chime Tone Duration

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	2														

Entry:

1. Enter 32.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 33 – Single Step Access

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	3														

Entry:

1. Enter 33.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 34 – Automatic Hold

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	4														

Entry:

1. Enter 34.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 35 – Exclusive Hold Recall

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	5														

Entry:

1. Enter 35.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

PROGRAM 36 – Exclusive Hold Recall Duration

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	6														

Entry:

1. Enter 36.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

PROGRAM 37 – System Hold Recall

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	7	1				2									

Entry:

1. Enter 37.
2. Press *.
3. Enter 1 [C data].
4. Press *.
5. Enter DEF data.
6. Press *. Timer 2 [G data] displays.
7. Enter HIJ data.
8. Press *.
9. Press # to exit program.

PROGRAM 38 – Unannounced Transfer Recall

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	8														

Entry:

1. Enter 38.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

PROGRAM 39 – Announced Transfer Recall

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
3	9														

Entry:

1. Enter 39.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

PROGRAM 40 – Class of Service

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	0	1	0												
4	0	1	1												
4	0	1	2												
4	0	1	3												
4	0	1	4												
4	0	1	5												
4	0	1	6												
4	0	1	7												
4	0	1	8												
4	0	1	9												
4	0	2	0												
4	0	2	1												
4	0	2	2												
4	0	2	3												
4	0	2	4												
4	0	2	5												
4	0	2	6												
4	0	2	7												
4	0	2	8												
4	0	2	9												
4	0	3	0												
4	0	3	1												
4	0	3	2												
4	0	3	3												
4	0	3	4												
4	0	3	5												
4	0	3	6												
4	0	3	7												
4	0	3	8												
4	0	3	9												
4	0	4	0												
4	0	4	1												

Entry:

1. Enter 40.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

(continued)

PROGRAM 40 - Class of Service (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	0	4	2												
4	0	4	3												
4	0	4	4												
4	0	4	5												
4	0	4	6												
4	0	4	7												
4	0	4	8												
4	0	4	9												
4	0	5	0												
4	0	5	1												
4	0	5	2												
4	0	5	3												
4	0	5	4												
4	0	5	5												
4	0	5	6												
4	0	5	7												
4	0	5	8												
4	0	5	9												
4	0	6	0												
4	0	6	1												
4	0	6	2												
4	0	6	3												
4	0	6	4												
4	0	6	5												
4	0	6	6												
4	0	6	7												
4	0	6	8												
4	0	6	9												
4	0	7	0												
4	0	7	1												
4	0	7	2												
4	0	7	3												

Entry:

1. Enter 40.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 41 - Permitted Codes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	1	0	1												
4	1	0	2												
4	1	0	3												
4	1	0	4												
4	1	0	5												
4	1	0	6												
4	1	0	7												
4	1	0	8												
4	1	0	9												
4	1	1	0												
4	1	1	1												
4	1	1	2												
4	1	1	3												
4	1	1	4												
4	1	1	5												
4	1	1	6												
4	1	1	7												
4	1	1	8												
4	1	1	9												
4	1	2	0												
4	1	2	1												
4	1	2	2												
4	1	2	3												
4	1	2	4												
4	1	2	5												
4	1	2	6												
4	1	2	7												
4	1	2	8												
4	1	2	9												
4	1	3	0												

Entry:

1. Enter 41.
2. Press *.
3. Enter CD data.
4. Press *. Display clears.
5. Enter EFGHIJKLMNOP data (only eight digits display at a time).
 - To erase this data, press OPAC.
6. Press *.

Next code [CD] displays:

- To enter EFGHIJKLMNOP data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.

PROGRAM 42 – Permitted Code Digit Limit

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	2														

Entry:

1. Enter 42.
2. Press *.
3. Enter CD data.
4. Press *.
5. Press # to exit program.

PROGRAM 43 – PBX Access Codes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	3	1													
4	3	2													
4	3	3													
4	3	4													

Entry:

1. Enter 43.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DE data.
 - To erase DE, press OPAC.
6. Press *.

Next code [C] displays:

- To enter DE data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.

PROGRAM 44 – Common Unrestricted Codes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	4	1													
4	4	2													
4	4	3													
4	4	4													

Entry:

1. Enter 44.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEFG data.
 - To erase DEFG, press OPAC.
6. Press *.

Next code [C] displays:

- To enter DEFG data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.

PROGRAM 45 - Digit Absorbing

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	5	1													
4	5	2													
4	5	3													
4	5	4													

Entry:

1. Enter 45.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter D data.
 - To erase D, press OPAC.
6. Press *.

Next Digit Absorb code [C] displays:

- To enter D data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.

PROGRAM 46 - Second Digit Restriction

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	6														

Entry:

1. Enter 46.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 48 - Night Class of Service Level

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	8														

Entry:

1. Enter 48.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 49 – System Speed Dial Restriction

A B C D E F G H I J K L M N O P

4	9																
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Entry:

1. Enter 49.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 51 – Call Duration Start Time

A B C D E F G H I J K L M N O P

5	1																
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Entry:

1. Enter 51.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press # to exit program.

PROGRAM 52 – Paging Splash Tone

A B C D E F G H I J K L M N O P

5	2																
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Entry:

1. Enter 52.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 53 – Alarm

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	3	1	0												
5	3	1	1												
5	3	1	2												
5	3	1	3												
5	3	1	4												
5	3	1	5												
5	3	1	6												
5	3	1	7												
5	3	1	8												
5	3	1	9												
5	3	2	0												
5	3	2	1												
5	3	2	2												
5	3	2	3												
5	3	2	4												
5	3	2	5												
5	3	2	6												
5	3	2	7												
5	3	2	8												
5	3	2	9												
5	3	3	0												
5	3	3	1												
5	3	3	2												
5	3	3	3												
5	3	3	4												
5	3	3	5												
5	3	3	6												
5	3	3	7												
5	3	3	8												
5	3	3	9												
5	3	4	0												
5	3	4	1												

Entry:

1. Enter 53.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

(continued)

PROGRAM 53 - Alarm (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	3	4	2												
5	3	4	3												
5	3	4	4												
5	3	4	5												
5	3	4	6												
5	3	4	7												
5	3	4	8												
5	3	4	9												
5	3	5	0												
5	3	5	1												
5	3	5	2												
5	3	5	3												
5	3	5	4												
5	3	5	5												
5	3	5	6												
5	3	5	7												
5	3	5	8												
5	3	5	9												
5	3	6	0												
5	3	6	1												
5	3	6	2												
5	3	6	3												
5	3	6	4												
5	3	6	5												
5	3	6	6												
5	3	6	7												
5	3	6	8												
5	3	6	9												
5	3	7	0												
5	3	7	1												
5	3	7	2												
5	3	7	3												

Entry:

1. Enter 53.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 54 – Release of Abandoned Calls On Hold

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	4														

Entry:

1. Enter 54.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 55 – DND Override

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	5														

Entry:

1. Enter 55.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 56 – Flash Timer

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	6	1													
5	6	2													

Entry:

1. Enter 56.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEF data.
6. Press *.

Next timer number [C] displays:

- To enter DEF data, repeat 5-6.
- To exit the program, press #.

PROGRAM 57 - Dial Pulse Sender Speed

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	7	0	1												
5	7	0	2												
5	7	0	3												
5	7	0	4												
5	7	0	5												
5	7	0	6												
5	7	0	7												
5	7	0	8												
5	7	0	9												
5	7	1	0												
5	7	1	1												
5	7	1	2												
5	7	1	3												
5	7	1	4												
5	7	1	5												
5	7	1	6												
5	7	1	7												
5	7	1	8												
5	7	1	9												
5	7	2	0												
5	7	2	1												
5	7	2	2												
5	7	2	3												
5	7	2	4												

Entry:

1. Enter 57.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next line [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another line, press *.
- To exit the program, press #.

PROGRAM 58 – Make/Break Ratio

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	8														

Entry:

1. Enter 58.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 59 – Headset Intercom Option

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	9	1	0												
5	9	1	1												
5	9	1	2												
5	9	1	3												
5	9	1	4												
5	9	1	5												
5	9	1	6												
5	9	1	7												
5	9	1	8												
5	9	1	9												
5	9	2	0												
5	9	2	1												
5	9	2	2												
5	9	2	3												
5	9	2	4												
5	9	2	5												
5	9	2	6												
5	9	2	7												
5	9	2	8												
5	9	2	9												
5	9	3	0												
5	9	3	1												
5	9	3	2												
5	9	3	3												
5	9	3	4												
5	9	3	5												
5	9	3	6												
5	9	3	7												

Entry:

1. Enter 59.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

(continued)

PROGRAM 59 - Headset Intercom Option (continued)

A B C D E F G H I J K L M N O P

5	9	3	8														
5	9	3	9														
5	9	4	0														
5	9	4	1														
5	9	4	2														
5	9	4	3														
5	9	4	4														
5	9	4	5														
5	9	4	6														
5	9	4	7														
5	9	4	8														
5	9	4	9														
5	9	5	0														
5	9	5	1														
5	9	5	2														
5	9	5	3														
5	9	5	4														
5	9	5	5														
5	9	5	6														
5	9	5	7														
5	9	5	8														
5	9	5	9														
5	9	6	0														
5	9	6	1														
5	9	6	2														
5	9	6	3														
5	9	6	4														
5	9	6	5														
5	9	6	6														
5	9	6	7														
5	9	6	8														
5	9	6	9														
5	9	7	0														
5	9	7	1														
5	9	7	2														
5	9	7	3														

Entry:

1. Enter 59.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another port, press *.
- To exit the program, press #.

PROGRAM 62 – Door Alert Tone

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	2														

Entry:

1. Enter 62.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 63 – Door Unlock Relay Contacts

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	3														

Entry:

1. Enter 63.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

PROGRAM 64 – Local Permitted Codes

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	4	0	1												
6	4	0	2												
6	4	0	3												
6	4	0	4												

Entry:

1. Enter 64.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter EFGHIJKLMNOP data (only 8 digits display at a time).
 - To erase this data, press OPAC.
6. Press *.

Next local code [CD] displays:

- To enter EFGHIJKLMNOP data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.

PROGRAM 65 - Nonrestricted Line

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	5	0	1												
6	5	0	2												
6	5	0	3												
6	5	0	4												
6	5	0	5												
6	5	0	6												
6	5	0	7												
6	5	0	8												
6	5	0	9												
6	5	1	0												
6	5	1	1												
6	5	1	2												
6	5	1	3												
6	5	1	4												
6	5	1	5												
6	5	1	6												
6	5	1	7												
6	5	1	8												
6	5	1	9												
6	5	2	0												
6	5	2	1												
6	5	2	2												
6	5	2	3												
6	5	2	4												

Entry:

1. Enter 65.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next line [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another line, press *.
- To exit the program, press #.

PROGRAM 66 - Intercom Link Increase

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	6														

Entry:

1. Enter 66.
2. Press *.
3. Enter CD data.
4. Press *.
5. Press # to exit program.

PROGRAM 67 - SMDR Timers

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	7	0	1			0	2								

Entry:

1. Enter 67.
2. Press *. Timer 01 [CD data] displays.
3. Enter EF data.
4. Press *. Timer 02 [GH data] displays.
5. Enter IJ data.
6. Press *.
7. Press # to exit program.

PROGRAM 68 - DISA Line Access

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	8	0	1												
6	8	0	2												
6	8	0	3												
6	8	0	4												
6	8	0	5												
6	8	0	6												
6	8	0	7												
6	8	0	8												
6	8	0	9												
6	8	1	0												
6	8	1	1												
6	8	1	2												
6	8	1	3												
6	8	1	4												
6	8	1	5												
6	8	1	6												
6	8	1	7												
6	8	1	8												
6	8	1	9												
6	8	2	0												
6	8	2	1												
6	8	2	2												
6	8	2	3												
6	8	2	4												

Entry:

1. Enter 68.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next line [CD] displays:

- To enter E data, repeat 5-6.
- To advance to another line, press *.
- To exit program, press #.

PROGRAM 70 – DISA Security Codes

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	0	1														
7	0	2														
7	0	3														
7	0	4														
7	0	5														
7	0	6														
7	0	7														
7	0	8														

Entry:

1. Enter 70.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEFG data.
6. Press *.

Next security code [C] displays:

- To enter DEFG data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.

PROGRAM 71 – DISA Security Code Port Assignment

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	1	1														
7	1	2														
7	1	3														
7	1	4														
7	1	5														
7	1	6														
7	1	7														
7	1	8														

Entry:

1. Enter 71.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DE data.
6. Press *.

Next security code [C] displays:

- To enter DE data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.

KTS

PROGRAM 72 - DISA Class of Service

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	2	1														
7	2	2														
7	2	3														
7	2	4														
7	2	5														
7	2	6														
7	2	7														
7	2	8														

Entry:

1. Enter 72.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter D data.
6. Press *.

Next security code [C] displays:

- To enter D data, repeat 5-6.
- To advance to another code, press *.
- To exit the program, press #.



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BUSINESSCOM PLUS
Supplement For
B-MPU-CII and B-MPU-D

BUSINESSCOM PLUS
Supplement For
B-MPU-CII and B-MPU-D

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What is this document? This supplement document is for the BUSINESSCOM PLUS B-MPU-C II and B-MPU-D PCBs. It includes the following new, optional BUSINESSCOM PLUS features:

- Deny Codes
- Data Telephone
- Night Audible to External Zones
- Remote Diagnostics
- Automated Attendant/Integrated Voice Mail
- Dot Matrix Telephone
- Delayed and Simultaneously Ringing

What is its purpose? This document is for an installer experienced in the installation and programming of the BUSINESSCOM PLUS. It provides information the installer needs to prepare the BUSINESSCOM PLUS for interface with optional features like the System 1001/1003, or Remote Diagnostics. Complete information for these new features is provided in other documentation. The installer is referred to such documentation where appropriate.

What is its format? This document follows the same format as the BUSINESSCOM PLUS Software Manual. It begins with a feature **DESCRIPTION** and lists any **Conditions** that the installer should be aware of. These conditions include requirements, or related factors that limit or enhance the feature under discussion. For instance, a certain feature must be programmed in order for the feature under discussion to operate in a specific way.

OPERATION refers the installer to the proper document, since the operation of these features is quite complex.

The **OPTIONS** section describes the program(s) that the feature under discussion requires. Included here are **Conditions** and **Additional Programming**. This latter subsection lists and briefly describes any programs that directly affect the program under discussion.

SELECTING OPTIONS shows the installer how to fill out the Program Record Form. Program Standard Values are shown to provide a frame of reference. An Example subsection helps clarify what a particular entry looks like when entered in the Program Record Form.

Finally, **ENTERING SELECTIONS** tells the installer how to enter the data from the Program Record Form.

DATA TELEPHONE

Description

The Data Telephone allows data communications between computers, terminals, printers or any other type of DTE--Data Terminal Equipment--device. The BUSINESSCOM PLUS serves as the link between the two, e.g., between an on-site computer and an off-site computer.

Auto Answering allows a Data Telephone to answer a call after a programmed number of rings. It can do so during the day, night or day/night mode. This is especially useful for situations where the Data Telephone is unattended, e.g., when the business has closed for the day. The user can override Auto Answering by answering the call before the Data Telephone does. The user can also place an outgoing CO or Intercom call on the Data Telephone.

Conditions

- a. The system can support a maximum of eight Data Telephones.
- b. The communications package for the computer must be Hayes-modem compatible.
- c. Numbers dialed through the terminal require DTMF lines, i.e., the modem can only dial calls on DTMF lines. Use Program 1 to select the line type--DTMF. The user can, however, manually dial on either DTMF or Dial Pulse lines from the telephone.
- d. Auto Answering requires that a Data Telephone ring for CO or Intercom calls. If the Data Telephone is programmed for Voice Announce, dial 1 after placing a call to it. This converts the signaling mode to ring.
- e. Day/night Ringing assignments can be used to allow auto answering during or after business hours.
- f. Data calls are not subject to override from extensions with Executive Override.
- g. Program Incoming Call Preference to allow auto answering.

Operation

Consult the Data Telephone Feature Handbook.

PROGRAM 73 -- DATA TELEPHONE PORT ASSIGNMENT

Options

Use this program to identify Data Telephone ports.

Conditions

a. Any key port can serve as a Data Telephone port.

Additional Programming

Program 1 indicates to the system the line type, e.g.,
DTMF

Program 6 assigns outgoing access

Program 7 assigns incoming access and audible

Program 8 assigns the port type, e.g., key telephone

Program 20 assigns an extension Incoming Call Preference

Program 63 enables or disables auto answering for Data
Telephone

Selecting Options

AB: Program number 73

CD: Port number

E: 0--Non-Data Telephone

1--Data Telephone

Standard Value

CD: All ports

E: 0

Example

Port 20 is a Data Telephone

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	3	2	0	1											

Entering Selections

1. Enter program number 73.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data, repeat steps 5-6.
- To advance to the next port number, press *.
- To exit this program, press #.

PROGRAM 63 -- AUTOMATIC MODEM ANSWERING

Options

Use this program to select the number of times a call rings before a Data Telephone answers it. Select one value from the following and enter it. This value applies to both CO and Intercom calls.

Value	Rings before CO answered	Rings before ICM answered
001	1	1
002	3	4
003	4	5
004	5	5
005	6	8
006	6	9
007	7	10
008	8	11
009	9	14
010	10	15

Conditions

None

Additional Programming

Program 73 assigns Data Telephone Ports

Selecting Options

AB: Program number 63

CDE: Timer value

Standard Value

CDE: 000

Example

The telephone waits 10 rings before answering

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	3	0	1	0											

PROGRAM 63 --- AUTOMATIC MODEM ANSWERING

Entering Selections

1. Enter program number 63.
2. Press *.
3. Enter CDE data.
4. Press *.
5. Press #.

DATA TELEPHONE INSTALLATION

- Step 1 ▶ An AC power adaptor is packaged with the telephone. Connect the appropriate end to an AC outlet. Connect the other end to the back of the telephone.
- Step 2 ▶ Install a line cord from the Data Telephone to a modular jack. Connect the modular jack to the appropriate extension block.
- Step 3 ▶ Connect the DB9 end of the cable (supplied) to the Data Telephone. Connect the other end to the RS-232 connector on the DTE device. Table 1 lists cable pinout functions. See Figure 1 — Data Telephone Installation.
- Step 4 ▶ Check your DTE or communications software technical reference manual. If either one does not support Data Terminal Ready--DTR, place switch 1 on SW1, which is on the modem board, to the ON position. If the DTE or communications software supports DTR, either the ON or OFF position is acceptable. See Figure 2 — Modem Switch Settings and Adjustments.
- Note: Your DTE may support DTR but timing may determine switch settings. That is, your DTE may support DTR but timing may require that switch 1 be set to the ON position.
- Step 5 ▶ Some DTE or communications softwares do not echo local command characters and result codes. To enable this, place switch 2 on SW1, which is on the modem board, to the ON position. See Figure 2 — Modem Switch Settings and Adjustments.
- Step 6 ▶ To adjust the volume level of the modem functions, e.g., dialing tones, use VR2. VR2 is located on the modem board. See Figure 2 — Modem Switch Settings and Adjustments.

Table 1 — CABLE PINOUT

DB9	DESIGNATION	FUNCTION	DB25
1	TXD	transmit data	2
2	CI	high speed indicate	12
3	DSR	data set ready	6
4	DTR	data terminal ready	20
5	RI	ring indicate	22
6	RXD	receive data	3
7	CTS	clear to send	5
8	SG	signal ground	7
9	DCD	carrier detect	8

DATA TELEPHONE INSTALLATION

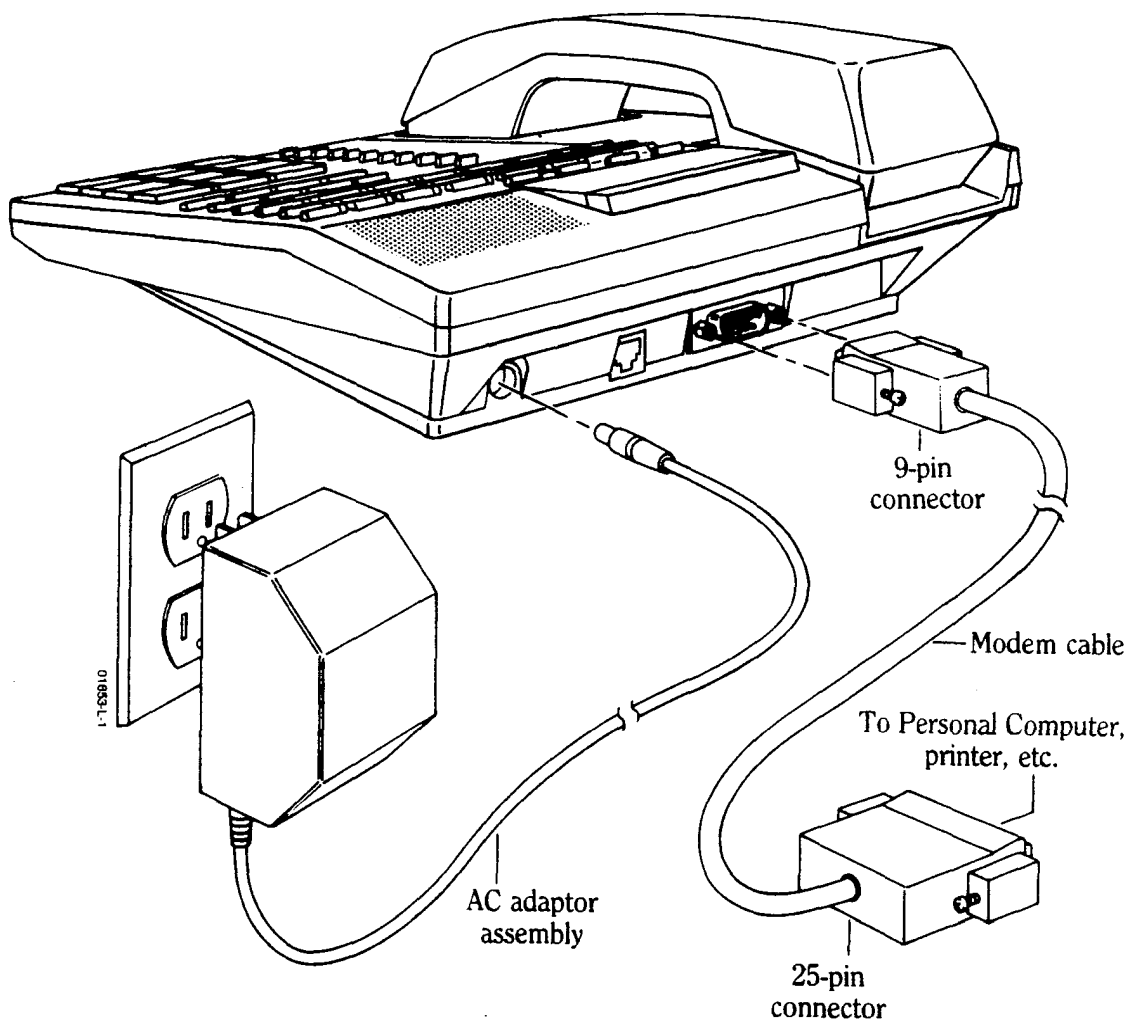


Figure 1 DATA TELEPHONE INSTALLATION

DATA TELEPHONE INSTALLATION

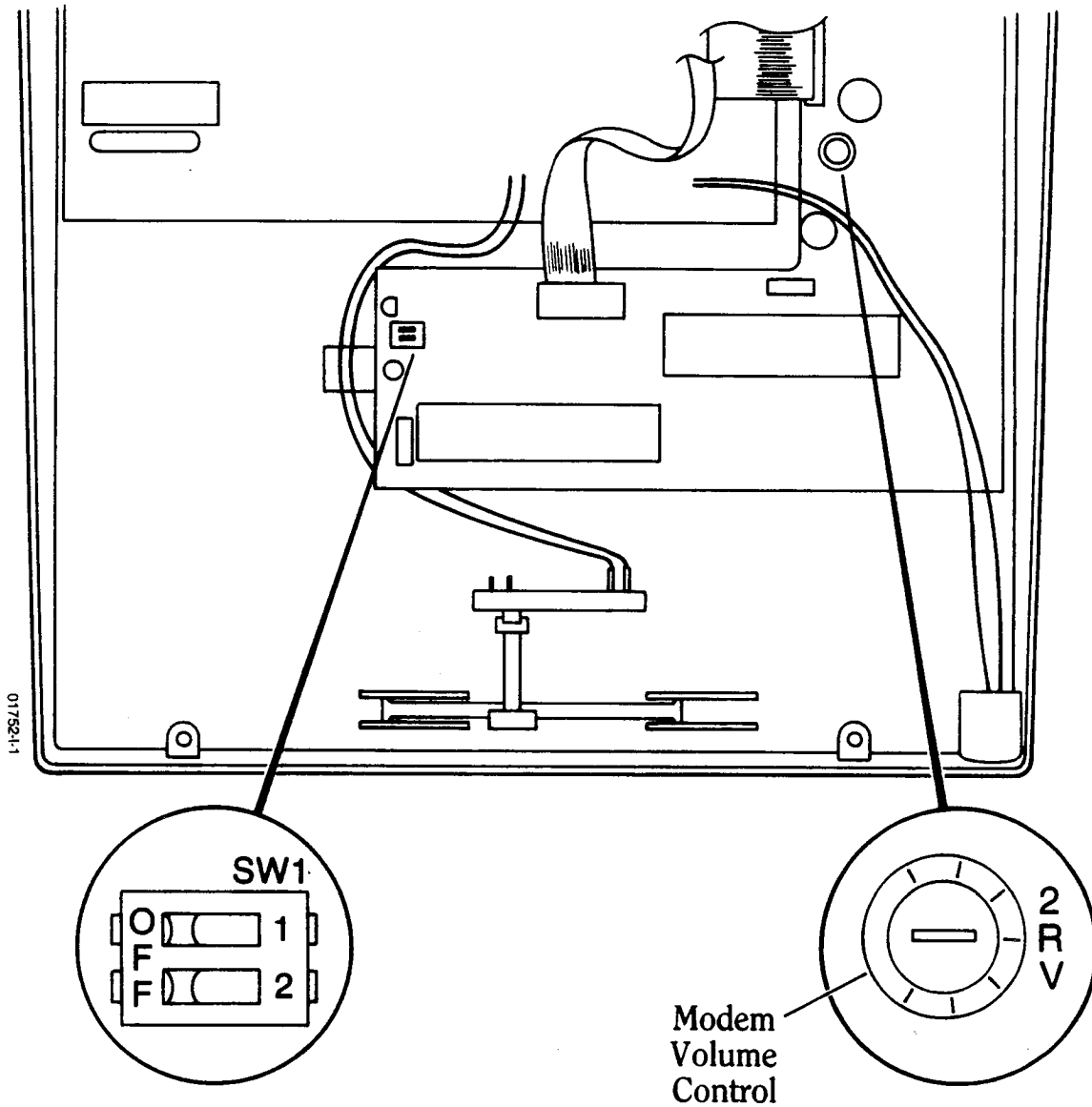


Figure 2 MODEM SWITCH SETTINGS AND ADJUSTMENTS

DATA TELEPHONE OPERATION

The modem powers up in the command state. In this state, the user can issue commands to the modem, or change various modem parameters, e.g., by changing memory in S registers. The user can leave the command state and go on-line with a remote terminal by entering the appropriate commands.

NOTE: Enter all commands in UPPERCASE.

Command State Commands

The following are modem commands.

AT -- Attention

Begin command input lines with AT. For example, to dial a number:

- Step 1 ▶ Type AT followed by D and the number.
- Step 2 ▶ Press carriage return.

A/ -- Repeat

When a user enters a command, the system stores it in a command buffer. To repeat the command without reentering it (using a carriage return):

- Step 1 ▶ Type A/.

The system overwrites the existing command in the buffer when a user enters a new command, or enters just the AT command.

, (Comma) -- Pause (default=2 seconds)

A comma causes the modem to pause. The length of the pause is programmable (register S8, see the S command and Table 3). Multiple commas are permissible.

D# -- Dial _____> # = telephone number

To dial a number, precede the number with a D. (There are other parameters that a user can enter when dialing a number. For instance, to dial a number using Dial Pulse when the normal modem dialing is Tone, dial P after D, e.g., AT DP1234. See T,P,R,; for further information.)

DATA TELEPHONE OPERATION

Command State Commands (cont'd)

En -- Echo (default n=1) -----> n=0,1

This command controls the echo ability of the Data Telephone during the command state.

To echo the characters being transmitted to the modem:

- Step 1 ▶ Type AT E1.
- Step 2 ▶ Press carriage return.

To suppress the echo:

- Step 1 ▶ Type AT E0.
- Step 2 ▶ Press carriage return.

Mn -- Speaker (default n=1) -----> n=0,1,3

This command allows the user to hear dial tone, busy tone and carrier over the Data Telephone speaker.

To deactivate monitoring:

- Step 1 ▶ 1. Type AT M0.
- Step 2 ▶ Press carriage return.

To activate the monitoring until the modem detects a carrier:

- Step 1 ▶ Type AT M1.
- Step 2 ▶ Press carriage return.

Enter AT M2 to activate continual monitoring.

O -- On-line

The O command returns the modem to the on-line state. For example, if the modem is in on-line state but you want to execute a command, use the Escape command. Then execute the command. Next type AT O followed by a carriage return to return to the on-line state.

On -- Code reporting (default n=0) -----> n=0,1

**Command State
Commands (cont'd)**

The modem can generate result codes, e.g., NO CARRIER.

To generate code transmission:

- Step 1 ▶ Type AT Q0.
- Step 2 ▶ Press carriage return.

To suppress code transmission:

- Step 1 ▶ Type AT Q1.
- Step 2 ▶ Press carriage return.

DATA TELEPHONE OPERATION

Commands State Commands (cont'd)

R -- Reversal

The R command toggles the state of the modem from originate to answer or vice versa. For example, to change from the originate to the answer state after dialing a number, type R after the number, e.g., AT D1235434R. When dialing is complete, the modem switches to the answer state. This command is useful when calling an originate-only modem.

Sn? -- Read Range -----> n=0-16

The Sn? command reads the content of an S register. The content appears on the terminal display as a decimal number (0-255). The n after the S specifies the register number (0-16). For example, to read the contents of register 5:

- Step 1 ▶ Type AT S5?.
- Step 2 ▶ Press carriage return.

For more information on registers, see Table 3.

Sn=v -- Assign Register Data -----> n=0-16, v=0-255

The Sn=v command sets the value of the register specified by n (range=0-16). The v specifies the value to assign the register (range=0-255). For instance, to assign register 6 a value of 3:

- Step 1 ▶ Type AT S6=3.
- Step 2 ▶ Press carriage return.

For more information on registers, see Table 3.

; -- Return to Command State

After the modem dials a number, it enters the on-line state. Use the ; command at the end of a dialing command to reenter the command state after the dialing.

**Commands State
Commands (cont'd)**

V_n -- Result Codes (default n=1) —————> n=0,1

The V_n command determines if the result code is literal, e.g. NO CARRIER, or numerical, e.g., 3. See Table 2 for information on result codes.

To select numerical result codes:

- Step 1 ▶ Type AT V0.
- Step 2 ▶ Press carriage return.

To select literal result codes:

- Step 1 ▶ Type AT V1.
- Step 2 ▶ Press carriage return.

Table 2 RESULT CODES AND TRANSLATIONS

Numerical Code	Literal Code	Code Translation
0	OK	Command executed without errors
1	CONNECT	Carrier detected at 300 bps
2	RING	Ring signal detected
3	NO CARRIER	Carrier lost or never present
4	ERROR	Command line error
		Invalid command
		Command line greater than 32 cters
		Invalid character format at 1200 bps
5	CONNECT 1200	Carrier detected at 1200 bps

Z -- Initialization

The Z command initializes the modem, i.e., it resets the command buffer, loads default values, and clears the command buffer.

To initialize the modem:

- Step 1 ▶ Type AT Z.
- Step 2 ▶ Press carriage return.

DATA TELEPHONE OPERATION

Commands State Commands (cont'd)

± -- Escape character (default=1 second)

The escape sequence returns the modem to the command state. The Escape sequence consists of the Escape character repeated three times, e.g., + + +, and a guard time. The guard time is the interval between the last character of a transmission and the Escape sequence. It has a fixed value. To change the Escape character, e.g., from + to another character, enter the ASCII value of the new character into register S2.

To use the Escape sequence:

- Step 1 ▶ Wait the length of the guard time.
- Step 2 ▶ Type the Escape character three times, e.g., + + +.
- Step 3 ▶ Wait the length of the guard time before transmitting another character. The modem enters the command state.

Table 3 S REGISTERS

Register	Range	Unit	Default	Function
S0	0-255	Rings	1	Rings after which modem answers
S1	0-255	Rings	0	Counts number of rings
S2	0-127	ASCII	43	Escape code character
S3	0-127	ASCII	13	Value for carriage return
S4	0-127	ASCII	10	Value for line feed
S5	0-32 or 127	ASCII	8	Value for backspace character
S6	2-255	Seconds	2	Delay before dialing
S7	1-255	Seconds	30	Delay for remote carrier detection
S8	0-255	Seconds	2	Pause time for comma command
S9	fixed	Seconds	0.6	Sets carrier detect response time
S10	fixed	Seconds	0.7	Delay between carrier loss and hang up
S11	fixed	Seconds	0.1	Duration and spacing of touch tones
S12	fixed	Seconds	1	Escape code guard time

DELAYED RINGING

Description

If an incoming CO call is not answered, the system may be programmed to ring to the Automated Attendant after a delay. Using this feature, a station or stations can be programmed to ring for a programmable period of time. If there is no answer, the CO call will be transferred to the Automated Attendant. While the Automated Attendant is ringing the programmed station(s) will continue to ring.

Conditions

- a. This feature requires a B-MPU-D PCB series 1 or higher and a System 1003.
- b. Delayed ringing does not apply to calls which have been ring transferred from another station.
- c. Program 74 overrides this program. For example, if program 74 is set for day ringing, delayed ringing is not in effect while the system is in the day mode.

Operation

N/A

PROGRAM 82 -- DELAYED RING LINE ASSIGNMENT

Options

Use this program to assign which lines shall be answered by the Automated Attendant after a programmed period of time. Each line may be individually programmed to delay ring to the Automated Attendant.

Conditions

- a. Use Program 7 to assign station audible to stations.
- b. If the Automated Attendant ports are busy, the stations programmed for audible in Program 7 will continue to ring.
- c. Delayed ringing is programmed on a per line basis.

Additional Programming

Program 2 Assign lines to line groups
Program 7 Assign line audible to stations
Program 83 Set delayed ring timer

Selecting Options

Standard Value

AB: Program number 82

CD: Line number

E: 0—disable delayed ring

1—enable delayed ring

E: 0 (all lines)

Example

Delayed ringing enabled for line 10.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
8	2	1	0	1											

Entering Selections

1. Enter program number 82.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.
7. Press # to exit program.

DELAYED RINGING TIMER

Description

When a System 1003 is connected to the BUSINESSCOM PLUS it is sometimes necessary to have the System 1003 act as an Overflow answering position. If the user does not answer an incoming call in a programmed amount of time, the call will be transferred to the Automated Attendant.

Conditions

- a. This timer only applies to calls which ring stations programmed in Program 07 and lines programmed in Program 74.

Operation

N/A

PROGRAM 83 -- DELAYED RINGING TIMER

Options

Use this program to assign the amount of time an incoming CO call will ring the programmed extensions before forwarding to the Automated Attendant. The range of the delayed ring timer is: (001 to 255) or (0-255 seconds). Each digit equals 1 seconds.

Conditions

- Enter all timer data in three-digit format, e.g., to enter a value of 40 seconds, enter 040.
- This program requires a prior entry in Delayed Ring Line Assignment--Program 82.
- Entry of 000 disables the delay timer.

Additional Programming

Program 07 assign Incoming Line Audible
Program 74 assigns Automated Attendant answering
Program 75 assigns Automated Attendant/Voice Mail lines
Program 76 assigns extensions for Automated Attendant/Voice Mail use
Program 78 assigns Voice Mail Timer
Program 82 assign the lines for Delayed Ringing

Selecting Options

	<u>Standard Value</u>
AB: Program number 83	
CDE: Line number	CDE: 000

Example

Delayed Ringing Timer set for 20 seconds.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
8	3	0	2	0											

Entering Selections

- Enter program number 83.
- Press *.
- Enter CDE data.
- Press *.
- Press # to exit program.

DOOR UNLOCK

DESCRIPTION

A customer-provided Door Unlock device can be installed with one of the Door Chime Boxes so that the extension users can unlock that door using their phones. The door can be unlocked after an extension user answers chimes from that box or calls that box. DOOR UNLOCK RELAY CONTACTS must be programmed for the device.

Conditions

- a. One set of external page zone relay contacts on the D1 block must be available for the Door Unlock device. The device must be connected to these contacts, and a B-GCU-A PCB must be installed on the B-TSU-A PCB.

OPERATION

To unlock the door after contacting the Door Chime Box:

- Step 1 ▶ Press FLSH.

PROGRAM 36 -- DOOR UNLOCK RELAY CONTACTS

OPTIONS

This program assigns one set of external page zone relay contacts (clips 15 & 16 on the D1 block) or external page zone 2 contacts (clips 19 & 20 on the D1 block). These contacts provide normally open, single-pole single-throw contacts.

Conditions

None

Additional Programming

None

SELECTING OPTIONS

Standard Value

AB: Program number 36

C: 0-disable Door Unlock

C: 0-no relay contacts

C=0

1-enable ext. page zone 1
contacts for Door Unlock

2-enable ext. page zone 2
contacts for Door Unlock

Example

External page zone 2 contacts are used for Door Unlock device.

A B C D E F G H I J K L M N O P

3	0	2														
---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ENTERING SELECTIONS

1. Enter program number 36.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

Description

The Dot Matrix Telephone has a 32-character alphanumeric display consisting of two 16-character rows. Lines and extensions can have names. When an extension or line calls in to a Dot Matrix Telephone, the Display shows the name, or number if a name is not assigned, to that extension or line.

The Dot Matrix Telephone can leave or receive display messages. For example, if a user calls a busy extension, the user can leave a message for the busy party. The MW lamp indicates the presence of a display message.

See the Feature Handbook for more information on features and instructions on their use. See TABLE 4 for Display information.

Conditions

- a. This feature requires a B-MPU-D PCB series 1 or higher.
- b. The system has default display messages (see Feature Handbook). Other messages can be programmed (16 characters maximum).
- c. Use a Display telephone at port 10 to program system messages.
- d. When programming Dot Matrix telephones, follow one of the programming options below:

Option 1

- Enter programming mode.
- Set program 77.
- Set program 50
- Exit programming mode.

Option 2

- Enter programming mode and set Program 50.
- Exit programming mode.
- Enter programming mode and set Program 77.
- Exit programming mode.

Conditions

None.

DOT MATRIX TELEPHONE

Operation

To store a message under a Function Key (F1 or F2) or a code:

- Step 1 ▶ Press the CHECK Key followed by the OPAC Key.
- Step 2 ▶ Dial a system code (00-49) or press an F Key (F1 or F2).
- Step 3 ▶ Dial *.
- Step 4 ▶ Enter or edit the message using the dialpad and F Keys. A dialpad key has three letters. To select a letter, press the appropriate key then press the corresponding F Key (F1, F2, or F3). For example, to select the first letter on a key, press the key then press F1. To select the second letter, press the key then press F2. To select the third letter, press the key then press F3.

To enter characters not on a dialpad key:

Insert a blank F4
Delete a character F5
Delete entire message F6
Move cursor to right #
Move cursor to left *
Insert a space F2 + dial 1 (underbar)
(can be filled in later)

- Step 5 ▶ Press the CHECK Key when done entering message.
- Step 6 ▶ Press * to store message under the F Key or code specified above --or-- select a new code or F Key then press *.
- Step 7 ▶ Press the CLOCK Key to return to the date/time display --or--select another F key or code for the next message and repeat.

Note: When storing a pause, stop, Flash or Pulse to Tone Conversion in a Speed Dial number, you see: P, _ , or #, respectively.

Operation (cont'd)

NOTE: When installing a system with Dot Matrix Telephones, the system is initialized for regular display telephones. In order to program the system from the port 10 location using a Dot Matrix Telephone, follow the procedure below.

Using a Dot Matrix Telephone at port 10:

- Step 1 ▶ Enter the programming mode by depressing the programming button.
- Step 2 ▶ Press the TIMER key.
- Step 3 ▶ The system will then initialize this telephone as a Dot Matrix Telephone (about 10 seconds).
- Step 4 ▶ Program the required system data.

To return to a regular display telephone:

- Step 1 ▶ Enter the programming mode by depressing the programming button.
- Step 2 ▶ Press the CHECK key.
- Step 3 ▶ The system will then initialize this telephone as a regular display telephone (about 10 seconds.)

THIS PROCEDURE WILL ONLY WORK FOR THE PORT 10 TELEPHONE.

DOT MATRIX TELEPHONE

Table 4 DOT MATRIX TELEPHONE DISPLAYS (Page 1 of 3)

<u>Display</u>	<u>When You</u>
ALARM Z>	set alarm Z using the Alarm Clock feature
B	battery is low
BUSY (XX or ext. name)	call a busy extension
CALL FM (XX or ext. name)	receive a call or Off-Hook Sig. from ext. XX; pick up a call ringing at ext. XX; answer a Meet-Me Page initiated from ext. XX
CALL FM XX DOOR Y CALL FM (door name)	or receive a call from a Door Chime Box Y that is associated with a dial-up code XX
CALL TO (XX or ext. name)	call or send Off-Hook Sig. to ext. XX; connect to paged party after initiating Meet-Me Answer Page
CALL TO XX -> YY	call ext. XX and its ICM calls are forwarded to YY
CALLBK (XX or ext. name)	activate Callback
CAMP-ON (XX or ext. name)	activate Camp-On
CLBK FM (XX or ext. name)	receive Callback when busy ext. XX becomes idle
CLBK FM LINE (XX) or CLBK FM (line name)	receive a Callback ring from the line (XX) you queued for.
CO DIR	make a directory call to a Speed Dial number
CONF INT X	set up a Meet-Me Conf. to internal page zone X
DATE>	set the calendar
DAY>	set the calendar
DND (XX or ext. name)	call an ext that is in DND
F(01-10) (number)	store, call or display a number under F Key ZZ
ICM DIR	place an ICM directory call to an ext.
LEAVE MESSAGE ?	press 0 after calling an ext. to leave a Message Waiting. The system asks if you want to leave a display message

Table 4 DOT MATRIX TELEPHONE DISPLAYS (Page 2 of 3)

<u>Display</u>	<u>When You</u>
LINE XX STA YY or (line name) (ext. name)	receive transfer recall on line XX from ext. YY (Only if you use DSS Console to transfer call)
LINE (XX or line name)	seize an outside line
LIST END	reach the end of the directory
LND (number)	use a Last Number Dialed
MEET-ME CONF	connect with a Meet-Me Conf.
MEET-ME INT X	set up a Meet-Me Ans. Page to internal zone X
MON 14 10:35	not using a programming-type feature or your telephone
MSG XX	store a message under code XX
MSG FM (XX or ext. name)	check messages, you see this if you have a display message from ext. XX
MW (XX or ext. name)	check messages, you see this if you have a Message Waiting from ext. XX
OUT SVC	call an uninstalled ext.
PAGING ALL CALL	make an All Call Page
PAGING ALL EXT	page to all external zones
PAGING EXT X	page external zone X
PAGING INT X	page an internal zone X
(00-99) (number)	store, call or display a number under a System Speed Dial Code (00-99)
SAVE (number)	call a number using Save
STA # XX	assign a name to an ext.
SYS # XX	assign a name to a Speed Dial code (00-99)

DOT MATRIX TELEPHONE

Table 4 DOT MATRIX TELEPHONE DISPLAYS (Page 3 of 3)

<u>Display</u>	<u>When You</u>
TIME>	set the time
VMSG	view messages, you see this if you have a Voice Message in your mailbox
XX:XX:XX	use the Call Duration Timer (hrs, mins, secs)
YEAR>	set the calendar

Note: When storing a pause, stop, Flash or Pulse to Tone Conversion in a Speed Dial number, you see: P, -, or #, respectively.

PROGRAM 77 -- DOT MATRIX PORT ASSIGNMENT

Options

Use this program to identify ports that have Dot Matrix Telephones installed.

Conditions

a: Must have a B-STU-G installed for the dot display telephone to work.

Additional Programming

Program 8 assigns an instrument type to an extension port, e.g., key telephone.

Program 50 assigns STU slot as an STU-G card.

Selecting Options

	<u>Standard Value</u>
AB: Program number 77	
CD: Extension port number	
E: 0--Defines non-Dot Matrix	E: 0
1--Defines Dot Matrix port	

Example

Port 23 defined for use with a Dot Matrix Telephone

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	7	2	3	7											

Entering Selections

1. Enter program number 77.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next port number displays. There are three options:

- To enter E data for this port, repeat steps 5-6.
- To advance to the next port, press *.
- To exit this program, press #.

B-STU-G INSTALLATION FOR BLF OR DOT MATRIX TELEPHONES

Description

When a B-STU-G station card is installed for BLF or DOT MATRIX telephones, the system must be told, through programming, which KSU slot the card occupies.

Conditions

- A. Each B-STU-G station card can support four key telephones of any type (not only BLF or DOT MATRIX phones).

Operation

For information on the BLF LED indications or DOT MATRIX DISPLAYS, see the Businesscom Plus Multibutton User Guide (P/N01652MBB02).

PROGRAM 50 -- B-STU-G INSTALLATION PROGRAMMING

Options

This program identifies which STU slots contain a B-STU-G card supporting BLF or DOT MATRIX telephones.

Conditions

- a. Any or all STU slots may be equipped with the B-STU-G PCB.

Additional Programming

None

Selecting Options

Standard Value

AB: Program Number 50
CD: STU slot number (01-16) CD: All STU slots (01-16)
E: 0-B-STU-G is not installed E: 0
OR

B-STU-G is installed but does not support BLF or DOT MATRIX phones.
1-B-STU-G is installed and supports BLF phones

Example

A B-STU-G station card is installed in STU slot 12 and the card supports BLF or DOT MATRIX phones.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
5	0	1	2	1											

Entering Selections

1. Enter program number 50.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next slot number is displayed. There are three options:

- To enter E data for this slot, repeat steps 5-6.
- To advance to another slot, press *.
- To exit the program, press #.

EXTERNAL ZONE LINE/AUDIBLE ASSIGNMENT

Description

External Zone Line/Audible Assignment allows External Paging Zones to receive audible/no audible for assigned Line Groups. There are four audible levels available:

- None ——— no ring
- Day ——— ring when Night Transfer is not in effect
- Night ——— ring during Night Transfer
- Day/Night - ring during either situation

Conditions

- a. Two External Paging Zones are available.
- b. Incoming audible interrupts BGM.
- c. Paging equipment, e.g., speakers, is customer provided.
- d. Program Line Groups using Program 2.
- e. Install a B-GCU-A PCB.

Operation

N/A

PROGRAM 80 -- EXTERNAL ZONE BGM/ALARM ASSIGNMENT

Options

Use this program to assign Background Music, and/or Alarm signals to External Zone one and/or two.

Conditions

a. Install a B-GCU-A PCB.

Additional Programming

Program 26 identifies Background Music as installed
 Program 28 selects the type of alarm contacts

Selecting Options

	<u>Standard Value</u>
AB: Program number 80	
C: External Paging Zone (1 or 2) C: 0	
D: 0--disables BGM 1--enables BGM	D: 0
E: 0--disables Alarm 1 1--enables Alarm 1	E: 0
F: 0--disables Alarm 2 1--enables Alarm 2	F: 0

Example

External Zone 1 receives BGM and Alarm 1; Zone 2, Alarm 1 and 2

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
8	0	1	1	1	0										
8	0	2	0	1	1										

Entering Selections

1. Enter program number 80.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEF data.
6. Press *.

Next zone displays. There are two options:
 - To enter data for it, enter DEF data.
 - To exit this program, press #.

PROGRAM 81 -- EXTERNAL ZONE LINE/AUDIBLE ASSIGNMENT

Options

Use this program to assign a Line Group with audible to External Zone one and/or two.

Conditions

a. Set Program 17 to 0, i.e., Night mode 1.

Additional Programming

Program 2 defines Line Groups

Selecting Options

	<u>Standard Value</u>
AB: Program number 81	
C: External Paging Zone 1 or 2	C: 0
DE: Line Group 01-sys. maximum	DE: 00
F: 0--none	F: 0
1--day audible	
2--night audible	
3--day and night audible	

Example

External Paging Zone 1 receives Line Group 2 with day audible

External Paging Zone 2 receives Line Group 5 with day audible

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	1	1	0	2	1										
0	1	2	0	5	1										

Entering Selections

1. Enter program number 81.
2. Press *.
3. Enter C data.
4. Press *.
5. Enter DEF data.
6. Press *.

Next zone displays. There are two options:

- To enter DEF data, repeat steps 5-6.
- To exit this program, press #.

PERMITTED/DENY CODES

Description

Permitted Codes are telephone numbers a caller can dial from extensions having Classes of Service (COS) 0-4. For example, when a customer has a branch office in another state, a good choice for a Permitted Code would be the telephone number of that branch office. In other words, a number that would otherwise be restricted by COS 2-4. Once the caller dials a number that matches the Permitted Code digits, any number of digits may follow unless Program 42 limits it.

Deny Codes allow the restriction of pay service telephone numbers (e.g., Dial a Joke, Dial a Porn, etc.). If the caller dials a Deny Code, the system disconnects the line. The number and length of the Deny Codes are programmable.

Conditions

- a. To limit the number of digits in a Permitted/Deny Code, use Program 42. The limit corresponds to the Permitted/Deny Code digits plus any digits that follow. The limit is optional.
- b. Use Program 64 to assign Local Permitted Codes. These codes expand the dialing options of extensions that have a COS of 4. See Program 64 for more information.

Operation

N/A

PROGRAM 41 -- PERMITTED/DENY CODES

Options

This program allows the selection of 30 Permitted and/or Deny Codes. A Permitted or Deny Code can contain up to the first 12 digits of the desired telephone number.

Conditions

- Program 42 limits the number of digits in a Permitted and Deny Code, and the number of digits that can follow either code.
- The DC Key can represent any digit. For example, 1-DC-DC-DC-555-1212 allows directory assistance in any area code.
- Do not use "0" or "DC" as the first digit. This allows access to the telco operator and, therefore, to toll calls.
- Do not enter PBX Access Codes as Permitted Codes. The system checks the PBX Access Code table before checking this table.

Additional Programming

Program 40 assigns a COS to each extension

Program 42 sets a maximum on digits in a Permitted/Deny Code call

Program 64 assigns a second table of Permitted Codes

Program 79 defines the number of Permitted and Deny Codes allowed

Selecting Options

	<u>Standard Value</u>
AB: Program number 41	
CD: Permitted/Deny Code identification number (01-30)	CD: All codes
E-P: Permitted/Deny Code digits	E-P: Unassigned

Example

Permitted Code 01 allows 1-800 + any seven-digit number.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	1	0	1	1	8	0	0	DC	DC	DC	DC	DC	DC	DC	

PROGRAM 41 -- PERMITTED/DENY CODES

Entering Selections

1. Enter program number 41.
2. Press *.
3. Enter CD data.
4. Press *. Display clears.
5. Enter EFGHIJKLMN data (only 8 digits display at a time).
 - To erase this data, press the OPAC Key.
6. Press *.

Next code number displays. Three options are available:

- To enter EFGHIJKLMN data, repeat steps 5-6.
- To advance to the next code, press *.
- To exit this program, press #.

PERMITTED/DENY CODE ALLOTMENT

Description

Permitted and Deny Codes occupy the same table. The system allows a maximum of 30 Deny or Permitted Codes, or any combination thereof. For example, if the installer specifies a total of 18 Permitted Codes, then the system allocates memory for 12 Deny Codes.

Conditions

- a. Use Program 41 to enter Permitted and Deny Codes.
- b. To restrict the length of a Permitted/Deny Code, use Program 42. Restriction is optional, the system does not require it.

Operation

N/A

PROGRAM 79 -- PERMITTED/DENY CODE ALLOTMENT

Options

Use this program to select the number of Permitted and Deny Codes. There is a maximum of 30 codes. Any combination is permissible. Choose a maximum for the number of Permitted Codes and enter it. Thirty minus the maximum number of Permitted Codes equals the maximum number of Deny Codes, i.e., $30 - \text{maximum number of Permitted Codes} = \text{maximum number of Deny Codes}$.

Conditions

None

Additional Programming

Program 41 enters the Permitted/Deny Codes into a table
Program 42 limits the length of Permitted/Deny Codes

Selecting Options

Standard Value

AB: Program number 79

CD: Permitted/Deny Code Maximum C: 30

Example

Permitted Code maximum is 20. Deny Code maximum is 10. Bins 01-20 are Permitted Code numbers; bins 21-30 are Deny Code numbers.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	9	2	0												

Entering Selections

1. Enter program number 79.
2. Press *.
3. Enter CD data.
4. Press *.
5. Press # to exit this program.

REMOTE DIAGNOSTICS

Description

Remote Diagnostics allows the following off-site functions:

- Check the MPU status of the BUSINESSCOM PLUS.
- List installed STU/OPU/COU PCBs and their locations.
- List CO lines indicating if idle, busy or not installed.
- List extensions indicating if idle, busy or not installed.
- Check the status of the memory backup battery.
- Download a complete database from the BUSINESSCOM PLUS to the off-site computer.
- Upload a complete database (installer and user programming) to the BUSINESSCOM PLUS from an off-site computer.
- Enable or disable the computer from displaying SMDR data.
- Program the BUSINESSCOM PLUS remotely (off-site).

Conditions

- a. The computer must use a Hayes-compatible modem or an BUSINESSCOM PLUS Data Telephone.
- b. The BUSINESSCOM PLUS uses a DISA Line to communicate with the off-site computer.
- c. Assign a security code to the DISA Line, and a COS 9 to the code. The Remote Diagnostics user must enter the security code to access BUSINESSCOM PLUS Remote Diagnostics.
- d. For Remote Diagnostics, the BUSINESSCOM PLUS requires an MDU PCB.
- e. Remote Diagnostics requires an installed key port in the BUSINESSCOM PLUS for programming purposes. The port need not be terminated to a telephone.
- f. Select a mode (day, night, day/night) under which a Remote Diagnostics user can access a DISA Line.

Operation

Refer to page 47.

PROGRAM 47 -- REMOTE SYSTEM MAINTENANCE

Options

Install an MDU PCB in the KSU's MISC slot. It replaces any PCB in that slot. Use this program to inform the system that an MDU is installed.

Conditions

None

Additional Programming

Program 3 designates a DISA Line

Program 8 defines an installed OPX port as a DISA port.
Leave the OPX port unterminated, i.e., unconnected to a device

Program 68 selects a mode (day,night,day/night) under which a user can access the DISA Line for Remote Diagnostics

Program 69 assigns the Remote Diagnostics programming port

Program 70 assigns a DISA Security Code

Program 72 assigns a COS 9 to the appropriate DISA Security Code

Selecting Options

	<u>Standard Value</u>
AB: Program number 47	
C: 0-MDU not installed	C: 0
1-MDU is installed	

Example

MDU is installed.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
4	7	1													

Entering Selections

1. Enter program number 47.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit this program.

PROGRAM 69 -- REMOTE PROGRAMMING PORT

Options

Use this program to select the Remote Programming Port in the BUSINESSCOM PLUS. Remote Programming requires such a port.

Conditions

- a. When someone is programming the BUSINESSCOM PLUS remotely, a Display telephone at the Remote Programming Port shows the programming data.
- b. The Remote Programming port must be an installed port. It need not be terminated, i.e., connected to a device, e.g., a telephone.
- c. During Remote Programming, the Remote Programming Port telephone cannot be used for other purposes, e.g. to place a call. Therefore, it is recommended that an installed but unterminated port be selected as the Remote Programming Port.

Additional Programming

Program 3 designates a DISA Line

Program 8 defines an installed OPX port as a DISA port.
Leave the OPX port unterminated, i.e., unconnected to a device

Program 47 informs system that MDU PCB is installed

Program 68 selects a mode (day,night,day/night) under which a user can access the DISA Line for Remote Diagnostics

Program 70 assigns a DISA Security Code

Program 72 assigns a COS 9 to the appropriate DISA Security Code

Selecting Options

	<u>Standard Value</u>
AB: Program number 69	
CD: Remote Programming Port	CD: Port 10

Example

Port 10 is the Remote Programming Port.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
6	9	1	0												

PROGRAM 69 -- REMOTE PROGRAMMING PORT

Entering Selections

1. Enter program number 69.
2. Press *.
3. Enter CD data.
4. Press *.
5. Press # to exit this program.

REMOTE DIAGNOSTICS SETUP

Software Requirements

Remote Diagnostics requires the following programming from the BUSINESSCOM PLUS programming extension.

PROGRAM 03 DISA LINE, FAX LINE, COMMON USE LINE

Remote Diagnostics requires a DISA Line. Use this program to select a line and define it as a DISA Line.

INSTRUCTIONS

DISPLAY

- | | | |
|-------------------------|--------|-------|
| 1. Enter 03. | | |
| 2. Press *. | 03-xx | |
| 3. Enter a line number. | 03-XX | |
| 4. Press *. | 03-XX- | a b c |
| 5. Enter 1 for a. | 03-XX- | 1 b c |
- The other values can remain the same.
6. Press *.
 7. Press # to exit this program.

PROGRAM 08 NIGHT COS, HEADSET, INSTRUMENT TYPE, DO NOT DISTURB, INTERNAL PAGE ZONE *

Use this program to define an installed OPX port as a DISA port. Leave the OPX port unterminated, i.e., do not install a device in the port.

INSTRUCTIONS

DISPLAY

- | | | |
|-----------------------------|-----------------|--|
| 1. Enter 08. | | |
| 2. Press *.08-00 | | |
| 3. Enter an extension port. | 08-xx | |
| 4. Press *. | 08-XX-e f g h i | |
| 5. Enter a 1 for entry g. | 08-XX-e f l h i | |
- (Entries e,f,h,i can remain the same.)
6. Press *.
 7. Press # to exit this program.

*For further information, consult the BUSINESSCOM PLUS Software Manual.

REMOTE DIAGNOSTICS SETUP

PROGRAM 47 REMOTE SYSTEM MAINTENANCE

Remote Diagnostics requires an MDU PCB. Install it in the KSU's MISC slot. This program informs the BUSINESSCOM PLUS of an installed MDU PCB.

INSTRUCTIONS

DISPLAY

- | | | |
|---------------------------------------|----|-----|
| 1. Enter 47. | | |
| 2. Press *. | 47 | - x |
| 3. Enter a 1 if the MDU is installed. | 47 | - 1 |
| 4. Press *. | | |
| 5. Press # to exit this program. | | |

* For further information, consult the BUSINESSCOM PLUS Software Manual.

PROGRAM 68 DISA LINE ACCESS

Use this program to determine the mode (day, night, day/night) under which a user can access a particular DISA line. Select the day/night mode (3). This allows the user to access the given DISA Line when the BUSINESSCOM PLUS is in either the day or night mode.

INSTRUCTION

DISPLAY

- | | | |
|----------------------------------|-------|-----|
| 1. Enter 68. | | |
| 2. Press ENTER. | 68-xx | |
| 3. Enter a DISA Line number. | 68-XX | |
| 4. Press ENTER. | 68-XX | - x |
| 5. Enter 3. | 68-XX | - 3 |
| 6. Press *. | | |
| 7. Press # to exit this program. | | |

*For further information, consult the BUSINESSCOM PLUS Software Manual.

REMOTE DIAGNOSTICS SETUP

PROGRAM 69 REMOTE PROGRAMMING PORT ASSIGNMENT

Remote Programming requires an extension port for programming. The port must be installed, but it need not be terminated to a telephone. Use this program to select a Remote Diagnostics programming port.

<u>INSTRUCTIONS</u>	<u>DISPLAY</u>
1. Enter 69.	
2. Press *.	69 - xx
3. Enter an extension port to serve as the port for Remote Programming.	69 - XX
4. Press *.	

PROGRAM 70 DISA SECURITY CODES *

The BUSINESSCOM PLUS requires a Remote Diagnostics user to enter a security code to access a DISA Line. Use this program to select that code.

<u>INSTRUCTIONS</u>	<u>DISPLAY</u>
1. Enter 70.	
2. Press *.	70-x
3. Enter a security code number (1-8).	70-X
4. Press *.	70-X -xxxx
5. Enter a four-digit security code.	70-X -XXXX
6. Press *.	
7. Press # to exit this program.	

PROGRAM 72 DISA CLASS OF SERVICE*

A DISA Security Code's Class Of Service determines the type of calls an external caller can place using a DISA Line. Assign a COS level 9 to the appropriate DISA security code. This defines the line for Remote Diagnostics use.

<u>INSTRUCTIONS</u>	<u>DISPLAY</u>
1. Enter 72.	
2. Press *.72-x	
3. Enter a security code number.	72-X
4. Press *.	72-X -x
5. Enter 9.	72-X -9
6. Press *.	
7. Press # to exit this program.	

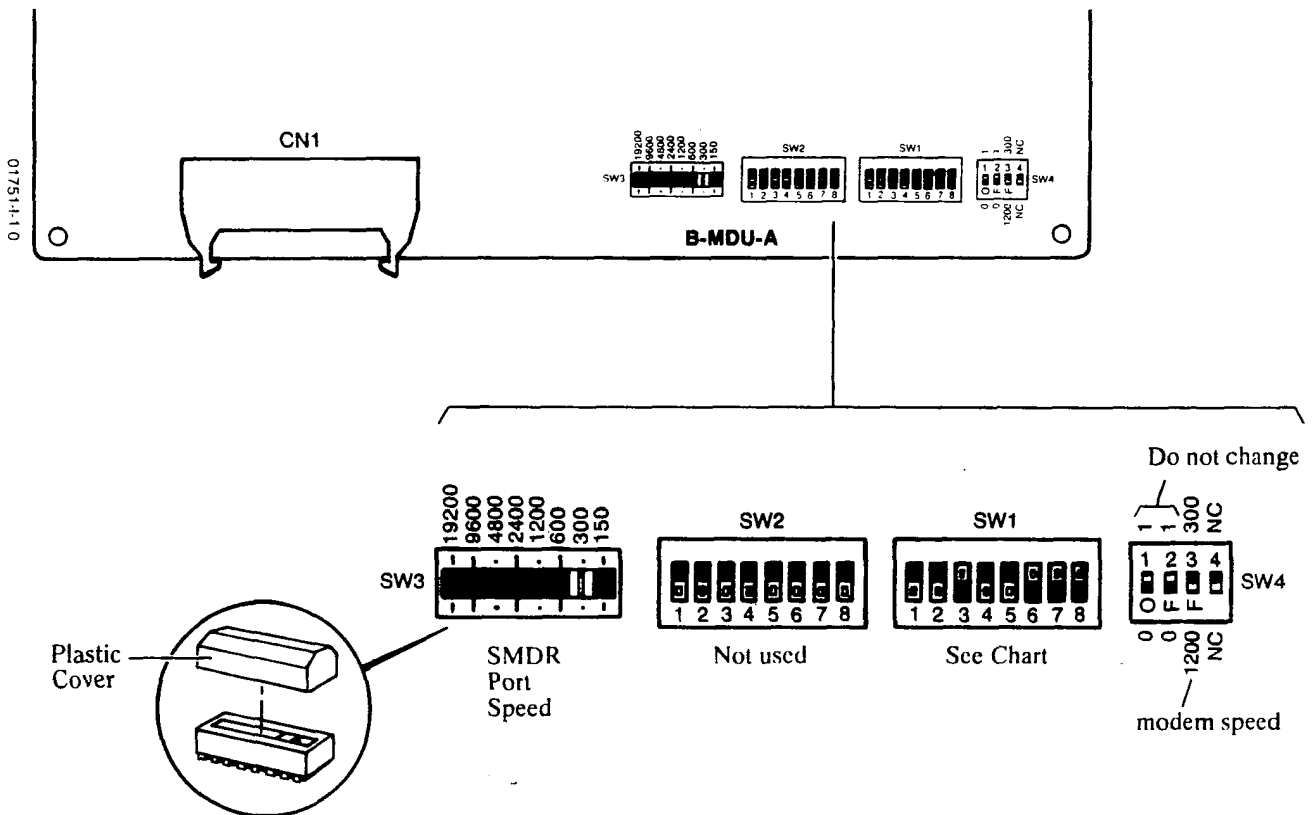
* For further information, consult the BUSINESSCOM PLUS Software Manual.

REMOTE DIAGNOSTICS SETUP

Hardware Requirements

Remote Diagnostics requires a B-MDU-A PCB. Set the following switches before installing the card (Figure 3).

Switch 1 Settings			
Sw	Option		Function
1	Dial Digits	OFF	Does not print if number is 7 digits or less
		ON	Prints regardless of number length
2	Duration	OFF	Does not print calls less than 1 minute long
		ON	Prints calls of any duration
3	Start Timing	OFF	Starts timing calls after 1 second
		ON	Starts timing calls after 5 seconds
4	Account Code	OFF	Users must enter Account Codes
		ON	Users may enter Account Codes
5	Incoming Call	OFF	Prints only if Account Code Entered
		ON	Always prints
6	Barred Outgoing	OFF	Prints blocked calls
		ON	Does not print blocked calls
7	OPX Act Code	OFF	OPX users can enter Account Codes
		ON	OPX users cannot enter Account Codes
8	Not used	OFF	Always leave OFF



Install this in the MISC slot of the system's KSU.

Figure 3 B-MDU-A PCB SWITCHES

MODEM SPECIFICATIONS

Use a modem that is Hayes-modem compatible. Set the modem to the following parameters:

- a. 300 or 1200 BAUD
- b. No parity
- c. 8 data bit
- d. 1 start bit
- e. 2 stop bits
- f. DTMF

Connect the modem to the RS-232 connector on the computer. Connect a CO or PBX line to the modem. Follow the modem manufacturer's instructions for proper installation.

Computer Specifications

Use a computer that is compatible with either the IBM AT or XT.

RUNNING REMOTE DIAGNOSTICS

Step 1 ▶ If the computer is off, power it up. This boots the computer.

-- or --

If the computer is on, simultaneously press the Ctrl, Alt, Del Keys. This (re)boots the computer.

Obtain a standard DOS prompt.

Step 2 ▶ Insert the Remote Diagnostics diskette into drive A. Make sure your computer is at the A:\> prompt.

Step 3 ▶ Type README then press the carriage return.

Step 4 ▶ The disk will guide you through installing the needed programs on your work disk or hard disk.

Step 5 ▶ After installing type COMESP3 from the proper drive and directory.

The following appears on the screen:

MODEM INITIALIZE START

input dial NO. & return

Step 6 ▶ Type the following: t telephone number,#,DISA Security Code.

t
telephone number

-- type a t.

-- type the telephone number of the system you want to call. Follow it with a comma. The comma represents a Pause.

#

-- type a #.

If a longer pause is necessary between the telephone number and the #, type more than one comma.

DISA Security Code

-- type the DISA Security Code that the BUSINESSCOM PLUS requires Remote Diagnostics users to input.

REMOTE DIAGNOSTICS MENU SELECTIONS

- ITEM 0 - To return to the Remote Diagnostics MENU from other menus, enter 0 then press carriage return.
- ITEM 1 - To check BUSINESSCOM PLUS MPU status, enter 1 then press carriage return.
- ITEM 2 - For a list of installed STU/OPU/COU cards and their locations in the BUSINESSCOM PLUS, enter 2 then press carriage return.
- ITEM 3 - For a list of the CO lines indicating an idle, busy or uninstalled condition, enter 3 then press carriage return.
- ITEM 4 - For a list of extensions indicating an idle, busy or uninstalled (none) condition, enter 4 then press carriage return.
- ITEM 5 - To check the status of the BUSINESSCOM PLUS memory backup battery, enter 5 then press carriage return.
- ITEM 6 - To download user programming data from the BUSINESSCOM PLUS, enter 6 then press carriage return. The following appears:

(Groups 1-3 consist of user programming data.
Group 4 consists of all user programming data.)

NAME/MESSAGE/DIAL NUMBER DOWN LOAD

- 0. Return to menu
- 1. Group 1 = A+B+C
- 2. Group 2 = D+E
- 3. Group 3 = F
- 4. Group 4 = A+B+C+D+E+F

99. Program Terminate

#

- A:Station names + Doorbox
- B:Trunk Names
- C:System Messages
- D:System Speed Dial Numbers
- E:System Speed Dial Names
- F:Station Information
 - DSS Keys
 - Station Speed Dial
 - Station Messages

Make a selection then press carriage return. The system downloads the data from the BUSINESSCOM PLUS and stores it on file on diskette. The file name is: SYSTEMn.DAT, n=1,2,3,4,5 (n=group number).

REMOTE DIAGNOSTICS MENU SELECTIONS

Note: Remote Diagnostics makes no changes to SYSTEMn.DAT files when you enter data through system programming. Therefore, to save a copy of the new system data, download the appropriate files after finishing system programming (item 10).

ITEM 7 - To upload user programming data to the BUSINESSCOM PLUS from the computer, enter 7 then press carriage return. The following appears:

(Groups 1-3 consist of user programming data.
Group 4 consists of all user programming data.)

NAME/MESSAGE/DIAL NUMBER UP LOAD

- 0. Return to menu
- 1. Group 1 = A+B+C
- 2. Group 2 = D+E
- 3. Group 3 = F
- 4. Group 4 = A+B+C+D+E+F

99. Program Terminate

#

- A:Station names + Doorbox
- B:Trunk Names
- C:System Messages
- D:System Speed Dial Numbers
- E:System Speed Dial Names
- F:Station Information

- DSS Keys
- Station Speed Dial
- Station Messages

Make a selection then press carriage return. The system uploads data file(s), if any, from diskette to the BUSINESSCOM PLUS. For example, if you select 2, Remote Diagnostics uploads:

- D:System Speed Dial Numbers
- E:System Speed Dial Names

ITEM 8 - To enable the computer to display SMDR data, enter 8 then press carriage return.

ITEM 9 - To disable the computer from displaying SMDR data, enter 9 then press carriage return.

REMOTE DIAGNOSTICS MENU SELECTIONS

ITEM 10 - To enter BUSINESSCOM PLUS system programming, enter 10 then press carriage return.

Remote Diagnostics displays existing values, e.g., when you enter a port and press carriage return, port data appear.

Note: To save any programming changes to the remote computer Program 97 (System Data Down Load) must be run. To upload this information to a new or existing system Program 98 (System Data Up Load) must be run.

ITEM 11 - To change the identification information of the BUSINESSCOM PLUS system, enter 11 then press carriage return. Enter new data.

ITEM 99 - To exit Remote Diagnostics, enter 99 then press carriage return.

Arrow Keys - move the cursor from one position to another within a field, or to another field.

Enter Key -- enters data into the BUSINESSCOM PLUS programming buffer.

Home Key -- cancels the last programming entry and returns to the Remote Diagnostics MENU, press the Home Key.

Esc Key ---- exits the programming mode and returns to the Remote Diagnostic MENU.

SIMULTANEOUS RINGING

Description

When a System 1003 is connected to the BUSINESSCOM PLUS, it is sometimes necessary for incoming calls to ring to both the Automated Attendant and the System Operator. If this program is not used incoming calls will ring to the Automated Attendant. These calls will not ring any stations until the Voice Mail Timer has elapsed.

Conditions

- a. This feature only applies to systems with a MPU-D and a System 1003.

Operation

N/A

PROGRAM 84 -- SIMULTANEOUS RINGING ASSIGNMENT

Options

Use this program to assign simultaneous ringing for the Automated Attendant. The program can be set to allow or disallow the simultaneous ringing.

Conditions

- a. If "0" is programmed, the lines designated as the Automated Attendant lines in Program 74 ring to the Automated Attendant until the Voice Mail Timer elapses (Program 78). At that time the call will then ring to the stations programmed for audible on that line or lines in Program 07.
- b. If "1" is programmed, the lines designated as the Automated Attendant lines in Program 74 ring to both the Automated Attendant and to the stations programmed for audible on that line or lines in Program 07.

Additional Programming

Program 7 assigns Ringing
 Program 74 assigns Automated Attendant answering
 Program 75 assigns Automated Attendant/Voice Mail lines
 Program 76 assigns extensions for Automated Attendant/Voice Mail use
 Program 78 assigns Voice Mail Timer

Selecting Options

	Standard Value
AB: Program 84	
C: 0--disable simultaneous ringing	C: 0
1--enable simultaneous ringing	

Example

Simultaneous ringing is enabled

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0	4	1													

PROGRAM 84 -- SIMULTANEOUS RINGING ASSIGNMENT

Entering Selections

1. Enter program number 84.
2. Press *.
3. Enter C data.
4. Press *.
5. Press # to exit program.

Description

Voice Mail allows the System 1001/1003 to receive or issue recorded messages to callers. These messages may inform callers of their options. For example, one option might allow a caller to leave a recorded message. Internal users can also leave Voice Messages at other extensions.

Both B-MPU-CII and B-MPU-D software support Voice Mail. If all Voice Mail ports are busy, incoming CO calls enter a queue. A programmable timer (B-MPU-D only) determines the length of time a call remains in the queue. If the timer elapses before a port becomes available, the system transfers the call to extensions that have audible for it.

Conditions

- a. Voice Mail does not answer calls automatically. To enable automatic answering, enable Program 74.
- b. An MW lamp flashing slowly indicates a Voice Message in the user's mail box. An MW lamp flashing rapidly indicates a Message Waiting or a text message (B-MPU-D ONLY).

Recommendation: that you not use Program 15--Flexible Line Appearance--with Voice Mail. It may cancel the function of the Voice Mail line keys at certain extensions. At such extensions, the user cannot access Voice Mail by pressing a Voice Mail key. Alternate methods of access are required. For more information on Program 15, see Flexible Line Appearance.

(If Program 15 is disabled, the Voice Mail function returns to the line keys.)

Operation

See the System 1001/2/3 Product Reference Manual for information on operation.

AUTOMATED ATTENDANT/INTEGRATED VOICE MAIL

Description

Automated Attendant, available with B-MPU-D software, directs an incoming call to the System 1003. The System 1003 then answers the call and provides the caller with a recorded greeting and options, e.g., the option to call an extension. If all lines in the System 1003 are busy, the call waits in a queue. If a particular timer expires before the System 1003 answers, all extensions having audible for the call ring.

The BUSINESSCOM PLUS (B-MPU-CII software), when used with the System 1001, provides Integrated Voice Mail. This includes directing a call to the System 1001 during the night mode. A caller can then access a mailbox and leave a message, or use various mailbox features.

For more information on System 1001, consult the System 1001/1003 manual.

Conditions

- a. B-MPU-C II AND B-MPU-D software allows mode selection for Voice Port Audible. This allows the Automated Attendant to answer during the day, night or day/night mode.
- b. A call rings at an extension one to nine times before the Auto Attendant answers. The number of rings is a function of System 1001/1003 programming.

Operation

N/A

PROGRAM 74 -- VOICE PORT AUDIBLE LINES

Options

Use this program to designate the telephone system CO lines that the Automated Attendant will answer.

Conditions

- a. Do not assign a DISA line as a Voice Port Audible Line.

Additional Programming

Program 75 assigns Voice Mail lines

Program 76 assigns Voice Mail extensions

Program 78 selects a Voice Mail Timer value

Selecting Options

Standard Values

AB: Program number 74

CD: Line number

E: Option. The options are

E: 0

- 0 to have the Automated Attendant not answer the line
- 1 to have the Automated Attendant answer the line at night
- 2 to have the Automated Attendant answer the call during the day
- 3 to have the Automated Attendant answer the call at night and during the day

Example

Automated Attendant answers calls on line 12 during the day mode--Night Transfer not in effect.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	4	1	2	2											

PROGRAM 74 -- VOICE PORT AUDIBLE LINES

Entering Selections

1. Enter program number 74.
2. Press *.
3. Enter CD data.
4. Press *.
5. Enter E data.
6. Press *.

Next line number displays. There are three options:

- To enter E data for this line, repeat steps 5-6.
- To advance to the next line number, press *.
- To exit this program, press #.

PROGRAM 75 -- VOICE MAIL LINE ASSIGNMENT

Options

Use this program to dedicate CO lines ports for Voice Mail DTMF Signaling.

Conditions

- a. CO lines used for Voice Mail are dedicated for that purpose.
- b. Extension users cannot answer or call out on Voice Mail lines.
- c. It is recommended that all Voice Mail lines be part of the same Queue Group--Program 1.
- d. The system can support a maximum of six line assignments.
- e. CO Voice Mail port 1 is associated with OPX Voice Mail port 1, CO Voice Mail port 2 is associated with OPX Voice Mail port 2, etc.
- f. CO Voice Mail Line 1 and/or 2 must be programmed as a CO line in Program 1.

Additional Programming

Program 01 to assign line type, dial mode and queue group
Program 76 to select extensions for Voice Mail
Program 78 to select a value for the Voice Mail Timer

Selecting Options

AB: Program number 75
CD: Voice Mail port card
number (01-06)
EF: Line number

Standard Value

EF: 00

Example

Line 15 is a Voice Mail line for port card 01.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	5	0	1	1	5										

PROGRAM 75 -- VOICE MAIL LINE ASSIGNMENT

Entering Selections

1. Enter program number 75.
2. Press *. Voice Mail port card number appears (CD data).
3. Enter EF data.
4. Press *.

The next Voice Mail port card number displays. There are three options:

- To enter EF data, repeat steps 3-4.
- To advance to the next bin, press *.
- To exit this program, press #.

PROGRAM 76 -- VOICE MAIL EXTENSION ASSIGNMENT

Options

This program dedicates STU-D PCB ports as OPX ports for Voice Mail. Each Voice Mail port card installed requires a corresponding STU-D PCB OPX port.

Conditions

- The system can support a maximum of six extension assignments.
- Voice Mail requires an OPX PCB and a ring generator.
- Make sure each port you assign in Program 76 you also assign as an OPX port in Program 8.
- OPX Voice Mail bin 1 is associated with CO Voice Mail bin 1.

Additional Programming

Program 8 assigns an instrument type, e.g., an OPX port

Selecting Options

	<u>Standard Value</u>
AB: Program number 76	
CD: Voice Mail port card (01-06)	
EF: OPX Port number	EF: 00

Example

Extension 25 assigned to Voice Mail port 01.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	6	0	1	2	5										

Entering Options

- Enter program number 76.
- Press *. Bin displays.
- Enter CD data.
- Press *.

Next bin displays. There are three options:

- To enter CD data, repeat steps 3-4
- To advance to the next bin, press *.
- To exit this program, press #.

PROGRAM 78 -- VOICE MAIL TIMER

Options

Use this program to select a timer value for Voice Mail. The timer determines the length of time a call remains in queue for an available Voice Mail line. When the timer lapses, the call rings at extensions with audible--Program 7. If no extensions are assigned to ring, the Attendant rings. If there is no Attendant, the extension at port 10 rings regardless of its audible assignment in Program 7.

Conditions

- B-MPU-CII software ignores this program.
- A timer value of 000 allows the call to remain in the queue indefinitely.

Additional Programming

Program 7 assigns Ringing
Program 13 assigns an Attendant
Program 74 assigns Automated Attendant/Integrated Voice Mail
Program 75 assigns lines for Voice Mail operation
Program 76 assigns extensions for Voice Mail use

Selecting Options

AB: Program number 78
CDE: Timer value

Standard Value

CDE:

Example

Timer set for 30 seconds

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
7	8	0	3	0											

Entering Selections

- Enter program number 78.
- Press *.
- Enter CDE data.
- Press *.
- Press #.

TIE/communications, Inc.

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You should always make your initial contact through TIE regional office. Each office is prepared to offer:

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- Technical Support
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For technical troubleshooting assistance in the event of an ABSOLUTE EMERGENCY between the hours of 5PM and 8:30AM Eastern Time, call:

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