EXCEL

308/816

GENERAL DESCRIPTION
INSTALLATION
AND PROGRAMMING MANUAL

**MACROTEL
INTERNATIONAL
CORPORATION**

GENERAL DESCRIPTION

INSTALLATION

AND PROGRAMMING MANUAL

EXCEL 308/816

FCC REG. #E4K5MR-17441-KF-E

REN 1.3B

P/N: 2208022

MACROTEL INTERNATIONAL CORPORATION
3540 N.W. 56TH STREET
FT. LAUDERDALE, FLORIDA 33309

CHANGE CONTROL

September 26, 1988...Issue 1
December 7, 1988...Issue 1.1

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CUSTOMER INFORMATION SHEET

CUSTOMER NAME: _____

MAIN TELEPHONE NUMBER OF CUSTOMER: _____

MANUFACTURER: MACROTEL INTERNATIONAL CORPORATION

MODEL: EXCEL 308

MODEL: EXCEL 816

FCC: #EK45MR-17441-KF-E

REN: 1.3B

FACILITY INTERFACE CODE:

SERVICE ORDER CODE:

REQUIRED NETWORK INTERFACE JACK: RJ 11

MODEL #: _____

SERIAL #: _____

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5.0 PROGRAMMING INSTRUCTIONS

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1.0 PURPOSE OF MANUAL

This manual details the instructions and procedures required to install, program and maintain the EXCEL 308/816 Series Electronic Key Telephone System. For convenience, the manual has been written in several sections. They are as follows:

GENERAL DESCRIPTION: Provides an overview of system operation, capacities and physical characteristics.

INSTALLATION: Detailed installation instructions to enable the installer to complete the installation of the KSU and associated equipment.

PROGRAMMING: Step by step procedures are provided to allow the installer to program the customer database. Also, blank programming forms are included so that a hard copy of the customer database can be maintained and left on site.

TROUBLESHOOTING: The last section covers troubleshooting procedures to be followed should the installer encounter any difficulties.

2.0 TELEPHONE COMPANY AND F.C.C. REQUIREMENTS AND RESPONSIBILITIES

In compliance with the requirements of Part 68 of the F.C.C. Rules and Regulations for connection of terminal system (this device is classified as a terminal system) to the telephone network and for your convenience, the following information is presented:

1. Notification to the Telephone Company

Customers connecting terminal equipment to the telephone network shall, upon request of the Telephone Company, inform the Telephone Company of the particular line(s) to which such connection is made, the F.C.C. registration number (see label on side of unit) and ringer equivalence number (REN) of the registered terminal equipment.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

2. Direct Connection to a Party-Line or Coin-Operated Telephone Line is Prohibited.

3. Incidence of Harm to the Telephone Lines

Should terminal equipment cause harm to the Telephone Network, the Telephone Company shall, where practical, notify the customer that service may be temporarily discontinued. However, where prior notice is not practical, the Telephone Company may temporarily discontinue service forthwith, if such action is reasonable in the circumstances. In case of such un-notified temporary discontinuance of service, the Telephone Company shall:

   (a) Promptly notify the customer of such temporary discontinuance of service.

   (b) Afford the customer the opportunity to correct the situation which gave rise to the temporary discontinuance.

   (c) Inform the customer of the right to bring a complaint to the Commission pursuant to the procedures set out in Subpart E of Part 68 of FCC Telephone Equipment Rules.

4. Compatibility of the Telephone Network and Terminal Equipment

   (a) Availability of telephone interface information.

Technical information concerning interface parameters and specifications not specified in FCC Rules, including the number of Ringers which may be connected to a particular line, which is needed to permit Terminal Equipment to operate in a manner compatible with Telephone Company communications facilities, shall be provided by the Telephone Company upon customer's request.

(b) Changes in Telephone Company Communications Facilities, Equipment, Operations and Procedures.

The Telephone Company may make changes in its communications facilities, equipment, operations or procedures, where such action is reasonably required in the operation of its business and is not inconsistent with the rules and regulations in FCC Part 68 of the FCC Rules and Regulations. If such changes can be reasonably expected to render any customer Terminal Equipment incompatible with Telephone Company Communications Facilities, or require modification or alteration of such Terminal Equipment, or otherwise materially affect its use or performance, the customer shall be given adequate notice in writing to allow the customer an opportunity to maintain uninterrupted service.

RADIO FREQUENCY INTERFERENCE

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

....Reorient the receiving antenna
....Relocate the equipment with respect to the receiver
....Move the equipment away from the receiver
....Plug the equipment into a different outlet so that equipment and
   receiver area are on different branch circuits.

3.0   GENERAL DESCRIPTION

OVERVIEW

The general description section provides detailed information of the operation of the Excel 308/816 Electronic Key Telephone System. The CPU, network interface and system components are described in order to provide a working knowledge of the equipment and it's operation.

GENERAL DESCRIPTION OF KSU

The system architecture of the Excel series is designed with "state of the art" components and high quality design criteria. The system is organized into three major sections: The Central Processing Unit, the Speech Path Network and Interface, and the Power Supply section.

CPU PROCESSOR UNIT

The heart of the system is controlled by a Z80-A Microprocessor.

```
                                              ┌── DATA BUS
                                          ┌─────────┐
                                          │ DECODER │
  ┌──────────┐      ┌──────────────┐      │         │   ┌──────────┐
  │  POWER   │      │              │      │         │   │ NETWORK  │── TELEPHONE
  │   ON     │──────│     CPU      │──────│         │───│ MATRIX   │   DATA
  │  RESET   │      │              │      │         │   └──────────┘
  └──────────┘      └──────────────┘      └─────────┘

  ┌──────────┐                            ┌─────────┐
  │ MEMORY   │      ┌──────┐  ┌──────┐    │ DECODER │
  │ BATTERY  │──────│ RAM  │  │ ROM  │    │         │   ┌──────────┐
  │ BACKUP   │      └──────┘  └──────┘    │         │───│  BUFFER  │── PERIPHERALS
  └──────────┘                            └─────────┘   └──────────┘

                                              └── ADDRESS BUS
```

When the AC power is tuned on, the power-on reset initializes the CPU. The CPU, in turn, requests instructions from the ROM to start call detection and processing. Temporary data is stored in the RAM along side user programmed data.

The user programmed data is backed up by a 3.7 Volt NICAD battery that is under constant trickle charge by the KSU power supply. The NICAD is also used to provide backup voltage for the real time clock. The NICAD battery will protect the speed dial numbers and customer database until the accumulated power outage exceeds approximately 40 hours. When the AC power is turned on, the NICAD recharges.

Memory power backup circuitry is monitored by voltage detecting circuitry controlled by the CPU and, in turn, works with the power supply circuitry, which monitors the DC output of the power supply.

NETWORK CONTROL

The network is designed using solid state, space division architecture to insure low loss and channel flexibility.

Audio Channels	308	816
Common Path	4	8
Doorphone	1	0
DTMF	1	1
MOH	1	1
Internal Tones	1	1
External Page	1	1

DATA — NETWORK CHIP — STATION AUDIO PATH
— C.O. LINE AUDIO PATH
— EXTERNAL PAGING PATH
— DTMF SENDING PATH
ADDRESS — MUSIC SOURCE PATH
— TONE SOURCE PATH
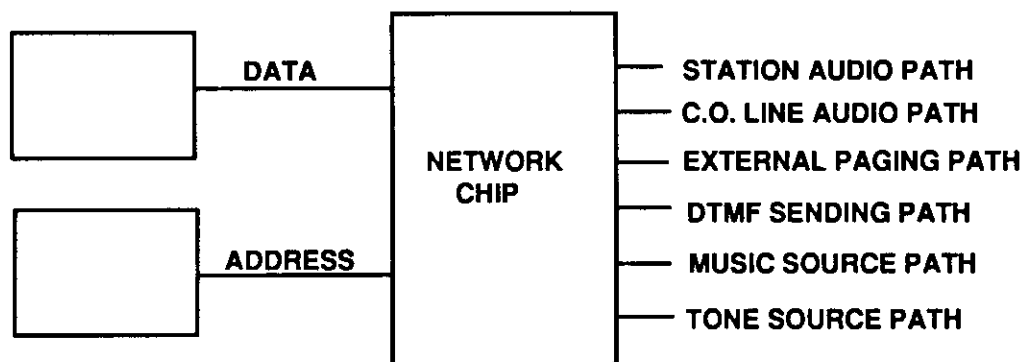
The 12 x 8 cross point supports common audio channels, DTMF sending channel, music source channel, and the external paging source channel. In the event that all common channels are busy and an incoming call is ringing, the system will select the external page channel and ring the appropriate phone(s). If that channel is busy, the system will notify the system operator via the alarm tone. When the power-on sequence takes place, the matrix is instructed to connect all stations with music. This checks the data connection showing the digital communication is working between the KSU microprocessor and the telephone microprocessor. It also checks that the audio path from the KSU network is communicating with the telephone network.

POWER SUPPLY

The power supply section consists of components which change 110/220 AC voltage into DC voltage which the integrated circuits use. Working in conjunction with this circuitry, the Excel series employs an on-line monitoring circuit which detects under voltage and over voltage.

In the event the system looses the AC voltage and system battery backup has been installed, the system detects when the batteries have discharged to such a rate that the KSU is no longer usable. Instead of allowing the batteries to completely discharge which may damage the batteries, the system disconnects the batteries.

When the AC voltage is restored to the KSU, the circuitry also monitors the charging of the batteries. Charging will take place until the monitor circuit detects the batteries is in a charged state; which, in turn, turns off the charging circuit thereby preventing the batteries from being over-charged.

SYSTEM COMPONENTS

308 KSU - The 308 KSU provides for 3 central office lines and 8 electronic telephones. It is a single PCB that contains:

> Main PCB
> Z80-A Microprocessor
> Associated Logic & Memory Circuitry
> Real Time Clock
> RAM Battery Backup
> System Timers
> Speech Path Network Circuitry
> External Paging Circuitry
> Music on Hold Circuitry
> Power Supply & Associated Circuitry

816 KSU - The 816 KSU provides for 6 central office lines and 16 electronic telephones. It contains 2 PCB's, 1 main equipment and 1 power supply, and the following:

> Main PCB
> Z80-A Microprocessor
> Associated Logic & Memory Circuitry
> Real Time Clock
> RAM Battery Backup
> System Timers
> Speech Path Network Circuitry
> External Paging Circuitry
> Music on Hold Circuitry

POWER SUPPLY

AC to DC rectification
External system battery backup monitoring and control
DC battery input fuse
Battery backup

ELECTRONIC TELEPHONE SETS

There are 2 models of telephones. The 308 telephones support 3 C.O. lines and 8 stations. It has a built-in speaker phone and an optional LCD unit may be installed at a later date. Any phone location may be used to program the system database as long as the correct security code is entered. All phones support dual color LED's to distinguish active lines and utilize separate volume controls for C.O. line ringing and hands-free conversation. All phones are equipped with magnetic receiver transducers compatible with most hearing aid pick-up coils.

The 308 telephones have the capability to use 8 personal speed dialing numbers.

The 816 telephones utilize the same features as the 308, but support 8 C.O. lines and 16 stations.

The 816 telephones have the capability to use 16 personal speed dialing numbers.

DOORPHONE

The 308 KSU supports 1 Doorphone PCB which is connected to the 308 KSU. Calling to and from the KSU is standard and also a door lock relay contact is provided. The user, after answering the call, may depress the door key which, in turn, activates the relay. Programming in the database activates the hardware.

2 C.O. LINE EXPANSION CARDS

The 816 KSU supports a 2 C.O. line expansion card which adds 2 additional C.O. lines giving a total of 8 C.O. lines. This card is connected to the 816 main equipment. Programming database activates the 2 additional C.O. lines. In addition, the 2 lines can also be configured as tie lines or ring down circuits.

LCD DISPLAY KIT

The LCD Display Kit is field installed and allows the user to upgrade to a display telephone without having to replace the original telephone. No programming is needed to enable this feature.

OFF-HOOK CALL ANNOUNCE ADAPTOR

The Ex-ACA adaptor and announce equipment provides the user with off-hook voice announce capability on a per station basis. The unit simply snaps onto the base of the 308 or 816 telephone and is connected to customer provided optional external equipment at the KSU location. One trunk port is used to restrict or allow access to this channel.

WALL MOUNT KIT

The WMK is a dual function kit which allows the phone to be attached to a wall in a vertical manner or by reversing the unit, provides a 28 degree elevation to the telephone.

BATTERY BACKUP

The battery backup consists of two maintenance-free lead acid 12 volt DC batteries connected in series which provides 24 volts DC to the 308/816 key system unit when commercial power has failed. The batteries are monitored and charged by circuitry contained within the KSU. When fully charged, the batteries will supply power for 6 to 8 hours. The batteries may be purchased individually or in an easy to install wall mount rack kit with all necessary cables included.

308 TELEPHONE SET
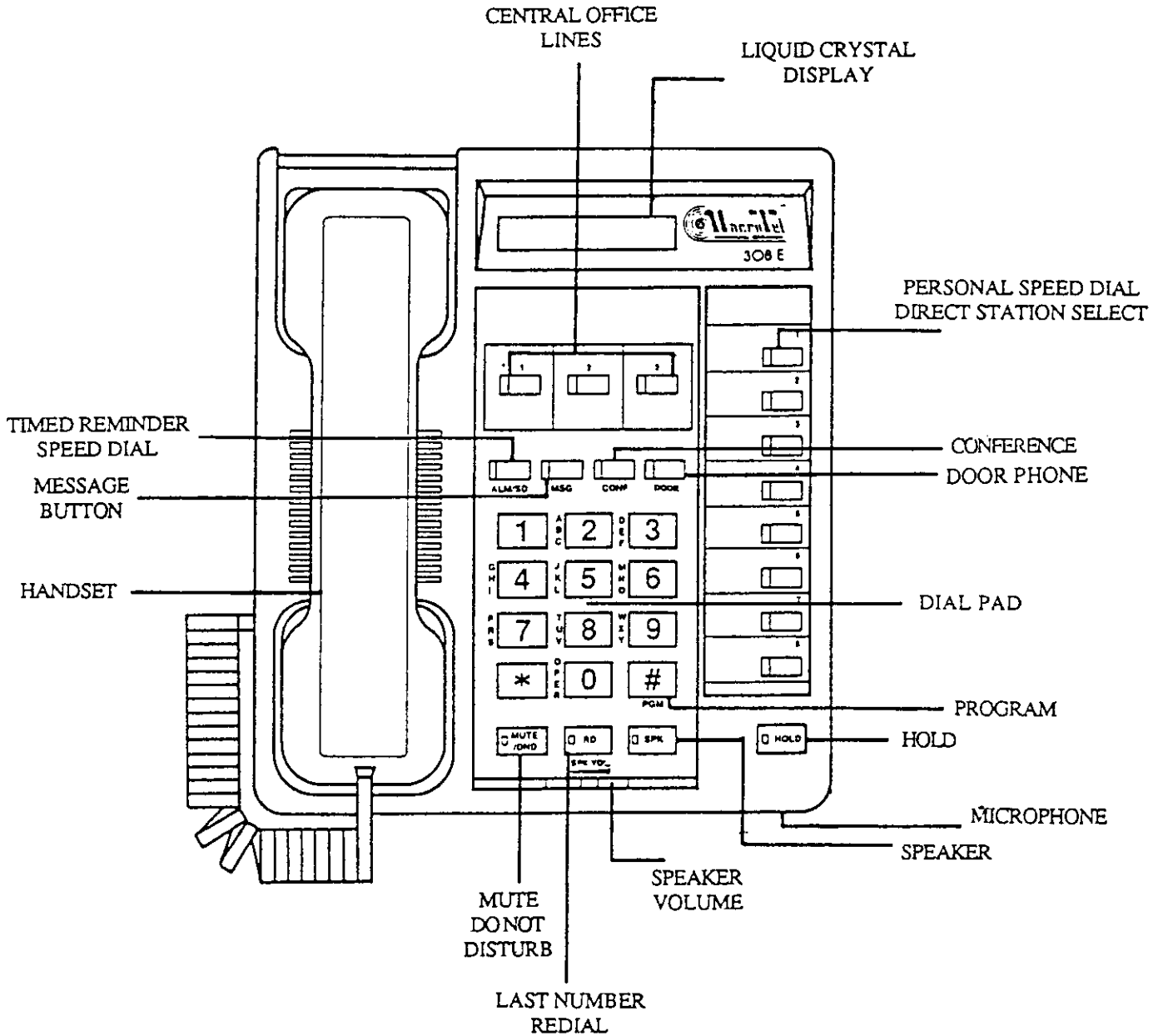
Figure 1

816 TELEPHONE SET

CENTRAL OFFICE
LINES

LIQUID CRYSTAL
DISPLAY

PERSONAL SPEED DIAL
DIRECT STATION SELECT

TIMED REMINDER
SPEED DIAL

MESSAGE
BUTTON

HANDSET

CONFERENCE

PAGE

DIAL PAD

PROGRAM

HOLD

MICROPHONE

SPEAKER

MUTE
DO NOT
DISTURB

SPEAKER
VOLUME

LAST NUMBER
REDIAL

Figure 2

15
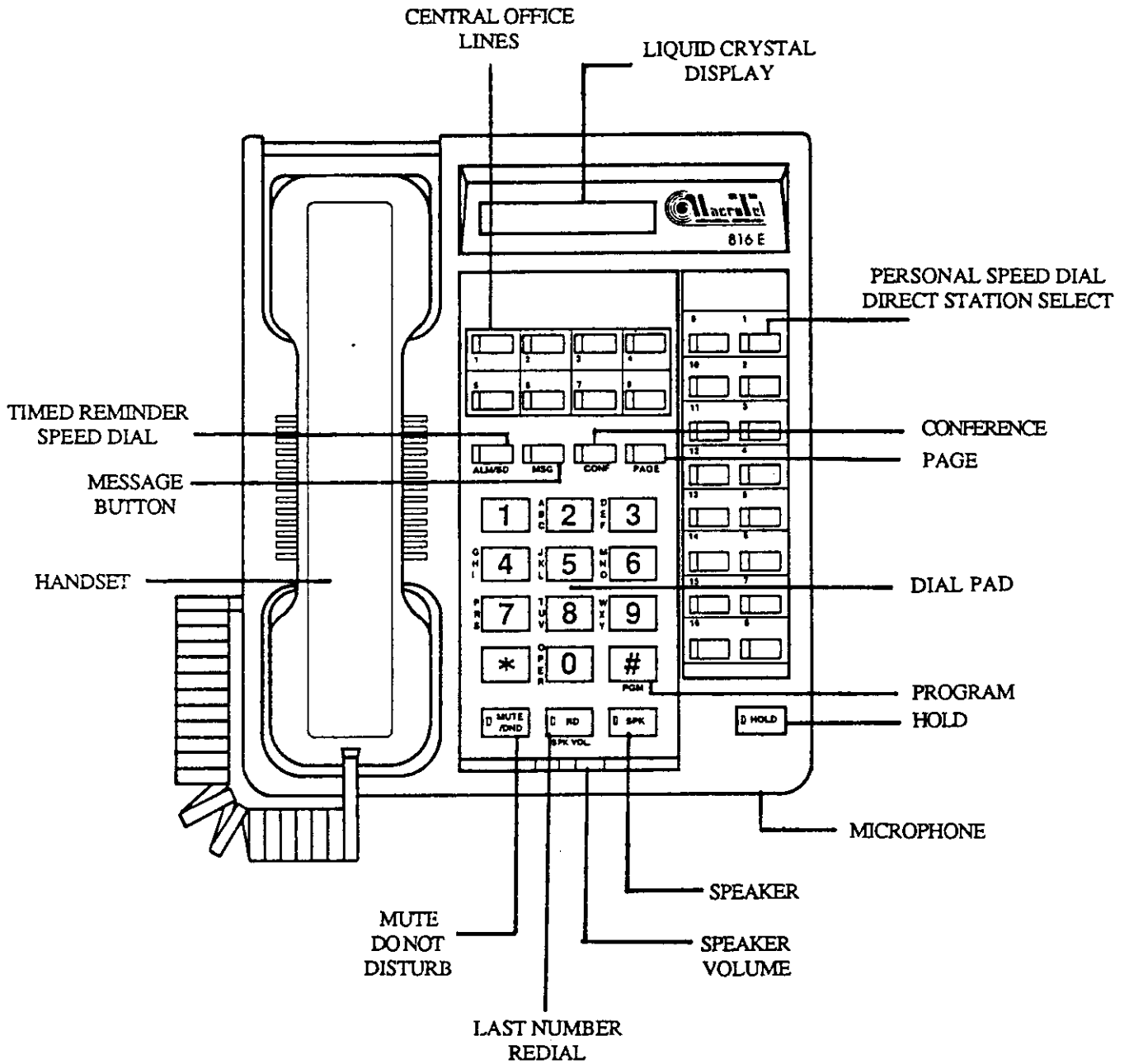
SYSTEM CAPACITIES

		Excel 308	Excel 816
✱	Main Board	1	1
✱	Power PCB	0	1
✱	Optional PCB	1 (Doorphone)	1 (2C.O. Lines)
✱	Line	3	6
✱	Optional Lines	0	2
✱	Stations	8	16
✱	Doorphone	1	0
✱	Ringing Stations		
	Day	8	8
	Night	8	8
	External Page Zone	1	1
	Internal Page Zone	1	1
✱	Speed Calling		
	Personal (30 Digits)	8	16
	System (30 Digits)	90	90
✱	Conference Calls		
	Number of Parties	5	5
	Simultaneous Conferences	4	8
✱	Forwarded Stations	8	16
✱	Toll Restricted Classes	5	5
✱	Boss/Secretary Station	1	1
✱	Control Method Stored Program	Z80A	Z80A

ELECTRICAL SPECIFICATIONS

INPUT PRIMARY

INPUT

308 - 110/220 VAC 60 HZ 25 WATTS

816 - 110/220 VAC 60 HZ 45 WATTS

OUTPUT - SECONDARY	+ 6 VDC, + 24 VDC
CIRCUIT VOLTAGE	+ 5 VDC, + 12 VDC, + 24 VDC
STATION VOLTAGE	+ 24 VDC

MUSIC ON HOLD SPECIFICATIONS

INPUT LEVEL	600 OHMS
INPUT VOLTAGE MAXIMUM	250 mV (NOMINAL) @ -10 dbm
OUTPUT MAXIMUM	1 VOLT RMS
USE JOHNSON PLUG	MINIATURE 1/8" (3.5mm)

EXTERNAL PAGING SPECIFICATIONS

OUTPUT LEVEL	250 mV (NOMINAL) @ -10 dbm
OUTPUT MAXIMUM	400 mVRMS

HANDSET	DYNAMIC TRANSDUCERS

BATTERY SPECIFICATIONS

LOAD SIDE
308   1.5A @ + 24 VDC
816   2.5A @ + 24 VDC
MINIMUM BATTERY SIZE   6 AH
MAXIMUM BATTERY SIZE 40 AH

Note: 6 AH battery provides about 8 hours of service with 8 telephones. Recharge of 6 AH battery supply is approximately 24 hours.

KSU PHYSICAL CHARACTERISTICS

	Weight	Dimensions
308	9 lbs.	15"H x 11.5"W x 4.25"D
816	10 lbs.	15"H x 11.5"W x 4.25"D

ENVIRONMENTAL SPECIFICATIONS

TO PROVIDE OPTIMAL PERFORMANCE OF THE EQUIPMENT, THE FOLLOW-
ING GUIDELINES SHOULD BE FOLLOWED:

AMBIENT ROOM TEMPERATURES

KSU - OPERATING RANGE

308 - 5°C (41°F) - 40°C (104°F) *
816 - 5°C (41°F) - 40°C (104°F) *

RELATIVE HUMIDITY

NOT MORE THAN 90% NON CONDENSING

VENTILATION

*This equipment uses state of the art components which generate very little heat.
Although it does not require strict environmental conditions, it is strongly suggested
that the equipment (mainly the KSU) be in a controlled environmental area. Places
such as garages, cleaning rooms, etc., have high heat, dust and/or corrosive air
which reduces the life of any equipment.

4.0 INSTALLATION

OVERVIEW

To complete the installation of the Excel series KSU and associated equipment, in a timely and efficient manner, it is essential to establish a complete installation plan. Be sure to complete the customer data programming sheets before getting started.

The following sections offer a detailed pictorial view on installation of the equipment with remarks, as needed.

Please completely read through the Installation and Programming sections before attempting to install the equipment.

INSTALLATION

INSTALLATION PRECAUTIONS

* DO NOT run cables parallel to fluorescent light fixtures or AC lines. If unavoidable, run the cable across at 90 degree (right) angles.

* DO NOT run station cables inside electrical conduit already occupied by an AC power cable. This will induce AC voltage into the cable and also is in violation of the National Electrical Code.

* DO NOT exceed 25 OHMS for each station cable length.

* Avoid installing in the following places. (Doing so may result in malfunction, noise, or discoloration.)

* In direct sunlight and hot, cold, or humid places. (Temperature range: 41º F - 104º F.)

* Due to sulfuric gases produced in areas where there are thermal springs, etc., damage to the equipment or contacts may occur.

* Places in which shock or vibration are frequent or strong.

* Dusty places, or areas where water or oil may come into contact with the unit.

* Near high-frequency sewing machines, electric welders, copy machines or motors.

* On or near computer, telexes, or other office equipment, as well as microwave ovens or air conditioners. (It is preferable not to install in the same room with the above equipment.)

* Near radio broadcast antennas (including short wave).

* Install at least 5 feet from radios and televisions.

* DO NOT OBSTRUCT AREA AROUND THE ELECTRONIC KSU SWITCH ING SYSTEM. (FOR REASONS OF MAINTENANCE AND INSPECTION - BE ESPECIALLY CAREFUL TO ALLOW SPACE FOR COOLING ABOVE AND AT THE SIDES OF THE KSU.)

EQUIPMENT VERIFICATION

Verify that all components on the packing slip are included in the boxes. For reference, utilize the chart below to assure that all components have been received. Any damaged material should immediately be reported to the carrier. Report any discrepancies of required equipment to the manufacturer.

SYSTEM COMPONENTS
EXCEL 308/816

UNIT	PART NUMBER	DESCRIPTION
308 KSU	2208001	Electronic Switching System (3x8)
Doorphone PCB	2208007	Doorphone Interface PCB
308 Telephone	2208004	3 Line/8 Station Speakerphone
816 KSU	2208002	Electronic Switching System (6x16)
2 Line Exp. PCB	2208003	2 Line Expansion PCB (C.O. line, tie line, ring down circuits)
816 Telephone	2208005	8 Line/16 Station Speakerphone
LCD Display	2208006	LCD Display Module
WMK	2208015	Wall Mount Kit
Ex-ACA	2208020	Off-Hook Call Announce Adaptor
12 v.d.c. Battery	2208021	Quantity of two required for battery backup
Battery Backup Kit	2208022	Wall Mount Kit, 2 batteries and associated cables

INSTALLATION

INSTALLATION LOCATION CHECKLIST

1. Select the KSU location to minimize station cable run lengths. DO NOT exceed measurements of 25 ohms or 1310 feet , using 24 AWG wire. The ohm value is the loop measurement. The length is the maximum one way measurement from the KSU.

2. Select a wall that is strong enough to support twice the weight of the equipment and plywood to be mounted.

3. The main distribution frame (MDF) requires a minimum 3 x 4 foot, 3/4 inch plywood backboard. The KSU is mounted on this backboard, along with connecting block(s) and modular jack assemblies.

Allow room near the KSU for the paging amplifier, battery back-up equipment, and the external music source, if used. To avoid interference, the music source should be placed a minimum of 5 feet away from the KSU.

Place the KSU within 9 feet of an isolated, dedicated, 110/220 VAC, single-phase, commercial power source. DO NOT use an extension cord. This MUST be an isolated, dedicated, AC circuit for proper operation. The ground wire must be dedicated to this outlet. Run the power, neutral, and ground wires directly from a separate circuit in the breaker box to the KSU outlet. DO NOT plug any other equipment into this outlet. Make sure there are AC outlets for a music source and a paging amplifier, if they are to be installed. These outlets MUST NOT be on the same circuit as the outlet for the KSU.

Prepare a floor plan for the keyset locations, using a star (home-run) configuration. Include each keyset's intercom number 1-8. Intercom number 4 is assigned to the system attendant in software programming 1-8 (1-16).

The system location should not be exposed to direct sunlight, high humidity, heat, dust, or strong magnetic fields (such as heavy motors or large copy machines).

Simple air space should be provided for the KSU since the power supply is convection cooled. DO NOT block the cooling vents located on the top of the KSU. Never place anything on top of the KSU.

TOOLS CHECKLIST

1. A high-impedance, digital multimeter is required to ensure the correct wiring and voltage on the keyset modular jack assembly.

2. Standard telephone hand tools.

3. 2-pair (4 conductor) twisted cable to run from the MDF to each keyset location.

4. 4-conductor modular jack assemblies for terminating the station cables at keyset locations.

5. Punch down tool, Phillips head screwdriver, flat head screwdriver, and drill and bit set.

INSTALLATION

KSU CONNECTIONS

308 KSU

C.O.LINES

25 PAIR
CONNECTOR

110 / 220 VOLT SWITCH

ON / OFF SWITCH

SYSTEM
BATTERY BACKUP

110 / 220 VOLT
50 / 60 HZ

66 BLOCK

DOOR PHONE

DOOR PHONE
RELAY CONTROL

PAGING
AMPLIFIER
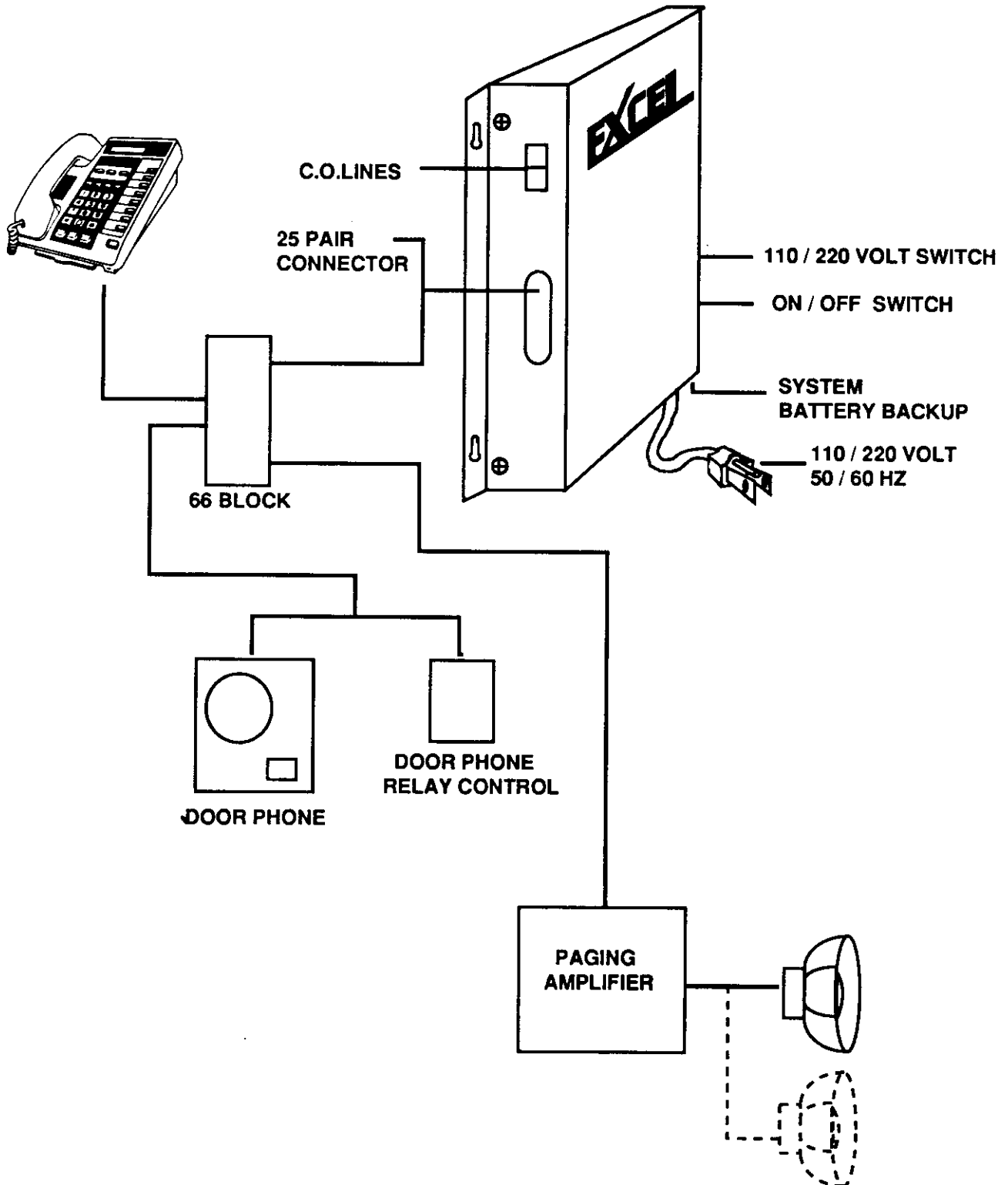
Figure 3

308 FACILITIES LOCATION

SHEET METAL CABINET

EXTERNAL MUSIC ON HOLD INPUT

C.O. LINES

F.C.C. LABEL

STATION , EXT. PAGING, DOOR PHONE RELAY CONNECTIONS

110 / 220 VAC SWITCH

POWER SWITCH

AC FUSE

BATTERY BACK-UP INPUT

CENTRAL OFFICE LINE MODULAR JACKS

BATTERY ON / OFF SWITCH

RAM MEMORY NICAD BATTERY

25 PAIR CONNECTORS FOR STATIONS EXT. PAGING

POWER SUPPLY FUSE

POWER ON LED

308 MAIN EQUIPMENT BOARD
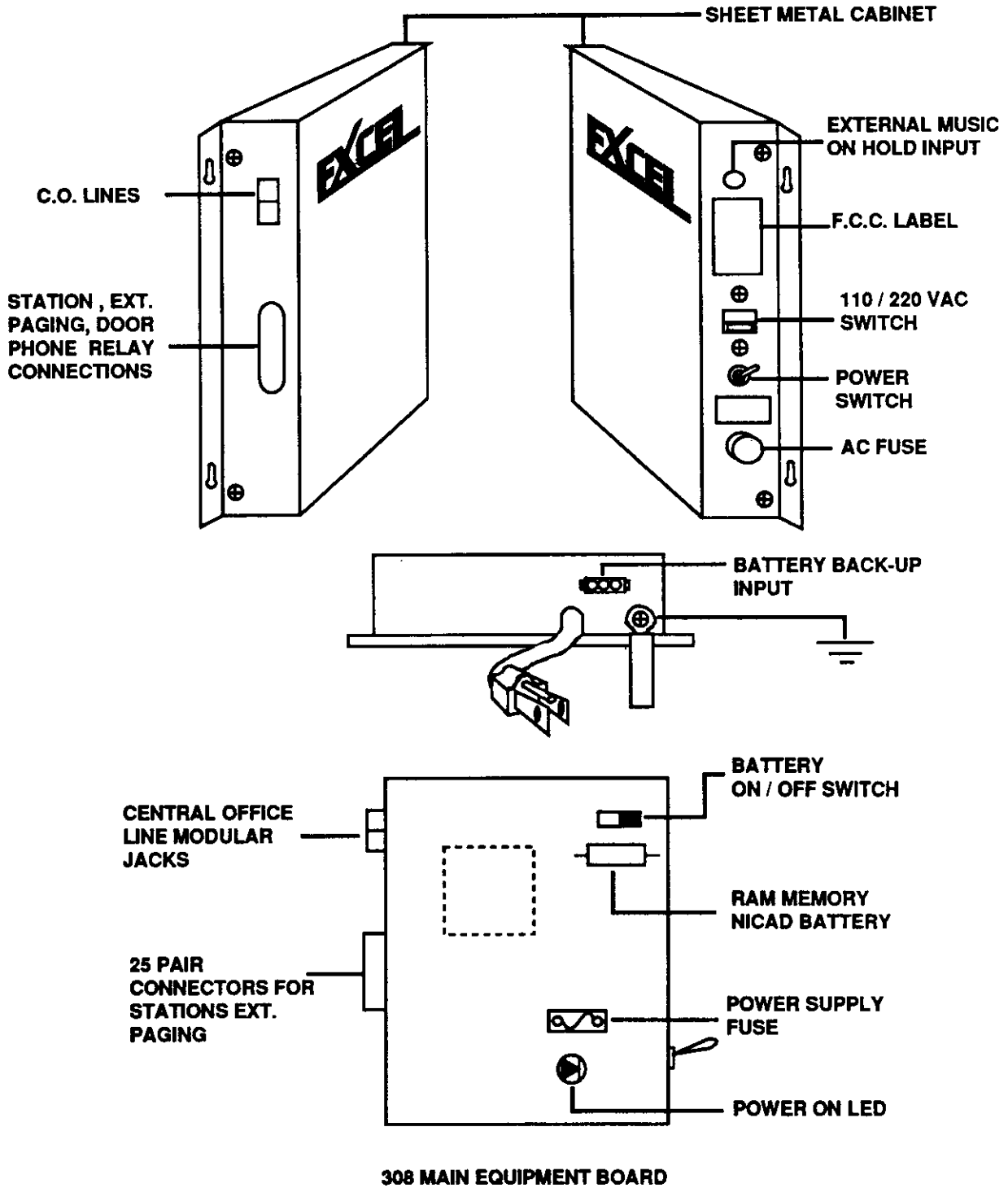
INSTALLATION

Figure 4

25

KSU CONNECTIONS

816 KSU

C.O.LINES

25 PAIR CONNECTOR

110 / 220 VOLT SWITCH

ON / OFF SWITCH

SYSTEM BATTERY BACKUP

110 / 220 VOLT 50 / 60 HZ

66 BLOCK

PAGING AMPLIFIER
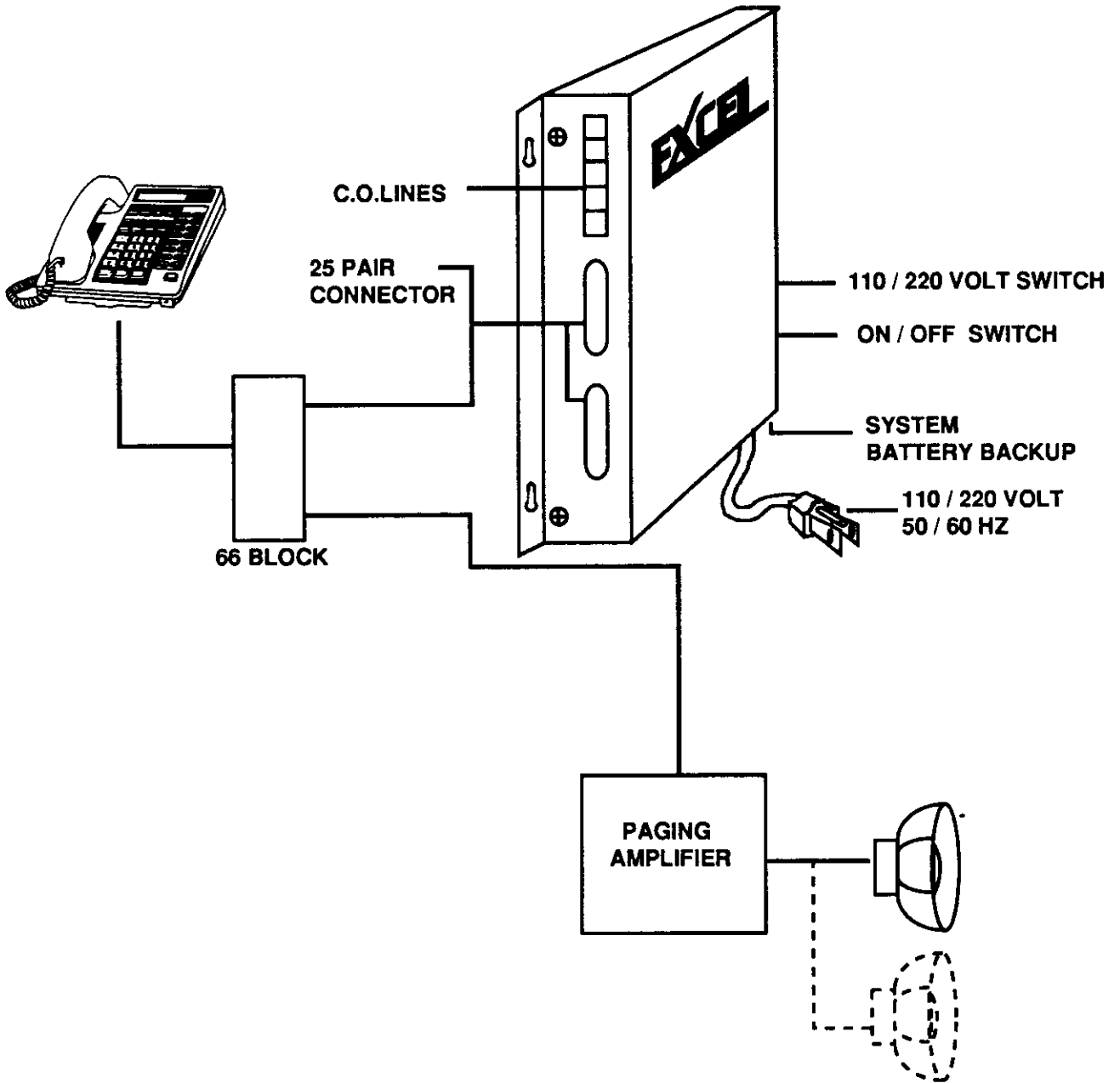
Figure 5

816 FACILITIES LOCATION

SHEET METAL CABINET

C.O. LINES

STATION,
EXT. PAGING,
CONNECTIONS

EXTERNAL
MUSIC ON
HOLD INPUT

F.C.C.
LABEL

110 / 220 VAC
SWITCH

POWER
SWITCH

AC FUSE

BATTERY BACK-UP
INPUT

CENTRAL OFFICE
LINE MODULAR
JACKS

25 PAIR
CONNECTORS
FOR STATIONS
EXT. PAGING

BATTERY
ON / OFF SWITCH

RAM MEMORY
NICAD
BATTERY

POWER
SUPPLY
FUSE

POWER ON LED

816 MAIN EQUIPMENT BOARD

Figure 6

27
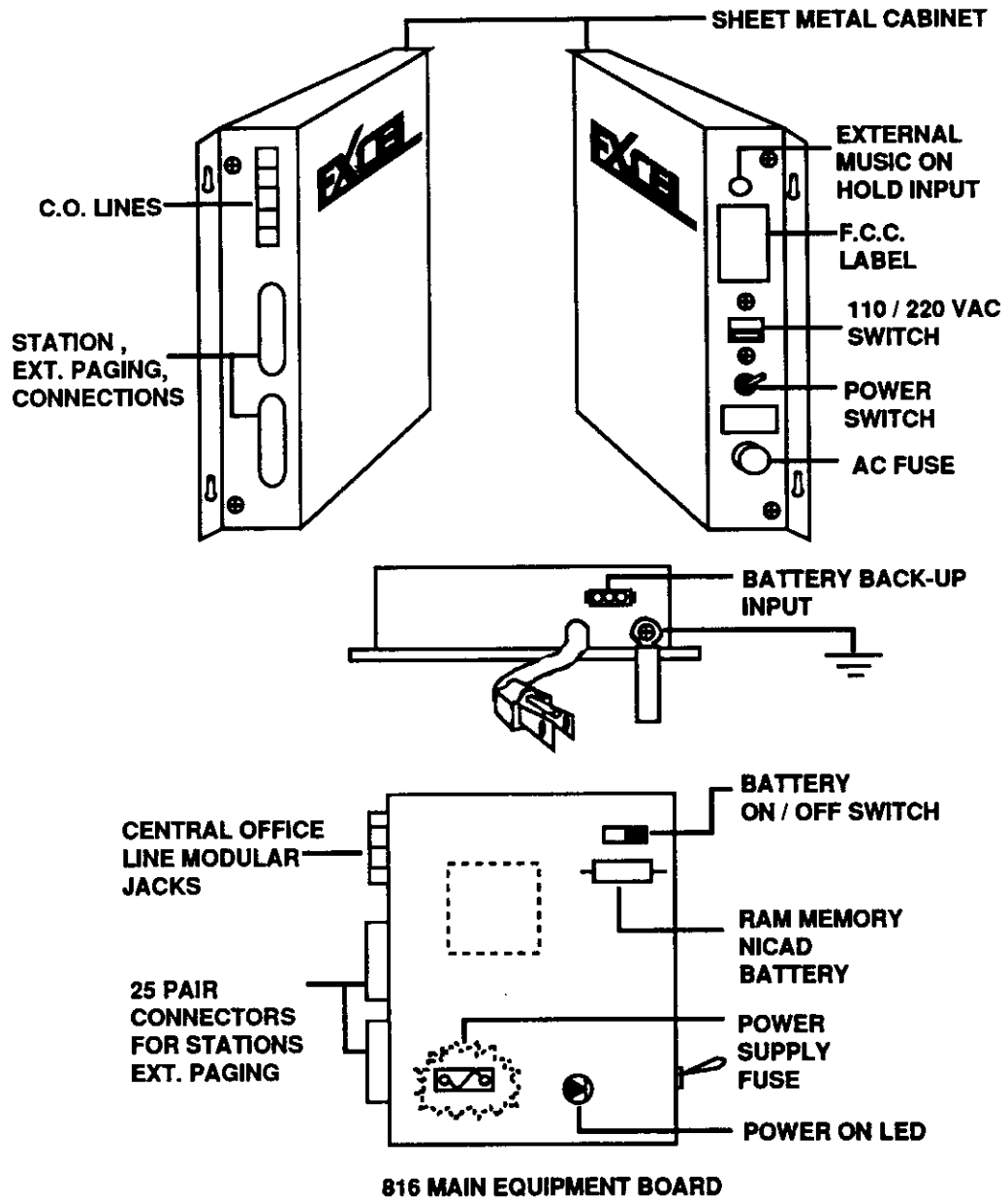
MOUNT THE MAIN DISTRIBUTION FRAME (MDF)

Plan the location for the 66 blocks, central office connectors, KSU and any other assemblies included in the installation. Be sure to connect the frame ground.

SYSTEM CABLING

STATION CABLES

Using the floor plan developed in pre-installed planning, run 2-pair twisted cable (3-pair if installing Ex-ACA) from the MDF to each keyset location. Label both ends of every cable with the keyset intercom number (1-8 or 1-16). Follow these guidelines when running cable:

Avoid cable runs parallel to fluorescent light fixtures of AC lines not in conduit. If these obstacles are unavoidable, run the cable across them at right angles.

DO NOT run station cables inside electrical conduit already occupied by the AC power cable. To do so is a violation of the National Electrical Code.

DO NOT run station cables near equipment with electric motors or past strong magnetic fields (copy machines, heavy motors, welding equipment, etc.).

DO NOT place station cables where they can be rolled over by office furniture or stepped on.

DO NOT allow the station cable length to exceed 25 ohms, using 24 AWG wire. The ohm value is the loop measurement; the foot (meter) length is the maximum one-way measurement from the KSU.

TERMINATE STATION CABLES AT THE MDF

Terminate each station cable at the MDF as described below:

1.   Mount the station 66 block assembly on the MDF backboard.

2.   Ensure that each station cable is correctly labeled with the keyset intercom number.

3.   Using the punch down tool, terminate the cables for each set in accordance with Table 1 or 2.

TERMINATE STATION CABLES AT KEYSET LOCATIONS

Terminate the keyset end of each station cable on a 4-conductor modular jack assembly as shown in Figure 3.

MOUNT THE KSU

Mount the KSU using the diagram shown below.

11 5/16"

12 3/8"

WHEN MOUNTING BACKBOARD TO A
CONCRETE OR MORTOR WALL,
ALWAYS USE ANCHOR PLUGS.

3/4" PLYWOOD

PLACE UNIT ON TO
SCREWS, SLIDE DOWN
AND TIGHTEN SCEWS.

ANCHOR
PLUGS
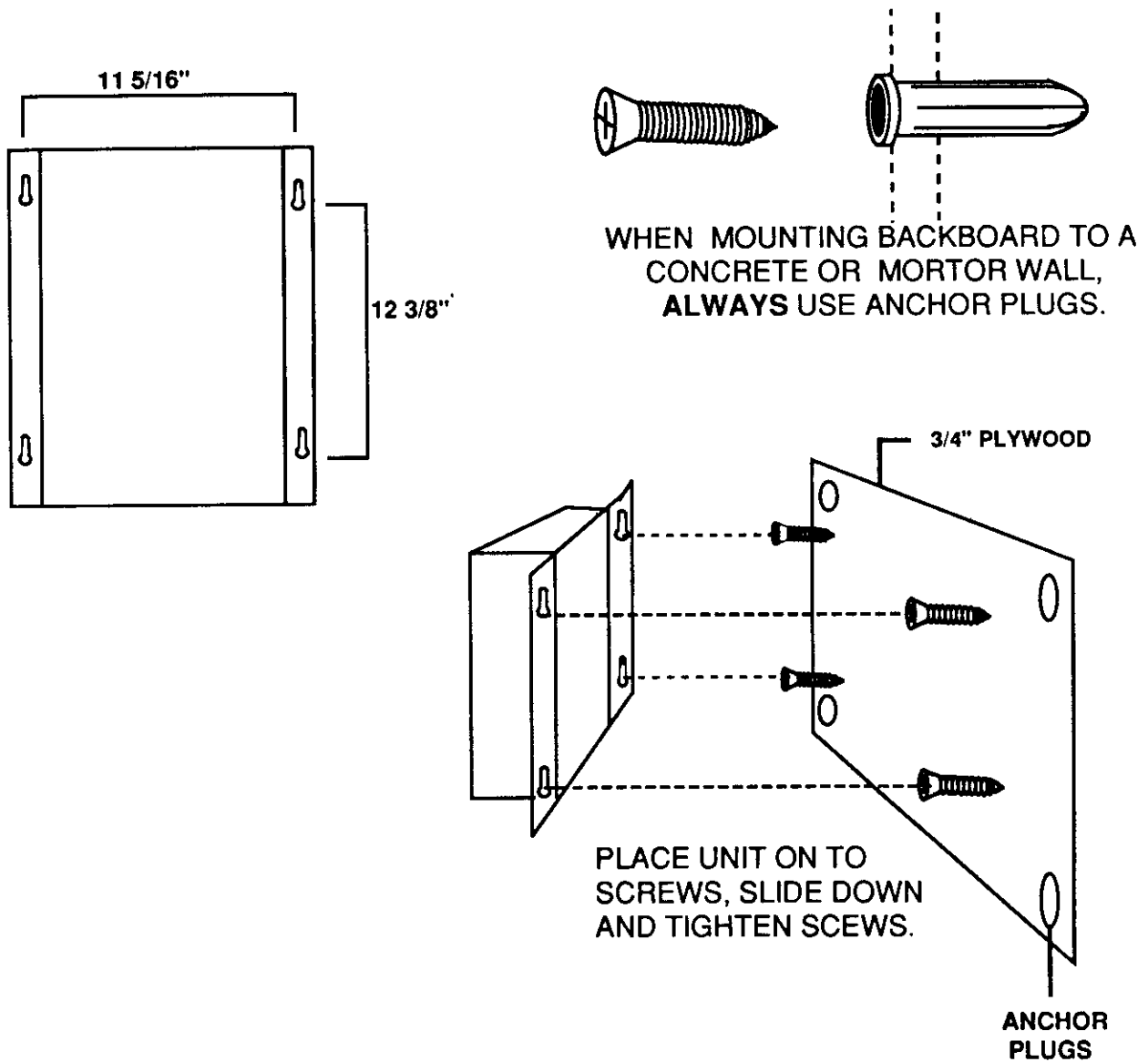
Figure 7

FRAME GROUND CONNECTIONS

EXTERNAL
24 VOLT
BATTERY
INPUT

12 AWG SOLID COPPER
GROUND CONNECTION

POWER
CORD
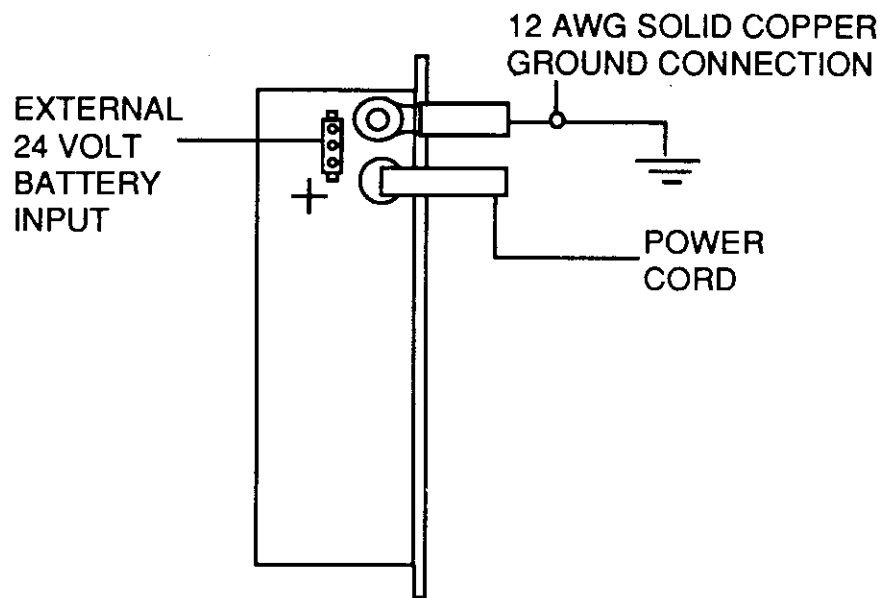
Figure 8

110/220 VOLTAGE CONNECTION:

1. Determine the proper voltage of the AC wall receptacle using a meter, if necessary.

2. Move the switch on the bottom of the KSU to the proper location.

INSTALL THE KEYSETS

Unpack and inspect each keyset for damage. Along with the keyset, the box should contain a 6-foot line cord, a coiled handset cord, a handset, and a plastic bag of key designation labels.

With the KSU AC power on, check the voltage on each modular jack assembly as follows:

a. Measure the voltage on the YELLOW (+24) terminal with respect to the RED (GND) terminal. Place the common probe of the voltmeter on the RED terminal. It must measure +24V ±5VDC. If -24VDC is measure, check the cabling for a reversed pair.

b. Check the voltage on the BLACK (+24) and GREEN (GND). The voltage condition is the same.

Connect all keysets to their respective connectors with the provided modular cord.

CONNECTION OF THE EXCEL SERIES TELEPHONE
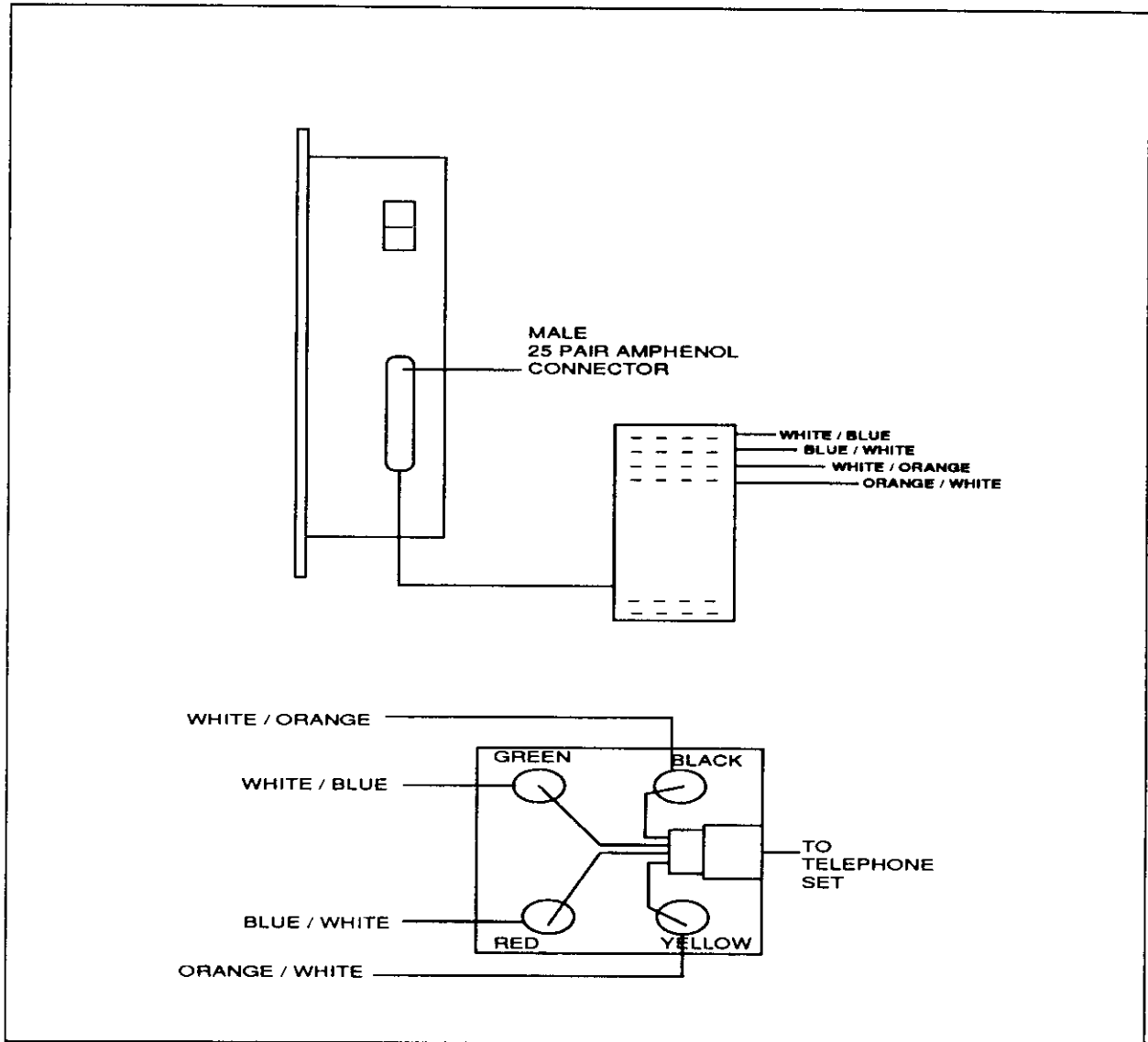
Figure 9

NOTE:

1. Use 2 or 3 pair twisted wire to prevent the possibility of cross-talk.

2. Review Installation Precautions as listed on page 20.

3. Refer to Table 1 (308) and Table 2 (816) for 25 pair connector station assignment.

CENTRAL OFFICE LINE

Assure that the central office lines have been installed on the backboard. These lines will be connected to the KSU with a modular cord after the KSU has been mounted. Follow the diagram on Figure 10.

KEY SYSTEM UNIT

BEFORE MOUNTING THE KSU

Unpack the KSU and lay it on a flat surface with the cover facing up. Open it by removing the four retaining screws and lifting off the cover. The PCBs contain static-sensitive components. Lift them only by the edges and carefully handle the components while inspecting them in the next step. Always use a static wrist strap for protection.

Inspect the fuses for the correct voltage and current rating. The AC fuse (3A, 250V, fast-acting) is accessible from the outer right side of the KSU. The DC fuse (3A, 250V, fast-acting) is mounted on the lower left corner of the Main Control PCB. Ensure that the ROM integrated circuits are properly seated in their sockets.

If the KSU or any of its components are damaged, contact MacroTel International Corporation.

****IMPORTANT****

You MUST activate the NICAD battery by setting the BACK-UP switch (2 pin DIP) to the "ON" position. Otherwise, the database memory will not be protected during a power outage. Refer to Figure 11 for location of back-up switch.

INSTALLATION

CENTRAL OFFICE LINE FOR 308/816 CONNECTION
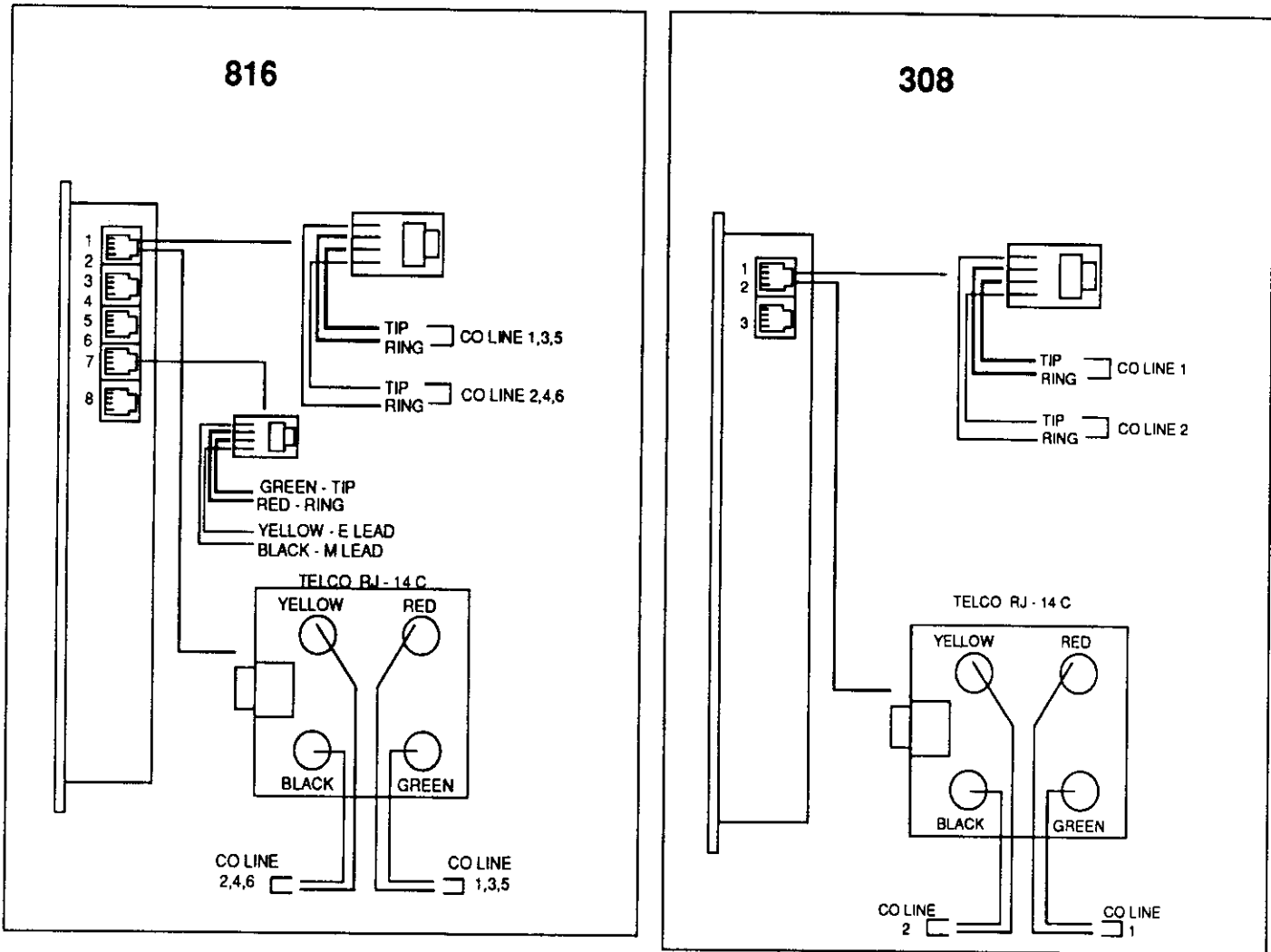
Figure 10

NOTE:

1.   Incorrect wiring of C.O. may cause the Excel KSU to malfunction. If so, refer to the Troubleshooting section for corrective procedures.

MEMORY BATTERY INITIALIZE

ON   OFF

NICAD BATTERY
ON / OFF SWITCH

3.7 NICAD
BATTERY
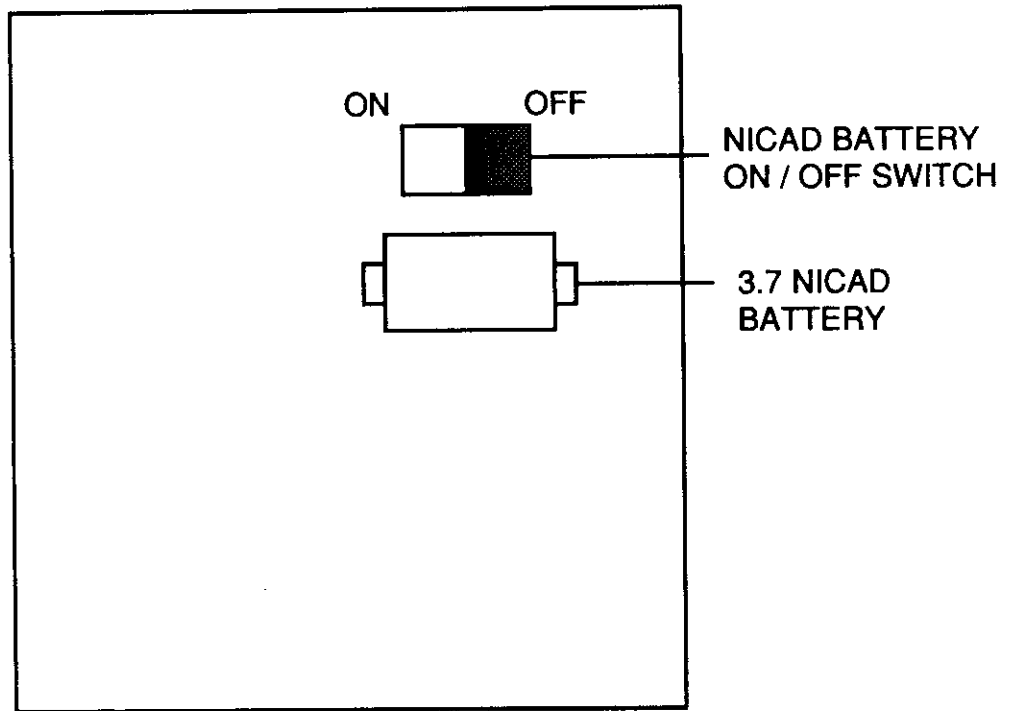
Figure 11

NOTE:

1. Remove the cover from the unit.

2. Locate the battery on/off switch and turn the switch on.

3. The battery will normally last 40 hours during power outage, if it is fully charged.

INSTALLATION OF DOORPHONE IN 308 KSU

BATTERY

DOOR
PHONE
PCB

XFMR

CASE
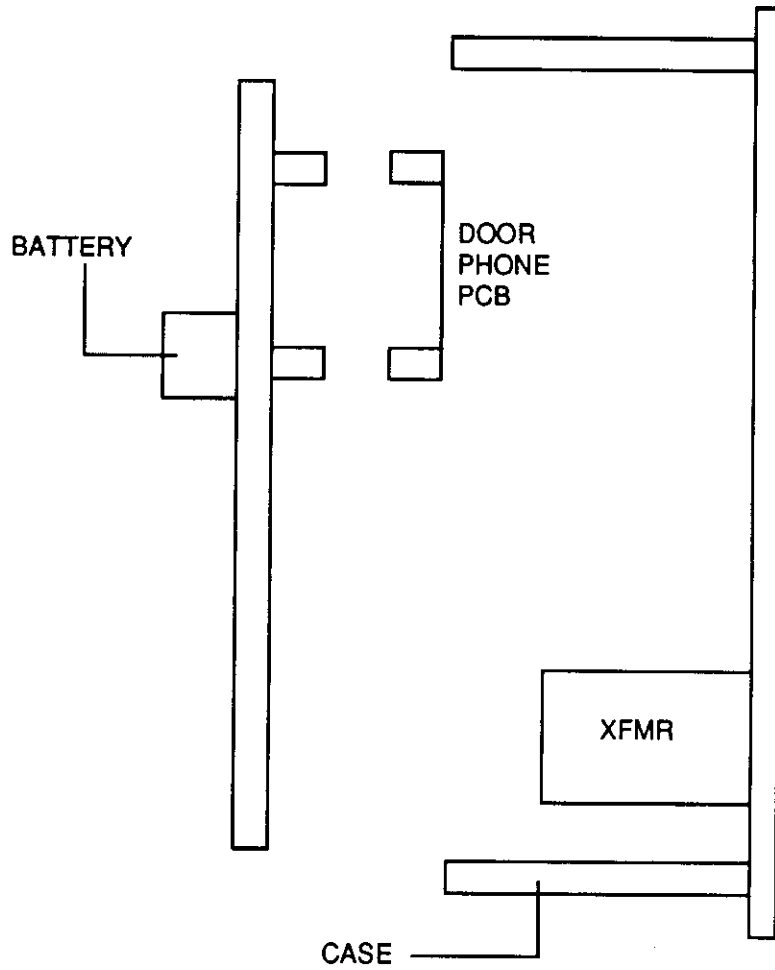
Figure 12

INSTALLATION OF 2 LINE EXPANSION PCB
IN 816 KSU

2 LINE
P.C.B.

BATTERY

**2 LINE PCB
SWITCH SETTING**

DIP SW	LINE 7					LINE 8				
	11	12	13	14	15	21	22	23	24	25
C.O.	0	1	0	0	ON	0	1	0	0	ON
E/M	1	0	1	1	OFF	1	0	1	1	OFF
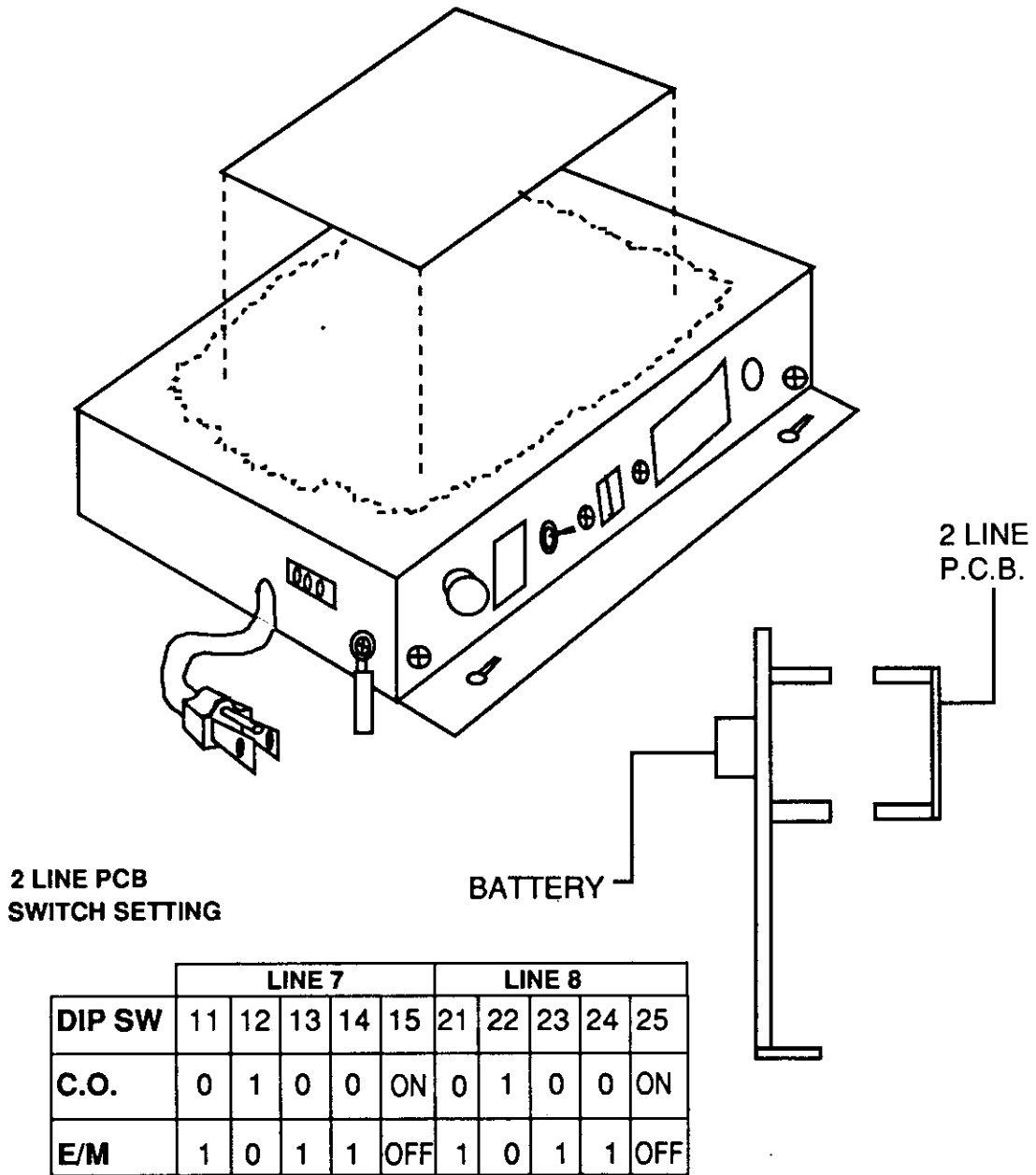
Figure 13

MUSIC ON HOLD INSTALLATION
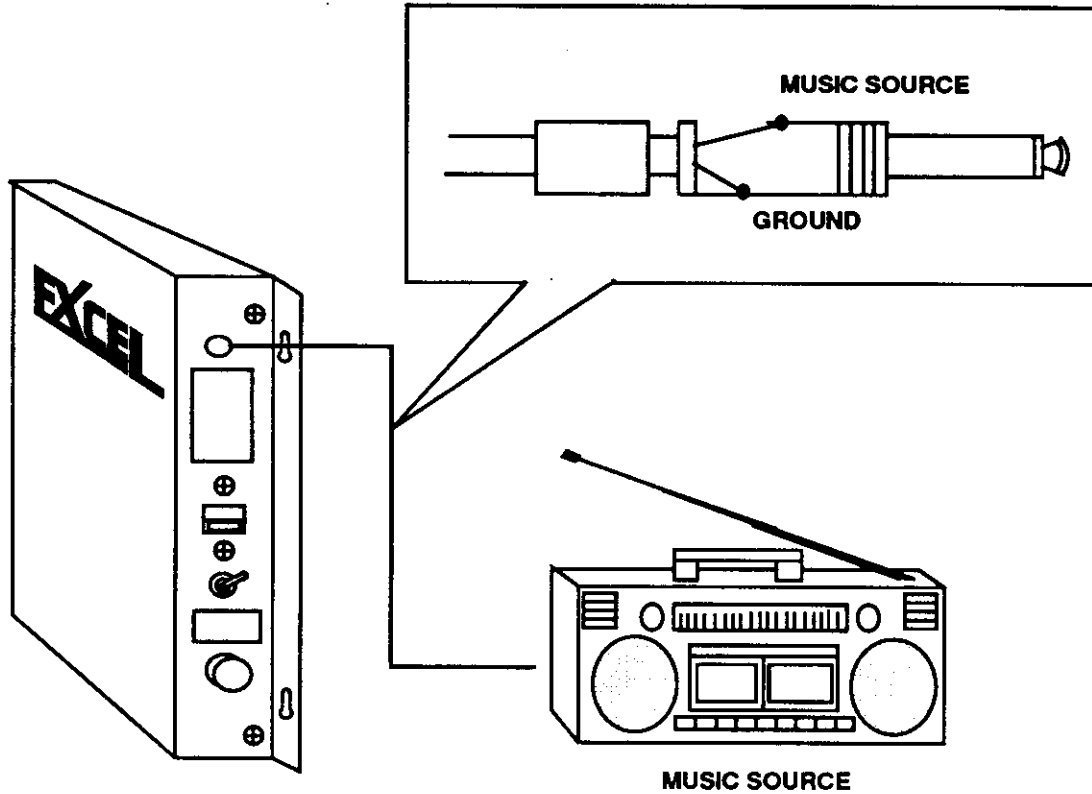
Figure 14

NOTE:

1.   Always used shielded cable.

2.   Do not connect radio source to same AC outlet as KSU.

3.   Locate music source a minimum of 5 feet away from KSU to prevent RFI interference.

4.   A chime tone will automatically be connected to circuits placed on hold or the background music channel unless a miniature phone plug is placed in the music source jack.

OFF-HOOK CALL ANNOUNCE ADAPTOR

STATION 66 BLK

K.S.U.

C.O. LINE

HANDS-FREE TALK-BACK
PAGING
UNIT.

WH/BL PAIR

WH/OR PAIR

WH/GRN PAIR

POWER
SUPPLY

110V AC

BASE UNIT

PHONE LINE

3 PAIR CORD
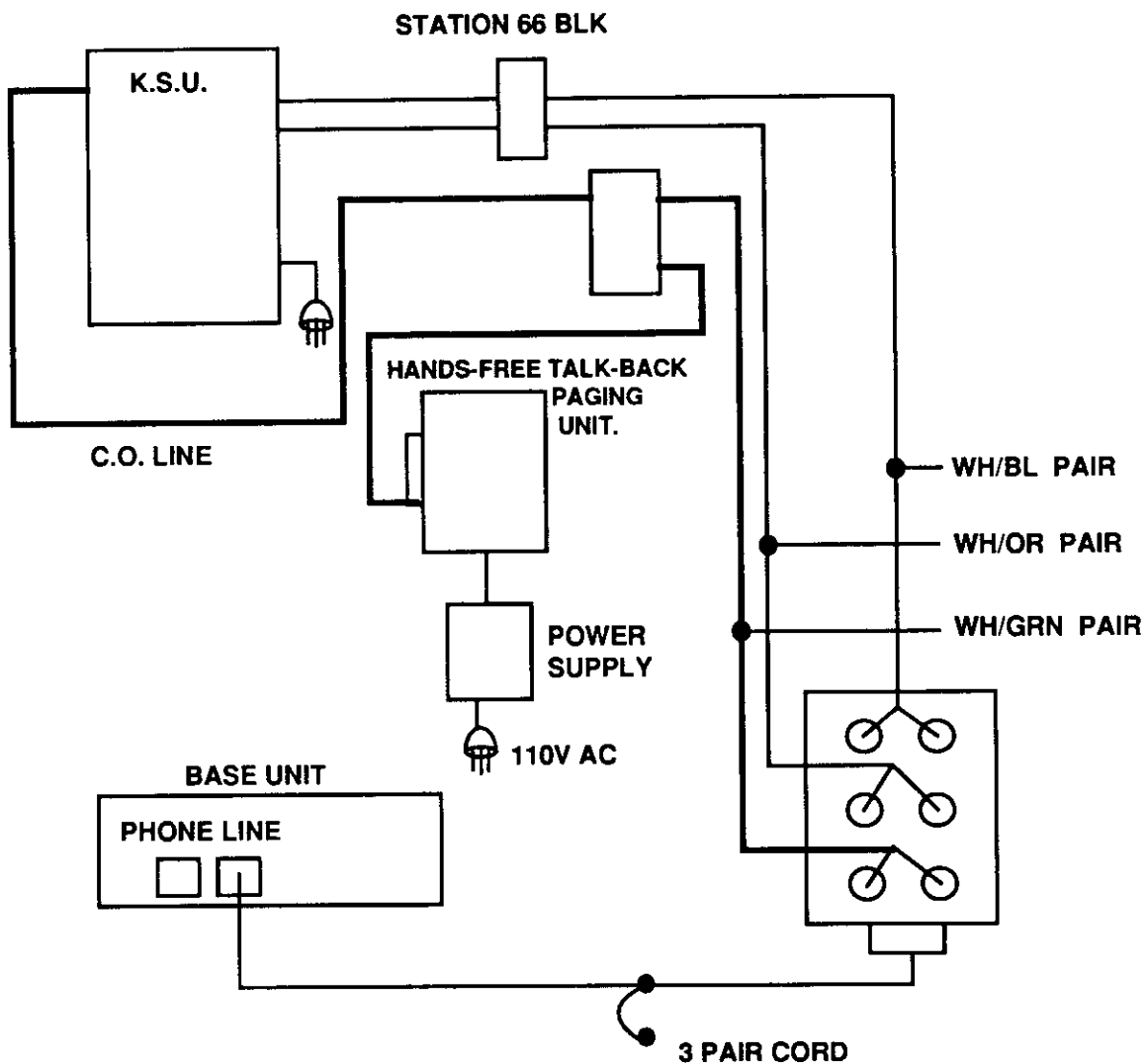
Figure 15

BATTERY BACK-UP

308 / 816 KSU
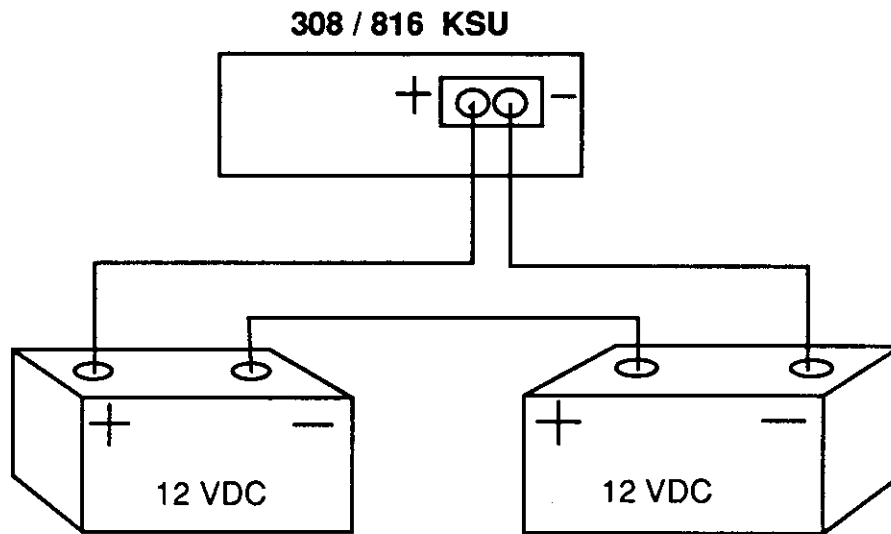
12 v.d.c. battery - P/N 2208021
Battery backup kit - P/N 2208022

Figure 16

CONNECTION OF EXTERNAL PAGING SPEAKER

PROVIDES ONE DRY CONTACT CLOSURE

25 PAIR AMPHENOL CONNECTOR

66 M125

AMPLIFIER
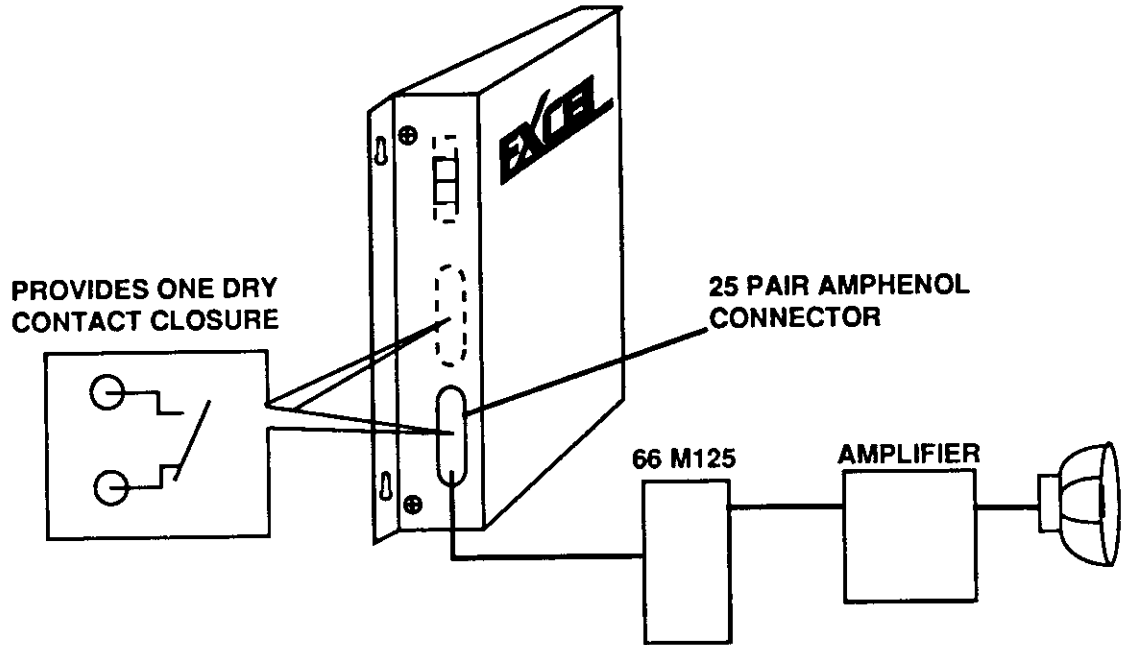
816

	CN-1	CN-2	
AUDIO		ORANGE / YELLOW	17
		YELLOW / ORANGE	42
CONTACTS	GREEN / YELLOW		18
	YELLOW / GREEN		43

308

	CN-1	
AUDIO	GREEN / VIOLET	23
	VIOLET / GREEN	48
CONTACTS	ORANGE / VIOLET	22
	VIOLET / ORANGE	47

Figure 17

LCD DISPLAY KIT INSTALLATION

CAUTION - use a wrist strap when performing this installation.

1. Remove the two Phillips head screws on base of telephone.

2. Gently open the phone by lifting the top of phone in the area of the volume adjuster slide. Remove the CPU flat cable from the top unit and lay the top on it's back.

3. Take a flat head screwdriver and insert the flat blade into the locking slot as shown in the diagram.

4. While pushing down on the plastic insert, gently turn the screwdriver clock wise enough to allow the plastic insert to push out.

5. Replace with the clear plastic insert that comes with the LCD kit. Insert this part from the front side of the telephone.

6. Place LCD unit in from the back and use four Phillips head screws to attach it to the top. MAKE SURE THE FLAT CABLE HOLDERS ARE LINED UP.

7. Insert flat cables so that the conductors of the flat cable are touching the flat cable holder's conductors.

LCD INSTALLATION DIAGRAMS

LOCKING SLOT

TOP

BOTTOM

LCD CONNECTOR

CPU CONNECTOR

TURN SCREWDRIVER

LOCKING SLOT

PLASTIC INSERT
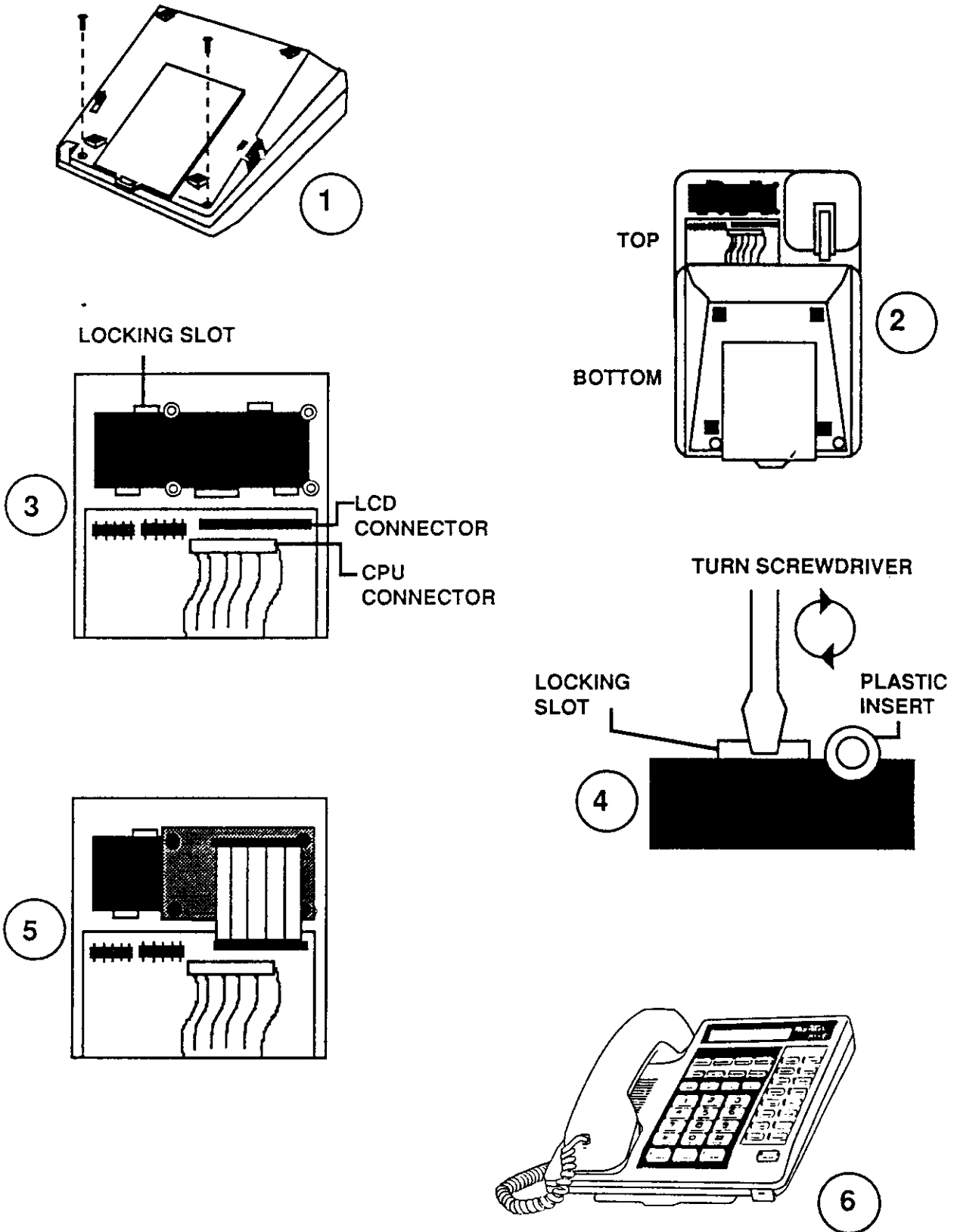
Figure 18

TABLE #1
EXCEL 308 CONNECTORS

STN CONNECTOR #1

TERM #	WIRE COLOR	KEYSET #	FUNCTION	REMARKS	
26	WH/BL	STATION 1	VOICE	VOICE	GREEN
01	BL/WH		VOICE	VOICE	RED
27	WH/OR		DATA -	DATA -	BLACK
02	OR/WH		DATA +	DATA +	YELLOW
28	WH/GR	STATION 2	VOICE		
03	GR/WH		VOICE		
29	WH/BR		DATA -		
04	BR/WH		DATA +		
30	WH/SL	STATION 3	VOICE		
05	SL/WH		VOICE		
31	RD/BL		DATA -		
06	BL/RD		DATA +		
32	RD/OR	STATION 4	VOICE		
07	OR/RD		VOICE		
33	RD/GR		DATA -		
08	GR/RD		DATA +		
34	RD/BR	STATION 5	VOICE		
09	BR/RD		VOICE		
35	RD/SL		DATA -		
10	SL/RD		DATA +		
36	BK/BL	STATION 6	VOICE		
11	BL/BK		VOICE		
37	BK/OR		DATA -		
12	OR/BK		DATA +		
38	BK/GR	STATION 7	VOICE		
13	GR/BK		VOICE		
39	BK/BR		DATA -		
14	BR/BK		DATA +		
40	BK/SL	STATION 8	VOICE		
15	SL/BK		VOICE		
41	YL/BL		DATA -		
16	BL/YL		DATA+		
42	YL/OR	DOORPHONE		AUDIO PAIR TO DOORPHONE	
17	OR/YL				
43	YL/GR	DOORPHONE		AUDIO PAIR TO DOORPHONE	
18	GR/YL				
44	YL/BR				
19	BR/YL				
45	YL/SL	DOOR LOCK	DRY CONTACT CLOSURE	MAX AMPERAGE 0.4A	
20	SL/YL				
46	VL/BL				
21	BL/VL				
47	VL/OR	CONTACT	DRY CONTACT	RATED AT 0.4A	
22	OR/VL	CONTACT	DRY CONTACT		
48	VL/GR	AUDIO-PAGE OUT	VOICE OUTPUT	PAGING OUTPUT	
23	GR/VL	AUDIO-PAGE OUT	VOICE OUTPUT	PAGING OUTPUT	
49	VL/BR				
24	BR/VL				
50	VL/SL				
25	SL/VL				

TABLE #2
EXCEL 816 CONNECTORS

TERM #	WIRE COLOR	CN-1 STA 1-STA 8	CN-2 STA 9-STA 16	FUNCTION
26	WH/BL	STATION 1	STATION 9	GREEN
01	BL/WH			RED
27	WH/OR			BLACK
02	OR/WH			YELLOW
28	WH/GR	STATION 2	STATION 10	VOICE
03	GR/WH			VOICE
29	WH/BR			DATA -
04	BR/WH			DATA +
30	WH/SL	STATION 3	STATION 11	VOICE
05	SL/WH			VOICE
31	RD/BL			DATA -
06	BL/RD			DATA +
32	RD/OR	STATION 4	STATION 12	VOICE
07	OR/RD			VOICE
33	RD/GR			DATA -
08	GR/RD			DATA +
34	RD/BR	STATION 5	STATION 13	VOICE
09	BR/RD			VOICE
35	RD/SL			DATA -
10	SL/RD			DATA +
36	BK/BL	STATION 6	STATION 14	VOICE
11	BL/BK			VOICE
37	BK/OR			DATA -
12	OR/BK			DATA +
38	BK/GR	STATION 7	STATION 15	VOICE
13	GR/BK			VOICE
39	BK/BR			DATA -
14	BR/BK			DATA +
40	BK/SL	STATION 8	STATION 16	VOICE
15	SL/BK			VOICE
41	YL/BL			DATA -
16	BL/YL			DATA +
42	YL/OR		AUDIO PAGE OUT	
17	OR/YL		AUDIO PAGE OUT	
43	YL/GR	CONTACT		PAGE CONTROL
18	GR/YL	CONTACT		MAX. AMPERAGE 0.4A
44	YL/BR			
19	BR/YL			
45	YL/SL			
20	SL/YL			
46	VL/BL			
21	BL/VL			
47	VL/OR			
22	OR/VL			
48	VL/GR			
23	GR/VL			
49	VL/BR			
24	BR/VL			
50	VL/SL			
25	SL/VL			

INSTALLATION

5.0 PROGRAMMING INSTRUCTIONS

OVERVIEW

Programming of the Excel 308/816 is a simple and easy exercise which can be performed from any display set. This section describes all programming options available to the installer and includes applicable notes where required. The program is broken down into three basic categories:

1. System-wide programming requiring a password to allow entry of the command.

2. System-wide programming not requiring a password to allow entry of the command.

3. System speed dialing input.

Before programming for the first time from a display, it is best to initialize the system by entering Program 25.

1. Sta. x = Depress "#"

2. Dial 20
   "MMC Disabled" is displayed

3. Dial 1 2 3 4 1

4. Depress "#"

5. Depress "#"

6. Dial 25

7. Dial 1 2 3 4 2

8. Depress "#"

Conditions:

◆ Entering "2" clears all "scratch-pad" RAM memory and battery back-up RAM.

◆ All program are set to default values. Refer to Customer Database Programming Sheets for values.

◆ All call processing is reset to idle status.

ENTERING/EXITING SYSTEM PROGRAMMING MODE (PROGRAM 20)

Description:

Allows programmer to gain access to programming mode for system-wide or individual software changes.

Programming:

1.   Depress "#"
      "Programming" is displayed

2.   Dial 20
      "MMC Disabled" is displayed

3.   Enter password (Default is 1234)
      "MMC Disabled" is displayed

4.   Dial 0 to Exit program mode
      Dial 1 to Enter program mode
      Dial 2 Enables "Dial 9" for any idle C.O. line
      Dial 3 Disables "Dial 9" for any idle C.O. line
      Dial 4 Sets clock to 12 hour mode
      Dial 5 Sets clock to 24 hour mode

5.   Depress "#"

Conditions:

◆   Default Value - "MMC Disabled" and "Dial 9" Disabled; 24 hour clock.

◆   The phone must be in the On-Hook mode.

◆   The unit will automatically go out of the programming mode if no data is entered in 4 minutes.

◆   Data is entered into working memory after exiting the programming mode.

◆   To verify programming is possible, follow steps 1 and 2. "MMC Enabled" is displayed.

MODIFICATION OF PASSWORD (PROGRAM 21)

Description:

This feature enables the system programmer the flexibility to modify the system password. This controls unauthorized entry into the database.

Programming:

1. During on hook; depress "#"
   "Programming" is displayed

2. Dial 21
   "Old Password" is displayed

3. Enter in current password
   "New Password" is displayed

4. Enter in new password

5. Depress "#"

Conditions:

◆ Default value is 1234.

◆ Valid entries are 0-9 and the first 6 DSS keys. The DSS keys 1-6 represent the letters A, B, C, D, E and F.

◆ If a valid 4 digit password is entered, the password will be changed.

◆ Loss of RAM memory will initialize the password to default value (1234).

DTMF MUTING TO STATION USER (PROGRAM 22)

Description:

This feature enables the system to mute the DTMF tones to the station user that is dialing on a central office line.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 22
   "DTMF MUTED" or "DTMF-ON" is displayed

3. Enter password

4. Dial 0 to enable user to hear DTMF
   Dial 1 to deny user to hear DTMF

5. Depress "#"

Conditions:

◆ Default is "1" (DTMF muted).

◆ If the password is incorrect, the display will show "ERROR" and the system will exit the programming mode.

◆ DTMF level is not adjustable.

DIAL PULSE MAKE/BREAK RATIO (PROGRAM 23)

Description:

This feature enables the system programmer to define the dial pulse make/break ratio of a C.O. line circuit that is classed as a rotary line.

Programming:

1. Depress "#"
    "Programming" is displayed

2. Dial 23
    "Make Ratio" is displayed

3. Enter password
    "Make xx" is displayed

4. Enter time by 2 digits
    "Break: xx" is displayed

5. Enter break time by 2 digits
    "Break 66: xx" is displayed

6. Depress "#"

Conditions:

◆   Default dial pulse make/break ratio is 33/66.

◆   x = any number.

◆   Make/break time standards are normally 33/66
    or 40/60.

◆   Dial pulse (pps) is set at 10 pps.

SOFTWARE VERSION OF SYSTEM AND TELEPHONE (PROGRAM 24)

Description:

This feature displays the current level of software being used in the main equipment. It also displays the version of current software in the telephone set.

Programming:

1. Depress "#"
    "Programming" is displayed

2. Dial 24
    "Version" is displayed

3. Enter password
    "KSU: xx KTS: xx" is displayed (version of software)

4. Depress "#"

Conditions:

◆   If the password is incorrect, the display will show "Error" and the system will exit the programming mode.

◆   x = 0 thru 9, A thru Z.

NOTE: Maintain this data in your office for future reference.

SYSTEM INITIALIZATION (PROGRAM 25)

Description:

This enables the system programmer the ability to initialize the system without turning the system power off. There are 2 levels of initialization.

Level 1 initializes scratch pad data in RAM.

Level 2 initializes scratch pad data and battery backed-up data in RAM.

Programming:

1.   Depress "#"
      "Programming" is displayed

2.   Dial 25

3.   Enter password

4.   Enter 0; Do not initialize
      Enter 1;
      Enter 2;

5.   Depress "#"

Conditions:

◆   All current data should be validated against programming
      sheets.

STATION CLASS OF SERVICE (PROGRAM 30)

Description:

This enables the system user the flexibility to assign individual classes of service to each extension.

Programming:

1. Depress "#"
    "Programming" is displayed

2. Dial 30
    "STN Toll Class" is displayed

    For 308 "xxxxxxxx" is displayed
    For 816 "xxxxxxxxxxxxxxxx" is displayed

3. Enter new class of service(s) to be modified. "New data" is displayed.

4. Depress "#"

Conditions:

◆ There are 5 classes of service: (0-4)

   0 = unrestricted
   1 = uses Program 33 and 34 (Deny/Allow)
   2 = uses Program 35 and 36 (Deny/Allow)
   3 = uses Program 37   (Allow only)
   4 = Internal calls only

◆ Default Data is 0.

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

◆ System abbreviated dialing overrides toll restriction if Program #71 is enabled.

◆ If a line is programmed as a PABX line, no toll restriction is applied except for class 4.

◆ Field definition: Station Number

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

C.O.S Data

C. O. LINE ACCESS BY STATION USER (PROGRAM 31)

Description:

This program defines what stations have access to C.O. lines on a station by station basis.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Depress 31
   "Trunk Access" is displayed

3. Depress DSS Key to be programmed
   For 308 "EXT yy: xxxx" is displayed
   For 816 "EXT yy: xxxxxxx" is displayed

4. Enter "0" (Deny) or "1" (Allow) for each line

5. Depress "#"

Conditions:

◆ Default is set to "1".

◆ y = 1 thru 16

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT
   FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS
   TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE
   THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA
   WILL NOT BE MODIFIED.

◆ To assign a private line, also use program 61 & 62 for
   ringing assignment.

◆ Although a station may not have access to the line to dial out, if the line is
   put on hold, the "privacy" feature is canceled for that particular call. To
   override, use Executive Hold.

◆ A station that rings on incoming calls for a restricted
   line has the ability to pick-up the line.

◆ Field definition

Line Number

1	2	3	4	5	6	7	8
x	x	x	x	x	x	x	x

Station Access Data

54

INTERNAL PAGING - ALLOW OR DENY (PROGRAM 32)

Description:

This enables the system programmer to allow or deny a station from receiving an internal page.

Programming:

1. Depress "#"
   "Programming " is displayed

2. Dial 32
   "Enable all calls" is displayed

   For 308 "xxxxxxxx" is displayed
   For 816 "xxxxxxxxxxxxxxxx" is displayed

3. 0 = Deny
   1 = Allow

   Enter new data
   Current data is displayed

Conditions:

◆ Default value is 1.

◆ Any station user can make an internal page.

◆ Page overrides DND.

◆ ENTRY INPUT MUST BE EITHER ALL 8 DIGITS (308) OR ALL 16 (816) DIGITS EVEN IF ONLY ONE STATION IS BEING CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE STATION DATA. UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

◆ Field definition:

	Station Number															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Page Access Data	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

CLASS OF SERVICE - TOLL RESTRICTION

Class 0 is non-restricted. Class of Service 1 and 2 are the primary toll restrict classes. Each class has a deny table and an allow table which provides for definition of the dial patterns to be restricted and allowed. Each table is comprised of ten entry lines having twelve digits per entry. Inserting the desired allow or deny codes in the appropriate table line entry defines the the type of restriction. Here is a sample table:

DENY TABLE (SAMPLE)

DIALED DIGITS

	1	2	3	4	5	6	7	8	9	10	11	12
0	9	7	6									
1	1	*										
2	0											
3												
4												
5												
6												
7												
8												
9												

ENTRY LINES (row labels 0–9)

In this case, any number beginning with "976", "1" or "0" will result in disconnection of the attempted call. An asterisk is programmed after the "1" in entry line 1 because the allow table may have exceptions such as 1 800 + numbers, 1-555-1212 or 1-800-555-1212. No asterisk is used after "976" and "0" as no exceptions are to be made with these prefixes being dialed. The asterisk used in a position allows for any number to be dialed in that digit. To limit the length of digits dialed, depress the "hold" key (displays "E") after your numbers and asterisks in the digit, respective of the total digit length to be permitted.

Class 3 is used for fully restricted stations. If, however, there must be an allowed emergency code from this Class 3 station, Program 37 (allow table) defines the allowed codes desired.

Class 4 only permits intercom calls; no trunk calls.

NOTE: See Program 33 through 37 for detailed information and examples.

PROGRAMMING

DENY CODES FOR CLASS OF SERVICE 1 (PROGRAM 33)

Description:

This program defines what leading digits in a dialing plan are to be restricted. There are 10 line entries (0-9) which define up to 12 digits per entry.

1. Depress "#"
    "Programming" is displayed

2. Dial 33
    "Deny in Class B" is displayed

3. Enter "0" to "9" to select line entry
    "BD x" is displayed

4. Enter digit sequence to be toll restricted
    To erase existing digit sequence depress "HOLD" key

5. Depress "#"

Conditions:

◆   x = line entries (0-9).

◆   Not all 12 digits in a line entry are required.

◆   Digit entries:

    a. Numbers 0-9
    b. "*" = allow any digit, subsequent digits will be restricted unless programmed in allow table.
    c. "E" entry (caused by depressing "HOLD" key) means that no more digits can be dialed.

◆   If certain 1 + dialing is allowed, the "1" must be followed by a "*" and the allow Program 34 must define the sequence to be allowed.
    Example: Deny 0+ and 1+ calls
    Allow 1-800
    Allow 1+ 7 digits
    Enter Program 33,   Line 0 = 1*
                            Line 1 = 0

    Enter Program 34
    Enter Lines   0 = 1800
                             1 = 1*******E

ALLOW CODES FOR CLASS OF SERVICE 1 (PROGRAM 34)

Description:

This program defines what leading digits in a dialing plan are to be allowed. There are 10 line entries (0-9) which define up to 12 digits per entry.

Programming:

1. Depress "#"
   "Programmed" is displayed

2. Dial 34
   "Allow in Class B" is displayed

3. Enter "0" to "9" to select line entry
   "BA x" is displayed

4. Enter allowed dialed digits
   To erase existing digit sequence depress "HOLD" key

5. Depress "#"

Conditions:

♦ x = line entries (0-9).

♦ Not all 12 digits in a line entry are required.

♦ Digit entries:

   a. Numbers 0-9
   b. "✱" = allow any digit, subsequent digits will be restricted unless programmed in allow table.
   c. "E" entry (caused by depressing "HOLD" key) means that no more digits can be dialed.

♦ If certain 1 + dialing is allowed, the "1" must be followed by a "✱" in Program 33 and the allow Program 34 must define the sequence to be allowed.

   Example: Deny 0+ and 1+ calls
              Allow 1-800
              Allow 1+ 7 digits
              Enter Program 33,   Line 0 = 1✱
                                       Line 1 = 0

              Enter Program 34
              Enter Line   0 = 1800
                                        1 = 1✱✱✱✱✱✱✱E

DENY CODES FOR CLASS OF SERVICE 2 (PROGRAM 35)

Description:

This program defines what leading digits in a dialing plan are to be restricted. There are 10 line entries (0-9) which define up to 12 digits per entry.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 35
   "Deny in Class C" is displayed

3. Enter "0" to "9" to select line entry
   "CD x" is displayed

4. Enter digit sequence to be toll restricted
   To erase existing digit sequence depress "HOLD" key

5. Depress "#"

Conditions:

◆ x = line entries (0-9).

◆ Not all 12 digits in a line entry are required.

◆ Digit entries:

   a. Numbers 0-9
   b. "*" = allow any digit, subsequent digits will be restricted unless programmed in allow table.
   c. "E" entry (caused by depressing "HOLD" key) means that no more digits can be dialed.

◆ If certain 1 + dialing is allowed, the "1" must be followed by a "*" and the allow Program 36 must define the sequence to be allowed.

   Example: Deny 0+ and 1+ calls
               Allow 1-800
               Allow 1+7 digits
               Enter Program 35   Line 0 = 1*
                                       Line 1 = 0

               Enter Program 36
               Enter Line   0 = 1800
                                       1 = 1*******E

ALLOW CODES FOR CLASS OF SERVICE 2 (PROGRAM 36)

Description:

This program defines what leading digits in a dialing plan are to be allowed. There are 10 line entries (0-9) which define up to 12 digits per entry.

Programming:

1.   Depress "#"
      "Programming" is displayed

2.   Dial 36
      "Allow in Class C" is displayed

3.   Enter "0" to "9" to select line entry
      "CA x" is displayed

4.   Enter allowed dialed digits
      To erase existing digit sequence depress "HOLD" key

5.   Depress "#"

Conditions:

◆   x = line entries (0-9).

◆   Not all 12 digits in a line entry are required.

◆   Digit entries:

     a. Numbers 0-9
     b. "*" = allow any digit, subsequent digits will be restricted unless
        programmed in allow table.
     c. "E" entry (caused by depressing "HOLD" key) means that no
        more digits can be dialed.

◆   If certain 1 + dialing is allowed, the "1" must be followed by a "*" in Program 35
     and the allow Program 36 must define the sequence to be allowed.

Example:	Deny 0+ and 1+ calls	
	Allow 1-800	
	Allow 1+ 7 digits	
	Enter Program 35	Line 0 = 1*
		Line 1 = 0
	Enter Program 36	
	Enter Line	0 = 1800
		1 = 1*******E

ALLOW CODES FOR CLASS OF SERVICE 3 (PROGRAM 37)

Description:

This program defines what leading digits in a dialing plan are to be allowed. There are 10 line entries (0-9) which define up to 12 digits per entry.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 37
   "Allow in Class D" is displayed

3. Enter "0" to "9" to select line entry
   "DA x" is displayed

4. Enter allowed dialed digits
   To erase existing digit sequence depress "HOLD" key

5. Depress "#"

Conditions:

◆ x = line entries (0-9).

◆ Not all 12 digits in a line entry are required.

◆ Digit entries:

   a. Numbers 0-9
   b. "✶" = allow any digit, subsequent digits will be restricted unless programmed in allow table.
   c. "E" entry (caused by depressing "HOLD" key) means that no more digits can be dialed.

   Example:

   All calls are to be restricted except 911. Enter program 37.
   Select Line entry 0 and enter 911. Depress "#".

CENTRAL OFFICE INCOMING/OUTGOING DENIAL (PROGRAM 40)

Description:

This enables the system user to class the C.O. lines as incoming only or incoming and outgoing.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 40
   "Incoming trunk" is displayed

   For 308 "xxxx" is displayed
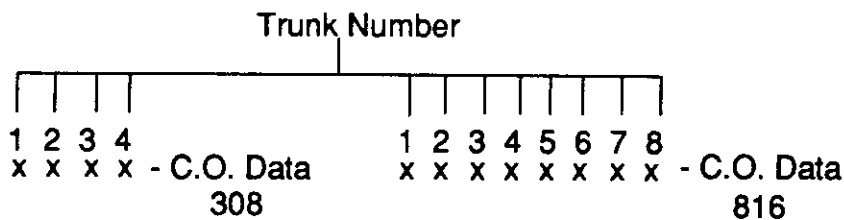   For 816 "xxxxxxxx" is displayed

3. Enter data

   0 = incoming/outgoing calls enabled
   1 = incoming call only enabled
   Current data is displayed

4. Depress "#"

Conditions:

◆ Default value is 0.

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

◆ Any data entered other than 0 or 1 will cause "ERROR" to be displayed and the system will exit the programming mode

◆ Field definition

```
                        Trunk Number
                             |
   ┌──┬──┬──┬──┐      ┌──┬──┬──┬──┬──┬──┬──┐
   1  2  3  4          1  2  3  4  5  6  7  8
   x  x  x  x - C.O. Data    x  x  x  x  x  x  x  x - C.O. Data
         308                              816
```

C.O. LINE DIAL MODE SELECTION (TONE/PULSE)/(PROGRAM 42)

Description:

This enables the system programmer the flexibility to define which C.O. lines are to be classed as either tone dial lines or dial pulse lines.
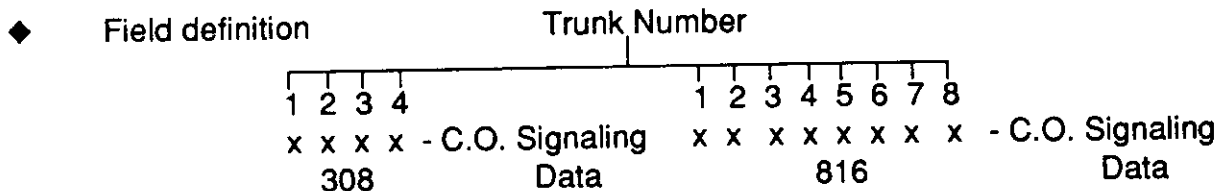
Programming:

1.   Depress "#"
     "Programming" is displayed

2.   Dial 42
     "Trunk dial type" is displayed

     For 308 "xxxx" is displayed   0 = Dial pulse lines
     For 816 "xxxxxxxx" is displayed   1 = DTMF lines

3.   Enter Data

4.   Depress "#"

Conditions:

◆   Default value is 0.

◆   THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

◆   Tone Dial Mode - the digital signal from the telephone will be converted to DTMF by the trunk circuit and sent to the Central Office.

◆   DTMF tones are industry standard frequencies and have a duration of approximately 100ms.

◆   Dial Pulse Mode - the digital signal from the telephone will be converted to Dial Pulses by the trunk circuit and sent to the Central Office. Make/Break ratio is set in Program 23. Dial pulse mode is set at 10 pps.

◆   Field definition

                          Trunk Number
                               |
     ┌─────────────┐   ┌─────────────────────┐
     1 2 3 4   1 2 3 4 5 6 7 8
     x x x x - C.O. Signaling   x x x x x x x x - C.O. Signaling
        308   Data   816   Data

C.O. LINE ENABLED FOR SERVICE (PROGRAM 43)

Description:

This enables the system programmer to define what lines are to be enabled in the system.

Programming:

1. Depress "#"
    "Programming" is displayed

2. Dial 43
    "Line Exist" is displayed (308)
    "Trunk Tie" is displayed (816)

    0 = C.O. line is not connected
    1 = C.O. line is connected

3. Enter Data

4. Depress "#"

Conditions:

◆   Default value for 308 is "1110"
    Default value for 816 is "11111111"

◆   THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

◆   0 = No trunk   1 = Loop start trunk   3 = E/M tie line

◆   Field definition   Trunk Number

```
  ┌─┬─┬─┐                    ┌─┬─┬─┬─┬─┬─┬─┐
  1 2 3 4                    1 2 3 4 5 6 7 8
  x x x x  -C.O. Service     x x x  x x x x x  -C.O. Service
    308         Data              816              Data
```

◆   For 308 - Line 4 is used for the Doorphone.

◆   For 816 - Lines 7 & 8 are used for Loop Start or E/M Tie Lines.

C.O. LINE DEFINITION (PROGRAM 44)

Description:

This enables the system programmer to define which lines are directly connected to a C.O. line or to a PABX line. If a line is classed as a PABX line, no toll restriction from the Excel will be activated.
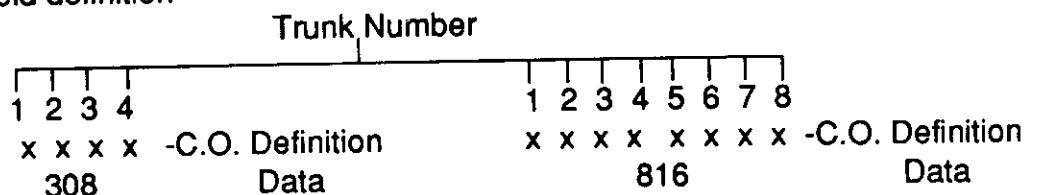
Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 44
   "PO CO TRUNK" is displayed

   0 = PABX line
   1 = C.O. line

3. Enter 0 or 1

4. Depress "#"

Conditions:

- ◆ Default value for 308 is "1111"
  Default value for 816 is "11111111"

- ◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

- ◆ Any data entered other than 0 or 1 will cause "ERROR" to be displayed and the system will exit the programming mode.

- ◆ IF A LINE IS CLASSED AS A PABX LINE, NO TOLL RESTRICTION IS APPLIED.

- ◆ Field definition

Trunk Number

```
   1 2 3 4                    1 2 3 4 5 6 7 8
   x x x x  -C.O. Definition  x x x x x x x x  -C.O. Definition
     308         Data              816              Data
```

C.O. FLASH TIMING (PROGRAM 50)

Description:

This enables the system programmer to define the length of a flash for a line defined as a C.O. line.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial "50"
   "C.O. Flash Time" is displayed
   "xxxx" msec is displayed

3. Enter new flash time

4. Depress "#"

Conditions:

◆ Default value is set at 600m sec.

◆ The C.O. line Flash Time may range from 0 msec to 5000 msec.

◆ If the value entered is over 5000 msec, 5000 msec is entered into the memory.

◆ If value is an odd value, the value will be rounded off to an even number.

◆ To accomplish Hook-Flash, depress C.O. line that is being used.

PABX FLASH TIMING (PROGRAM 51)

Description:

This enables the system programmer to define the length of a flash for a line defined a PABX line.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 51
   "PO Flash Time" is displayed

3. Enter new flash time "xxxx"

4. Depress "#"

Conditions:

◆ Default value is set at 0600 msec.

◆ The PABX line flash time may range from 0 msec to 5000 msec.

◆ If the value entered is over 5000 msec, 5000 msec is entered into the memory.

◆ If value is an odd value, the value will be rounded off to an even number.

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

HOLD RECALL TIME DEFINITION (PROGRAM 52)

Description:

This enables the system programmer to define the length of time a C.O. line is allowed to be on hold before it recalls the station user.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 52
   "Hold Recall Time" is displayed
   Current data is displayed

3. Enter new Hold Recall Time "xxx"

4. Depress "#"

Conditions:

◆ Default value is set at 030 seconds.

◆ The Hold Recall Time may range from 0 seconds to 200 seconds.

◆ If the value entered is over 200 seconds, 200 seconds is entered into the memory.

◆ If the telephone is off hook during the recall mode, the telephone will ring as soon as the telephone goes on-hook.

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

TRANSFER RECALL TIME DEFINITION (PROGRAM 53)

Definition:

This enables the system programmer to define the length of time a call may ring to a transferred station before a line reverts back to the original station.

Programming:

1. Depress "#"

2. Dial 53
   "TRSF Recall Time" is displayed
   Current data is displayed

3. Enter new Transfer Recall Time information "xxx"

4. Depress "#"

Conditions:

◆ Default value is 30 seconds.

◆ The Transfer Recall Time may range from 0 seconds to 200 seconds.

◆ If the values entered are over 200 seconds, 200 seconds will be entered in the memory.

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

ALARM TIME DURATION (PROGRAM 54)

Definition:

This enables the system programming to define the length of time the alarm will ring the telephone.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 54
   "Alarm Ring Time" is displayed
   Current data is displayed

3. Enter new Alarm Ring Time data "xxx"

4. Depress "#"

Conditions:

◆ Default value is 10 seconds.

◆ The Alarm Time Duration may range from 0 seconds to 200 seconds.

◆ If the value entered is over 200 seconds, 200 seconds will be entered into the memory.

◆ The alarm timing is not reset unless a new time is entered.

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

TIME & DATE DISPLAY (PROGRAM 55)

Description:

This enables the system programmer the ability to adjust the time of day or modify the date.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 55
   "YY MM DD W HH MM" is displayed
   Current data is displayed

3. Input new data

   YY = last 2 digits of year
   MM = month of year (01 to 12)
   DD = day (01 to 31)
   W = weekday
   HH = Hour (24 hour mode)
   MM = Minutes (00 to 60)

   0 = Sunday
   1 = Monday
   2 = Tuesday
   3 = Wednesday
   4 = Thursday
   5 = Friday
   6 = Saturday

Conditions:

◆ THIS PROGRAM REQUIRES THAT ALL DIGITS FOR THAT FIELD MUST BE ENTERED REGARDLESS IF THE DATA IS TO BE CHANGED. AN INCORRECT ENTRY WILL NOT CHANGE THE DATA; UPON EXITING THE PROGRAM, THE OLD DATA WILL NOT BE MODIFIED.

◆ When setting HH:MM, HH:MM must always be set in 24 hour mode.

C. O. LINE RINGING MODE (PROGRAM 60)

Description:

This feature enables the system programmer the flexibility to designate
how C.O. lines ring to keysets on a system-wide basis.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 60
   "Incoming Ring Mode" is displayed ———————— *depress Line Key*

3. Enter new data
   0 = Individual ring mode
   1 = Conditional universal ring mode
   2 = Unconditional ring mode

4. Depress "#"

Conditions:

◆ Default value is "0".

◆ Individual ring mode: An incoming line will ring the first non-busy
   station in the order defined in Program 61 for night mode and
   Program 62 for day mode. If all stations are busy, off-hook
   ringing is sent to the 1st station programmed for the line
   ringing group (refer to Program 61 & 62).

◆ If individual ring is programmed, a phone can transfer ringing to
   that phone to another phone by using call forwarding.

◆ Conditional ring mode: An incoming line will ring all station(s)
   that are idle for that line ringing group (refer to Program 61
   & 62).

◆ Unconditional universal ring mode: An incoming line will
   ring station(s) as defined in a line ringing group whether
   they are active or idle.

NIGHT MODE RINGING (PROGRAM 61)

Description:

This feature enables the system programmer the flexibility to define which phone(s) ring on a per-line basis when the system is in the night mode.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 61
   "Night Ring Assign" is displayed

3. Depress the C.O. line key to be programmed
   Current data is displayed

4. Depress the DSS key of each phone that is to ring

5. Depress "#"

Conditions:

◆ Default value has all C.O. lines ring station 4.

◆ A C.O. line may have a maximum of 8 stations assigned to ring.

◆ If Individual Ringing is system defined, the system will ring the station(s) in order of sequence as defined in Program 62.

◆ To modify ringing program, enter new ringing program sequence.

◆ Stations 10 to 16 are displayed as A to G, respectively.

◆ (308 only) To assign Doorphone ringing, depress doorphone key, then appropriate station(s).

DAY MODE RINGING (PROGRAM 62)

Description:

This feature enables the system programmer the flexibility to define which phone(s) ring on a per-line basis when the system is in the day mode.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 62
   "Day Ring Assign" is displayed

3. Depress the C.O. line key to be programmed
   Current data is displayed

4. Depress the DSS key of each phone that is to ring

5. Depress "#"

Conditions:

◆ Default value has all C.O. lines ring to station 4.

◆ A C.O. line may have a maximum of 8 stations assigned to ring.

◆ If Individual Ringing is system defined, the system will ring the station(s) in order of sequence as defined in Program 62.

◆ To modify ringing program, enter new ringing program sequence.

◆ Stations 10 to 16 are displayed as A to G, respectively.

◆ (308 only) To assign Doorphone ringing, depress doorphone key, then appropriate station(s).

NIGHT RING OVER EXTERNAL PAGE (PROGRAM 63)

Description:

This feature will allow or deny all incoming calls in the night mode to ring over the external page.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 63

3. Enter 0 or 1

       0 = Deny

       1 = Allow

4. Depress "#"

Conditions:

◆ Default value is 0.

◆ If enabled, all incoming calls will signal the external page only.

ATTENDANT KEYSET DESIGNATION (PROGRAM 70)

Description:

This feature enables the system user to define which keyset is to act as the Operator's station.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 70
   "Attend: Ext 04:" is displayed

3. Input new data by depressing the new station's DSS key

4. Depress "#"

Conditions:

◆ Default operator station is station 4.

◆ Operator places system into night mode by depressing DND key.

◆ DND feature is not allowed on the attendant keyset.

◆ If DND is flashing at a rate of 250ms on/off, this signifies the system is in the night mode.

◆ Dial "0" on a station set will ring this designated attendant station.

◆ Unsupervised recalls will return to this station.

SYSTEM SPEED DIAL PROGRAMMING

Description:

The Excel can have 90 System Speed Dial Numbers programmed. They are numbers 10-99. Each Speed Dial Number may have 30 digits.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 20
   "MMC Disabled" is displayed

3. Depress 1234

4. Dial 1 to enable system

5. Depress "#"

Once you have enabled system, the following steps must be done:

1. Depress "Speed Dial" key (ALM/SD)
   "Dial Memory" is displayed

2. Select a number 10-99 to store your Speed Dial Number

3. Then dial the phone number to be stored

4. Depress "Speed Dial" key to finish

5. To clear a number, depress "Hold" key after entering memory location.

6. To insert a 3 second pause, use the "Hold" key. This can be inserted after the first digit has been entered or any time thereafter.

Conditions:

◆ System speed dial overrides station toll restriction classes 1, 2 and 3. Station toll restriction class 4 is not overridden.

◆ Each pause entered takes the place of a programmed digit.

SYSTEM SPEED DIAL TOLL RESTRICTION (PROGRAM 71)

Description:

This feature enables the system programmer the ability to define whether the system allows or denies long distance numbers in system speed dialing to override toll restriction.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 71
   "Allow Toll" is displayed

3. 0 = Allow speed-dialing to override toll restriction
   1 = Deny speed-dialing to override toll restriction

4. Depress "#"

Conditions:

◆ Default is "0".

◆ Will not override Class 4 restriction.

BOSS/SECRETARY COMBINATION (PROGRAM 73)

Description:

This feature identifies which station is defined as boss and which station is defined as secretary.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 73
   "Boss" is displayed

3. Depress DSS key which is to be Boss
   "Boss xx Sec." is displayed

4. Depress DSS key which is to be Secretary
   "Boss xx Sec xx" is displayed

5. Depress "#"

Conditions:

◆ There is only one Boss/Secretary group.

◆ If the Boss enables DND, all ICM calls are transferred
   to the secretary. C.O. calls do not forward.

◆ Use Program 80 to define Boss/Secretary key. On all other
   keysets, this key is disabled.

SOFT KEY PROGRAMMING (PROGRAM 80)

Description:

This feature defines what each soft key (all keys except key pad) is assigned as a function.

Programming:

1. Depress "#"
   "Programming" is displayed

2. Dial 80

3. Depress key to be programmed
   Present function of key is displayed

4. Dial selected code from table to change function
   of soft key

CODES

01 = STATION 1	02 = STATION 2
03 = STATION 3	04 = STATION 4
05 = STATION 5	06 = STATION 6
07 = STATION 7	08 = STATION 8
09 = STATION 9	10 = STATION 10
11 = STATION 11	12 = STATION 12
13 = STATION 13	14 = STATION 14
15 = STATION 15	16 = STATION 16
17 = C.O. LINE 1	18 = C.O. LINE 2
19 = C.O. LINE 3	20 = C.O. LINE 4
21 = C.O. LINE 5	22 = C.O. LINE 6
23 = C.O. LINE 7	24 = C.O. LINE 8
25 = HOLD	26 = SPK BUTTON
27 = REDIAL	28 = MUTE/DND BUTTON
29 = EXT PAGE	30 = CONFERENCE
31 = MESSAGE	32 = ALARM/SPEED DIAL
33 = TIMER BUTTON	34 = EXEC./SECRETARY
35 = INTERNAL PAGE	36 = ATTENDANT KEYSET
37 = DOORPHONE	

Conditions:

◆ Each key programmed is a system-wide function.

CUSTOMER DATABASE
PROGRAMMING SHEETS

CUSTOMER NAME _____

ADDRESS _____

CONTACT _____

PHONE # _____

*UPON INSTALLATION, ALWAYS INITIALIZE THE SYSTEM AND SET THE MEMORY BACK-UP SWITCH ON.

PRG #	TO SET	DATA	DEFAULT	NOTE
20	Programming Mode	☐	0	Enables Programming Mode 0 = Disable 1 = Enable 2 = Enable dial "9" for C.O. line access 3 = Disable dial "9" for C.O. line access 4 = 12 hour clock mode 5 = 24 hour clock mode (military time)
25	System Initialization	☐	0	0 = Do Not Initialize 1 = Initialize memory 2 = Initialize system and clear RAM memory
21	Change Password	☐☐☐☐	1234	Must be 4 digit (0-9) and DSS keys (1-6)
22	Touch Tone Mute	☐	1	1 = Disable 0 = Enable
23	Make/Break Ratio	☐☐	33/66	Standard is 33/66 or 40/60 PPS is set at 10 pps
24	System Version Display			Displays Current KSU & Keyset Software Version

PRG #	TO SET	DATA	DEFAULT	NOTES
30	Set Class of Service for Stations	☐	0	0 = No restriction 1 = Program 33/34 (Allow/Deny) 2 = Program 35/36 (Allow/Deny) 3 = Program 37 (Allow Only) 4 = Tables E (ICM Only)
31	C.O. Line Access by Stations	☐	1	0 = Deny 1 = Allow
32	Internal Paging Station	☐	1	0 = Disable 1 = Enable Requires all fields to be entered
40	C.O. Lines Incoming/ Outgoing	☐	0	0 = Incoming & Outgoing 1 = Incoming Only
42	Trunk Dial Type	☐	0	0 = Rotary Pulses 1 = Touch Tone
43	C.O. Lines Enabled	☐	1	0 = Disabled 1 = Enabled
44	C.O. Line Definition	☐	1	0 = PABX Line 1 = C.O. Line
50	C.O. Trunk Timing	☐☐☐☐	0600	0000 - 5000ms*
51	PABX Flash Timing	☐☐☐☐	0600	0000ms - 5000ms
52	Hold Recall Timing	☐☐☐	030	000 sec - 200 sec
53	Transfer of Call Recall Timing	☐☐☐	030	000 sec - 200 sec

*ms = millisecond

PRG #	TO SET	DATA	DEFAULT	NOTES
54	Alarm Duration Timer	☐	010	600 sec - 200 sec
55	Time and Date Change			YY = Year MM = Month DD = Day W = Day of Week HH = Hour MM = Minute (Military Time)

60	System Ringing Assignment	☐	0	0 = Individual Ring Mode:
				    Stations to ring in order of
				    Program 61 & 62. If all
				    stations are busy, the 1st
				    station set to ring will ring.
				
				1 = Conditional Ring Mode:
				    Only stations that are idle
				    will ring within a
				    programmed group.
				
				2 = Unconditional Ring Mode:
				    All stations to ring
				    whether idle or busy.

61	Night Ringing Stations	☐☐☐☐	308 0000		Stations	
				308		816
		☐☐☐☐☐☐☐☐	816 00000000			

NOTE: USE ATTENDANT DND KEY TO PUT SYSTEM IN NIGHT MODE.

62	Day Ringing Stations	☐☐☐☐	308 0000		Stations	
				308		816
		☐☐☐☐☐☐☐☐	816 00000000			

63	Night Ringing Over Page	☐	0	0 = Disable 1 = Enable
70	Attendant Station Assignment	☐	04	Attendant's DND key is used to put system in Night Mode.

PRG #	TO SET	DATA	DEFAULT	NOTES
71	System Speed Dialing override of toll restriction	☐	0	0 = Disable 1 = Enable
73	Boss/Secretary Set		Boss Sec	Requires one Boss & one Secretary. Use Program 80 to set Boss/Secretary Key
80	Softkey Programming			

CODES

01 = STATION 1	02 = STATION 2
03 = STATION 3	04 = STATION 4
05 = STATION 5	06 = STATION 6
07 = STATION 7	08 = STATION 8
09 = STATION 9	10 = STATION 10
11 = STATION 11	12 = STATION 12
13 = STATION 13	14 = STATION 14
15 = STATION 15	16 = STATION 16
17 = C.O. LINE 1	18 = C.O. LINE 2
19 = C.O. LINE 3	20 = C.O. LINE 4
21 = C.O. LINE 5	22 = C.O. LINE 6
23 = C.O. LINE 7	24 = C.O. LINE 8
25 = HOLD	26 = SPK BUTTON
27 = REDIAL	28 = MUTE/DND BUTTON
29 = EXT PAGE	30 = CONFERENCE
31 = MESSAGE	32 = ALARM/SPEED DIAL
33 = TIMER BUTTON	34 = EXEC./SECRETARY
35 = INTERNAL PAGE	36 = ATTENDANT KEYSET
37 = DOORPHONE	

PROGRAM #33 CLASS 1 DENY

Dialed Digits

Line Entry

PROGRAM #34 CLASS 1 ALLOW

Dialed Digits

Line Entry

PROGRAM #35 CLASS 2 DENY

Dialed Digits

Line Entry

PROGRAM #36 CLASS 2 ALLOW

Dialed Digits

Line Entry

PROGRAM #37 CLASS 3 ALLOW

Dialed Digits

Line Entry

PROGRAM #61 NIGHT MODE RINGING

STATION LINE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1																
LINE 2																
LINE 3																
LINE 4																
LINE 5																
LINE 6																
LINE 7																
LINE 8																

PROGRAM #62 DAY MODE RINGING

STATION LINE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE 1																
LINE 2																
LINE 3																
LINE 4																
LINE 5																
LINE 6																
LINE 7																
LINE 8																

SYSTEM SPEED DIALING SHEET

10			48		
11			49		
12			50		
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6.0 TROUBLESHOOTING

DURING INSTALLATION

System does not operate	No AC input from wall socket	Meter verify 110 VAC at outlet
	Red LED on Main Equipment not on	◆ Check battery power fuse ◆ Check battery connection for correct polarity
		For correct polarity: ◆ Power supply unit is not working properly
Extension does not operate properly	No LEDs or display	◆ Bad or open connection to the telephone ◆ Data pair is reversed ◆ Phone is bad; verify phone on another ext. port that is working
	No Page	◆ Verify audio contacts correct
External Paging	Noise over Page	◆ Use shielded cable to amplifier input ◆ Verify input matches amplifier ◆ A short, shielded input cable is recommended
Music on Hold	No Music	◆ Verify internal music on hold is played during power-up sequence ◆ Disconnect external MOH source from KSU and verify internal MOH works. ◆ Verify no loose connections.
During Use - No one can make make or receive C.O. calls		◆ Verify dial tone at the DEMARC ◆ Replace connecting cords ◆ Verify programming

Function Buttons	Functions not working as should be	◆ Verify soft key programming. ◆ Refer to user's guide for complete description of function.
Extension does not operate	One Extension	◆ Check line and handset cord . ◆ Unplug the extension and plug in again. ◆ Verify at a working port.
Phone does not ring		◆ Check volume control on side of telephone.
System does not operate	Re-initialize	◆ Soft Initialize - use Program 25 - 1 to reset the system. Turning off the AC power does the same thing. Clears: Calls on hold, redial, camp-ons.
		◆ Hard Initialize - use Program 25 - 2 to completely reset the system. Turning off the power and removing the RAM battery does the same thing. Clears: All call processing, all data stored in RAM memory.