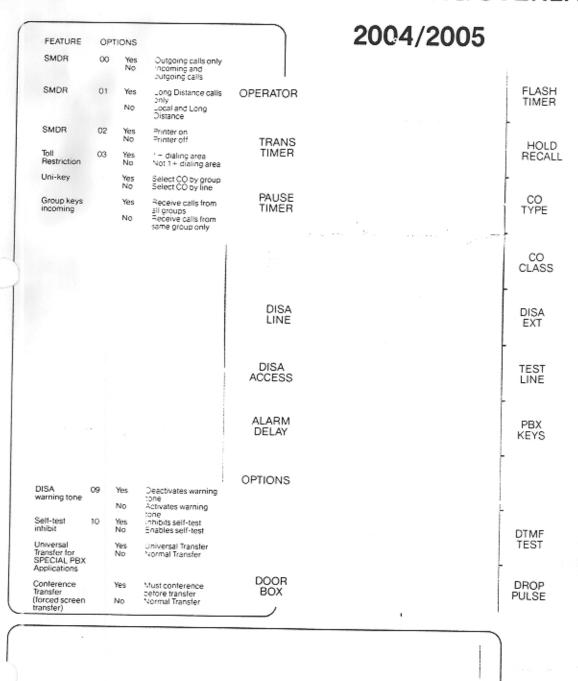
EZ-1/36

EZ-1/36 SYSTEM PROGRAMMING OVERLAY



YES

NO

NEXT

LINE

CHANGE

D

END

ENTER

W

EZ-1/36 SYSTEM PROGRAMMING OVERLAY

FEATURE	OP	TIONS)	2004/2005	
SMDR	00	Yes No	Outgoing calls only Incoming and outgoing calls			
SMDR	01	Yes No	Long Distance calls only Local and Long Distance	OPERATOR		FLASH TIMER
SMDR	02	Yes No	Printer on Printer off			
Toll Restriction	03	Yes No	1 – draling area Not 1 – dialing area	TRANS TIMER		HOLD RECALL
Uni-key		Yes	Select CO by group Select CO by line			-
Group keys incoming		Yes No	Receive calls from all groups Receive calls from same group only	PAUSE TIMER		CO TYPE
						CO CLASS
				DISA LINE		DISA EXT
				DISA ACCESS		TEST LINE
				ALARM DELAY		PBX KEYS
DISA (varning tone		Yes No	Deactivates warning tone Activates warning	OPTIONS		
Self-test t		Yes No	tone Inhibits self-test Enables self-test			
Iniversal ransfer for PECIAL PBX oplications		Yes No	Universal Transfer Normal Transfer			DTMF TEST
conference ransfer orced screen ansfer)		Yes No	Must conference before transfer Normal Transfer	DOOR BOX		DROP PULSE

YES

NO F NEXT LINE

CHANGE D

END

ENTER W

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SECTION 1 INTRODUCTION

1.1 GENERAL

Installation, operation, maintenance and programming instructions for the EZ-1™ (36) Key Telephone System are covered in this manual. A technical description, detailed step-by-step installation procedures, and post installation checkout are also covered.

1.2 DESCRIPTION

The EZ-1[™] (36) is a microprocessor controlled switching system capable of serving 6 CO/PBX lines and 12 stations with a single Key Service Unit (KSU) or 12 CO/PBX lines and 24 stations with a KSU and an Expansion Key Service Unit (EKSU). The EZ-1[™] (36) is presented in Figure 1-1, and a block diagram of the system is shown in Figure 1-11. Audio signal switching within the system is accomplished by a space division matrix switch.

CO/PBX line signaling is loop start and may be either Dual Tone Multi-Frequency (DTMF) or dial pulse (rotary).

The stations are microprocessor controlled multi-line telephones (MLTs) with programmable keys denoting CO (Central Office) lines and features. Calls are completed and features activated by means of momentary push keys; LEDs show the status of calls and the features in use. A speakerphone is built into each station (telephone) to allow hands free handling of incoming, outgoing, and internal calls.

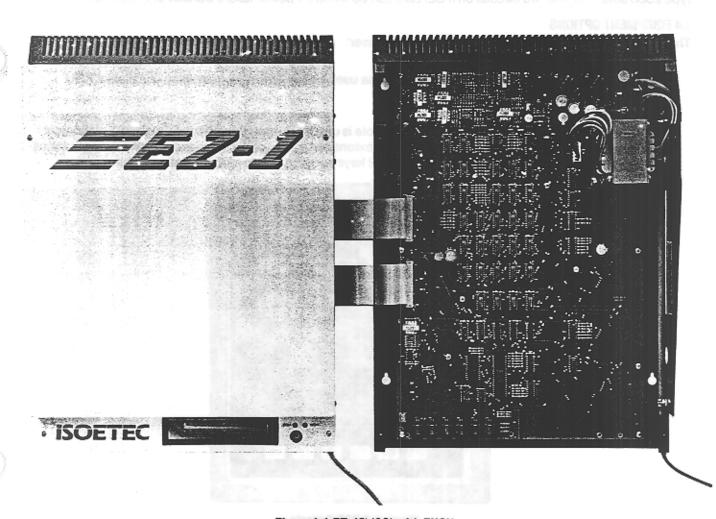


Figure 1-1 EZ-1™ (36) with EKSU

1.3 SYSTEM CAPACITY

The EZ-1™ (36) Key Telephone System has a maximum capacity of 12 CO/PBX lines and 24 stations. The maximum configuration consists of the following modules and assemblies:

Key Service Unit (KSU)

Expansion Key Service Unit (EKSU)

Four 4-channel (Quad) MLT Line Interfaces

Five 2-channel (Dual) CO/PBX Line Interfaces

DTMF Receivers (Up to three)

Relay/Sensor Interface

SMDR Interface

The basic KSU is equipped with circuitry for four multi-line telephones and two CO/PBX lines. The station capacity is expanded by the addition of Quad MLT cards (2 maximum) each of which provides capacity for four multi-line telephones (MLTs). The CO/PBX line capacity is expanded by the addition of CO interface cards (COI cards, a maximum of 2) each of which provides circuitry for 2 additional CO/PBX lines.

The telephone system can be further expanded by the addition of an Expansion KSU. The EKSU has built-in an additional four station circuits. However, there are no built-in CO interfaces in the EKSU. A maximum of two Quad MLT cards can be added to the EKSU. A maximum of three COI cards can also be added to the EKSU.

The maximum configuration of a KSU is 12 stations and 6 CO/PBX lines. The maximum configuration of an EZ-1™ (36) Telephone System (KSU and EKSU) is 24 stations and 12 CO/PBX lines.

The EZ-1™ (36) can support Single Line Telephones (SLT) with the addition of a Single Line Interface card (SLI). A maximum of one SLI card can be installed in each KSU and EKSU to provide up to eight single line extensions. These cards are installed in the last station card position and take the place of one MLT card. Single line extensions require the addition of an external ring generator power supply. The single line stations must be tone dial type 2500 sets. The first two circuits on a SLI card can be wired for power failure transfer of a CO line.

1.4 EQUIPMENT OPTIONS

The following equipment options are available to the user:

1.4.1 Remote KSU.

(part number 10010). The Remote KSU enables the user to change the programming of a distant KSU without physically traveling there.

1.4.2 DSS Console.

(part number 80400) (Figure 1-2). The DSS Console is used in conjunction with the Operator's station only to provide direct station selection of all equipped extensions. It also provides easy access to the park zones and paging. The DSS Console is equipped with 32 keys and 32 LEDs to monitor station status.



Figure 1-2 DSS Console

1.4.3 Emergency Power.

(part number 50010). If a total AC power failure occurs, the Emergency Power System will provide emergency power to ensure continuous telephone service. The Emergency Power unit has a maximum life of four to six hours depending upon system size and usage.

NOTE: Emergency Power System specifications are available in Appendix 2 of this manual.

1.4.4 Line Conditioner Model LC-36.

(part number 50020). The line conditioner protects the system from voltage spikes and dips in the incoming AC line level. Normal correction time is 1/3 of one AC cycle.

NOTE: Model LC-36 Line Conditioner specifications are available in Appendix 2 of this manual.

1.4.5 Telephone Headset.

(part number 40010) (Figure 1-3). The headset can be worn in any of four basic ways whichever is more comfortable. It has an assortment of five ear tip styles that rest on the ear to maximize comfort when used for long periods of time.

1.4.6 SMDR Interface.

(part number 10150) (Figure 1-4). This optional Station Message Detail Recorder interface is an RS-232C port and is provided as a plug-in module at the EKSU. Baud rates from 110 to 9600 bps are DIP switch selectable to drive a serial printer to record call information.

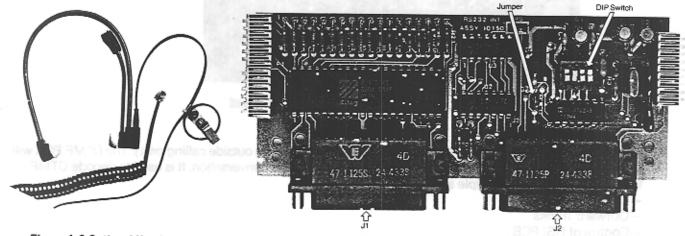


Figure 1-3 Optional Headset

Figure 1-4 SMDR Printed Circuit Board

1.5 KSU COMPONENTS

The following is a short summary of the KSU components:

1.5.1 Central Processor Unit (CPU).

The CPU, part of the KSU, consists of an 8-bit microprocessor with its peripheral devices. The CPU contains 50 kilobytes of memory organized as ROM, RAM, and battery backed RAM. The CPU also includes the necessary devices to control the system modules and to receive data from these modules. The CPU performs all logical operations and passes control signals to other system modules.

1.5.2 Analog Matrix.

The matrix consists of CMOS semiconductor devices which are capable of connecting each of the stations to each of the CO/PBX lines, system tones, DTMF receivers, and page amplifiers. The matrix is driven by the CPU through voltage level shift buffers.

1.5.3 System Tone Generator.

The generator provides tones used for system signaling. The frequencies of 350, 440, and 600 Hz are mixed to provide dial tone, busy tone, splash tone, reorder tone, ring tone, and camp-on tone.

1.5.4 Background Music/Music On Hold Amplifiers (BGM/MOH).

These amplifiers allow a music source to be connected to the system through a standard RCA-type jack and a coupling transformer. The output impedance of the music source should be less than two kilohms. The level of music for BGM and MOH can be adjusted through individual potentiometers on the KSU Control Module.

1.5.5 Dual Tone Multi-Frequency (DTMF) PCB.

(part number 10170) (Figure 1-5). The optional DTMF PCB (Printed Circuit Board) has three primary functions:

(1). Self-Test.

It is used during Self-Test to perform station to trunk test and a station to station test on all internal links as well as KSU to expansion (EKSU) links. During Self-Test, the DTMF will provide an audible tone to every station while the system is checking for cross talk and any malfunction of the matrix.

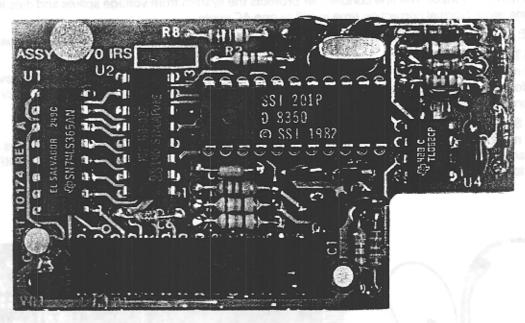


Figure 1-5 DTMF Printed Circuit Board

(2). DISA

The DTMF PCA must be installed to receive DTMF tones from an outside calling party. The DTMF PCA will stay seized on the DISA caller's line for the entire length of the conversation. It is used to decode DTMF tones for the following multiple accesses:

- Internal Stations
- Outward Trunks
- —Control of RSI PCB
 - (3). SLI Operation

The DTMF PCB is used to decode DTMF tones during single line station operation. It is only seized during the dialing portion of a call and will be idle during the conversation portion of a call. During idle time, the DTMF PCB is available for access by other single line stations, or for DISA.

1.5.6 External Page Preamplifier.

The preamplifier is capable of driving output loads of 1000 ohms or higher and provides a gain of 12 dB.



Figure 1-6 Digital Display

1.5.7 Digital Display.

(Figure 1-6). A 16 character digital display indicates self-test results or programming status. The display also indicates lines in use at a given time and statistical information on calls originated, received and answered. Line status is indicated at all times except when programming and diagnostics are in progress.

Typical display indications are:

"LINE - 01 - 8USY - 31"

"LINE - 01 - HOLD"

"LINE-01-RINGING"

In the examples, the "LINE" is followed by the CO LINE number (01 thru 12). In the first example, the digits following the "BUSY" indication are the station number involved in the call. When a self diagnostic test is being performed, the display continuously indicates the status of the test. When the EZ-1™ system is in programming mode (PROGRAM switch ON) the programming menu is displayed and the action taken to answer each prompt is then displayed.

1.5.8 Power Supply.

Each KSU and EKSU has a built-in power supply which furnishes required voltages (\pm 15 V and \pm 5 V) for system operation. Input requirements are 117 V ac, \pm 10%, 0.7 A for each KSU. A 1 Amp input fuse and three secondary minifuses provide protection.

1.5.9 Quad Multi-Line Telephone Interface (MLI).

(part number 10110) (Figure 1-7). The interface is capable of connecting four MLTs to common equipment. The interface board consists of audio circuitry to couple audio signals from the MLT to the Analog Matrix. It also contains circuitry that transmits and receives digital signals to and from the telephones and provides power to each of the four sets. A current limiting circuit makes provision for accidental shorts among the four conductors connecting the MLTs to the KSU.

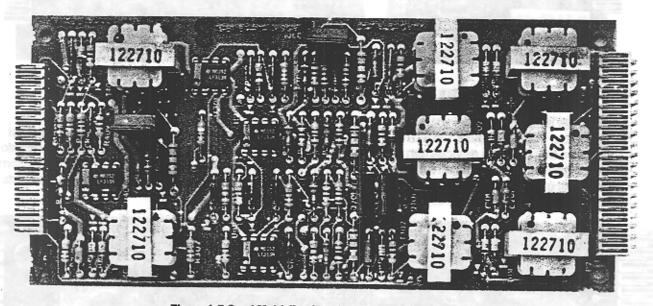


Figure 1-7 Quad Multi-line Interface Printed Circuit Board

1.5.10 CO/PBX Line Interface.

(part number 10120) (Figure 1-8). CO/PBX Line Interface provides an interface for ring detection, DTMF and rotary dialing, MOH and camp-on tone. It can accommodate either polarity of tip and ring and provides for high voltage protection at tip and ring input.

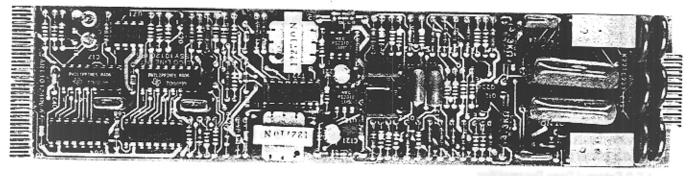


Figure 1-8 CO/PBX Line Interface Printed Circuit Board

1.5.11 Quad Single Line Interface (SLI).

(part number 10160) (Figure 1-9). This interfaces four type 2500 Tone Dial SLTs with the system. The interface board also provides for ringing, as well as loop current and audio paths. The first two circuits on the board provide for Power Failure Transfer and can be connected via the MDF (Main Distribution Frame) to any of the CO/PBX lines. Use of this board requires the installation of an external ring generator (90-105 V ac. 20-30 Hz).

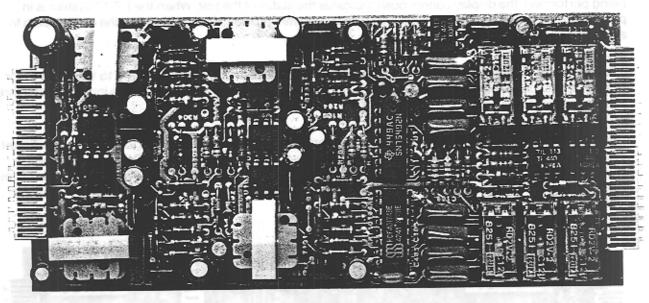


Figure 1-9 Quad Single Line Interface Printed Circuit Board

1.5.12 Relay/Sensor Interface.

(Part number 10140) (Figure 1-10). The Relay/Sensor Interface provides for a maximum of three contact closures so that external devices can be activated. Each contact is rated for 24 V at 1 A. The interface also provides three sensors which are capable of sensing contact closures and to initiate actions by the system (dependent upon programming). The interface to the sensors must be implemented through dry contacts only. Each sensor protects the system through a 1/8 Ampere fuse.

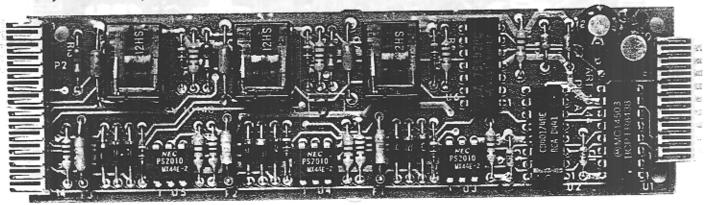


Figure 1-10 Relay/Sensor Interface Printed Circuit Board

1.6 EKSU COMPONENTS

The Expansion Module consists of an MLI, an Analog Matrix, a Power Supply, and associated circuitry. The module communicates with the KSU module via two 40 pin ribbon connectors and a ground conductor.

1.6.1 SMDR Interface.

(optional) (Figure 1-4). This optional Station Message Detail Recorder interface is an RS-232C port and is provided as a plug-in module at the EKSU. Baud rates from 110 to 9600 bps are DIP switch selectable to drive a serial printer to record call information.

1.6.2 External Page Preamplifier.

The preamplifier is capable of driving output loads of 1000 ohms or higher and provides a gain of 12 dB.

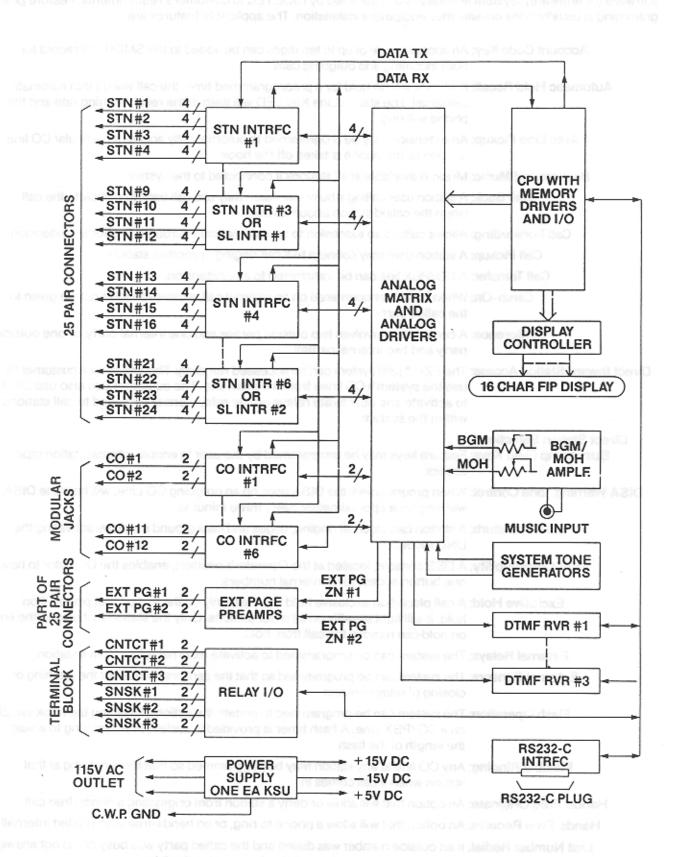


Figure 1-11 System Block Diagram

1.7 SOFTWARE

The EZ-1™ Key System is a stored program system, switching calls and initiating features under control of the software (or firmware). System firmware is programmed by ISOETEC to customer's requirements. Feature programming is usually done on-site after equipment installation. The applicable features are:

- Account Code Key: An account code of up to ten digits can be added to the SMDR call record for both incoming and outgoing calls.
- Automatic Hold Recall: If a line is left on hold for a preprogrammed time, the call will go into automatic call recall. The station Line Key LED will flash at the recall flashing rate and the phone will ring.
 - Auto Line Pickup: An extension may be programmed to automatically access a particular CO line as soon as the phone is taken off the hook.
 - Background Music: Music is available at all stations if connected to the system.
 - Call Back: A station user calling a busy extension may use call back to complete the call when the called station becomes free.
 - Call Forwarding: Allows calls to an extension to be automatically rerouted to another extension.
 - Call Pickup: A station user may connect to a call ringing at another station.
 - Call Transfer: A CO/PBX line can be transferred to any extension.
 - Camp-On: When busy is encountered on an internal call, a camp-on tone can be given to the called party.
 - Conference: A conference involves two outside parties and one internal party, or one outside party and two internal parties.
- Direct Inward Station Access: The EZ-1™ (36) system can be accessed remotely. This will allow a customer to use the system's CO lines from a distant site. The customer can also use DISA to activate and deactivate relays on the relay/sensor card, and to call stations within the system.

Direct Station Selection/

- Busy Lamp Field Keys: Feature keys may be programmed by the user to enable internal station rapid access.
- DISA Warning Tone Control: When programmed, the DISA user, on an outgoing CO Line, will hear the DISA warning tone approximately every three minutes.
 - Do Not Disturb: A station can block all ringing, pages and background music by activating the DND mode.
 - DSS Compatibility: A DSS console, located at the Operator's position, enables the Operator to have one button access to all internal numbers.
 - Exclusive Hold: A call placed on exclusive hold will flash only on the station that placed it on hold, it will light steadily on all other stations. Only the station that placed the line on hold can remove the call from hold.
 - External Relays: The system can be programmed to activate external relays from a station.
 - External Sensors: The system can be programmed so that the sensors can detect the opening or closing of relay contacts.
 - Flash Operation: The system can be programmed to imitate the action of flashing the hook switch on a CO/PBX Line. A flash timer is provided in system programming to adjust the length of the flash.
 - Flexible Ringing: Any CO line at any station may be programmed so that it will not ring at that station when a call comes in.
 - Hands Free Originate: An option that will allow or deny a station from originating a hands-free call.
 - Hands Free Receive: An option that will allow a phone to ring, or go hands-free when called internally.
 - Last Number Redial: If an outside number was dialed and the called party was busy or did not answer, the same number can be redialed by pressing the # key.
 - Message Waiting: To leave an LED indication when a caller receives a busy signal or a ring-no answer.

Multiple UNI Keys: The programmable UNI key enables the user to receive or originate calls on outside lines that do not appear at their station.

Music On Hold: When music is connected to the system and the Hold key is pressed, music is applied to the caller's line.

Night Answer Key: An incoming call at night may be answered by the user if the station is programmed to allow it.

Paging (including External)

Ringing and Meet-Me Page: All paging is under control of the user. Paging may be for individual zones, all zones, or external zones.

Park Page Option: An individual call may be parked while an attempt is made to locate the called party.

PBX Feature Keys: Up to 12 programmable features can be assigned to the feature keys for single key emulation of PBX features.

Release Key: Used in conjunction with headset operation in place of hook switch.

Remote Diagnostics: May be programmed with a remote KSU.

Remote Programming: A system can be programmed over a telephone line from a remote KSU. System must be equipped for DISA.

Self Test Inhibit: An option that allows the automatic self-test to be inhibited. In certain situations, the audible tone produced by the self-test may not be desired.

Save-Repeat Key: A dialed number can be saved for later redialing through the use of this function.

Single Line Features: CO Line pickup, call back, line queueing, and transfer may be accomplished when accessing the system from a single line telephone.

Station Message Detail

Recording (SMDR): Provides a record of incoming and/or outgoing calls.

Split Key Function: If a camp-on tone is heard while a call is in progress, split operation will place the current call on hold and the new party will be connected.

Station Speed Dial: Every station can store up to ten speed dial numbers with up to 16 digits each.

System Speed Dial: System Speed Dial is programmed only by the Operator to provide up to 25 speed dial numbers with a maximum of 16 digits each. For systems with an expansion control unit (EKSU), 50 speed dial numbers may be programmed.

Three Digit Toll Restriction: The system is capable of providing toll restriction on CO line calls based on the first three digits of the dialed number.

Trunk Queueing: When all CO/PBX lines in a particular group are busy, a station user can activate this feature which will ring the station back when a line becomes available.

Volume Control: Volume is controlled by two keys on the station — Volume Up and Volume Down.

14 Button Key

Telephone Compatible: Will perform the same functions as the EZ-1™ 26 button telephone but with less feature keys.

Multiple UNI Keys: The programmable UNI key enables the user to receive or originate calls on out > A large that So not appear at first, serior.

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SECTION 2 OPERATION

2.1 GENERAL

The following describes the operating procedures required by the user of an EZ-1™ (36) Key Station to complete calls and to use the features programmed into the system.

The EZ-1™ (36) Key System can be used with two different telephones: the standard EZ-1™ 26 key telephone and the small EZ-1™ 14 key telephone. The operation of either phone is identical except where noted. Most features can be accessed by dedicated feature keys. Six of these keys are preset function keys while the remainder are programmable. These keys can be programmed to access Central Office (CO) lines, PBX lines, Direct Station Selection (DSS), or any of the programmable features of the system. Station Selection for DSS keys and assignment of Station Speed Dial numbers can be programmed by the user. The LEDs next to assigned DSS keys are used as a Busy Lamp Field to indicate the status of the extension assigned to it.

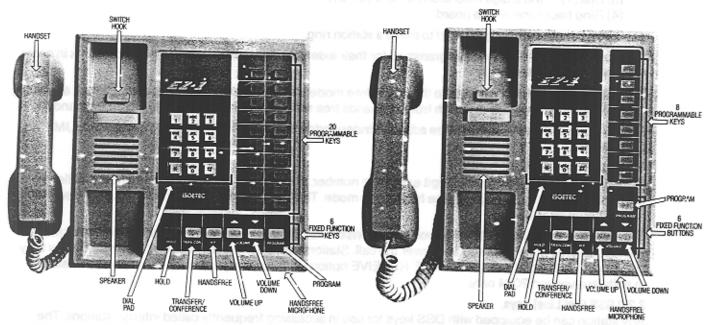


Figure 2-1 EZ-1™ (36) 26 Key Telephone

Figure 2-2 EZ-1™ (36) 14 Key Telephone

2.2 STATION TO STATION (INTERNAL) CALLS

2.2.1 Placing A Call.

Each EZ-1[™] Key Station has a built-in microphone and speaker which may be used instead of the handset during station to station calls. A call can be made between any two stations:

- Lift the handset.
- (2) Internal dial tone will be heard.
- (3) Dial the 2 digit extension number (31-54).
- (4) Splash tone will be heard and the called station is now in a hands free state.

or

- (1) Press HF (hands free) key.
- (2) Internal dial tone will be heard.
- (3) Dial the 2 digit extension number (31-54).
- (4) Splash tone will be heard and the called station is now in a hands free state.

or

- Lift the handset.
- (2) Internal dial tone will be heard.
- (3) Press the pre-assigned DSS key.
- (4) Splash tone will be heard and the called station is now in a hands free state.

or

(1) Press the pre-assigned DSS key.

(2) Splash tone will be heard and the called station is now in a hands free state.

NOTE: If non-existent station is dialed, a reorder tone will be heard for 2 seconds and then dial tone will return.

Extension can be programmed to prevent originating a call with the hands free key with the HANDS FREE ORIGINATE option in station programming. This option exists in software version 2004 only.

At the called station, a double splash tone will be heard and the HF key LED will flash indicating that the station's microphone is on. The called party can then answer the caller without having to lift the handset.

If the station user prefers to ring the desired extension and have the extension answered:

- Lift the handset.
- (2) Internal dial tone will be heard.
- (3) Dial [1] + the 2 digit extension number (31-54).
- (4) Ring back tone will be heard.

or

- (1) Press the HF (hands free) key.
- (2) Internal dial tone will be heard.
- (3) Dial [1] + the 2 digit extension number (31-54).
- (4) Ring back tone will be heard.

A DSS key can not be programmed to make a station ring.

Stations with auto-line pickup programmed for their extension must dial [2] before going off-hook in order to receive internal dial tone.

Switching from the handset mode to the hands free mode is accomplished by pressing the HF key, and going on-hook with the handset. To switch from the hands free mode to the handset mode, just lift the handset.

Headset and speaker volume can be adjusted independently by using the VOLUME UP and VOLUME DOWN keys.

2.2.2 Receiving A Call.

If the calling party dialed the two digit extension number, a double splash tone is heard and the called extension is automatically placed in the hands free mode. The conversation may take place hands free, or the handset may be lifted.

If the calling party dialed [1] + the two digit extension number, the station will ring and the handset must be lifted or the HF key pressed to answer the call. Stations can be programmed to ring no matter how they are dialed, by use of the HANDS FREE RECEIVE option in station programming. This option is available in software version 2004 only.

2.2.3 DSS (Hot Line) Keys.

Any station can be equipped with DSS keys for use in accessing frequently called internal stations. The number of keys which can be designated for each station is dependent upon the number of keys available (when not used for other features). A feature key must be pre-programmed as a DSS key by the system programmer before a station user can program it for their individual use. DSS station numbers can be programmed individually by each station user:

- (1) Press PROGRAM key while phone is on-hook. (PROGRAM key LED will flash)
- (2) Press selected feature key.
- (3) Dial selected station extension number (31-54).
- (4) The LED will go out indicating that feature key programming is complete.
- (5) Be sure that selected feature key is marked with station number or name.

The status of the station extension is indicated by the LED. When a LED is lit steadily, the extension is either busy or in DND mode. The feature key LED also flashes to indicate ringing of the extension when a call is placed to that extension. A DSS call is activated by pressing the idle DSS key of the desired extension number. The call progresses in the same manner as an internal call. To camp-on to an extension, the station handset is lifted (go off-hook) or the HF key is pressed and the DSS key of the busy extension is pressed. Both parties will hear the camp-on tone. The call is then completed as in a normal camp-on call.

2.3 EXTERNAL CALLS

2.3.1 Placing A CO/PBX Call.

The built-in speaker and microphone of the 26 key station can be used with CO/PBX line calls instead of the handset. However, the 14-key station can only use the built-in speaker to monitor the progress of a call and can not use it to carry on a conversation.

To place a call:

- (1) Lift the handset. We have a low double opening on no bottom poor of the problem and teachers a
- (2) Press the desired CO/PBX line key.
- (3) CO/PBX dial tone will be heard.
- (4) LED will flash slowly, and will be lit steady on other stations.
- (5) Dial the desired number.

or

- Press the desired CO/PBX line key.
 The station will automatically go hands free.
- (3) CO/PBX dial tone will be heard.
- (4) LED will flash slowly, and will be lit steady on other stations.
- (5) Dial the desired number.

If the extension is programmed for auto-line pickup:

- Lift the handset or press HF key.
- (2) Extension will automatically be connected to the preprogrammed CO/PBX line.
- (3) CO/PBX dial tone will be heard.
- (4) LED will flash slowly, and will be lit steady on other stations.
- (5) Dial the desired number.

NOTE: The station user can turn auto-line pickup On or Off by dialing [67]. If auto-line pickup is On, press digit [2] before going off-hook in order to receive internal dial tone. Then dial [6] to turn Off auto-line pickup.

Each key station can re-dial the last number dialed by pressing the [#] on the dial pad after receiving CO/ PBX dial tone.

As an added feature in software version 2004K, CO/PBX lines may be dial accessed, as long as an extension has a UNI key or direct appearance. To dial access a line, go off-hook and dial [9] + CO/PBX line number e.g., 91 or 92.

2.3.2 Receiving An External Call.

Each EZ-1™ Key Station can be individually programmed to ring on each CO/PBX line that it has access to, and for night ring if it is not programmed to ring during the day. In addition, each station can be programmed for automatic answer.

To answer a call without auto-answer:

- (1) Lift handset or press HF key.
- (2) Press CO/PBX key whose LED is flashing.
- (3) The call is now connected.

To answer a call with auto answer:

- (1) Lift handset or press HF key.
- (2) The call will automatically be connected.

The UNI key is a function key that can be programmed on an extension which will allow access to CO/PBX lines that do not appear on that extension.

To place a call with the UNI key:

- (1) Lift the handset.
 - (2) Press the UNI key.
 - (3) Dial the desired CO/PBX line (01-12); using two digits.
 - (4) The UNI key LED will flash slowly and CO/PBX dial tone will be heard.
 - (5) Dial the desired number. Last number re-dial [#] may be used when using the UNI key to access a line.

To receive a call with UNI key:

To answer a call without auto-answer:

- (1) Lift handset or press HF key.
- (2) Press the flashing UNI key.
- (3) The call is now connected.

To answer a call with auto-answer:

- Lift the handset or press HF key.
- (2) The call will automatically be connected.

2.3.4 Universal Answer Key (Available in software version 2004K).

A universal answer key can be programmed on an extension which will allow a station user to answer any incoming call ringing into the system. The extension must have either a direct appearance of a CO/PBX line or a UNI key. When a CO/PBX line is ringing, the UNIVERSAL ANSWER key will flash whether the extension is programmed to ring or not.

To answer the call:

- Lift the handset.
- (2) Press UNIVERSAL ANSWER key.
- (3) The call will be connected.

or

- (1) Press UNIVERSAL ANSWER key.
- (2) The extension will go hands free.
- (3) The call will be connected.

2.4 DIALING ALTERNATIVES

2.4.1 Station Speed Dial.

Station Speed Dial is a feature that allows a station user to store up to ten frequently called telephone numbers in system memory. Software version 2002 and 2003 can store up to 12 station speed numbers. The memory locations where the numbers are stored are called bins. These bins are numbered 1 thru 0 and can be accessed by dialing or by pre-programmed keys. To simplify the dialing process, a feature key can be assigned a station speed dial bin (see programming section).

To program a Station Speed Dial number without a key being assigned:

- (1) Press PROGRAM key (PROGRAM key LED will flutter).
- (2) Dial the assigned bin number (1 thru 0).
- (3) Dial an outside number with a maximum of 16 digits.
- (4) Press the PROGRAM key when the number sequence is completed. The PROGRAM key LED will

Use VOLUME UP key to enter a pause. The pause takes the place of one digit and can be entered at any position in the number being programmed. Pauses between digits are required in making calls behind a PABX or when using long distance carrier services. Any number of pauses can be chained together. Station Speed Dial numbers can be pre-chained at the end of a number by pressing the VOLUME DOWN key, followed by the next bin number to be chained. This operation takes the place of two digits.

To program a Station Speed Dial number assigned to a key:

- Press the PROGRAM key (LED will flutter).
- (2) Press the pre-programmed feature key.
- (3) Dial the outside number with a maximum of 16 digits.
- (4) Press the PROGRAM key when the number sequence is completed.

To use the Station Speed Dial feature for an outside call, press an idle Line key and, after return of dial tone, press PROGRAM key followed by the bin number of the programmed number. To chain another number, repeat this procedure. If a station is equipped with a Station Speed Dial key or keys, an outside call can be made by pressing an idle CO Line key and then the assigned Station Speed Dial feature key.

2.4.2 System Speed Dial.

System Speed Dial numbers can only be programmed from the Operator's position. The system provides 25 speed dial numbers with just the KSU or a total of 50 speed dial numbers with the addition of the EKSU.

For the Operator to program a System Speed Dial number:

- (1) Press the [*] key on the dial pad, the PROGRAM LED will flash.
- (2) Dial the desired bin number (01-25 or 01-50).
- (3) Dial telephone number to be entered; up to 16 digits.
- (4) Press PROGRAM key when completed; the PROGRAM LED will go out.
- (5) Repeat for as may bins as desired.
- (6) Label stations if any speed dial numbers are assigned keys.

To use a System Speed Dial:

- Dialing a bin number from dial pad:
- After accessing a CO/PBX line. (2) Dial [*] and the bin number (01-50) of the desired speed dial number.

Using a System Speed Dial pre-programmed feature key.

- (1) After accessing a CO/PBX line.
- (2) Press the desired system speed dial key.
- (3) The system will begin dialing the number.

2.4.3 Last Number Redial.

If an outside number was dialed and the called party was busy or did not answer, the same number can be redialed automatically. To redial the last number dialed, press the desired LINE key followed by the [#] key on the dial pad. A maximum of 16 digits may be automatically dialed.

2.4.4 Save/Repeat.

To save a number on an outside call, after dialing is completed, press the SAVE key (if programmed). The number will be saved until the SAVE function is used again. To dial a saved number, press the desired LINE key followed by the SAVE key. The call will be completed in the same manner as a normal call. This call is dropped at system reset.

2.5 CALL PROCESSING FEATURES

2.5.1 Hold.

Any CO Line may be placed on hold by pressing the HOLD key. Pressing the HOLD key one time places the line on INCLUSIVE hold. The LINE key LED will flash at all other stations where the line appears. Any of these stations may take the line off hold by pressing the flashing LINE key. If the HOLD key is pressed twice, the outside line is placed on EXCLUSIVE HOLD. The LINE key LED will flash only at the station that placed the call on hold. The LED will remain steady on all other stations indicating that the line is busy. Only the party that initiated the EXCLUSIVE hold can release the line by pressing the flashing LINE button.

If a line is left on hold for a pre-programmed time (Hold Recall Time), the call will go into automatic call recall. The station LINE key LED will flash at the recall flashing rate and the phone will ring. If the line is not answered by the station it will recall to the Operator.

Picking up a CO line on hold with a UNI key.

If a station user wishes to pick up a CO line that is on hold at another station, but does not have a key appearance, the line may still be picked up. The station must have a UNI key and:

- (1) Lift handset or press HF.
- (2) Dial [2] and CO line (01-12).
- (3) The call will be connected via UNI key.

2.5.2 Call Transfer.

To transfer an outside call to another extension, the TRAN/CON key is pressed (the outside call is placed on HOLD and the LINE key LED will flash). When dial tone returns, the desired station is dialed and the call is announced. The LINE key LED will flash at both internal stations and will indicate busy at all other stations. If the called station accepts the call, the calling party goes on-hook and the call is transferred. If the called extension is busy, does not wish to accept the call or does not answer, the calling party can return to the calling line by pressing the LINE key with the flashing LED of the held call.

The transferred call can be camped-on to a busy extension by transferring the call and hanging up.

If a station has a DSS key programmed for the extension to which a call is to be transferred and the station is also programmed for Automatic Transfer, an incoming call can be transferred by pressing the DSS key. When the party which answered the incoming call goes on-hook, the call is transferred automatically.

If the transferred call is not answered within the programmed transfer-recall time, the originating phone will ring and the associated LINE key LED will flash at the recall flashing rate. If the call is not answered by the originating phone, the call will recall to the Operator.

2.6 CONFERENCE

A conference call can be made with three parties (one or two may be external calls). The following procedures should be followed to set up a conference call:

2.6.1 Two Outside Parties.

To set up a conference which involves two outside parties and one internal party, the user places a call to the first outside party. When the call is completed it is put on hold by pressing the TRAN/CON key. A call is then placed on another CO line to the second party and when complete, the TRAN/CON key is pressed and all three parties are joined. The TRAN/CON key LED will flash slowly while the conference is in progress. To drop one party from the conference, the HOLD key is pressed putting both lines on hold.

The LINE key of the party to be dropped is then pressed. The LINE key of the party to be retained is then pressed to continue the conversation.

2.6.2 One Outside Party.

This feature is activated by placing an outside call and, when the called party answers, press the TRAN/CON key. The call is now on hold and the desired station number (additional party) can now be dialed. When the party answers, the TRAN/CON key is again pressed to establish the conference. The TRAN/CON key LED will flash at both stations involved in the conference. If one party wishes to leave the conference, that party hangs up, leaving the other two parties connected. When one party leaves a conference, the TRAN/CON key LED will go out.

2.6.3 Unsupervised Conference.

(Available in software version 2004K.) An unsupervised conference is a two outside party conference in which the station user that originated the conference has hung up his telephone allowing the two outside parties to continue their conversation.

To make a two outside party conference:

- (1) Place a CO/PBX line call.
- (2) Press TRAN/CON key.
- (3) Place another CO/PBX line call.
- (4) Press TRAN/CON key.
- (5) Conference is now established and TRAN/CON key LED will flash.

To leave the conference and allow outside parties to continue:

- (6) Press Unsupervised Conference Key.
- (7) Go on-hook.

In order to re-enter the conference, press one of the CO/PBX line keys on which the conference is taking place.

- NOTES: 1. Use of unsupervised conference requires a key position on an extension to be programmed for key code 81.
 - An unsupervised conference is going to use one DTMF receiver position while the conference is in progress.
 - Disconnect supervision must be provided (by Telco) on CO lines to ensure the conference call will drop when outside parties hang up.

2.7 BUSY/NO ANSWER ALTERNATIVES

2.7.1 Message Waiting.

To leave a message-waiting indication when a busy signal or ring—no answer is received, press the MES-SAGE WAITING key (or HOLD key if there is no MESSAGE WAITING key). The MESSAGE WAITING (or HOLD) key LED at the called station will light and two short beeps will be heard by the caller to indicate that a message was left.

If a MESSAGE WAITING or HOLD key LED is lit at your station, go off-hook and press that key and the station that left the message will automatically ring and the LED will be turned off. If more than one message was left, the LED will remain lit until the last message has been answered. To cancel a message, press the MESSAGE WAITING key or HOLD key while the handset is on-hook. (Any number of messages can be left to a given station.)

2.7.2 Call Back.

- (1) Station Call Back. To activate the CALL BACK feature when a busy signal is received on an internal call, press the CALL BACK key while the busy signal is heard and go on-hook. The CALL BACK feature automatically calls you back when the busy extension becomes free. If station has a DSS key associated with the called extension, the DSS key LED will light to indicate that the extension is busy. In this case, the DSS button is pressed, followed by the CALL BACK key. The CALL BACK key LED will then flutter confirming that the feature is activated. When the called station goes on-hook, the CALL BACK key LED of the calling party will flash and the telephone will ring. By picking up the handset or pressing the HF key, and pressing CALL BACK key, the station will be connected to the other station. Automatic CALL BACK can be cancelled when desired; the user can press the CALL BACK button after their phone rings and before answering.
- (2) Outside Lines Call Back (Trunk Queueing). To activate trunk queueing when access to an outside line is busy, press the LINE key followed by the CALL BACK key. Trunk Queueing is now activated. When the line becomes available, the LINE key LED will flash at the call back rate and the phone will ring.

When the handset is picked up (or the flashing LINE key LED pressed for HF mode), the line will be seized automatically if the automatic answer feature is equipped. If not, it will be necessary to press the flashing LINE key after the handset is lifted.

NOTE: Any call-back ring which is not answered within 30 seconds will be cancelled.

2.7.3 Camp-On.

When busy is encountered on an internal call, a camp-on tone can be given to the called party by dialing the digit [2]. A confirmation tone will be heard and the calling party will remain camped on the other extension as long as the station remains off-hook. When the camped extension becomes free or uses the SPLIT key, the call will automatically be connected. When transferring an outside call to a busy extension, the outside line can be camped-on to the busy line transferring the call and going on-hook.

The call extension (the station which has been camped on to) will receive a camp-on tone repeated at programmed intervals. The camped-on extension can press the SPLIT key to place the outside party on hold and to establish a direct connection with the camped-on call. By again pressing the SPLIT key, the extension will return to the original call.

2.7.4 Barge In.

(Available in software version 2004K). Barge in (executive override) is a feature that allows an authorized station user to break into an existing conversation. A feature key is programmed as a barge in key (key code 82) and is used to activate the feature. A warning tone is heard as the conversation is entered.

To barge into a conversation:

- Lift handset or go HF.
- (4) Press BARGE key.
- (2) Dial extension number.
- (5) A short warning tone will be heard.
- (3) Busy tone will be heard.
- (6) The station user is now in the conversation.

Station programming can be set to keep an extension from being barged into. The extension can also be programmed not to receive the warning tone (silent barge-in). Barge-in is blocked if the extension called is in DND mode.

In order to remove the station from the barged conversation, hang up.

2.8 STATION CALL PICKUP

To pick up a call to another station, go off-hook and dial [2] followed by the extension number of the ringing station. The call will automatically be connected.

2.9 CALL FORWARDING.

To forward calls to another station, the desired extension number is dialed, and when the call is answered, the FORWARD key is pressed. Two short beeps will be heard and the FORWARD key LED will flash at a slow rate to indicate that the phone is in call forwarding mode. To cancel call forwarding, the FORWARD key is pressed while the station is on-hook. The FORWARD key LED light will go out. There is no limit to the number of stations that can be forwarded at the same time, but only four stations can be forwarded to any one station at a given time.

2.10 DO NOT DISTURB (DND).

A station, while on-hook, can block all ringing, calls, pages, BGM and barge in by activating the DND mode. The DND mode is activated by pressing the DND key. The DND key LED will flash to indicate DND status. To cancel DND, the DND button is pressed to return the phone to normal service.

2.11 MUTE.

The MUTE key, when pressed, attenuates the station microphone as well as the handset microphone so that no transmission is possible. Pressing the MUTE key a second time will enable both microphones allowing normal station operation.

2.12 AUDIBLE FEATURES.

2.12.1 Paging.

The EZ-1™ Model 36 key system can be programmed to access four internal paging zones, and one external zone per KSU. To activate paging, the user dials the paging access code (60—all zones, 61—zone 1, 62—zone 3, and 64—zone 4). A single beep, indicating connection to the paging system, will be heard by the originator and at all stations associated with the dialed zone. The originator can now make a voice paging announcement.

NOTE: Stations which are busy or in DND mode will not hear the paging announcement.

To answer a page, a called party dials [65]. The paged party will be connected to the station that is occupying the page circuit at the time. The system is equipped with one external paging zone per KSU. These zones can be programmed to receiving paging from any zone, to ring on any incoming call, to receive BGM and to ring in NIGHT mode. BGM to the external zones can be activated only by the Operator by dialing the access code: [*1] - BGM On/Off external zone 1 or [*2] BGM On/Off external zone 2.

2.12.2 Background Music.

Every station can activate background music (BGM) via the station speaker. The BGM is turned ON by dialing the digit [1] and turned OFF by dialing the digit [1]. When BGM is in operation, it is automatically cut off when a ca!! is received and turned on again upon call completion.

2.12.3 Night Ringing.

This feature can be activated only by the Operator. Night ringing is activated by pressing the NIGHT key. The NIGHT key LED will light and incoming calls will ring at stations programmed for night ringing as well as those stations programmed to ring on CO lines. The night mode is cancelled when the Operator presses the NIGHT key a second time.

A night answer key is used with a UNI key to enable a station user to answer an incoming call when the system is in night mode and CO lines do not ring at this station.

To answer a call at night with a night answer key:

- Lift handset or press HF.
- (2) Press NIGHT ANSWER key.
- (3) The call will be answered.

2.12.4 Release Key.

A release key is used when a station is used with a headset rather than the handset. The release key takes the place of the hook switch (which is always up when using a headset). When using a headset, press the release key to go off-hook and get dial tone. Press the release key again to go back on-hook.

2.12.5 Account Code Key.

An account code key is used to enter an account number into an SMDR call record. A 6 digit account code can be entered with software version 2002. A 10 digit account code can be entered with software versions 2003 and 2004.

An account code can be entered on an external call, or while on an incoming call:

- Press AC key.
- (2) Dial number:
- (3) Press AC key again.

2.12.6 PBX Feature Key.

The PBX feature is used on lines which are connected to a PBX instead of a Central Office. Keys can be programmed in such a way that they emulate dial accessing a PBX feature. 12 different feature keys can be programmed per system and each key can have up to eight entries. Commands used in these entries are:

- W Wait for digits to be dialed followed by number of digits (0-9).
- F Flash the PBX line.
- P—Pause followed by number of seconds to pause (0-9).
- D—Dial digits that were waited for.
- 1-0, *, # Digits to be dialed.

2.12.7 Flexible Ringing.

Any station can be programmed to ring (or not ring) on any CO line for incoming calls.

2.12.8 Volume Control.

Speaker volume can be set for eight separate functions at each station. Once the volume is set for each function, the setting will remain in system memory. To increase speaker volume, the VOLUME UP key is pressed in steps until the desired volume is found. Decrease in volume is accomplished in the same manner with the VOLUME DOWN key. Functions which can be programmed for volume control are:

- (1) Handset off-hook on CO call.
- (2) Handset off-hook on internal call. (6) CO line ringing volume.

 - (4) Hands free on internal call.
- (5) Page volume.
- (3) Hands free on CO call. (7) Internal line ringing volume.
 - (8) Background music volume.

2.12.9 Audible Tones Listing.

Ring Back Tone. Indicates to a calling party that the called party is being rung.

Splash Tone. Tone heard when a station is called.

Reorder Tone. Fast busy signal indicating an incorrect operation.

Busy Tone. An interrupted tone indicating a station on line is in use.

Dial Tone. A continuous dual frequency tone. This is an indication that dialing may be started.

Self Test Audible. A loud tone (one second duration) upon power up of KSU or system reset.

Ring Tone. Audible tone heard to indicate a station has been dialed. A single ring indicates a

CO line call. A double ring indicates a station call.

Camp-On Tone. A brief tone heard during an in-progress call that indicates another call waiting to ring through.

2.13 OPERATOR STATION, as present the second second

2.13.1 Operator Position.

In addition to the capabilities of each station in the system, the designated Operator station can perform the following:

- Program system speed dial numbers.
- (2) Transfer system to night ringing mode.
- (3) Activate DISA mode.
- (4) Receive unanswered recall calls.
- (5) Control BGM to External Page.

2.13.2 Programming System Speed Dial Numbers.

The entire system can be programmed for System Speed Dial as follows:

- (1) While phone is on-hook, the [*] key is dialed to initiate the System Speed Dial function. The PRO-GRAM key LED will flutter.
- (2) The Operator now dials two digits (01-50) corresponding to the bin number designated for the desired Speed Dial Number.
- (3) An outside number of up to 16 digits is now dialed and PROGRAM key pressed to indicate end of the number sequence. The PROGRAM key LED will go out.
- (4) The VOLUME UP key is used to enter a pause. This takes the place of one digit and can be entered at any position in the number being programmed. Any number of pauses can be chained together. The pause period is programmable via the Systems program. This pause may be required when you are making your calls behind a PABX, or when you use the Special Service Networks (e.g., MCI or SPRINT).

2.13.3 Night Mode.

The Operator can have access to a preprogrammed key designated NIGHT which, when pressed, will light the LED. All incoming calls will then ring at those stations programmed to ring at night which have the appearance of the line that is ringing or a UNI key. The NIGHT key is programmed for the Operator position only. If a NIGHT key is not programmed on the Operator's position the system can not be put in the NIGHT mode. To program DISA access, see Table SS-11.

2.13.4 DISA Activation.

The DISA feature is activated by the Operator dialing [*3] with the handset off-hook. The feature is deactivated by the Operator dialing [*4] with the handset off-hook. When the designated DISA line is ringing and the DISA feature is deactivated, the line will ring as an incoming call. When the DISA line receives an incoming call and the feature is activated, it will not ring but it will show as a busy line on all phones except the Operator position where it will flash.

2.13.5 Unanswered Recall Calls.

Calls placed on HOLD and not answered within the Hold Recall time, will ring at the holding station for the Transfer Recall time and if not answered, will be transferred to the Operator. The call will ring the Operator until answered or abandoned. Transferred calls not answered within the Transfer Recall time will also be transferred to the Operator and will ring until answered or abandoned.

2.13.6 Using DSS Console.

The DSS Console keys are pre-programmed to call other internal extension and/or transfer incoming calls by pressing the DSS keys in lieu of dialing the extension number. That number will be rung hands free, if the extension is programmed for hands free receive.

The key functions are:

1 through 24 = Stations 31 through 54

25 through 29 = Park Page zones 55 through 59

30 through 31 = No use

32 = Page all zones

2.14 SINGLE LINE TELEPHONE OPERATION

2.14.1 Outside (CO) Line Access.

- Lift handset off-hook.
- (2) Dial [9] and CO line number (1 thru 0, #, *).

2.14.2 Put Outside (CO) Line on Hold (Inclusive).

(1) Flash hook switch. (Rings back after Hold Recall Time.) (Will ring as long as Transfer Recall Time.)

2.14.3 Return To Holding CO Line.

- (1) Lift handset off-hook.
- (2) Dial [*].

2.14.4 Inclusive Hold Pickup.

- Lift handset off-hook.
- (2) Dial [8] and CO line number (1 thru 0, #, *).

2.14.5 Transfer Outside Call.

- Fiash hook switch (Puts CO on Hold).
- (2) Dial [#] and extension number (31 thru 54). When you announce the call and hang up, the call will ring at the transferred extension. (If transferred extension doesn't pick up within Transfer/Recall Time, call will ring directly to the Operator.)

2.14.6 Call Back To A Busy Extension/Trunk Queueing.

- (1) Dial extension (31-54)
- (2) While receiving busy signal, flash hook switch.
- (3) Dial [7] and go on-hook.

2.14.7 External Page.

- (1) Lift handset off-hook.
- (2) Dial [60-64].

2.14.8 Station Call Pick Up.

- Lift handset off-hook.
- (2) Dial [2] and extension number (31-54).

2.14.9 Night Answer.

- Lift handset off-hook.
- (2) Dial [66].
- (3) Connect to incoming call.

2.14.10 Split Answer.

- Lift handset off-hook.
- (2) Answer first call.
- (3) Hear camp-on tone.
- (4) Flash hook switch.
- (5) Answer call, first call is on hold.
- (6) Flash hook switch to switch from one call to another.

NOTE: Single line phone must have a key appearance and access to any CO line that is to be used by Single Line Phone.

2.15 TOLL RESTRICTION

2.15.1 Software Version 2002 and 2003.

Toll restriction is accomplished by the correlation of CO lines and station classes of service (COS). This will allow three types of access:

- —Full access:
 - Semi-restricted access;
 - Toll restricted access.

NOTE: A station can be denied access to a CO line by "station line access" programming.

(1) Station Classes of Service:

Class 0: No restriction;

Class 1: Allows 1 + 7 digits on all CO lines;

Class 2: 1/0 toll restriction on all CO lines;

Class 3 thru 11: 1/0 toll restriction on all CO lines which have a class of service less that the station COS, semi-restricted access on all outside lines which have a class of service equal to or greater than the station class of service.

Class 12: No restriction and is not SMDR recorded.

(2) CO Line Class of Service:

CO Line COS: 0-11: Used in correlation with station COS 0-11.

NOTE: A toll restricted station is allowed to dial only seven digits after which the dialpad is disabled. In applications where additional digits must be dialed (i.e., beepers, MCI/SPRINT access codes and long distance numbers, etc.):

—Set CO line flash timer to 001 to 003 (50 mSec-150 mSec.). For example, the station user dials NNN-XXXX (local beeper service). Tap CO line key (to allow flash), continues dialing digits (for beepers, common carriers, etc.);

or

CLASS OF

 Program common carrier number (i.e., MCI/SPRINT) on system speed with pause plus access digits (only for common carrier service).

Table 2-1 CLASS OF SERVICE TABLE (2002 & 2003)

SERVIC	E											
12	F	F	F	F	F	F	F	F	F	F	F	. F
11	Т	T	Т	Т	Т	Т	T	T	T	T	T	S
10	T	io aliva	a to Tools	T		I.	J	T	T	T	S	S
09	Т	Т	T	Т	Т	Т	T	Т	T	S	S	S
08	Т	Т	Т	Т	Т	T	n a Tur	Τ.	S	S	S	S
07	Т	Т	T	Т	Т	T	Т	S	S	S	S	S
06	Т	Т	Т	Т	Т	Т	S	S	S	S	S	S
05	Т	Т	Т	Т	Т	S	S	S	S	S	S	S
04	Т	Т	Т	T	S	S	S	S	S	S	S	S
03	-114	A. 04050	T	S	S	S	S	S	S	S	S	S
02*	T	No. Land	90) L L-Z	3 setTrain	w ter T io	o (n T it ansc	eleThon	PIME	ns mEnt i	so ATHO	To pilice a	Т
01*	1+T	1+T	1+T	1+T	1+T	1+T	1+T	on1+Ti	1+T	: 1+T∈	1±T	1+T
00	F	FIG	in Francis	eye Fil.	oegu F i e	boo s F atus	cosr F II) s	boo F aac	os /E10	ticio F uc	Entel the	F
	0	(31 f hru 54	2	3	4	5	6	7	8	9	10	11

CO LINE (TRUNK) CLASS OF SERVICE

F = Full Access; allows all calls.

\$ = Semi-Restricted Access; allows all local and long distance calls; does not allow 0 for external Operator.

T = Toll Restricted; 1/0 toll restriction on all CO (trunk) lines.

NOTE: For Station Class of Service 1, 2 & 12:

*1 = Class of Service (COS); 1-Allows 1 + 7 digits on all CO lines. *2 = Class of Service (COS); 2-Allows 1/0 toll restriction on all CO lines.

Station COS 1 & 2 are pre-determined for their specifications, regardless of the CO line COS. It is recommended to use station COS 1 or 2 with CO line COS 0.

12 = Class of Service (COS); 12 – Full access on all CO lines.

2.15.2 Software Version 2004.

Toll restriction on software revision level 2004 has been enhanced to include a one thousand entry area code and exchange table. Stations will now either be allowed full access to CO Lines or be Toll Restricted in accordance with the Class of Service table.

NOTE: See Table 2-2 for correlation between station and CO line classes of service.

Table 2-2 CLASS OF SERVICE TABLE (2004)

STATION								oitc. "se	1/0 / ч			
CLASS OF SERVICE												
	UBW 10 SSI	BIO A COM	s writen r	auto abes a	00 40 PO S	22 <u>9</u> 006 DE	riginteen i	mins so	<u>_</u>	_	_	_
12	F	F	F	F sorv	E	id no deta	Et ned	To see up 1	ď.	Г	_	
11	T	T	Т	T	Toppion	ADR Tex	Ton all b	Inoiton	I No reli	$_{\odot}$ Γ_{zz} \sim	T	F
10	T	T	T	T	T	T	Т	Τ.	T	T	F	F
09	Т	Т	T	T	T	T	T	Service	1	F	F	F
08	T	Т	T	12-080	TOUGH	T	T	riel II	F SOO	F	F	F
07	Tablerio	-Tonglaid	THE BUS	VITIBILITY	To	e T ino is	T	F	F b	E of	F	F
06	T	PER ROTE	CIVSETI	T	(T. n.) b	To	F	Frodb	t F sherry	F	loF	F
05	Ť	Т	Т	Т	T	F	F	F :(.ate	Fredmu	F	·F	F
04	Ton our	Torto	id T osken	T	F	eFn den e	F	F	F. an	F	F	F
63	T						F		F	F	F	F
02	T	T	E	F	F	F	F	F	F	F	F	F
		_	-	-	-	<u>'</u>	-	-	e mems	o J ominic	×	E
01	T	F	F	Η-	F	F	-	Г	Г	Г	200	-
00	F	F	F	F	F	.E.	F	F	F	F	F	F
- T. BOX	0	with privi	2	3	4	5	6	7	8	9	10	11

CO LINE (TRUNK) CLASS OF SERVICE

F = Full Access

T = Toll Restriction (Determined by table)

Each area code and exchange is assigned a YES (for allowed) or a NO (for restricted). The default condition of the table is that area codes are restricted and exchanges are allowed. Option 3 is used to distinguish area codes from exchangers in 1 + NPA dialing area. If option 3 is YES, it will tell the system that it is in a 1 + dialing area.

Station Class of Service is as follows:

Class 0 : No restriction.

Class 1-11: CO lines which have a class of service less than the station class of service, toll restriction will apply.

Class 12: No restriction and is not SMDR recorded.

2.16 DIRECT INWARD SYSTEM ACCESS (DISA).

2.16.1 Standard DISA.

The user activates the DISA access capability by dialing [*3] from the Operator's position while off-hook. To place a DISA call from any DTMF telephone (not associated with the EZ-1™ (36) key system) dial the number designated for the DISA line, wait for the call to be answered, and the system to provide a dial tone. Enter the four digit DISA access code (if inaccurate code is used, the system will drop the call).

Wait for dial tone. Dial a line access code [91 thru 9#] for CO line (01 thru 12). Dial (31 thru 54) for an internal extension.

To retry an internal or outside line call, press the [#] and receive a new DISA dial tone.

To release a DISA call, caller should dial [*] before hanging up to free the DISA line.

NOTE: The DISA feature requires a DTMF receiver.

DISA Warning Tone Option 9 has been added to software in the following versions:

- (1) 2003A9 and higher.
- (2) 2004A7 and higher.

When option 9 has been programmed as NO, the DISA user, on an outgoing CO line, will hear the DISA warning tone approximately every three minutes. When the warning tones are heard the DISA user must enter any two digits, except [*] and [#], to continue the phone call. If the digits are not entered the DISA user will be disconnected from the outside call. If the [*] is used this will signify that the external or internal call is complete and that the DISA user will not need the service any longer. When the [*] is dialed it will immediately disconnect the DISA line from the system. The [#] key is used either on an internal or external call (CO line) to end the call and the DISA user will return to internal dial tone. At this point the DISA user is able to make another internal or external call without having to dial into the system again.

2.16.2 Automatic DISA (software version 2004K).

Up to three CO lines can be programmed for automatic DISA. This differs from regular DISA in that the line is automatically answered and no authorization code is required. In addition, only one call may be made each time the DISA line is used. A DISA line user may dial an extension 31 to 54 or a CO line by dialing [91] to [9#]. A DISA call to a station will only require a DTMF receiver while the station is being dialed. A DISA call to a CO line will use the DTMF receiver for the entire call. Therefore, for each simultaneous DISA call, one DTMF receiver is required to a maximum of three.

In order to make a CO line an automatic DISA line, place it in CO group 9.

2.17 DOOR BOX. (software version 2004K)

The door box is a type of EZ-1™ (36) station that provides a signal and a two way voice path from a door unit to an EZ-1 station.

Each door box is wired to the EZ-1™ (36) in the same manner as a key station, and takes up one extension position. A maximum of two door box units may be connected to the system.

The door box is operated by pressing the button on the face plate. When this button is pressed, the extensions programmed to receive calls from the door box will ring for as long as the button is held in. Extensions are programmed to receive calls from the door box by being in page zone 64.

The voice box can be called as an extension by dialing its extension number or by programming a DSS key for the extension of the door box.

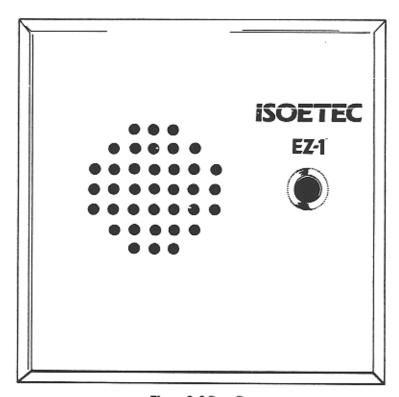


Figure 2-3 Door Box

2.16.2 Automatic BISA (software version 2004)().

Up to three CO times can be programmed for automate. DISAL I be differs from regular DISA in that the line is bit, answered and per programmed for codes to the uponed to addition color one datumaly be made as a line of been a been. A DiSAL in the period of the same continued to the period of the period with respondence a DTMT received to the same the same to the period of the color of the entire continued to a continued to a maximum of there.

n order to make a CO time an autonorite DISA fir e, place this CO , mup 9

2.17 3009 ROX (subjugge version 2004%)

The door box — a type of 62-11" (38) stance that provides a signal and a molycay core path from a door unit to an 62-1 stall.

Each door box is wired to the EVEN* (36) in the same manner at all it station, and takes up one extension post on A making of two door box units early be or checked to the postern.

The door box is nouralled by pressing the button on the face plate. When this button is pressed, the extensions programmed to receive asless from the direction solved for as long as the button is held in the tensions are programmed to an laive data from the doubles to be being in page zone 64.

The voice box tunible called as an expension by dualing its extension of tuber or by programming a DSD key for the extension of the culor box.



Firm: 2-3 Bust Box

SECTION 3 INSTALLATION

3.1 FCC/TELEPHONE COMPANY REQUIREMENTS

Before starting system installation, there are established FCC rules and regulations which must be observed. FCC rulings state that the owner of the system to be installed give the local telephone company sufficient advance notice of intention to use privately owned telephone equipment. The owner must also furnish information as to the identification of the particular lines to be connected to the system and the affected telephone numbers. FCC registration information on the model name, FCC-assigned registration number and ringer equivalence information must also be furnished. Should there be any question that the customer provided equipment may cause harm to the telephone number, the local operating company is required to notify the customer of an impending temporary interruption of service. The customer must be given the opportunity to correct the existing problem if possible. The telephone company must also advise the customer of their rights for filing complaints before the FCC.

Under no circumstances is the equipment to be altered or modified without written approval of the manufacturer. Failure to gain permission for any modification will void the warranty. If a system malfunction is suspected, the RJ11C connectors terminating the equipment to the CO lines should be disconnected.

3.2 SITE REQUIREMENTS

Selection of a suitable location is the most basic, yet most critical consideration in the installation of a telephone system. The following factors should be considered when choosing an appropriate location for equipment installation:

- (1) The KSU must be wall mounted so there is a three foot clearance from the ceiling and a four foot clearance from the floor.
- (2) Ample space must be allowed to remove the cabinet cover, to access assemblies and cards within the cabinet and allow space for the MDF (Main Distribution Frame). Consideration should be given to future growth with an allowance for adequate space for an Expansion Module (EKSU).
- (3) A well ventilated area having an optimum temperature range of 60 to 80 degrees F and a relative humidity range of 5 to 90% (non-condensing) must be provided.
- (4) A good earth ground must be provided using 16 AWG or larger insulated copper wire. A cold water pipe (not interrupted by insulated joints) will provide an adequate ground. Any interruptions in the cold water pipe must be bypassed with 14 AWG or larger straps.
- (5) A separately fused, dedicated 117 V ac, ± 10%, 15 A, 47-63 Hz, single phase, 3-wire (parallel blade with ground) power outlet should be located within six feet of the lower right side of the KSU and EKSU.
- (6) To minimize the length of cable runs between the stations and the KSU, the location of the majority of the telephone sets (stations) should be taken into consideration when selecting a location for the KSU.
- (7) The KSU should not be installed close to any equipment which may produce RFI (Radio Frequency Interference) such as electric welding equipment or a radio frequency transmitter.
- (8) Location of CO/PBX line terminations must be considered when selecting a KSU location. In the case of telephone company lines, the RJ11C or RJ21C – FCC approved connectors supplied by the telephone company, must be within five feet of the lower left side of the KSU and EKSU.
- (9) Area lighting should be adequate for installation and maintenance of the system. Hazardous or flammable materials should be removed from the vicinity of the KSU. The immediate area must not be subject to flooding or excess moisture. The KSU should be isolated from areas of moving machinery or equipment. It is also recommended that static electricity producing carpets not be installed in this area.

3.3 UNPACKING AND INSPECTION.

The following inspection procedures should be performed prior to start of installation. Carefully inspect packages for evidence of external damage indicating possible damage to the contents. Check each package against the shipping list and job order. Report damaged or missing items immediately to your supplier representative.

3.3.1 Key Service Unit.

Locate and open carton marked "KSU" and remove unit from carton. Carefully remove covering and check all parts against the enclosed packing list. Check each item for damage and check part numbers of each part against those listed on your order form.

NOTE: Packing material around the LED display is taped. Remove carefully to avoid damaging connections.

3.3.2 Stations.

Locate packages containing Multi-Line Telephone sets (MLT) and remove individual cartons from the packages. Carefully open cartons and remove telephones. Check that the total number received agrees with those on the stock list. Place multi-line telephones in locations where they are to be installed.

3.3.3 Miscellaneous Items.

Open packages containing miscellaneous items and check each item against the packing list. Be sure that the MDF is included in the packages. Report any discrepancies.

3.4 KSU INSTALLATION

3.4.1 Preparation.

Mount the KSU and Expansion Module (EKSU) on the wall so that the top is approximately three feet from the ceiling and bottom is four feet from the floor. The EKSU must be installed beside the KSU with no greater separation than two inches to allow for modular ribbon cable connections and for the ground connector from EKSU to the KSU. Adequate space must be maintained between KSU and EKSU to allow access to the KSU reset button. See Figure 3-1, KSU Mounting Dimensions.

3.4.2 Grounding.

Immediately after the KSU is mounted, the system must be properly grounded. Since the AC line cord ground (green conductor) is not a reliable ground, the system must use a cold water pipe for ground.

The AC connection to the power supply requires a parallel blade with a ground receptacle. A three wire to two wire isolation adapter should not be used. To ensure proper system operation, a good earth ground must

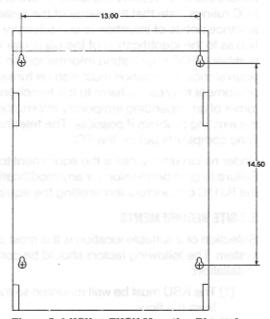


Figure 3-1 KSU or EKSU Mounting Dimensions

be provided. In most cases, this can be provided by a metallic (unpainted) cold water pipe. The installer should verify that there are no insulated joints such as non-metallic pipe sections which will isolate the earth ground. If the cold water pipe is found to be an inadequate earth ground, another source must be found.

Earth ground must be provided using 16-AWG or larger insulated wire kept as short as possible. The ground wire is connected to the ground lug (J28 pin 2) inside the KSU (see Figure 3-2 for ground lug location). If an Expansion Module (EKSU) is required, ground wire E-2 should be connected from the EKSU to the KSU (J28 pin 1). This ensures that both modules are at the same potential for proper operation.

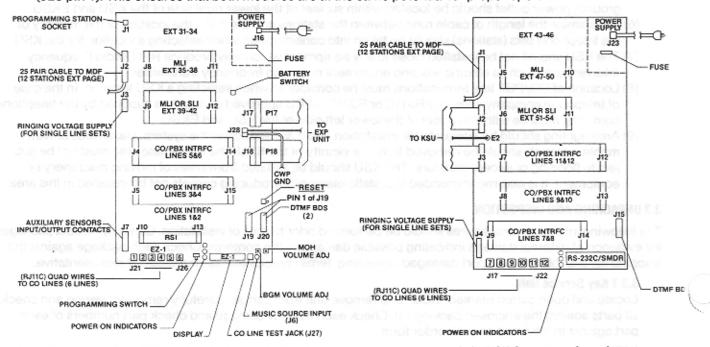


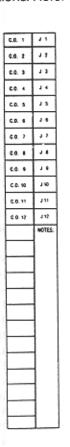
Figure 3-2 KSU Component Locations

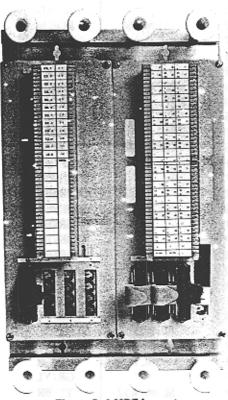
Figure 3-3 EKSU Component Locations

3.5 KSU CABLING

The 25-pair station cables (with AMP-type 522203-1 or equivalent female connectors) are connected to the KSU at position J2 and to the EKSU at J1. The cables should be of sufficient length to reach from the MDF to the upper left side of each module and terminate at the appropriate jack. The type of block termination used on the MDF should be industry standard to provide a reliable connection, flexibility for moves, changes and problem isolation. The precise pin connections for the output cables to terminate stations and provide external paging are found in Table 3-1. The color codes shown are industry standard. The MDF is mounted in the immediate vicinity of the KSU and EKSU so that the 25-pair cables for the KSU and EKSU can be readily connected to the MDF.

The installation of an EZ-1™ (36) can be simplified and shorten the installation time by the use of the M36 Main Distribution Frame (part number 20100). This preassembled main frame provides for speedy connections between the KSU, EKSU and the main frame. The M36 MDF provides for connection of the CO lines terminated on an RJ-21X and the termination of the station cables to the KSU or EKSU. A 25-pair jumper cable is connected between J2 on the KSU and the connector labeled KSU on the MDF. A second 25-pair jumper is used between J1 on the EKSU and the connector labeled EKSU on the MDF. The third connector labeled MISC is not used at this time. CO lines terminated on an RJ-21X are connected to the connector labeled CO lines. Bridging clips are then inserted on the CO block to connect to the modular jacks on the bottom of the MDF. Modular cords are then used to connect individual CO lines to the KSU and EKSU. See Figure 3-4 for station cable connections. Refer to Table 3-1.





1 R	31	!	36	T B	47
DA OR	31	DA DB	30	0A 08	47
,		9		17	
T B	ĸ	t R	40	T 8	48
ÇA DE	22	04. 06	40	DA DB	44
2		10		16	
i R	23	T R	41	T A	49
DA. DB	33	0A 98	41	9A 98	49
3	a	н		+9	
T 8	ж	T B	42	T R	50
0A 08	ж	DA DB	e	GA. DR	50
4		12		27	
T R	35	I A	a		51
ол 08	В	0A 08	43	9A 98	51
,		13		21	
T #	36	T	44	1	n
DA 198	ж	0A 08	44	\$A 56	52
6		14		22	
i B	37	T R	45	ī	53
DA DB	31	0A 06	45	6A 68	50
,	1	15	1.40	ъ	
1 R	36	1	46	T R	54
(A (8	ж	3A 38	46	0A 06	54
		16		34	
40.0		-	-	2	

Figure 3-4 MDF Layout

CAUTION: A prolonged short circuit between the audio (tip and ring) and the data (DT/DR) can cause permanent damage to the circuit. Care should be exercised during installation to prevent this type of damage. It is recommended that the 25 pair cable be left unplugged at the KSU and EKSU until the station jacks have been terminated.

The system allows the connection of customer provided amplification equipment for noisy areas where page volume levels are inadequate. Night ringing may be provided over the external paging system if so programmed. (See Table 3-1 for external page output positions).

Music On Hold (MOH) and Background Music (BGM) are provided to the system through RCA-type jack J6 on the KSU. BGM and MOH volumes can both be adjusted through potentiometers located on the KSU above J6 (see Figure 3-2 for location of adjustment potentiometers).

TABLE 3-1 CABLE CONNECTIONS

KSU (J2) BASIC UNIT		KS EXPAN	U (J1) SION UNIT	The nulpic of the thick that the second of t	CONN. CABLE				
JACK TERM	DESIG	JACK TERM	DESIG	LEAD COLOR	LEAD DESIG	CABLE TERM	LEAD COLOR		
26	STN #31	26	STN #43	WH/BL	Tip	26	GE.		
- disnim		onoit d	301	BL/WH	Ring	1	RD		
27		27	2 4 2 4 4 4	WH/OR		27	BK		
2		2	Last and 19N but	OR/WH		2	YL		
28	STN #32	28	STN #44	WH/GR	ant or T USA	28	GR		
3		3	TOM BEILING DEX	GR/WH	R	3	RD		
29		29	managengo oaka	WH/BR		29	BK		
4		4	m a sat or soont	BR/WH		ent nor 4	YL		
30	STN #33	30	STN #45	WH/SL	sed to $_{ m T}$ onnec	30	GR		
5		5		SL/WH	R	A snoiscenno	RD		
31		31		RD/BL		31	BK		
6		6		BL/RD		6	YL		
32	STN #34	32	STIN #46	RD/OR	T	32	GR		
7		7	da - a - a - a - a - a - a - a - a - a -	OR/RD	R	7	RD		
33		33		RD/GR		33	BK		
8		8		GR/RD		8	YL		
34	STN #35	34	STN #47	RD/BR	T	34	GR		
9		9		BR/RD	R	9	RD		
35		35		RD/SL		35	BK		
10	11-11-11	10		SL/RD		10	YL		
36	STN #36	36	STN #48	BK/BL	T	36	GR		
11	0111170	11	01111110	BL/BK	R	11	RD		
37		37		BK/OR		37	BK		
12		12		OR/BK		12	YL		
38	STN #37	38	STN #49	BK/GR	T	38	GR		
13	3114 #37	13	3114 #47	GR/BK	R	13	RD		
39	10.00	39		BK/BR	K	39	BK		
14		14		BR/BK		14	YL		
	CTN1 #20	40	CTN1 #50		T	40	GR		
40	STN #38		STN #50	BK/SL	R		RD		
15		15		SL/BK	К	15			
41		41	The section of the	YL/BL		41	BK		
16	CT 111 (1120	16	CT HETHER	BL/YL	22	16	YL		
42	SL #1/#39	42	SL #5/#50	YL/OR	T	42	GR		
17	DEGE 44	17	pror us	OR/YL	R	17	RD		
43	PFSL #1	43	PFSL #3	YI./GR		43	BK		
18	GT 110 11 (0	18	er uz men	GR/YL	ar.	18	YL		
44	SL #2/#40	44	SL #6/#52	YL/BR	T	44.	GR		
19		19	DECKE OF A	BR/YL	R	19	RD		
45	PFSL #2	45	PFSL #4	YL/SL		45	BK		
20 _{190 98}	IVDR) can caus	20	18 (0.0%) 20% 20%	SL/YL	ted lignic fro	20	YL		
46	SL #3/#41	46	SL #7/#53	VI/BL	e engli fiuono	46	GR		
statio <mark>15</mark> ac	EKSE and the	ons UZI	ta recopulação d	BL/VI	as that the 25	21	RD		
4		47		VI/OR		47	BK		
22 .	N DECTOR OF THE	22	or no const	OR/VI		22	YL		
48	SL #4/#42	48	SL #8/#54	VI/GR	o to nativean	00 9 48	GR		
23	of a measurable	23	TO DODINO	GR/VI	R	pob. 23 maio	RD		
49		49		VI/BR		49	BK		
2408 90	ntough PUA-ty	24	d b <mark>ebivora swif</mark>	BR/VI		24	YL		
50 USX	EXT PAGE	50	EXT PAGE	VI/SL	Toy HO	50	on the KSI		
25	ZONE #1	25	ZONE #2	SL/VI	R	25	3707		

3.6 TELEPHONE CABLING

3.6.1 Station Loop Limits — MLT.

The maximum distance from the KSU to a station location using an EZ-1™ MLT key phone is 1500 feet. This distance can be obtained using standard station wiring of 24 AWG, inside wire, jacketed. A three pair, 24 AWG jacketed cable is recommended on all station runs. The EZ-1™ key phone can not be installed in an off-premise location unless a continuous copper run, with a maximum loop resistance of 75 ohms, can be guaranteed.

Each telephone station is supplied with a 4-wire, fully modular line cord. A 625QA-6 jack assembly or equivalent should be mounted at the location where each telephone will be installed. Care should be taken to make sure that cable pairs do not get crossed or reversed during installation. Proper polarity must be maintained for correct telephone installation.

All connections to the telephone set are fully modular. There should be no requirements to open the telephone set at any time during installation except to wall mount the telephone. To wall mount the MLT, remove the four screws from the telephone base. (This base can be used as a template for proper positioning of the telephone while removed from the base.) Rotate the base 180 degrees before replacing the screws. Place two wood screws or hollow-wall anchors in the marked position on the wall and tighten the screws or anchors to within ½ inch from the wall. The two teardrop holes on the base section should now line up with the two wall screws. Place the set on the wall screws and slide into place.

To provide a wall-type hanger bracket for the handset, remove the designation tag cover and the screw beneath it. Invert the plastic hanger assembly and replace the screw and designation tag cover.

3.6.2 Station Loop Limits - SLT.

The maximum distance from the KSU to a station location using a Single Line Telephone (SLT) is 4500 feet. This distance can be obtained using standard station wiring of 24 AWG, inside wire, jacketed. A maximum loop resistance of 1000 ohms must not be exceeded.

The Single Line Telephone can be used for Office Premise locations if a circuit can be ordered from your local BOC, utilizing the following parameters:

Terminated Impedance = 600 ohms
Transmission Loss = 4.5 to 5.5 dB
Frequency Response = 0.01 to +1.0 dB
Maximum Loop Resistance = 1000 ohms

If SLI is used for OPX, use OL13C circuit from Telco.

Carefully check all cable routes within the system to verify that all cables are securely fastened in place.

3.7 OUTSIDE LINE CABLING

Cabling between the telephone company-provided RJ11C jacks and the KSU will be six foot, modular to modular, single pair cables. Lines 1 through 6 will be terminated at positions J21-J26 on the KSU (see Figure 3-2) and the appropriate Telco RJ11C jacks. Lines 7 thru 12 will terminate at positions J17 thru J22 on the EKSU (see Figure 3-3) and in the appropriate Telco RJ11C jack.

3.8 PRINTED CIRCUIT BOARDS

3.8.1 PCB Requirements.

The number of telephones and lines required will determine how many PCBs will be needed in the KSU and EKSU. Each KSU is shipped with four MLI (Multi-Line Telephone Interfaces) and two CO/PBX Line Interfaces built-in. Configurations exceeding this capacity will require the placement of additional cards in the KSU. The EKSU is shipped with four built-in MLIs. Configurations exceeding this capacity will require the placement of additional PCBs in the EKSU. Make certain that all circuit boards are properly placed in the correct slots in the KSU and EKSU (See Figures 3-2 and 3-3).

Ensure that system firmware (EPROM) is installed in the KSU in the following manner when viewing it straight-on:

6 2345

Place KSU and EKSU (if used) in the location where they are to be installed.

3.8.2 Additional PCB Installation.

(1) Turn OFF power to KSU and EKSU by unplugging power cables. Make certain that battery switch is in if any programming has been done.

(2) Line up the card so that the flat end of the female receptacle on the card lines up with the plastic end of the male connector on the KSU and EKSU. Push lightly on the aligned female receptacle. Align the receptacle on the other end of the PCB with its connector on the KSU or EKSU. Push lightly on the female receptacle and verify that both connector pins have entered the corresponding receptacles properly. Once the pins and receptacles are correctly aligned, push on both receptacles simultaneously. The module is correctly seated when the card rests on the plastic body of the male receptacle at each end. Repeat this procedure for all required PCB installations.

(3) Turn power ON and observe power LEDs. All three should be lighted. Turn the PROGRAMMING switch to ON and then press the RESET button. If the system is equipped with a DTMF receiver the system will go into a diagnostic self test routine and verify the correct placement and operation of the added PCB.

3.8.3 Printed Circuit Board Removal.

(1) Turn power OFF by unplugging power cords on the KSU and the EKSU.

(2) Hold the PCB at both ends and work the card back and forth with a tilting motion. Pull card lightly outward until card releases from its connector. When the card has been removed, inspect the pins of the male connector to make sure that no pins have been bent or deformed. In the event any of the pins have been bent, use a pair of long nose pliers to straighten the pins.

CAUTION: Connector pins can be broken if proper care is not taken when straightening.

3.9 ADDITION OF EXPANSION MODULE (EKSU)

To add an Expansion Module to the system in cases where the original configuration did not include this module, proceed as follows:

3.9.1 EKSU Mounting.

Mount the EKSU not more than two inches to the right side of the KSU.

CAUTION: Be sure that power is disconnected from both the KSU and EKSU.

3.9.2 EKSU Cabling.

Insert both 40-pin ribbon cables, as well as the ground conductor, from the EKSU into the KSU through the opening on the right side of the KSU. Using a small flat-bladed screwdriver, insert the ground wire into J28, pin 1 and tighten. Connect the lower 40-pin ribbon cable from J3 on the EKSU to J18 on the KSU. Connect the upper 40-pin cable from J2 on the EKSU to J17 on the KSU. Verify that both connectors are properly seated before restoring power to the system.

3.9.3 EKSU Testing.

Restore power to the KSU and EKSU and press the RESET button momentarily. If a DTMF receiver is installed, perform the diagnostic test as previously described.

NOTE: When single line interfaces are used, an external ringing generator (105V, 20-30 Hz) must be used to provide signaling to type 2500 telephone stations. If the SLI is used for extensions 39-42, the ringing generator should be connected to J3 on the KSU; if extensions 51-54 are used, cable is connected to J4 on the EKSU.

3.9.4 Cordless Telephones.

To use a cordless telephone on the EZ-1™ Model 36 Key System, use a Single Line Interface (SLI) extension. The cordless telephone must meet the requirements of any standard Model 2500. The phone must be DTMF and the ring generator must be connected to the EZ-1™ system as outlined in this manual.

3.9.5 Installation of Speed Dialer, Modem, and Similar Devices.

The EZ-1™ MLI stations can be interfaced with a variety of devices (except devices that provide automatic answer). Automatic Night answer machine/recorder devices must use an SLI extension or be directly connected to a CO line.

Devices such as speed dialers, manual controlled recorders and modems need a talk path and external power to operate. The external power is designated by the manufacturer of the device. The talk path can be obtained by using the new station adapter (part number 20010) or by rewiring using the green (tip) and red (ring) leads on the station block. To install an auto answer device, use an SLI station and follow manufacturer's installation procedure for that device. When auto night answer machine is required on a system with no SLI station, it is recommended to use a call diverter from 2 to 12 CO line size. This will monitor all CO lines and all calls coming into the system will automatically be diverted to the auto night answer machine/recorder.

3.10 RELAYS AND SENSORS

The RSI PCB (Relay/Sensor Interface Printed Circuit Board) has three sensors and three relays which can be used in a variety of functions. The RSI PCB is installed at J10 and J13 of the KSU. The connections to the contacts are made at J7 of the KSU (see Figure 3-5). The relays and sensors can have button appearance on one or all EZ-1™ MLI (Multi-Line Interface) stations, the key codes are as follows:

49 Sensor 1 56 Relay 1 50 Sensor 2 57 Relay 2 51 Sensor 3 58 Relay 3

The relays and sensors can be accessed through DISA for control of various devices. Use of access codes are outlined in Section 2 of this manual.

3.10.1 Relays.

The relays can be programmed for the following: normally open, normally closed, normally open to follow CO ringing, normally closed to follow CO ringing, individual CO line ringing or night answer. Refer to Table SA-15 in the Programming section of this manual.

3.10.2 Sensors.

The sensors can be programmed for the following: activate on open, activate on short, alarm function or alarm delay (the time in seconds that a condition open or short will be present before the system will respond). Refer to Table SA-16 in the Programming section of this manual.

When a sensor is used for an alarm feature, the sensor should appear on a key of the EZ-1™ MLT station. A dial access code is used to test or clear the sensors.

3.11 RS-232C/SMDR INTERFACE BOARD

3.11.1 SMDR Interface Board.

The RS-232C/SMDR Interface is an optional plug-in board installed between J16 and J26 in the lower right hand corner of the EKSU. The board is used to drive external devices such as a printer. It operates at asynchronous baud rates of 50 to 9600 bps and is DIP switch selectable.

SENSOR 1

SENSOR 3

SENSOR 2

SENSOR 2

SELAY 1

RELAY 2

RELAY 3

Figure 3-5 Relay and Sensor Wiring

Baud rates are selectable by setting the DIP switch in accordance with the following table. Ensure that the jumper is installed between A and D.

Table 3-2. SMDR Baud Rates.

1	2	3	4	BAUD RATE
ON	OFF	ON	ON	50
OFF	OFF	ON	ON	75
OFF	OFF	OFF	OFF	110
ON	OFF	OFF	OFF	150
OFF	ON	OFF	ON	200
OFF	ON	OFF	OFF	300
ON	OFF	OFF	ON	600
OFF	OFF	ON	OFF	1200
ON	OFF	ON	OFF	1800
ON	ON	OFF	OFF	2400
OFF	ON	ON	OFF	4800
ON	ON	ON	OFF	9600

3.11.2 Printer Cabling.

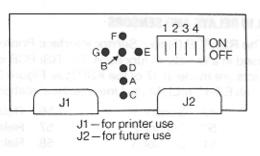
The RS-232C printer cable is wired for J1 in the following configuration:

Pin 2	Receive Data
Pin 3	Transmit Data
Pin 7	Ground
Pin 20	Data Terminal Ready
Pin 5 & 6	Request To Send

3.11.3 System Programming Mode.

Set options as follows:

Option 00	Yes No	Outgoing calls only Incoming and outgoing calls
Option 01	Yes No	Long distance calls only Local and long distance calls
Option 02	Yes No	Activate printer Deactivate printer



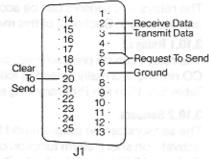


Figure 3-6 SMDR Wiring Diagram

After programming the options, the HOLD and TRAN/CON key LEDs at the Operator's station will blink until the system time is entered. The system time is entered while on-hook to enable the printer to record the time of incoming and outgoing calls. System time is entered at the Operator's station by pressing [*] and [#] keys and entering military time. Example: 1:00 PM is expressed as 1300.

NOTE: When the [*] key is pressed, the PROGRAM key LED will light; when the time is entered, the PROGRAM key LED will go off.

An optional ACCOUNT CODE key may be added to the system by programming a feature key for code 79. The calling party, after placing the call, will press the account key and enter a six digit code on outgoing calls only for 2002 software only. The system allows a ten digit code for either 2003 or 2004 software. Press the account key after account code has been entered.

3.11.4 SMDR Output.

The SMDR output on the EZ-1™ (36) uses ASCII format. No control characters, escape sequences, or printer specific command/control characters are used. This allows the use of almost any serial printer or printing terminal. Printers that could be used are the: EPSON MX-80, RX-80, FX-80, MX-100, FX-100 series Okidata models 82, 84, 92, Texas Instrument Silent 700 printing terminals, etc. The serial port provided on Commodore printers (such as the MPS 801 and the 1526) is not RS-232C and should not be used.

NOTE: All printers must have a serial RS-232C port. The serial port should be set up for the following:

7 bit character, 1 Stop bit, Even Parity

For the SMDR format there are 3 types of call records: Outgoing, Incoming and Not Answered. Each of the records starts with the ">" character, time and a "1" character. A sample printout of each record is included and should provide all the necessary information for those interested in adapting call costing and accounting systems to the EZ-1™ (36).

Sample Call Records.

Incoming Call:

>13:17:391IN*1EXT-315CO-091DUR-01:271ACC# 18NS

18NS-351RING TIME-00:80

Outgoing Call:

>08:33:2910UT1EXT-37100-0110UR-00:3018CC#

1#:6556500

Incoming Ring With No Answer:

3.12 POWER FAILURE CIRCUIT

When a power failure occurs and the EZ-1™ Model 36 key system is inoperable, communication is still possible with a single line telephone through the SLI (Single Line Interface) board of the KSU. Connect the single line

telephone to station 39 tip and ring terminals of the MDF. Connect a pair of jumpers from station 39 terminals (DT) and (DR) to the CO line terminals. Dial tone will be available to the SLT for dialing out on the CO line.

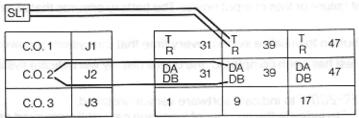


Figure 3-7 Wiring Connections for SLT in a Power Failure Condition

3.13 POWER APPLICATION

3.13.1 Input Power.

117 V ac, ±10%, 47-63 Hz, single phase (per KSU or EKSU).

NOTE: If local power facility can not meet power requirements or if building power is susceptible to dips, surges, or spikes; it is recommended that a line conditioner be used to provide clean power to the system.

3.13.2 Input Power Site Requirements.

A separately fused, dedicated 117 V ac, \pm 10%; 47-63 Hz, single phase, three wire (parallel blade with ground) power outlet should be located within 6 feet of the lower right side of the KSU and EKSU.

NOTE: One dedicated duplex power outlet will provide sufficient power for one KSU and one EKSU.

3.13.3 Internal System Operating Voltage.

117 V ac is applied to the transformer of KSU and EKSU power supplies where it is rectified and regulated to the three required operating voltages of ± 1.5 V dc and ± 5 V dc.

CAUTION: When powering up or down a system that contains both a KSU and an EKSU, be sure to power them both up at the same time. If either KSU or EKSU operating voltages are not present, the unit with voltages will attempt to power up the unit without the required voltages via ribbon cables P17 and P18 to cause an overload condition of the operating unit.

3.13.4 Grounding.

Check that a good earth ground is installed and connected prior to the application of power. Be sure that a common ground wire is connected from the EKSU terminal E2 to KSU terminal J28.

FUSE

F2

F3

F4

3.13.5 FUSES.
The power is fused with a 1 Ampere fuse
at leasting Et for both VOLL and EVOLL

at location F1 for both KSU and EKSU.

3.13.6 Voltage Adjustment.

+/- 15 V dc adjustment: none

+ 5.1 V dc adjustment procedure:

Use J28 (KSU) or E2 (EKSU) for ground reference

Check voltage level at F4.

Adjust R194 if not within range.

If either $(+15V \text{ or } -15V)$ is not present,
the following will occur:

No digital display.

No call processing.

LED Power Indicator will not light.

reference.	

+14.6 to +15.4 V dc

-14.6 to -15.4 V dc

+ 5.1 to +5.15 V dc

If +5.1V dc is not present, the following will occur:

No digital display.

No call processing.

LED Power Indicator will not light.

All installed phones will produce a continuous 600 Hz tone.

TYPE

Mini Fuse

Mini Fuse

Mini Fuse

3.14 DIAGNOSTICS

Upon completion of the checks listed in paragraph 3.13, apply power to the EZ-1™ (36) Key System as follows:

Apply power to KSU and EKSU by plugging line cords into dedicated wall receptacles. Observe voltage indicators on the KSU and EKSU. All three LEDs (+15, -15 and +5V) should light as power is applied.

NOTE: After power is applied, press RESET button on the KSU and be sure PROGRAMMING switch is set to ON. The system self diagnostic test will be run after the RESET button is pressed.

Be sure that the memory support battery is activated. The activating plug (located to the left of the battery) is a pop-out switch. Press switch to activate the battery.

CAUTION: Failure to activate the battery will cause system feature loss during a power outage.

The +3.6 V NiCad battery supplies CMOS chip U41 (KSU) and U46 (EKSU) with voltage in the event of a power supply component failure or loss of input power. The battery ensures that all programmed data will be retained.

NOTE: Press the RESET button to initialize system every time that the system is powered up.

After the self-diagnostic test has been completed, the digital display will indicate system status through one of three or four messages:

Message 1: "EZ-1™ VER-2004" to indicate software version installed.

Message 2: "IN-R-DT-" to indicate the number of incoming calls (IN), answered calls (A) and outgoing calls (OT) received or made since system was reset (System will reset at midnight each day).

Messages 3 and 4: " $K-5-\ell-$ " and " $\ell-5-\ell-$ ". These messages are self diagnostic results.

To freeze the display at a certain message point, press [#] key on station 32 while on-hook. The display will remain as long as the [#] key is pressed. While on-hook and when system is not in use, the display will show position of CO/PBX line in use.

3.15 SYSTEM TESTS AND ADJUSTMENTS

NOTE: If an impedance imbalance occurs on the data leads between the KSU and the EZ-1™ telephone, control of the LEDs of the telephone will be lost. Resolve this by checking the resistance of the line cord to the phone. If there is a variation in the cord, replace it.

3.15.1 Programmed Testing.

After power has been applied to the system, the self diagnostic test will run if the system has a DTMF receiver installed. This test performs a complete test of the matrix cross points, station interface and CO/PBX Line interfaces. Upon completion of a successful diagnostic test, the CO Line Test is performed. When this has been done, each individual station (telephone) is checked via the MLT Station Test.

3.15.2 BGM and MOH Volume Setting.

If the system is to be used with an external music source for BGM/MOH, the two volume controls on the basic KSU must be adjusted. To check volume of MOH, set up an external call between two lines. Answer the call, place one party on HOLD and listen to the music level in the handset. Adjust MOH volume control to a comfortable listening level. To adjust BGM volume, press [1] on dial pad at station 32 and adjust speaker volume to maximum by means of VOLUME UP key. Then adjust BGM volume control to a comfortable level at station 32.

3.16 STATION TEST

System checkout after installation and system tests consists of performance of the following:

3.16.1 Station Checks.

At each telephone station, in turn, perform the following:

Pick up handset and dial [80]. Then proceed to test all keys and LEDs on station.

Press HF key. A lighted HF key LED and dial tone indicate that hands-free mode is functioning properly. Press CO LINE 1 key and lift handset; listen for dial tone. Repeat for all assigned CO lines.

Check ability of every station to converse with every other station in HF mode. This will involve two persons: one to dial each extension while station is in HF; and another to answer each dialed extension in HF mode.

3.16.2 Internal Dial Tone.

Nick up handset at station and listen for dial tone. When dial tone is heard, talk or hiss into the receiver; side tone should be returned. If satisfactory, go on-hook and press HF key, listen for dial tone.

3.16.? Internal Calls.

At station, pick up handset and dial [1] + two digit number [32 to 54] to place an internal call. Check for ringing, ringback tone and answer. Repeat procedure to place calls to all assigned stations.

3.16.4 External Calls.

Pick up handset and press CO LINE key. Listen for dial tone and dial no-charge test number. Check for completion of call and repeat for all assigned lines.

3.16.5 Other Stations.

At all other stations, complete at least one call and perform paragraphs 3.16.2 through 3.16.4 for all stations.

3.16.6 Features.

After the above procedure has been completed, check for correct operation of all equipped features on the stations. Verification can be made by performing feature functions as described in Section 2, Operating Instructions.

3.17 PLACING EQUIPMENT IN SERVICE

Upon completion of system checkout, the system can be placed in operation. Any faults detected in performing the system checkout procedures can be remedied by reference to the maintenance procedures of Section 5 of this manual.

3.16.6 Festives.

After the above procedure has been completed, chook for timent operation of all equipped features on the statism control from can be made by performing feature indices as described in Section 2, Operating testings.

SOLVERS OF THEMSELVED SERVICE

Thon completion of system checknut, the system can be placed in spersion. Any highly detected in performing the system can decide a cannot procedured use the remodes by refer to use to the maintains on pro-educed at Section and the manual.

SECTION 4 PROGRAMMING

4.1 SYSTEM DEFINITION

The EZ-1™ (36) Key Telephone System makes available numerous station and system features which can be selected for each station as required. This section is composed of Station and System programming functions in that order.

Although the stations can be programmed to pick up identical CO lines and features, most users have unique functional requirements. The needs of each user should be considered prior to defining station requirements.

Functional requirements of each station should be defined prior to actual programming. The Station Software Definition charts (sample form is shown in Figure 4-1) determine all features which must be programmed for each station. A listing of all available programmable features, along with a reference to the applicable programming table for each feature, is given in Table 4-2.

4.2 PROGRAMMING CONSIDERATIONS

Make certain that all required hardware associated with lines, stations, and features is installed prior to initiating the programming procedures. Do not attempt to program features, lines or stations when supporting hardware does not exist. Prior to beginning the actual programming, make certain that the memory support battery is activated.

CAUTION: Failure to activate the battery will result in feature programming loss during a power outage.

All station programmable features in the EZ-1²⁴ (36) Key Telephone System may be initially programmed on site without interrupting the system's operation by using the station 32 position as the program station. The feature to be programmed is selected by pressing the appropriate keys. An overlay is provided to aid in associating the program station keys with the features and parameters required to program the system.

The program station (station 32) should be located to allow visibility of the digital display on the KSU. If the display is visible from the existing location, go to the KSU and turn on the programming switch. If the display is not visible from the location of the Program Station, move the station to the KSU location and plug the modular cord in jack J1.

NOTE: Station 32 is an EZ-1™ (36) MLT.

The digital display will normally display system status or diagnostics unless the programming mode is activated. When programming is initiated by setting the program switch to "ON," the display will request the type of programming desired. Prompt: PROGRAM STATIONS? Y/M. The "YES" key is pressed for station programming while the "NO" key is pressed for system programming.

4.3 PROGRAMMING PROCEDURES

Refer to the station software sheets when programming each station. A listing of available features, along with a reference to the applicable programming table for each feature is given in Table 4-2.

The programming process is menu-driven and consists of digital display prompts and responses. Familiarization with the programming tables, displaying their prompts and optional responses, will greatly increase the ease and accuracy of programming. The 2003/2004 Software Comparison shown in Table 4-1 defines the various features and the level of software applicable to these features.

Select the first feature to be programmed by pressing the appropriate keys on the programming station, using the template as a guide. Enter the required programming data as shown in the List of Programmable Features, Table 4-2. Proceed to the next feature to be programmed, following the sequence shown.

NOTE: When entering data for stations, and programming that is common to all stations can be accomplished by pressing [*] after programming one extension, for example, if key 10 is the same for all stations, after programming key 10 on one station, press [*]. The display will show PROGRAM ALL.

Repeat these procedures until all features have been programmed for each station and return the programming switch to the OFF position.

NOTE: The new feature data is transferred to the system's memory when the ENTER key is pressed or the next feature key is selected.

Table 4-1 lists the differences between software versions 2003 and 2004.

	S CODE #	5	4	9	8	01	27	4	91	18	50						3 NG		r.i	
unctio	DESIGNATIONS	1	1	1	1	1	I	1	1	1	1						ned der		Doe sete n ti	
LOCATION #		ereki Lacil Re	3	200	ong	6	=	13	5	2001	19	90					H.		COLF	VER
100	# 3000	cia i	nust bi to the	ribidy spheni	aures o a cele	iot ile i Inw pre	numre bla de	en (I - leatu L	renug idsmr e eldel	A nume isty us roll iss	rode al selas s se as s	mno irvis irniir		omi g o	AUTOPICK	C.O.S.	CAMP TIMER	E DAG	1	AUTOANSWER
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# Z	FEATURE	No Assignment CO Line Assignment CO Groups	Station Speed Dial Message Wailing Call Forward Call Buck	Do Not Disturb Sensor #1 Sensor #2 Sensor #3	Alarm On/OII Save/Repaat Uni-Key Night Mode	Helay #1 Control Helay #2 Control Relay #3 Control Microphone Mute	All Page Page Zone #1 Page Zone #2 Page Zone #3	Page Zone #4 Split Key PBX Feature Keys	Night Answer Unsupervised Conference Barge In	Universal Answer DSS/BLF Keys System Speed Dial	SS	-		Inc			bei	avit:	8 8 145	
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neilgine	FEATURE	No Assignment CO Line Assignment CO Groups	Station Speed Dial Message Walting Call Forward Call Back	Do Not Disturb Sensor #1 Sensor #2 Sensor #3	Save/Repost Uni-Key Night Mode	Control Control Control	All Page Page Zone #1 Page Zone #2 Page Zone #3	Page Zone #4 Split Key PBX Feature Key	Night Answer Unsupervised Conference Barge In	Universal Answer DSS/BLF Koys System Speed Dial	RING	i lot pring	del 197	B (1	nel I gal	08	At the	N :3	OV	

Figure 4-1 Station Software Definition Chart

TABLE 4-1. 2003/2004 Software Comparison.

Hardware Summary		
	2003	2004
KSU Level	Any Level	IRS level H or higher
EPROM SET	5 chips	6 chips
DSS compatible	NO	YES 2/9/19/19
Software Sumary	37.00	ssage Withing
Paga Zone 2	2003	2004
DISA Warning Tones	2003A9	2004A7
Hands free Originate Option	No	Yes
Hands free Receive Option	No	Yes
Self Test Inhibit (Option 10)	2003A5	Yes
Station Speed Dial Numbers	12	10
Toll Restriction	0/1 toll	3 digit toll

TABLE 4-2 LIST OF PROGRAMMABLE FEATURES

STATION PROGRAMS (SA)

SYSTEM PROGRAMS (SS)

STATION PROGRAMS (SA)			STSTEM PROUNAMS (SS)								
Program Sequence	Feature Description	Program Table	Program Sequence	Feature Description	Program Table						
1	Program Keys	SA-1	1	Operator Position	SS-1						
2	CO Line Ringing Assignment	SA-2	2	CO Flash Timer	SS-2						
3	Night Ringing	SA-3	3	Transfer Recall Timer	SS-3						
4	Camp-On Timer	SA-4	4	Hold Recall Timer	SS-4						
5	Class Of Service	SA-5	5	Pause Time Out (Speed Dialing)	SS-5						
	(Toll Restriction)		6	CO Type (DTMF or Rotary)	SS-6						
6	Page Zones	SA-6	7	CO Line Group (Queing)	SS-7						
7	Alarms	SA-7	8	CO Line Class (Toll Restriction)	SS-8						
8	Automatic Answer	SA-8	9	DISA Line	SS-9						
9	Automatic Transfer	SA-9	10	DISA Extension	SS-10						
10	Station Line Access	SA-10	11	DISA Access Code	SS-11						
11	External Page/CO Ringing	SA-11	12	Test Line	SS-12						
12	External Page/Night Ringing	SA-12	13	Alarm Delay	SS-13						
13	External Page/Page Zones	SA-13	14	Automatic Pickup	SS-14						
14	External Page/Alarms	SA-14	15	Options	SS-15						
15	Relays	SA-15	16	Toll Restriction	SS-16						
16	Sensors	SA-16	17	DTMF Test	SS-17						
17	Automatic Pickup	SA-17	18	Drop Pulse	SS-18						
18	System Initiate	SA-18	19	Door Box	SS-19						
19	Hands free Receive	SA-19									
20	Hands free Originate	SA-20									
21	Barge In	SA-21									
22	Barge In Tone	SA-22									

TABLE 4-3 STATION SOFTWARE DEFINITION CHART

KEY CODES

Feature	Codes	Feature	Codes
CO Line Keys	01-12	Microphone Mute	59
Station Speed Dial	33-42	All Page	60
Message Waiting	45	Page Zone 1	61
Call Forwarding	46	Page Zone 2	62
Call Back (Queue)	47	Page Zone 3	63
Do Not Disturb	48	Page Zone 4	64
Sensor #1	49	Split Key	65
Sensor #2	50	PBX Keys	66-77
Sensor #3	51	Release	78
Alarm On/Off	52	Account Code	79
Save/Repeat	53	Night Answer	80
UNI Key	54	Unsupervised Conference	81
Night Mode	55	Barge In	82
Relay #1 Control	56	Universal Answer	83
Relay #2 Control	57	DSS/BLF Keys	131-154
Relay #3 Control	58	System Speed Dial	155-204

NOTE: Station Speed Dial is codes 33-44 for software versions 2002 and 2003

STATION PROGRAMMING

TABLE SA-1 PROGRAM KEYS

(Assigns Feature Codes To Keys, see Table 4-3.)

Actio	on	NO key	Digital Display
1. Set PROGRAMMING switch to ON.			PROG STN2-Y/N
2. Press YES key.			PROG STATION - 31
Press NEXT STATION key or dial State change station to be programmed.			PROG STATION - NN
4. Press KEYS key.			PROGRAM KEYS-ONN
Press key to be programmed. (CCC)			KEY (KK) IS
KK = Key #		1 0-1	EEE = CODE #
Dial new code for selected feature.			SEE KEY CODE TABLE 4-3
Press ENTER key. If code is to be the same for all stations	s, press [*] key.		KEY (KK) IS (CCC) PROGRAM ALL
8. Press next key to be programmed and	repeat steps 6 and 7.		
9. When all keys in this station are progra	ammed, return to step 3.		PROG STRTION-NN
10. If all keys on all stations are program	med, press END key.		PROG STN? Y/N

TABLE SA-2 CO LINE RINGING ASSIGNMENT

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN? - Y/N
2. Press YES key.	PROG STRTION - 31
3. Press NEXT STATION key or dial new station number and press ENTER key.	PROG STRTION-NN
4. Press RING key.	RING LINE O1 XXXXXX XXXXXX = Y/N
5. Press either YES or NO key. YES NO If same for all stations, press [*] key.	RING LINE 01 YES RING LINE 01 NO
6. Press STEP key to advance to next line.	VILIO FILIE 33 VVV FO
If other ringing assignments are required, press NEXT STATION key or press next function key if further programming is required for the same station.	PROG STATION-PP
When ringing assignments are complete, press END key.	PROG STNP Y/N

TABLE SA-3 NIGHT RINGING

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STATION - 31
3. Press NEXT STATION key or dial in new station number, press ENTER key.	PROG STATION-NN
4. Press NIGHT key.	NIGHT RING? XXXXXX XXXXXX = Y/N
5. Press either YES or NO key.	
YES NO If same for all stations, press [*] key.	NIGHT RING? - YES NIGHT RING? - NO PROGRAM ALL
If other night ringing assignments are required, press NEXT STATION key or next function key if further programming is required for the same station.	PROG STATION-PP
When night ringing assignments are complete, press END key.	PROG STNP - Y/N

337 ST 436 SST

See Key Codes, Table 4-3

TABLE SA-4 CAMP-ON TIMER

(Camp-On Timer is the length of time between splash tones while a call is camped-on to a station)

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STRTION - 31
3. Press NEXT STATION key or dial new station number. Press ENTER key.	PROG STATION - NN
4. Press CAMP TIMER key.	CRMP T 0 060 SEC T 0 = TIME OUT (BETWEEN TONES)
 Dial number (000 thru 255) and press ENTER key. If same for all stations, press [*] key. 	CRMP T O PPP SEC

NOTE: Splash (CO ringing) tone is camp-on tone. If camp-on tone is programmed for "0" seconds, splash tone will not be heard on incoming call, only CO LED will flash. If camp-on tone is programmed for "255" seconds, splash tone will be heard every 4 minutes and 15 seconds upon an incoming CO line call.

If other camp-on assignments are required, press NEXT STATION key or	
next function key if further programming is required for the station.	PROG STRTION-PP
7. When camp-on timer assignments are complete, press END key.	PROG STN?-Y/N

TABLE SA-5 STATION CLASS OF SERVICE (For Use With TOLL RESTRICTION)

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STATION - 31
3. Press NEXT STATION key or dial new station number. Press ENTER key.	PROG STATION - NN
4. Press CLASS key.	CLRSS OF SERV SS
5. Dial number (00 thru 12) for new class of service and press ENTER key.	CLRSS OF SERV TT
If other class of service assignments are required, press NEXT STATION key or next function key if further programming is required for the same station.	PROG STATION-PP
7. When class of service assignments are complete, press END key.	PROG STN?-Y/N

NOTE: Station Class Of Service has a different meaning with 2004 release software than it had previously.

TABLE SA-6 PAGE ZONES

Action	Digital Display
Set PROGRAMMING switch to ON. Press YES key. Press NEXT STATION key or dial in new station number. Press ENTER key. Press PAGE ZONE key.	PROG STN?-Y/N PROG STRTION-31 PROG STRTION-NN PRGE ZONE IS NN
5. Dial in either 60 thru 64 or 0 and press ENTER key.	PRGE ZONE IS NN = NEW PAGE ZONE. 0 = STATION WILL NEVER BE PAGED. 64 = USED WITH DOOR BOX IN SOFTWARE VERSION 2004K
If other page zone assignments are required, press NEXT STATION key or next function key if further programming is required for the same station.	PROG STATION-PP
7. When page zone assignments are complete, press END key.	PROG STN?-Y/N

TABLE SA-7 ALARMS

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STATION - 31
3. Press NEXT STATION key or dial in new station number. Press ENTER key.	PROG STATION-NN
4. Press BURGLAR ALARM key.	BURG ALARM? - XXX XXX = Y/N
5. Press either YES or NO key. YES NO 1 - 110 19 2 20 20 20 20 20 20 20 20 20 20 20 20 2	BURG ALARA? - YES BURG ALARA? - NO
If other station alarm assignments are required, press NEXT STATION key or next function key if further programming is required for the same station.	PROG STRTION-PP
7. When station alarm assignments are complete, press END key.	PROG STN? Y/N

NOTE: A Relay/Sensor Module is required to use the alarm function.

TABLE SA-8 AUTOMATIC ANSWERING

Action MO of Maties.	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STATION - 31
B. Press NEXT STATION key or dial new station number. Press ENTER key.	PROG STATION - NN
4. Press AUTO ANSWER key.	RUTO RNSWER? - XXX XXX = Y/N
5. Press either YES or NO key. YES NO If same for all stations, press [*] key.	AUTO ANSWER? - YES AUTO ANSWER? - NO
If other automatic answer assignments are required, press NEXT STATION key or next function key if further programming is required for the same station.	PROG STATION-PP
7. When automatic answer assignments are complete, press END key.	PROG STN?-Y/N

NOTE: When programmed "YES" all outside lines programmed to ring at the station can be answered by lifting handset (or pressing HF key) when an incoming call is ringing. If programmed "NO" the CO LINE key must be pressed, after going off-hook, to answer ringing CO LINE.

TABLE SA-9 AUTOMATIC TRANSFER

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN? - Y/N
2. Press YES key.	PROG STATION - 31
3. Press NEXT STATION key or dial new station number. Press ENTER key.	PROG STATION - NN
4. Press AUTO TRANSFER key.	<i>RUTO TRANS? - XXX</i> XXX = Y/N
5. Press either YES or NO key. YES NO If same for all stations, press [*] key.	RUTO TRANS? - YES RUTO TRANS? - NO
If other automatic transfer assignments are required, press NEXT STATION key, or next function key if further programming is required for the same station.	PROG STATION-PP
When automatic transfer assignments are complete, press END key.	PROG STN?-Y/N

NOTE: When programmed "YES" station can transfer a call without using TRAN/CON key, by pressing only the DSS/BLF key associated with the transferred extension and going on-hook.

TABLE SA-10 CO LINE ACCESS

Action	Digital Display
Set PROGRAMMING switch to ON. One of the set of t	PROG STN?-Y/N
2. Press YES key.	PROG STRTION - 31
3. Press NEXT STATION key or dial new station number. Press ENTER key.	PROG STATION - NN
4. Press LINE ACCESS key.	CO 01 RCCE55 XXX 01 = CO LINE #
	XX = Y/N
5. Press either YES or NO key. YES NO If same for all stations, press [*] key.	CO 01 RCCESS YES CO 01 RCCESS NO
6. To program for next line, press STEP key.	CO D2 RCCESS XXX D2 = CO LINE # XXX = Y/N
7. Repeat steps 5 and 6 for all CO Lines (01 thru 12).	
 If other line access assignments are required, press NEXT STATION key, or next function key if further programming is required for the same station. When line access assignments are complete, press END key. 	PROG STRTION-PP PROG STN?-Y/N

NOTE: When programmed "YES", station will have access to that line to make outside calls (either through CO LINE key or through UNI key).

TABLE SA-11 EXTERNAL PAGING (With CO Ringing)

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STRTION - 31
Press PAGE EXT key. Use NEXT STATION key to step to other external zone.	PROG EXT ZONE - 01 PROG EXT ZONE - 02
4. Press RING key.	RING LINE 01 XXX XXX = Y/N
5. Press either YES or NO key.	
YES NO	RING LINE O1 YES RING LINE O1 NO
6. Press STEP key to advance to next line.	RING LINE YY XXX YY = LINE #
	XXX = Y/N
 If other ringing assignments are required, press NEXT STATION key or press next function key if further programming is required in the same station. 	PROG STATION-PP
8. When ringing assignments are complete, press END key.	PROG STN2-Y/N

TABLE SA-12 EXTERNAL PAGING

(With Night Ringing)

TRANSPORTATION Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN2-Y/N
2. Press YES key.	PROG STATION - 31
Press PAGE EXT key. Use NEXT STATION key to step to other external zone.	PROG EXT ZONE - 01 PROG EXT ZONE - 02
4. Press NIGHT key. 10 10 10 10 10 10 10 10 10 10 10 10 10	NIGHT RING? XXX
5. Press either YES or NO key. YES NO	NIGHT RING? - YES NIGHT RING? - NO
If other night ringing assignments are required, press NEXT STATION key or next function key if further programming is required for the same station.	PROG STATION - PP
7. When night ringing assignments are complete, press END key.	PROG STN?-Y/N

TABLE SA-13

(With Page Zones)

Action	Digital Display
Set PROGRAMMING switch to ON. Press YES key.	PROG STN2-Y/N
Press PAGE EXT key. Use NEXT STATION key to step to other external zone. Press PAGE ZONE key.	PROG STATION - 31 PROG EXT ZONE - 01 PROG EXT ZONE - 02
Dial either 60 thru 64 or 0 and press ENTER key	PROG ZONE IS WW
6. If other page zone assignments are required, press NEXT STATION key or next function key if further programming is required for the same station. When page zone assignments are complete, press END key.	PROG STATION-PP PROG STAZ-Y/N

TABLE SA-14 EXTERNAL PAGING (With Alarms)

Action	Digital Display
Set PROGRAMMING switch to ON.	Digital Display
2. Press YES key.	PROG STN2-Y/N
	PROG STATION - 31
Press PAGE EXT key. Use NEXT STATION key to step to other external zone.	PROG EXT ZONE - 01
4. Press BURG ALARM key.	PROG EXT ZONE - 02
1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	BURG RLARM? XXX
5. Press either YES or NO key. YES	XXX = Y/N, which is a second of the contract of the contrac
NO TO THE STATE OF	BURG ALARM? - YES
6. If other station alarm assignments are required	BURG ALARM? - NO
5. If other station alarm assignments are required, press NEXT STATION key or next function key if further programming is required for the same station.	
 When station alarm assignments are complete, press END key. 	
10TE- D	PROG SINZ-Y/N
IOTE: Relay/Sensor Module is required to use the alarm system.	

TABLE SA-15 PROGRAM RELAYS

Action	Digital Display
Set PROGRAMMING switch to ON. Press YES key. Press RELAY key. Use NEXT STATION key to increment relay number. 4. Press CONTROL key and dial one of the following:	PROG STN2-Y/N PROG STRTION-31 PROG RELRY-01 PROG RELRY-02
00 = Normally Open - On/Off operation	4 Press PAGE Z vic ker 5 Din either 60 thru 64 or 0 and 6 Other ca. company
Proceed in programming selected relays using the same sequence as used in programming an extension number.	RELRY OI CONT OI
 If other relay assignments are required, press NEXT STATION key, or next function key if further programming is required for the same station. When relay assignments are complete, press END key. 	PROG STATION-PP PROG STA?-Y/N
NOTE: A Relay/Sensor Module is required to access the relays.	

TABLE SA-16 PROGRAM SENSORS

Action	Digital Display
Set PROGRAMMING switch to ON. Press YES key.	PROG STN2-Y/N
Press SENSOR key. Use NEXT STATION key to step to next sensor.	PROG STATION - 31 PROG SENSOR - 01
4. Press CONTROL key and dial one of the following: 00 = Activate on short 01 = Activate on short	PROG SENSOR - PP
 When other sensor assignments are required press NEXT STATION key, or next function key if further programming is required for the same station. When sensor assignments are complete, press END key. 	PROG STRTION-PP PROG STN2-Y/N
NOTE: Relay/Sensor Module is required to access the sensors.	

TABLE SA-17 AUTOMATIC PICKUP

Action	Digital Displa	У
Set PROGRAMMING switch to ON.	PROG STN?-Y/N	
2. Press YES key.	PROG STATION - 31	
3. Press NEXT STATION key or dial new station number. Press ENTER key.	PROG STATION - NN	
4. Press AUTO PICK key.	RUTO PICKUP - NN	
5. Dial CO Line number (01 thru 12) and press ENTER key.	RUTO PICKUP - NN	
S. Dial O and press ENTER for no pickup.		
 If other auto pickup assignments are required, press NEXT STATION key, or next function key, if further programming is required for the same station. 	PROG STATION-PP	
8. When automatic pickup assignments are complete, press END key.	PROG STN2-Y/N	

NOTE: Station must dial [67] to activate automatic pickup prior to use.

TABLE SA-18 SYSTEM INITIATE

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN2-Y/N
2. Press YES key. (4no encorted h000 ni satcheuA)	PROG STATION - 31
3. Press RESET button.	STATION WILL RETURN TO ORIGINAL DEFAULT
	PROGRAM

NOTE: SYSTEM INITIATE will default the system.

remain off as long as this option is selected. The mone can not be used for two-way nurds free con

TABLE SA-19 HANDS FREE RECEIVE

(Available in 2004 Software only)

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN2-Y/N
2. Press YES key.	PROG STRTION-31
3. Press HANDS FREE RECEIVE key.	
4. Press either YES or NO key. YES NO	HF RECEIVE — YES HF RECEIVE — NO
Press NEXT STATION key or dial extension number and press ENTER. Return to step 3.	l other auto pickup assignm ar next function key, if farth
When Hands free Receive key programming is completed, press END key. Set PROGRAMMING switch to OFF.	PROG STN?-Y/N

NOTE: HF Receive is used to deactivate the automatic hands free mode when the station is called. If hands free receive is turned off, the phone will ring when called. The phone may still be used for two-way hands free calls.

TABLE SA-20 HANDS FREE ORIGINATE

(Available in 2004 Software only)

Action Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STATION - 31
3. Press HANDS FREE ORIGINATE key.	
4. Press either YES or NO key. YES NO	HF ORIGINATE — YES HF ORIGINATE — NO
Press NEXT STATION key or dial extension number and press ENTER. Return to step 3.	
6. When Hands Free Originate programming is completed, press END key. 7. Set PROGRAMMING switch to OFF.	PROG STN?-Y/N

NOTE: Hands Free Originate is used to turn off the microphone inside the telephone. The microphone will remain off as long as this option is selected. The phone can not be used for two-way hands free conversation, but will still receive voice pages.

TABLE SA-21 BARGE IN

(Software Version 2004K)

Action	Digital Display
Set PROGRAM switch to ON.	PROG STN2-9/N
2. Press YES key.	PROG STATION - 31
3. Dial extension number.	PROG STATION - 31
4. Press ENTER key.	PROG STRTION-NN
5. Press BARGE OK key (key 16).	
6. Select either YES or NO. YES NO	BRRGE IN - YES BRRGE IN - NO
Press NEXT STATION key to continue programming other station.Press END key.	PROG STN?-Y/N

TABLE SA-22 BARGE IN TONE

٦.

(Software Version 2004K)

Action	Digital Display
Set PROGRAM switch to ON.	PROG STN?-Y/N
2. Press YES key.	PROG STATION - 31
3. Dial extension number.	
4. Press BARGE IN key.	MO of right BRRGE IN-Y/N
5. Press BARGE TONE key (key 17).	
6. Select YES or NO. YES NO	BARGE TONE - YES BARGE TONE - NO
7. Press NEXT STATION to continue programming other stations.	
8. Press END key.	PROG STN? - Y/N

SYSTEM PROGRAMMING

TABLE SS-1 OPERATOR EXTENSION

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press NO key.	SYSTEM OPTIONS
3. Press OPER key.	OPERATOR IS NO NO = OPERATOR EXTENSION
Dial operator extension (31-54) and press ENTER key.	OPERATOR IS NN NN = NEW OPERATOR EXTENSION
Press END key or next function key if further programming is required.	PROG STN?-Y/N

TABLE SS-2 CO FLASH TIMER

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press NO key.	SYSTEM OPTIONS
3. Press FLASH TIMER key.	CO 01 FLRSH-NNN NNN = 001 = 50 MILLISEC
Dial new flash duration and press ENTER key.	CO CC FLRSH-NNN CC = LINE NUMBER NNN = FLASH DURATION
5. Press NEXT LINE key.	CO O2 FLRSH-NNN PRESS NEXT LINE KEY UNTIL DESIRED LINE
Repeat steps 4 and 5 for any additional CO FLASH TIMER changes by pressing NEXT LINE key.	
When timer changes are complete, press END key or next function key i further programming is required.	if PROG STNP-Y/N

NOTE: While on outside call, pressing the associated line (or UNI) key will open the tip and ring of the line for the programmable flash time.

TABLE SS-3 TRANSFER RECALL TIMER

Digital Display	Action	Digital Display
Set PROGRAMMING swi	tch to ON.	PROG STN2-Y/N
2. Press NO key.		SYSTEM OPTIONS
3. Press TRANS TIMER key		TRRNS T D NNN SEC NNN = NUMBER OF SECONDS RECALL OF A TRANSFERRED CALL.
4. Dial recall time (0-999) and press ENTER key.		TRANS TO NNN SEC NNN= NEW VALUE OF RECALL TIMEOUT.
When timer changes are of if further programming is	complete, press END key or nex required.	t function key PROG STN?-Y/N

NOTE: Transfer Recall Time is the period a transferred call will ring at the transferred station. If the call is not answered within this period of time it will be transferred to the originating station and then back to the Operator.

TABLE SS-4 HOLD RECALL TIMER

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN2-Y/N
2. Press NO key.	SYSTEM OPTIONS
3. Press HOLD RECALL key.	HOLD TO NAM SEC NAM = NUMBER OF SECONDS RECALL TIMEOUT OF HELD LINE.
4. Dial required hold recall time (0 thru 999) and press ENTER key.	HOLD TO MMM SEC MMM = NEW VALUE OF RECALL TIMEOUT OF HELD LINE.
When timer changes are complete, press END key or next function key if further programming is required.	PROG STNP-Y/N

NOTE: Hold recall time is the period of time after which a call placed on hold, or not retrieved, will recall at the station.

TABLE SS-5 PAUSE TIMEOUT FOR SPEED DIAL

VE GOOD REPORT Action 1908	Digital Display
Set PROGRAMMING switch to ON.	PROG STN2-Y/N
2. Press NO key.	SYSTEM OPTION
3. Press PAUSE TIMER key.	PRUSE T 0 Niin SEC NNN = NUMBER OF SECONDS PAUSE TIMEOUT.
4. Dial required pause time (00 thru 999) and press ENTER key.	PRUSE T 0 MMN SEC MMN = NEW VALUE OF PAUSE TIMEOUT.
When timer changes are complete, press END key or next function ke if further programming is required.	PROG STN?-Y/N

NOTE: A pause can be entered in programming System and Station Speed Dial numbers.

TABLE SS-6 CO TYPE (OUTPULSE OR DTMF)

Action	Digital Display
1. Set PROGRAMMING switch to ON. 2. Press NO key. 3. Press CO TYPE key.	PROG STNP-Y/N SYSTEM OPTIONS CO 01-TYPE TYPE = DTMF OR OUTPULSE
4. Press NEXT LINE key. AUGUST STATE OF THE	CO 02-TYPE PRESS KEY UNTIL DESIRED LINE NUMBER APPEARS.
5. Press CHANGE key.	CO MM-TYPE MM = LINE NUMBER TYPE = DTMF OR OUTPULSE
 Press NEXT LINE key. (Repeat steps 4 and 5 for the required CO lines.) Repeat step 5. 	CO NN-TYPE
When CO type changes are complete, press END key or next function key if further programming is required.	PROG STN?-Y/N

TABLE SS-7 CO LINE GROUP

(For Queueing)

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press NO key.	SYSTEM OPTIONS
3. Press CO GROUP key.	CO 01 GRP IS GG GG = CO LINE GROUP (1 THRU 12)
Press NEXT LINE key and advance to next CO Line.	CO OZ GRP 15 GG PRESS KEY UNTIL DESIRED LINE NUMBER APPEARS.
5. Dial group number (01 thru 12) and press ENTER key.	IN = LINE NUMBER
6. Repeat steps 4 and 5.	
 When CO line group changes are complete, press END key or next function key if further programming is required. 	PROG STN?-Y/N
NOTE: Group 9 - Auto answer DISA (2004H and 3004K only).	
and the state of t	saccad via the LINII key

Group 11—Assign to all private lines or other lines that shouldn't be accessed via the UNI key.

Group 12-Assign to lines connected behind PABX.

TABLE SS-8 CO LINE CLASS

(For Toll Restriction)

Action A Page Visited on the Line	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press NO key	SYSTEM OPTIONS
3. Press CO CLASS key.	CO 01 C 0 5 IS CC 01 = CO LINE NUMBER
	0 1
4. Press NEXT LINE key.	CO O2 C O 5 IS CC PRESS KEY UNTIL DESIRED LINE NUMBER APPEARS.
5. Dial Class Of Service (0-11) and press ENTER key.	CO MM C O S IS CC MM = LINE NUMBER CC = NEW CLASS OF SERVICE
6. Repeat steps 4 and 5.	
7. Press END key or next function key if further programming is required	d. PROG STN?-Y/N

TABLE SS-9 DISA LINE

Action	Digital Display	
Set PROGRAMMING switch to ON.	PROG STN2-Y/N	
2. Press NO key.	SYSTEM OPTIONS	
3. Press DISA LINE key.	DISA LINE IS - NN	
4. Dial in new DISA line (1-12) and press ENTER key.	DISR LINE IS - NN NN = NUMBER OF NEW DISA LINE.	
When DISA LINE changes are complete, press END key or next function key if further programming is required.	PROG STN?-Y/N	

NOTES: S1. A DTMF Module is required to operate DISA.

2. The DISA line number is the outside line through which calls have to be placed in order to reach the DISA (Dial Inward System Access) of the EZ-1™ system.

TABLE SS-10 DISA EXTENSION

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN2-Y/N
2. Press NO key.	SYSTEM OPTIONS
3. Press DISA EXT key.	DISR EXT IS - NN
4. Dial new extension number (31 thru 54) and press ENTER key.	DISR EXT IS - NN NN = NEW DISA EXTENSION NUMBER.
When DISA EXT changes are complete, press END key or next function key if further programming is required.	PROG STN?-Y/N

NOTE: When DISA is activated by the Operator, the DISA Extension number can not be used. This extension is assigned to calls coming in through the DISA line.

TABLE SS-11 DISA ACCESS CODE

velcei() (stine)	Action	Digital Display
1. Set PROGRAMMING:	switch to ON.	PROG STN2-Y/N
2. Press NO key.		SYSTEM OPTIONS
3. Press DISA ACCESS k	ey.	DISA ACCESS - NNNN
	code and press ENTER key.	DISA RECESS - NNMN NNMN = NEW DISA ACCESS CODE.
5. When DISA ACCESS of	changes are complete, press E programming is required.	

TABLE SS-12 CO LINE TEST

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN?-Y/N
2. Press NO key.	SYSTEM OPTIONS
3. Press TEST LINE key.	CHECK CO LINE-00
NOTE: Plug modular jumper cord from TEST JACK to CO jack to be tested.	
Dial CO line interface number to be tested and press ENTER key.	EHEEK EO LINE-NN NN = CO LINE INTERFACE BEING TESTED
5. When test is finished:	CO LINE-NN IS OK OR CO LINE-NN IS NG
6. Press END key or repeat steps 3 thru 6 if new CO line is desired.	PROG STN?-Y/N

NOTE: Remove modular jumper cord from the CO jack being tested and plug in the CO line cord.

TABLE SS-13 ALARM DELAY

Digita: Display	Action	Action	Digital Display
1. Set PROGRAMMING s	witch to ON.		PROG STN?-Y/N
2. Press NO key.			SYSTEM OPTIONS
3. Press ALARM DELAY k			RLRRM T O - NNN SEC NNN = ALARM TIME OUT
4. Dial new time (001 thru	999) and press ENTER key.		RLRRNT TO-NNN SEC NNN = NEW ALARM TIME OUT
When Alarm Delay char key if further programm	nges are complete, press END key or ne ing is required.	kt function	PROG STN?-Y/N
NOTE: Alarm delay time is t	the elapsed time between activating a S	Sensor (alarm) and the time the system will

TABLE SS-14 PBX FEATURE KEYS

(Available in 2004 software only)

		1100 ACL 5809 FT.
CHECK COLUME-OD	Action	Digital Display
1. Set PROGRAMMING swite	ch to ON.	PROG STN?-Y/N
2. Press NO key.		SYSTEM OPTIONS
3. Press PBX key.		PBX01 = PPPPPP P = PBX FEATURE CODE
4. Dial feature codes.	*	P8X01 = W3FP1082
5. Press NEXT LINE key and I	return to step 4.	PBXO2 = PPPPPP
6. Press PBX key.		PBX01 = PPPPPP THIS WILL ALLOW YOU TO START FROM SCRATCH.
7. Press END key.		PROG STN?-Y/N

NOTE: Up to 8 commands can be entered for each of 12 (01 thru 12) tables.

SAMPLE: PBX01 = W3FP1D82

2 = DIAL digit 2

8 = Dial digit 8

D = Dial digits entered by station.

P1 = Tells EZ-1™ to pause 1 second then continue.

F = Tells EZ-1™ to provide switch hook flash.

start to sense the change in the condition of a sensor.

3 = Determines number of digits of D.

W = Wait for station to enter digits.

NOTE: The sample tells the EZ-1[™] to (W) wait for (3) digits to be dialed by the user then switch hook flash, pause for 1 second, send the three (3) digits, then send the digits 8 and 2.

TABLE SS-15 PROGRAM OPTIONS

yslasiC (st.)	А	ction nodeA	Digital Display	
Set PROGRAMMING switch to ON.		ON. MO at ribit	PROG STN?-Y/N	
2. Press NO key.			SYSTEM OPTIONS	
3. Press OPTIONS	key.		OPTION OO - NO	
			(SEE NOTE)	
 When options ha if further program 		eted, press END key or next function key _ ed.	PROG STN?-Y/N	
Feature	Option		Software	
SMDR	00	Yes — Outgoing calls only No — In and outgoing calls	2003 or higher	
SMDR	01 il 00 s no lungia	Yes — Long distance calls only No — Local and long distance	All Software	
SMDR velgal@felige.!	02	Yes — Printer On No — Printer Off	All Software	
Toll Restriction	03	Yes-1 + Dialing Area No-Not 1 + Dialing Area	2004 only	
DISA Varning Tones	09	Yes – Deactivates Warning Tones No – Activates Warning Tones	2003A9 or 2004A7 or higher	
Self-Test	JIM 10	Yes — Inhibits Auto Self-Test No — Enables Auto Self-Test	2002A12, 2003A5 or 2004	
NOTE: System defaults to all antions NO				

NOTE: System defaults to all options NO.

TABLE SS-16 TOLL RESTRICTION

(Available in 2004 software only)

Action	Digital Display
Set PROGRAMMING switch to ON.	PROG STN2-Y/N
2. Press NO key.	AC OF SYSTEM OPTIONS
3. Press TOLL RESTRICTION key.	AREA NNN -XXX
	NNN = AREA CODE XXX = YES/NO
4. Dial area code or exchange and press ENTER key.	AREA MNN -XXX
5. Press either YES or NO key.	
YES = Allow	ARER MMM - YES
NO = Deny	OF THE PROPERTY OF THE PROPERT
6. Repeat steps 4 and 5 for all area codes or exchanges to b	e changed.
7. When area codes have been completed, press END key	or next function
key if further programming is required.	PROG STN2-Y/N

NOTE: The default condition of the table is that area codes are denied and exchanges are allowed.

TABLE SS-17 DTMF RECEIVER SELF TEST

PROG STN2-Y/N
SYSTEM OPTIONS
DTMF REC = TEST RESULTS

NOTE: Rec. 1, Rec. 2, Rec. 3 = _____ Not Installed

0 = DTMF Receiver OK 1 = DTMF Receiver Failed

TABLE SS-18 DROP PULSE

Drop Pulse Time: The length in time of a disconnect signal on a CO line.

	5.7.2
Action NO represed - old	Digital Display
Set PROGRAMMING switch to ON.	PROG STM2-Y/N
2 Proce NO key	SYSTEM OPTIONS
3. Press DROP PULSE Key (Key 20).	DROP PULSE 030
4. Dial Drop Pulse Time.	1 INCREMENT = 25 MILLISECONDS.
Press ENTER key. Press END key.	PROG STN?-Y/N

NOTE: Default is 030 (X 25 milliseconds = 750 milliseconds).

TABLE SS-19 DOOR BOX

(Software Version 2004K)

		1700000
Winds Will Drugs	Action	Digital Display
Set PROGRAM switch to O	N.	PROG STN2-Y/N
2. Press NO key.		SYSTEM OPTIONS
3. Press DOOR BOX key (key	19).	000R 80X-NNN
4. Dial extension number of de	oor box. (40)	
5. Press ENTER key.		000R 80X 1-040
6. Press NEXT LINE key.		000R 80X 2 - NNN
7. Dial extension number of de	oor box 2. (41)	
8. Press ENTER key.		000R BOX 2-041
9. Press END key.		

NOTE: The station or stations that are to ring when the door box button is pressed must be programmed for page zone 64.

SECTION 5 MAINTENANCE

5.1 GENERAL

This section provides maintenance instructions for the EZ-1™ (36) Key Telephone System. The procedures can be used not only as part of system installation and checkout but also as a preventive or corrective maintenance tool. The design of the system greatly reduces the frequent need for repair. The system is monitored via a self-diagnostic program which will indicate the presence of a malfunctioning PCB. Replacement may return the system to optimum operating efficiency. Certain other problems can be traced to either wiring or cable fault.

5.2 REPLACEMENT PARTS of the local of numers are the port

If a circuit board or a component in the key system is known to be faulty, a new part may be ordered from ISOETEC by specifying the name of the item and the location where it is used. Immediate express service can be provided for delivery of urgently needed parts.

5.3 SYSTEM VOLTAGES/ADJUSTMENTS

CAUTION: The system +5.1 V dc adjustment is critical for proper system operation. Adjust the voltage after installation of all PCBs according to the following.

5.3.1 +5.1 V dc Adjustment Procedure:

- Use J28 (KSU) or E2 (EKSU) for ground reference.
- (2) Check voltage level at fuse F4 where the voltage should be 5.1 V dc.
- (3) Adjust potentiometer R194 if the voltage is not within tolerance.

If +5.1 V dc is not present, the following conditions will occur:

No Digital Display

No Call Processing

LED Power Indicator Out

All MLTs will produce a continuous 600 Hz tone.

5.3.2 + /- 15 V dc Power Supplies.

There is no adjustment for these power supplies.

5.3.3 Battery Voltage Measurement.

The battery (capacitor) voltage, measured with a voltmeter, should indicate 3.5 to 4.2 volts when fully charged with battery switch open. There is no adjustment.

5.4 DIAGNOSTIC TESTS

The diagnostic tests enable a check of system integrity to be made at any time and are a very effective maintenance tool. It is recommended that the self-diagnostic test be performed on a regular basis during periods of light traffic. The CO Line Test and the MLT Station Test should be done on a monthly basis, or whenever there appears to be a need for their execution.

NOTE: A DTMF module must be installed in J20 of the KSU to perform diagnostics.

5.4.1 DTMF PCB Installation:

- Power down KSU and EKSU.
- (2) Unpack DTMF PCB and inspect for damage.
- (3) Install DTMF PCB in Slot J20 of the KSU.
- (4) When installing, insure that DTMF PCB is seated flush.
- (5) Check +5.1 V dc adjustment listed in paragraph 5.3.
- (6) Install a second DTMF PCB (if used) in slot J19 of the KSU.
- (7) Install third DTMF PCB (if used) in slot J15 of the EKSU.

Slot	Functions Japanese of (TSL) Soul read language at the base in	
SIOL	C Functions () Substitute () Subst	
J20	Self-Test Diagnostics, DISA, SLT and CO Line Test on KSU.	
J19	DISA and SLT	
J15	DISA and SLT (EKSU)	

5.4.2 DTMF Test Procedures.

- (1) DTMF PCB is tested in either of two ways: During Self-Test Diagnostics or accessing "DTMF TEST" in system options programming mode.
- (2) Self Test Procedure is: Set PROGRAMMING switch to ON. Momentarily press the KSU RESET button. Return PROGRAMMING switch to OFF. Read Error Code from digital display.

5.5 SELF TEST DIAGNOSTICS

NOTE: Option 10 has been added to 2004 software. This option is for Self Test Inhibit.

When Option 10 is programmed for NO, the system will automatically perform a Self Test every 6 hours of idle time.

When Option 10 is programmed for YES, the system will not perform an automatic Self Test, however, a manual Self Test can still be performed at any time.

When the system is powered up, the self diagnostic test procedures are run to test the matrix cross points, the CO/PBX line modules and the station modules. The tests can also be initialized by setting the PROGRAMMING switch to ON and pressing the RESET button.

At test initiation, the KSU will display: YY-SELF**TEST-XX

The YY display indicates the current test station (up to 12 with one KSU and up to 24 with two KSUs).

The XX indicates that a fault is present; 00 at this location indicates no fault.

Upon completion of the self-diagnostic the display will indicate the test results, for example, for a fully equipped system:

KOO 5000 COOOOOO (KSU)

5000 C000000 (EKSU)

The following explanations are given to aid in the interpretation of the diagnostic test results:

K00 or E00: Indicates the result of cross point tests. If a different number than 00 is displayed, it indicates that a cross point failure has been detected.

S000:

- S Indicates Station Lines diagnostic output
- 0—1st MLI (4th on EKSU) Ext. 31-34/(43-46)
- 0-2nd MLI (5th on EKSU) Ext. 35-38/(47-50)
- 0—3rd MLI (6th on EKSU) Ext. 39-42/(51-54)

S000 Display Readout:

- 0 Proper operation.
- 1 Defective interface.
- -- Not installed or detected
- *—SLI Module installed

C000000:

- C—Indicates CO line diagnostic output.
- 0-1st CO Line (7th on EKSU)
- 0-2nd CO Line (8th on EKSU)
- 0-3rd CO Line (9th on EKSU)
- 0-4th CO Line (10th on EKSU)
- 0-5th CO Line (11th on EKSU)
- 0—6th CO Line (12th on EKSU)

C000000 Display Readout:

- 0 = Proper Operation.
- X = No line detected or bad CO line; proceed with CO Line Test per paragraph 6.06.
- 1 = Defective module.
- = No interface installed.

5.6 CO LINE TEST

The EZ-1™ (36) Key System is equipped with a special test jack (J27) for manual test of the CO Line Interfaces. The CO Line Test enables electronics on the KSU board to be tested by the system. An audio and current test are run by the system on a manual basis.

NOTE: This test is not performed on the telephone company's lines but only on the interface boards.

To perform the CO Line Test, proceed as follows:

- (1) Disconnect the CO line cable connector, of the line to be tested, from telephone company RJ11C.
- (2) Connect modular jumper test cord from CO line test jack (J27) on KSU to CO line connector (J21-J26) of line to be tested.
- (3) Set PROGRAMMING switch to ON. Place System Programming overlay on the telephone at extension 32. The LED display will indicate:

PROG STN2-Y/N.

(4) Press the NO key in answer to display query. Display will indicate:

SYSTEM OPTIONS.

(5) Press TEST LINE key. Display will indicate:

CHECK CO LINE - 00.

(6) Dial two digit CO line number (01 thru 12). Display will indicate:

CHECK CO LINE-NN.

(7) When test is complete, the display will indicate one of the following:

COL NE-NN SOK

or

COLINE-NN 5 NG.

NOTE: If display indicates NG, replace CO Interface card or replace the entire KSU if the defective circuit is built in to the KSU.

(8) Press END key. Display will indicate:

PROG STN2-9/N.

5.7 DTMF RECEIVER

The DTMF PCB has three primary functions:

5.7.1 Self Test.

Used during Self-Test to perform station to trunk test, station to station test on all internal links as well as KSU to EKSU links. During Self-Test, the DTMF PCB will produce an audible tone to every station. The system program will then be checking for cross-talk and for any malfunction of the matrix.

5.7.2 DISA Operations.

The DTMF PCB must be installed to receive tones from the outside calling party. The DTMF will stay seized on the DISA caller's line for the entire length of the conversation. It is required to decode DTMF tones for the following multiple accesses:

- Internal stations
- (2) Outward trunks
- (3) Control of Relay/Sensor Interface (RSI).

5.7.3 SLI (Single Line Interface Printed Circuit Board).

The DTMF accepts and decodes DTMF tones from a single line station. It is only seized during the dialing portion of a call and will be idle during the conversation portion of a call. The DTMF PCB must be installed in slot J20 for Self-Test, DISA, SLT, and CO Line Test.

5.8 MLT STATION TEST

The EZ-1™ (36) Key System is equipped with a special program that performs a complete test of all the keys and LEDs on each Multi-Line Telephone (MLT). To perform the key and LED test of a station, proceed as follows:

- Lift handset.
- (2) Dial [80].
- (3) Press each key on the station. The key LED will light as each key is pressed. When dial pad keys are pressed during the test, the two vertical columns of feature LEDs will light in succession as digits 1 thru 0, # and * are pressed on the dial pad.

NOTE: The VOLUME keys do not contain LEDs. When VOLUME DOWN key is pressed, the TRAN/CON key LED will light. When VOLUME UP key is pressed, the HOLD key LED will light.

- (4) Go on-hook to release test program.
- (5) Repeat procedure for each station telephone in the system.

5.9 TELEPHONE WIRING

NOTE: If an impedance unbalance occurs on the data leads between the KSU and the telephone, LED control will be lost on telephone. Check the resistance of the line cord to the telephone. If there is a variation, replace the cord.

5.10 SYSTEM INITIALIZATION

- If, during programming the system, you wish to return the system to the initial program state, proceed as follows:
 - (1) Set PROGRAMMING switch ON and place station overlay on station 32.
 - (2) Press YES and then SYSTEM INITIATE keys.
 - (3) This will result in a **RESET 595TEM** indication on the digital display and the system will then be ready for initialization.
 - (4) Press RESET button on KSU to initialize system and to start self-test operation.

5.11 TROUBLESHOOTING GUIDE

5.11.1 System Troubles.

Symptom	Possible Causes	
System totally inoperative; no LED display.	 (1) Power plug removed from AC outlet. (2) No power at AC outlet. (3) Power at AC outlet below 105 V. (4) Input fuse F1 blown. (5) +5 V fuse F4 blown. (6) PCB loading down +5 V. (7) One or more firmware EPROMs upside down or have bent pins. (8) Defective KSU. 	
System inoperative; LED display lit.	(1) +15 or -15 V fuse blown. (2) Firmware EPROMs in wrong order. (3) Firmware EPROM missing.	
System resets.	 AC line voltage spikes, install surge protector. Missing or improper ground. AC outlet not dedicated. +5.1 V low. Possible DTMF, station, or COI cards loading down system voltages. Defective KSU. 	
System resets every morning.	Normal Operation: Every six hours of idle system time the KSU will automatically perform a self test and reset.	
System losing programming.	(1) Battery switch not activated. (2) Battery switch broken. (3) Perform battery backup test. (4) Defective battery. (5) Defective KSU.	
System can not be programmed.	(1) Extension 32 not connected. (2) Extension 32 connected in more than one location. (3) Extension 32 is off-hook. (4) Programming switch not ON. (5) Extension 32 cable bad. (6) Programming switch defective.	

5.11.2 CO Line Problems.

No dial tone. before the control of	 (1) No dial tone from central office. (2) Open bridging clips or cross connect. (3) CO line not connected to KSU. (4) CO line cable bad. (5) Defective COI card; run CO Line Test.
on programmed for auto pickup. enot laib would line to keyset.	(1) Low dial tone from central office. (2) Volume adjustment turned down on phone. (3) Defective COI card.
No incoming ring. Quito no text and the connected are programmed for no handstree receive an exited).	(1) No ring generator from Central Office. (2) CO Line not connected to KSU. (3) CO line cable bad. (4) Incorrect telephone number being dialed. (5) Defective COI card. (6) See station troubles for specific stations.
Can not dial on CO line — rotary.	(1) Bad CO line. (2) Defective COI card. (3) CO line programmed to dial DTMF.
Can not dial on CO line – DTMF.	(1) Bad CO line. (2) Rotary service from Central Office. (3) Defective COI card. (4) Defective KSU.
5.11.3 Station Troubles.	Excessive side tone. (1) CO votu
Station totally inoperative.	 (1) System not turned on. (2) Station not connected. (3) Cabling shorted or open. (4) Mounting cord bad. (5) Defective keyset. (6) Defective station jack.
Station handset does not work but handsfree works.	(1) Broken hook switch. (2) Defective handset. (3) Defective handset cord. (4) Defective keyset.
Station Handsfree does not work clips but handset is o.k.	(1) Excessively loud environment. or (2) Defective keyset.
Station can not access a CO line.	(1) CO line defective; see CO line troubles. (2) CO line not programmed to a key. (3) CO line access programmed as NO. (4) Defective keyset.
LEDs flash intermittently.	(1) Defective wiring. (2) Loose connections. (3) Defective mounting cord. (4) Defective keyset.
Station does not ring on CO calls.	 (1) CO line programmed not to ring. (2) Noisy environment; can not hear phone ringing. (3) CO line problem. (4) Defective keyset. (5) Phone is in Do Not Disturb.

Station does not ring on internal calls.	(1) Noisy environment; can't hear phone ringing. (2) Defective keyset. (3) Phone disconnected.
had alties	(4) Phone is in Do Not Disturb.
Strange noises over dial tone.	(1) One of the two data leads open.
No internal dial tone either on handset or handsfree.	(1) Extension programmed for auto pickup to non- existent CO line. (2) Defective keyset.
Extension can not be called. below pried redmun enor use in the lower states.	(1) Extension in DND. (2) Defective keyset. (3) Extension not connected. (4) Extension programmed for no handsfree receive (it rings when called). (5) Wrong extension number.
Low volume. Smill DTMF	(1) Volume turned down. (2) Defective handset. (3) Defective or misadjusted keyset.
Static. Static Oentral Office. Static Oentral Office.	(1) Defective handset. (2) Defective handset cord. (3) Loose connections in cabling. (4) Noisy CO line.
Excessive side tone.	(1) CO volume too high. (2) Need anti-sidetone transmitter (3) Defective handset. (4) Misadjusted keyset.
Station constantly resets.	(1) Defective mounting cord.(2) Cabling; loose connections.(3) Defective keyset.(4) Bad station card.
Station can not transmit.	 (1) Extension has mute key on. (2) Defective handset. (3) Defective handset cord. (4) Defective keyset. (5) Using handsfree, and HandsFree Originate is NO.
Station can not hear. Station can not hear.	(3) Defective handset.
Programmed features inoperative.	(1) Check keys programming.
Extension does not receive pages.	(1) Extension in wrong page zone. (2) Extension in No Page zone. (3) Extension in DND.

APPENDIX 1.

SHORT FORM OPERATION

(Supplements Section 2 Operation)

2.1 GENERAL.

This section supplements the information in Section 2 of this manual and the paragraph numbers correspond to the same number sequence in that section. This section gives the abbreviated explanation of how to quickly place or make a call.

2.2 PLACING A CALL

2.2.1 Internal Call. Smun and tapogen of material security of amin transport is very TALEMERALEVAL as easy STOM

- Go off-hook (or press HF key).
- (2) Dial two digit internal station code (31-54) for hands free operation or dial digit [1] and station code (31-54) for handset mode and ring extension. 2.2.2 External (Outside) Call.

- (1) Manual Cail
 - (a) Go off-hook (or press HF key).
 - (b) Press idle (unlighted) CO LINE key.
 - (c) Dial external (outside) telephone number.
- (2) UNi Kev
 - (a) Go off-hook (or press HF key).
 - (b) Press UNI key.
 - (c) Dial CO LINE number (01 thru 12).
 - (d) Dial external (outside) telephone number.

2.3 DIALING ALTERNATIVES

2.3.1 Station Speed Dial.

- (1) Programming (No station speed key assigned)
 - (a) Press PROGRAM key (PROGRAM key LED will flutter).
 - (b) Dial bin number (1 thru 0) followed by outside telephone number.
 - (c) Press PROGRAM key (LED will go out).
- (2) Programming (station speed key assigned)
 - (a) Press PROGRAM key (LED will flutter).
 - (b) Press assigned station speed key followed by outside telephone number.
 - (c) Press PROGRAM key (LED will go out).
- (3) Access Station Speed Dial (no key assigned)
 - (a) Press idle (unlighted) CO LINE key.
 - (b) Press PROGRAM key followed by bin number.
- (4) Access Station Speed Dial (key assigned)
 - (a) Press idle (unlighted) CO LINE key.
 - (b) Press Station Speed Key.

2.3.2 System Speed Dial.

(No System Speed Dial Keys Assigned) For System Speed Dial assigned keys, see Section 4, Programming

- (1) Programming
 - NOTE: Only Operator station may program System Speed Dial.
 - (a) Go on-hook.
 - (b) Press [*] key (PROGRAM key LED will flutter), followed by bin number (01-25 if KSU or 01-50 if EKSU also installed), and by external (outside) telephone number.
 - (c) Press PROGRAM key (LED will go out).

- (2) Access System Speed Dial
 - (a) Press idle CO LINE key.
 - (b) Dial [*] followed by bin number (01-25 or 01-50 if EKSU).

2.3.3 Last Number Redial.

NOTE: Dials last number manually or automatically.

- (1) Go off-hook (or press HF key).
- (2) Press idle CO LINE key.
- (3) Dial [#] key.

2.3.4 Save/Repeat.

NOTE: Only one number can be saved at a time. Number saved remains in memory until the next time the SAVE function is used.

- (1) Go off-hook (or press HF key).
 - (2) Press idle CO LINE key.
 - (3) Dial telephone number (manual or automatic).
 - (4) Press SAVE/REPEAT key.

NOTE: Press SAVE/REPEAT key a second time to cause system to repeat the number dialed.

2.4 CALL PROCESSING FEATURES

2.4.1 Call Hold.

- (1) Press HOLD key one time CO Line is placed in Inclusive Hold. Anyone With this CO Line can press CO LINE key to pickup CO LINE and override Inclusive Hold.
- (2) Release Hold Press flashing CO LINE key LED. Call on Hold will recall to extension after HOLD RECALL timeout.
- (3) Press HOLD key two times—CO LINE is placed in Exclusive Hold: Only the extension that placed the call on Exclusive Hold can release it.
- (4) Release Hold—originator presses flashing CO Line key.

2.4.2 Call Transfer.

- (1) Press TRAN/CON key to place CO Line on hold and to cause CO LINE key LED to flash.
- (2) Dial extension.
- (3) Call will transfer after originator goes on-hook. If called station does not answer within transfer recall time, the call will ring at the originating station.

2.4.3 Conference (Two Outside Calls).

- (1) Dial outside number and, when answered, place on hold by pressing TRAN/CON key.
- (2) Dial second outside number on another line and, when answered, place on hold by pressing TRAN/ CON key. The conference is now in operation.

2.4.4 Conference (One Outside Call And Two Internal).

- (1) Dial outside number and, when answered, place on hold by pressing TRAN/CON key.
- (2) Dial internal number and, when answered, place on conference.

 2.4.5 DSS (Hot Line) Keys.

- (1) Programming
 - (a) Go on-hook.
 - (b) Press PROGRAM key (PROGRAM key LED will flash).
 - (c) Press feature button and feature LED will light.
 - (d) Dial extension number and PROGRAM key LED will go out.
- (2) Accessing DSS Keys.
- Accessing DSS Keys. (becauses your lest) been if normal second (b) (a) Go off-hook (or press HF key).
 - (b) Press DSS feature key.

2.4.6 Mute Key.

- (1) Press MUTE key.
 - (a) Pressing key attenuates both station and handset microphones.
 - (b) Pressing MUTE key a second time activates the microphones.

2.5 BUSY/NO ANSWER ALTERNATIVES

2.5.1 Message Waiting (to activate).

(1) If called phone is busy or there is no answer, press MESSAGE WAITING key (or HOLD key if no MESSAGE WAITING key).

(2) MESSAGE WAITING or HOLD key LED will flash at called extension.

2.5.2 Call Back.

- (1) If called phone is busy, press CALL BACK key.
- (2) Go on-hook.
- (3) When called phone is no longer busy, your phone is called.

2.5.3 Camp-On.

- (1) If called phone is busy, dial [2] and hear camp-on tone.
- (2) When busy phone is free, the two stations are connected and the tone ceases.

2.5.4 Split Operation.

If camp-on tone is heard, press SPLIT key to place current call on hold (an internal call will be disconnected) and the new party will be connected.

2.6 ALTERNATIVE ANSWER FEATURES

2.6.1 Call Forwarding.

- (1) To forward calls to another station:
 - (a) Go off-hook.
 - (b) Dial extension number.
 - (c) When call is answered, press FORWARD key.
- (2) To cancel call forwarding:
 - (a) Set station on-hook.
 - (b) Press FORWARD key.

2.6.2 Call pickup.

- (1) To pickup a call ringing at another station, dial [2] followed by the extension number of the ringing station. The call will automatically be connected.
- (2) An outside call placed on Inclusive hold can be picked up at any extension (equipped with a UNI key). An outside call can be answered by dialing [2] followed by the outside line (CO LINE) number (01 thru 12).

2.6.3 Do Not Disturb.

- Any station, while on-hook, can block all ringing, calls, page and BGM by pressing the DND key (if programmed).
- (2) The DND key LED will flash to indicate DND status.
- (3) To cancel DND, press DND key. LED will go out.

2.7 AUDIBLE FEATURES

2.7.1 Paging.

- Dial [60 thru 64] for the required paging zone.
- (2) A single beep will indicate connection to the paging system.
- (3) To answer a page, dial [65]. Paging may include ringing on incoming call, BGM and to ring in NIGHT mode. (dependent upon programming.)

2.7.2 BGM.

- Dial [1] to turn on background music.
- (2) Dial [1] a second time to turn off BGM.

2.7.3 Night Ringing.

- (1) Operator only can turn on night ringing.
- (2) Stations must be programmed to receive night ringing calls.
- (3) Night mode is cancelled by pressing the NIGHT key.

2.7.4 Volume Control.

- Volume may be increased by pressing the VOLUME UP key.
- (2) Volume may be decreased by pressing VOLUME DOWN key.

2.8 Operator Station

The designated operator station can perform the following: (131 out of phone is but couse CAUS atACHOVEY

- (1) Program system speed dial numbers.
- (2) Transfer system to night ringing mode. (3) Which called phone is no longer busy your phase is crited
- (3) Activate the DISA mode.
- (4) Receive unanswered recall calls.

NOTE: For further data on the above listed functions of the Operator Station refer to Section 2, Operation.

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2.9 Access Codes

NOTE: For further data on access codes refer to Section 2, Operation.

2.10 Display Indications On KSU

NOTE: For further data on display indications refer to Section 2, Operation in this manual.

APPENDIX 2

TECHNICAL SPECIFICATIONS

Technology Distributed, stored program, microprocessor controlled. Data communi-

cations between key phones and common equipment is accomplished through time division techniques. Data and audio signals, as well as power, are provided to the key phones through two-pair non-twisted cable. The system Analog Matrix employs space division techniques, is software driven and non-blocking on CO lines with three intercom links for system configuration of up to 6 CO lines and 12 stations. Configurations requiring more than 12 stations are equipped with 5 intercom links,

while all CO lines are still non-blocking.

Capacity:

EZ-1™ Model 36 Key Phones Up to 24 in increments of 4.

Single Line Telephones 8 in increments of 4 (in place of EZ-1™ key phones.)

Type 2500

CO Line Interface Up to 12 in increments of 2.

Power And Environmental:

Input Power Requirements 117 V ac ± 10%, 47-63 Hz, single phase; primary fuse 1 ampere each KSU.

Input Power Dissipation Basic KSU (6×12):

System Idle: 45 VA max. @ 117V System Busy: 80 VA max. @ 117V

Expanded System (12×24): System Idle: 72 VA max. @ 117V System Busy: 150 VA max.@ 117V

Operating Temperature 32 to 104 F (0 to 40 C)

Storage Temperature -40 to 140 F (-40 to 60 C)

Relative Humidity 5 to 90% of maximum temperature.

Physical Dimensions The system utilizes two wall mounted side-by-side KSU's connected

through two 40 conductor ribbon cables. Each KSU measures 14" wide, 20" long and 4" deep. Each KSU with all modules in place weighs 13.5

pounds.

Electrical

Loop Limits Maximum length of station loop is 9000 feet when single line telephones

(SLT) are used (4 Wire, 24 AWG, inside wiring, non-twisted cable).

Single Line Loop Resistance 450 ohms nominal, not including phone.

CO Line Loop Resistance 2.2K ohms maximum w/48 V battery.

CO Line AC Impedance 600 ohms nominal.

CO Line DC Resistance 225 ohms @ 20 mA,

85 ohms @ 100 mA

Insertion Loss: CO line to EZ-1™ key phone:

1 dBm + 0.5 dBm @ 1 KHz (system conpensates for loss in KSU).

CO Line to Type 2500 instrument:

Less than 2.5 dB at 1 KHz.

Loss Deviation CO line to all stations:

0.1 to 0.7 dBm at 200 Hz to 3.2 KHz.

Out-Of-Bound Signal Power 60 dB or better from 4 KHz to 1 MHz.

Better than 15 dB from 300 Hz to 3.4 KHz at 20 ma loop current. Return Loss Single Frequency

Greater than 65 dB from 200 Hz to 3.4 KHz. Longitudinal Balance

Greater than 75 dB from 20 Hz to 200 Hz.

16 Hz to 30 Hz at 40V rms min. Ringing Sensitivity

30 Hz to 67 Hz at 50V rms min.

2.1 B Ringer Equivalence

DTMF signaling frequency pair - 5 dBm + 0.5 dBm. Frequency CO Line Signaling

tolerance + 1.5%. Dial pulse at 10 pps user programmable.

Less than 12 dBrnC for all connections. Idle Channel Noise

Less than 26 dBrn (3 KHz flat weighted) all connections.

Crosstalk Attenuation Greater then 75 dB station to CO line and station to station.

+ 10 dB maximum. Input Level Range

System Tones All multi-frequency tones with mixing of 350, 440, and 600 Hz.

Internal page Zones Four, user programmable.

External page Zones Two simultaneous, preamplified for + 2 dB gain with 600 ohms output

impedance, transformer isolated.

The system provides three relay contacts to activate external functions. External Contacts and Sensors

Each contact rating is for 1 A maximum at 24 V. It also provides three external sensors so that it can sense external contact closures and activate certain features. These contacts are dry (relay) contacts only.

Music Input Can be driven by any receiver or tape player with output impedance of

2 K ohms or less, transformer isolated. Individual volume controls for

Background Music (BGM) and Music On Hold (MOH).

Standard RCA jack input.

FCC Registration Number: DHF-7AS-11963-KF-E

UL Listing Number: 77B5

OPTIONAL EQUIPMENT

Emergency Power System

Model SB-36-28

Input Voltage 117 V ac ± 10%

Input Frequency 60 Hz ± 10% Input AC Line Separately fused, dedicated line, single phase, 3-wire, (parallel blade

with ground) 15 A, 47 to 63 Hz.

Output Voltage 117 V ac ± 10%

Output Frequency 60 Hz ± 10% Load Wattage 200 W maximum

Transfer Time Approximately 5 milliseconds

Recharge Time 12 to 16 hours (typical) EPS AC Outlets Two 3-wire duplex

Fuses DC switching and internal AC

Indicator Lights AC Line and Battery power

Housing Steel, baked enamel finish Dimensions 6.25 inches (159 mm) high

8.75 inches (222 mm) wide 12 inches (305 mm) deep

Weight 36 pounds (16.3 kg)

Line Conditioner For AC power

Model LC # 36

Input Voltage 117 V ac ± 10%

60 Hz ± 10% Input AC Line Separately fused, dedicated line, single phase, 3 wire (parallel blade Input Frequency

with ground). 15 A, 47 to 63 Hz.

APPENDIX 3

ABBREVIATIONS

ASCII American Standard Code For Information Interchange

AWG American Wire Gauge BGM Background Music

CDR(S) Call Detail Recorder (System)

CMOS Complementary Metal Oxide Semiconductor

CO Central Office
COI CO Line Interface
COS Class Of Service

CPU Central Processing Unit
CWP Cold Water Pipe (for grounding)

dB Decibel

DISA Direct Inward Station Access

DND Do Not Disturb

DSS/BLF Direct Station Selection/Busy Lamp Field

DTMF Dual Tone Multi-Frequency EKSU Expansion Key Service Unit

EPROM Erasable - Programmable Read Only Memory

FAX Auto-Answer Facsimile Machine FCC Federal Communications Commission

FX Foreign Exchange

Hz Hertz

IC Integrated Circuit

IRS Item Revision Status (Revision Level)

KSU Key Service Unit
LED Light Emitting Diode
MCU Main Control Unit
MDF Main Distribution Frame

MSG Message

MLI Multi-Line Interface
MLT Multi-Line Telephone
MOH Music On Hold

NEMA National Equipment Manufacturers Association

PABX Private Automatic Branch Exchange

PBX Private Branch Exchange PCB Printed Circuit Board

PROM Programmable Read Only Memory

RAM Random Access Memory

RCD Remote Changes And Diagnostics RFI Radio Frequency Interference

ROM Read Only Memory
RSI Relay/Sensor Interface

SMDR Station Message Detail Recording

SLI Single Line Interface SLT Single Line Telephone STI Station Interface

TELCO Telephone Company (Telephone CO Line)

UL Underwriter's Laboratory

UNI key Universal key VA Volt Ampere

VAC Volts—Alternating Current
VRMS Volts—Root Mean Square
WATS Wide Area Telephone Service

APPENDIX 3

ABBREVIATIONS