STARPLUS® DHS™

I&M manual
I&M manual
I&M manual

Installation & Maintenance Manual

LIFE SUPPORT APPLICATIONS POLICY

VODAVI Communications Systems products are not authorized for and should not be used within Life Support applications without the specific written consent of VODAVI Communications Systems. Life Support systems are equipment intended to support or sustain life and whose failure to perform when properly used in accordance with instructions provided can be reasonably expected to result in significant personal injury or death. Users contemplating application of VODAVI Communications Systems products in Life Support applications are requested to contact VODAVI Communications Systems to establish suitable terms and conditions for these applications. VODAVI Communications Systems warranty is limited to replacement of defective components and does not cover injury to persons or property or other consequential damages.

VODAVI Communications Systems reserves the right to make changes in specifications at any time and without notice. The information furnished by VODAVI Communications Systems in this material is believed to be accurate and reliable, but is not warranted to be true in all cases.

"STARPLUS" is a trademark of VODAVI Communications Systems.

PRINTED IN UNITED STATES OF AMERICA **PMF/95**

Table of Contents

Revision History

Revision	Affected entry	Description:
Revision 1	N/A	First commercial revision for distribution.
Revision 1a	Key Telephone Features Description & Operation	Corrected DISA feature operation discrepancy. All other contents of Revision 1 are unaffected.
	Configuration	Corrected formatting (point size and margins).
	Appendix A	Corrected various spelling errors. Added "Tone Det. Time" to ABR of Call Handling data form. Added "CO LN Preset FWD" to Call Handling data form.

INTRODUCTION

FCC REGULATIONS

IMPORTANT:

Customers connecting this equipment to the telephone network shall, before such connection is made, give notice to the telephone company of the particular line(s) to which such connections are to be made, and shall provide the telephone company with the following information:

- Complies with Part 68, FCC Rules.
- FCC Registration Number for PBX or hybrid operation (CO Line accessed by means of dial-access-codes or group/pooled CO line access): **D6XTAI-23086-MF-E**
- FCC Registration Number for Key System operation (CO Line access by means of individual CO Line button appearance): **D6XTAI-23085-KF-E**
- Ringer Equivalence Number (**REN**) or service code: **1.0B**
- Type and **USOC** number of the interface jack to be ordered from the telephone company: **RJ21X**

The telephone company should also be given notice upon final disconnection of this equipment from the particular line(s).

It is also the responsibility of the customer to provide the telephone company with registration numbers of any other devices which are configured for connection to the telephone network.

It is prohibited to make connections to party lines.

Under certain circumstances the telephone company may temporarily discontinue service and make changes in facilities and services which may affect the operation of this equipment; however, the customer shall be given adequate notice in writing to allow the customer an opportunity to maintain uninterrupted service.

Users should not adjust, repair, or attempt to service this equipment. In the event that a problem occurs, contact the local authorized factory service representative.

In the event of trouble with the telephone line(s), this equipment must be disconnected from the telephone line(s). If trouble ceases, the equipment must be repaired by an authorized factory service representative. If the trouble continues to occur with equipment disconnected, the telephone company should be notified that they have a problem. If this is the case, repairs or adjustments must be made by the serving telephone company.

NOTICE

THIS SYSTEM INCLUDES HEARING AID COMPATIBLE HANDSETS THAT ARE IN COMPLIANCE WITH SECTION 68.316 OF THE FCC RULES.

WARNING

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

- Reorient the receiving antenna.
- Relocate the KSU with respect to the receiver.
- Check that the KSU and receiver are not on the same circuit; the KSU must be powered from an isolated, dedicated AC outlet.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems"

This booklet is available from the U.S. Government Print Office, Washington, D.C. 20402, Stock No. 004-000-00398-5.

If RFI problems persist, contact Customer Service.

SAFETY REGULATIONS

The System is certified for safety approval by a Nationally Recognized Testing Laboratory (NRTL). Before installation, check your local electrical codes for installation of telephone and electronic equipment.

The following safety information is reprinted from UL 1459, a product safety specification governing telephone equipment.

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Read and understand all instructions.
- Follow all warnings and instructions marked on the product.

- Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Do not use this product near water (for example, in a wet basement).
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings in the cabinet and the back or bottom are provided for ventilation, to protect it from overheating; these openings must not be blocked or covered. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
- This product should be operated only from the type of power source indicated in the manual. If you are not sure of the type of power source to your building, consult your dealer or local power company.
- This product is equipped with a three-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.
- Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Do not use an extension cord with this product's AC power cord. The AC outlet for this product should not be used for any other electrical equipment.
- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
- To reduce the risk of electric shock, do not disassemble this product, but take it to a qualified servicemen when some service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect re-assembly can cause electric shock when the product is subsequently used.
- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    - When the power supply or plug is damaged or frayed.
    - If liquid has been spilled into the product.
- If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions because improper adjustment of the controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- If the product has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.

SAVE THESE INSTRUCTIONS

CAUTION

To Reduce the Risk of Fire or injury to persons, Read and Follow these instructions:

1. Use only the following type and size battery(ies) listed here as the maximum battery type and size: 24vdc, 40AH.
2. Do not dispose of the battery(ies) in a fire. The call may explode. Check with local codes for possible special disposal instructions.
3. Do not open or mutilate the battery(ies). Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.
4. Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.
5. Charge the battery(ies) provided with or identified for use with this product only in accordance with the instructions and limitations specified in this manual.
6. Observe proper polarity orientation between the battery(ies) and battery charger.
7. Do not mix old and new batteries in this product (applies to products employing more than one user replaceable secondary battery).
8. Do not mix batteries of different sizes or from different manufacturers in this product (applies to products employing more than one user replaceable secondary battery).

LIMITED WARRANTY

For a period of twelve (12) months from the date of shipment to Buyer, Vodavi Communications Systems, Inc. warrants the equipment (except for fuses and lamps) to be free from defects in material and workmanship. In the event that during the term of the warranty the product should prove to have material or workmanship defects, Vodavi Communications Systems, Inc. will repair, or in its discretion, replace the defective equipment. No equipment of any kind may be returned without prior authorization and specific shipping instruction from Vodavi Communications Systems, Inc. and Vodavi Communications Systems, Inc. cannot accept any responsibility for material returned without such authorization.

This WARRANTY does not apply to defects or malfunctions caused by abuse, accident, modification, negligence, disaster such as fire, flood, wind, and lightning or any other damage not resulting from defects in materials or workmanship or reasons beyond the control of Vodavi Communications Systems, Inc.

WHILE THIS DEVICE IS DESIGNED TO BE REASONABLY SECURE AGAINST INTRUSIONS FROM FRAUDULENT CALLERS, IT IS BY NO MEANS INVULNERABLE TO FRAUD. THEREFORE NO EXPRESS OR IMPLIED WARRANTY IS MADE AGAINST SUCH FRAUD INCLUDING INTERCONNECTION TO THE LONG DISTANCE NETWORK.

WHILE THIS DEVICE IS DESIGNED TO BE REASONABLY SECURE AGAINST INVASION OF PRIVACY, IT IS BY NO MEANS INVULNERABLE TO SUCH INVASIONS. THEREFORE NO IMPLIED WARRANTY IS MADE AGAINST UNLAWFUL OR UNAUTHORIZED UTILIZATION WHICH RESULTS IN THE INVASION OF ONE'S RIGHT OF PRIVACY.

THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THIS LIMITED WARRANTY AND IN NO EVENT SHALL VODAVI COMMUNICATIONS SYSTEMS, INC. BE LIABLE FOR LOSS OF ANTICIPATED PROFITS, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF TIME OR OTHER LOSSES INCURRED IN CONNECTION WITH THE OPERATION, POSSESSION OR USE OF THE EQUIPMENT.

For complete information on returning equipment,, refer to the current Vodavi Communications Systems, Inc. Customer Service Policy. This document includes specific information on the following subjects: warranty, procedures to follow when returning equipment, equipment damaged in shipment, insurance, repair policy, and advance replacement policy.

GENERAL DESCRIPTION

SYSTEM TECHNOLOGY

The Starplus Digital Hybrid System (DHS) is a fully digital key telephone system comprised of an application configurable, expandable Key Service Unit (KSU) platform. The common system architecture supports three digital telephone models and an expandable D/A, A/D analog device interface. The DHS is designed to meet the telecommunications needs of small to medium sized business offices. The DHS incorporates state of the art digital technology for voice switching and call processing utilizing Pulse Code Modulation and Time Division Multiplexing (PCM/TDM). The Starplus DHS family is engineered to allow migration of the Starplus DHS digital terminals and terminal accessories throughout the entire product line. ISDN-like, 2B+D technology complements the system architecture and capabilities. On one industry standard twisted pair, key telephones perform all system functions and voice communications. The DHS is a non-blocking switch, with no loss or degradation of voice signals. The system is stored-program control and utilizes a 16-bit, 8 MHz microprocessor. Memory consists of 512K bytes of ROM (Read Only memory) and 128K bytes of RAM (Random Access Memory).

When analog device interface is required, a 2-port Single Line Telephone (SLT) Adapter may be connected to any one digital station port. The 2B+D technology allows the Starplus DHS to split one digital key telephone port voice channel (B1) and the second voice channel (B2) to provide two independent SLT-type device interfaces. The 2-port SLT Adapter may be expanded with the 2-port SLT Expansion (housed in the 2-port SLT Adapter housing).

Note: The 2-port SLT Expansion requires one dedicated digital station port. It should also be noted that the application of analog devices in the Starplus DHS has the effect of two-to-one port gain.

The Starplus DHS Basic KSU is shipped equipped to interface three (3) loop start CO lines and eight (8) digital key telephones/2-Port SLT Adapters. The standard 3X8 CO/Station interface module is available separately and called the "3X8 Expansion Module." Two (2) 3X8 Expansion Modules may be added to the Standard 3X8 Module in the Basic KSU for a maximum configuration of 9X24 (CO lines/stations). Alternately, a "6-Port CO Module" may be substituted for one 3X8 Expansion Module allowing for greater flexibility. The maximum capacity of this configuration is 12/16 (CO/Sta). Regardless of the configuration, the system has sufficient resources to allow completely non-blocked access to all facilities (intercom and CO lines).

A Standard Background Music/Music-On-Hold (BGM/MOH) Module is also equipped in the Basic KSU. A external music source may be connected to this interface via a one-eighth inch phono plug for BGM/MOH listening. All system features are supported by the equipment provided in the Basic KSU except External Call Forward (ECF), Direct Inward System Access (DISA), Automatic Busy Redial, Unsupervised CO Line Conference, Dial Tone Detection, Loud Bell Control, External Paging, the second BGM channel, and RS232 serial ports for SMDR and Remote Programming.

When equipped, the Option Module replaces the Standard BGM/MOH Module and provides the resources for the features above. The Option Module provides two (2) DTMF receivers and two (2)

Tone Detectors specifically for ECF, DISA, Unsupervised CO Line Conference, and Dial Tone Detection. Note: SLT operations do **NOT** rely on the Option Module.

CONFIGURATION

Components

The Starplus® DHS™ platform is comprised of three key telephone models and a modular KSU (Key Service Unit) which houses the following KSU components:

CPU Module

Standard 3X8 Module

Standard MOH/BGM Module (equips one music channel)

3X8 Expansion Module(s)

6 Port CO Module

Option Module

In the standard configuration the KSU is equipped to service three (3) CO Lines and eight (8) Starplus® DHS™ digital key telephones. The standard configuration is equipped to service one music channel for use as Background Music and Music On Hold and all system features except Dial Tone Detection, External Call Forwarding, Direct Inward System Access, Automatic Busy Redial, SMDR (Station Message Detail Recording), Loud Bell Control, External Voice Paging, second BGM channel and Unsupervised Conference. These advanced call processing features require the Option Module for operation.

The Starplus® DHS™ is scaleable to meet a variety of applications. The 3X8 Expansion Module and 6 Port CO Module are interchangeable expansions. The 3X8 Expansion Module is identical to the standard 3X8 Module shipped with each Basic KSU. 3X8 modules interface 3 loop start CO lines and 8 Starplus DHS digital key telephones. As implied, 3X8 Expansion Module(s) (2 maximum) may be added to the Basic KSU to increase system capacity in increments of 3 CO lines and 8 stations.

The 6 Port CO Module may be substituted for either expansion 3X8 Expansion Module to interface 6 loop start CO lines. Only one (1) 6 Port CO Module may be installed in the Basic KSU.

The following system configurations are possible:

Equipment installed:	Maximum number of loop start CO lines.	Maximum number of Starplus DHS digital key telephones.
1-3X8 module	3	8
2-3X8 modules	6	16
3-3X8 modules	9	24
1-3X8 module and 1-6 Port CO Module	9	8
2-3X8 modules and 1-6 Port CO Module	12	16

Station apparatus is comprised of the following components:

- Executive Key Telephone
- Enhanced Key Telephone
- Basic Key Telephone
- 2 Port SLT Adapter
- 2 Port SLT Expansion

(Note: key telephones are available in two colors; "Off White" and "Charcoal Gray".)

System Administration

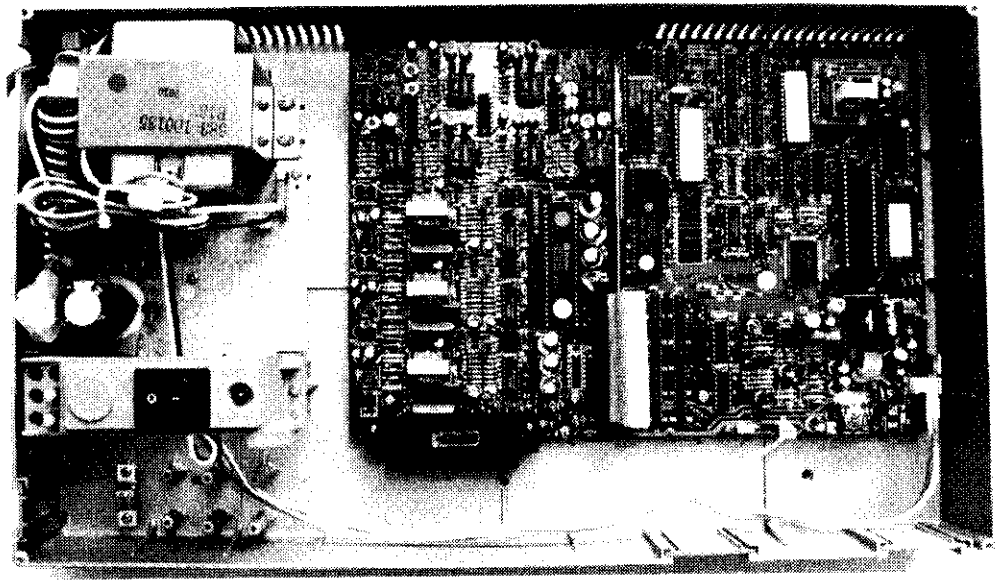
The system's default customer data base can be entered and changed, under password control, from any Executive Key Telephone. All Customer information is protected by an internal rechargeable NiCad battery. Programmable password protection is allowed for each station, system administrator and external (DISA) callers.

Key Service Unit

The Starplus DHS Basic Key Service Unit (KSU) is a modular flat-pack design. It is a self-contained cabinet with internal power supply, common control circuits (CPU board) and Standard 3X8 Module. The power supply AC transformer is hard-wire selected for either 117vac or 230vac operation. (It is shipped wired for 117vac operation.) The KSU is designed for wall mount and shipped with a wall mounting template. The compact KSU weighs less than 20 pounds and is UL Listed.

Standard panels installed over various KSU openings may be removed or repositioned to accommodate exterior connection requirements. Three such panels are present. One may be removed to route a serial cable through the KSU outer housing for connection of SMDR equipment. Another may be removed to route a serial (NULL Modem) cable through the KSU outer housing for connection of a modem or PC (via a straight-through cable). This serial port is used for remote programming and maintenance. Both serial ports are provided when the Option Module is installed. One KSU opening panel may be removed or repositioned to accommodate cable entry requirements through the outer housing for connection to the MDF.

KSU (cover removed)



Power Supply

The power supply circuitry of the Starplus® DHS™ incorporates a linear design transformer with a choice of input voltage taps. The transformer primary windings are shipped wired for 117vac applications. A factory insulated tap wire may alternately be connected for 230vac applications. Since the power supply is linear in design the output voltage varies between 21.6vdc and 32vdc depending on load and stability of the input voltage. The output voltage is delivered to the CPU board for distribution and rectified there for logic and control voltages.

Two fuses are equipped on the power supply board, one for ac input over-voltage protection and one for dc output over-voltage protection. A DPDT (Double Pole Double Throw) switch is accessible from outside of the KSU when the KSU cover is in place. The DPDT switch will simultaneously switch AC input and DC output circuits on and off. In the event battery backup operation is desired and equipped via the optional Starplus® BBU (Battery Backup Unit), the KSU switch may be used to switch off/on power from both sources.

The power supply wiring harness is equipped with a Mate-n-lock connector on the DC output for connection of the Starplus® BBU. When equipped the BBU will maintain complete system operation during commercial power outages. A current draw/configuration chart is included in this document for assistance in selecting the appropriate batteries for use in the BBU. Please refer to the BBU manual for installation precautions and proper battery installation.

CPU

The CPU board is standard in the Basic KSU. This board contains all circuitry required to control the fully equipped Starplus® DHS™. Three buss connectors are provided where the station/CO line interface 3X8 Expansion Module and 6 Port CO Module are connected. The Option Module connector and Standard MOH Module connector are also located on the CPU board. All digital voice switching and call processing data switching is accomplished on the CPU board.

The CPU and common control statistics are as follows:

Processor	:	Motorola V20
speed	:	8MHz
Memory ROM	:	512K Bytes
RAM	:	256K Bytes
Controller	:	Interrupt
Recovery	:	Watch Dog Timer
Voice switching	:	PCM (Pulse Code Modulation)
Data switching	:	TDM (Time Division Multiplexing)

Standard 3X8 Module

Installed in the Basic KSU at the factory is the Standard 3X8 Module. This module is in fact exactly the same as the 3X8 Expansion Module.

3X8 Expansion Module (includes standard 3X8 module)

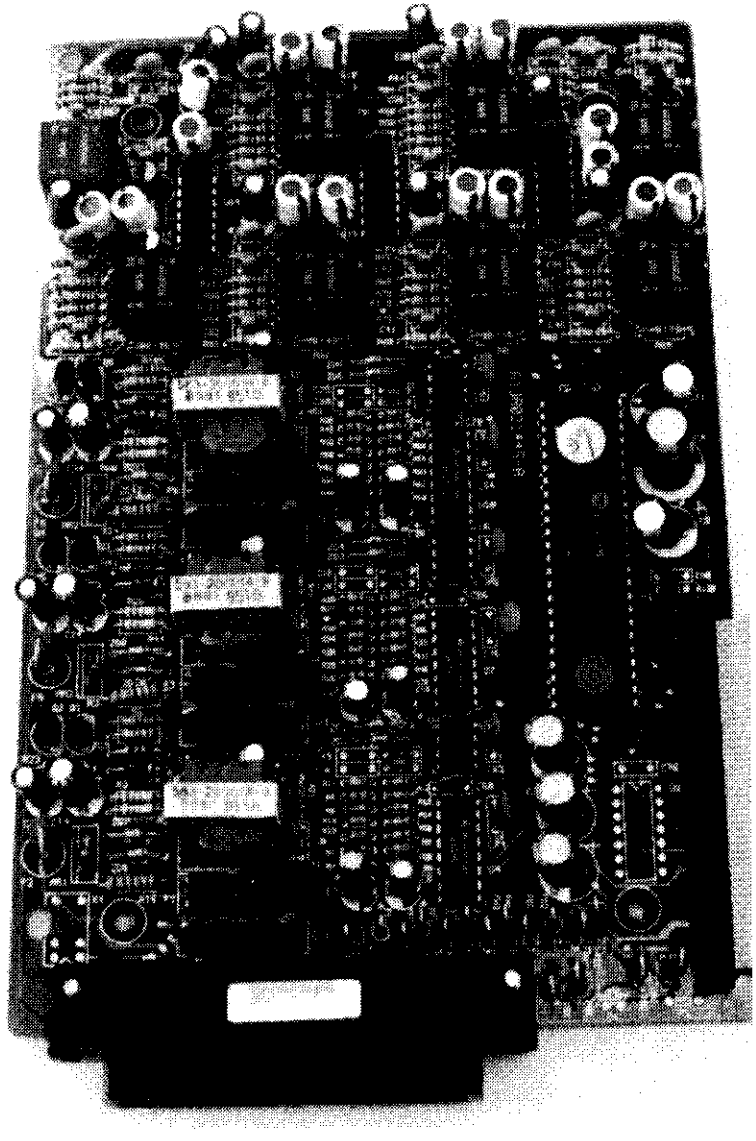
Provides interface of 3 loop-start CO lines and 8 Starplus DHS Key Telephones or 8 Starplus 2 Port SLT Adapters/Expansions. The 3X8 Expansion Module is shipped with four (4) mounting stand-offs used to install the board into the Basic KSU

Each CO line circuit incorporates over-voltage protection, ring detector, loop detector, loop/pulse-dial relay, current sink circuit, Coupling/isolation transformer (impedance 600:600), hybrid circuit and COMBO (CODEC & filter) polarity guard circuit and Radio Frequency noise filter.

Each digital key telephone port is comprised of a proprietary octal ASIC (Application Specific Integrated Circuit) transceiver designed using ISDN type 2B+D architecture. At this time the "D" channel is used for call processing control of digital key telephone functions/operations and one "B" channel is used for the digital key telephone voice channel. The second "B" channel is unused at this time for digital key telephone operation. When used in conjunction with the Starplus 2 Port SLT Adapter or Starplus 2 Port SLT Expansion, the "B2" channel is used to provide a digital voice path for a second SLT station. Both 2 port SLT devices have a port gain characteristic that allows two SLT (analog) devices to be operated from one digital key telephone port.

Each digital station interface is protected against circuit wiring shorts by an over-current protection polyswitch. The digital station circuit requires only one cable pair to operate and is not polarity sensitive.

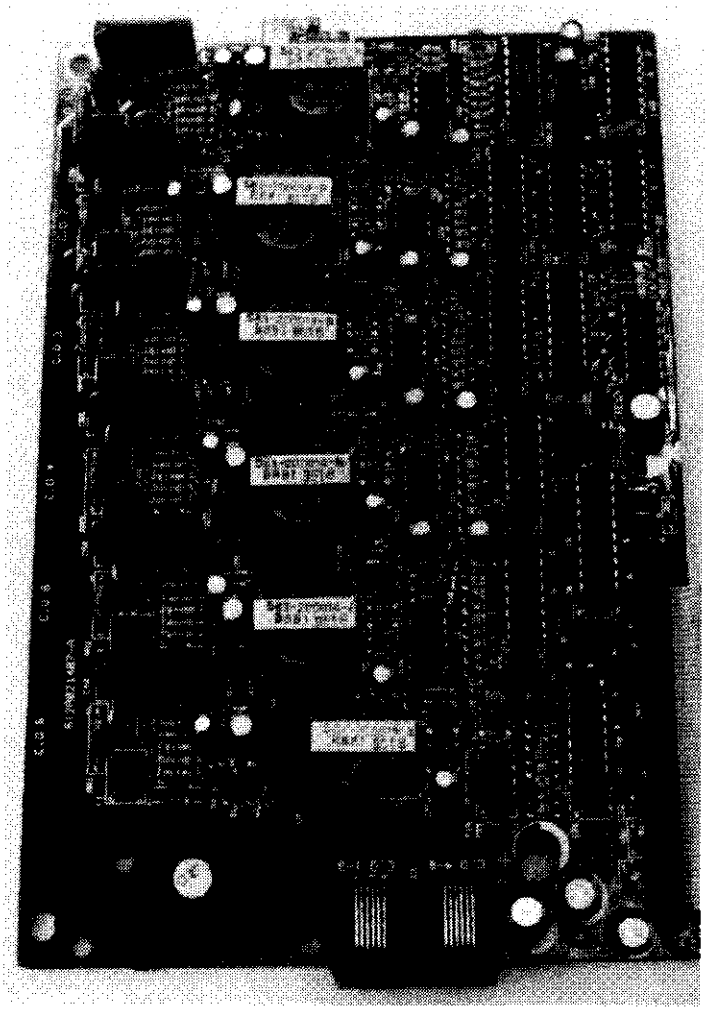
Physical connection of stations and CO lines to the 3X8 module is made through one 25 pair amphenol-type connector to the MDF (Main Distribution Frame). Station power to both digital key telephones and 2 Port SLT Adapter/Expansion is provided by a single twisted pair from the 3X8 module to the MDF.



6 Port CO Module

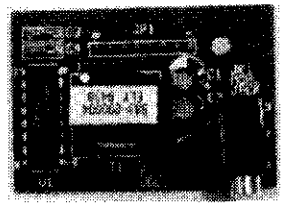
The 6 Port CO Module may alternately be equipped in place of either 3X8 Expansion Module. The 6 Port CO Module interfaces 6 loop-start CO lines only. No station interface is provided on this module. The 6 Port CO Module is shipped with four (4) mounting stand-offs used to install the board into the Basic KSU, two(2) six-conductor modular line cords and two (2) six-conductor modular blocks. The mounting cords and modular blocks are used to extend the CO line interface circuits to the MDF for connection.

Each CO line circuit consists of an over-voltage protector, ring detector, loop detector, loop/pulse-dial relay, current sink circuit, isolation transformer, hybrid circuit and COMBO (CODEC & filter).



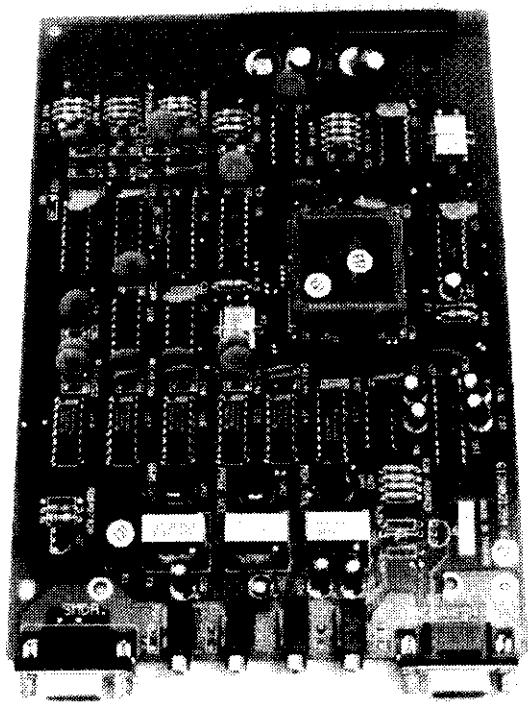
Standard MOH/BGM Module

The standard MOH/BGM Module is pre-installed at the factory and used to interface one external music source that will be used for callers who are placed on hold and station users who activate BGM listening. Connection of the external music source to the MOH/BGM Module is made via an eighth-inch phono type connector.



Option Module

The Option Module replaces the standard MOH/BGM Module. This module comprises all additional system resources required to make all system features operational. The Option Module contains 2 DTMF receivers and 2 Tone Detectors that facilitate the following features; Dial Tone Detection, External Call Forwarding, Direct Inward System Access, Automatic Busy Redial and Unsupervised Conference. Interface circuits and hardware connectors for SMDR (Station Message Detail Recording), PC Programming, Loud Bell Control, External Voice Paging and two music sources are also provided. Connectors for SMDR and PC Programming are standard 9-pin RS-232 (serial) connectors. Connectors for Loud Bell Control, External Voice Paging, MOH/BGM and BGM2 are eighth-inch phono type connectors.



Digital Key Telephones

The Starplus DHS supports three proprietary digital terminal models and an 2 Port SLT Adapter/Expansion. All key telephone models operate on one single twisted pair and provide D/A, A/D conversion at the terminal.

Basic Key Telephone:

The Basic Key Telephone is equipped with a speaker for monitoring call progress and receiving Call Announcements but is not equipped with a microphone for Hands-Free reply. The Basic Key Telephone has 16 buttons, 8 of which are fixed function buttons to control settings and primary key telephone call processing operations. These buttons are; HOLD, TRANS (transfer), FEAT (Feature), CLEAR, MUTE, SPKR (Speaker), and Volume UP/DN.

Eight (8) buttons are user Programmable Feature Buttons equipped with dual color LED's that are pre-assigned default settings for quick power up operation. These buttons are arranged in two rows and four columns. Beginning at the top left button they are assigned the following default values; CO line 1, CO line 2, CO line 3, CO line 4, CO line 5, CO line 6, HF/Tone and Message Waiting.

The Basic Key Telephone is also equipped with a 12 key Dial Pad for dialing intercom numbers, system feature codes and telephone network numbers on CO lines.

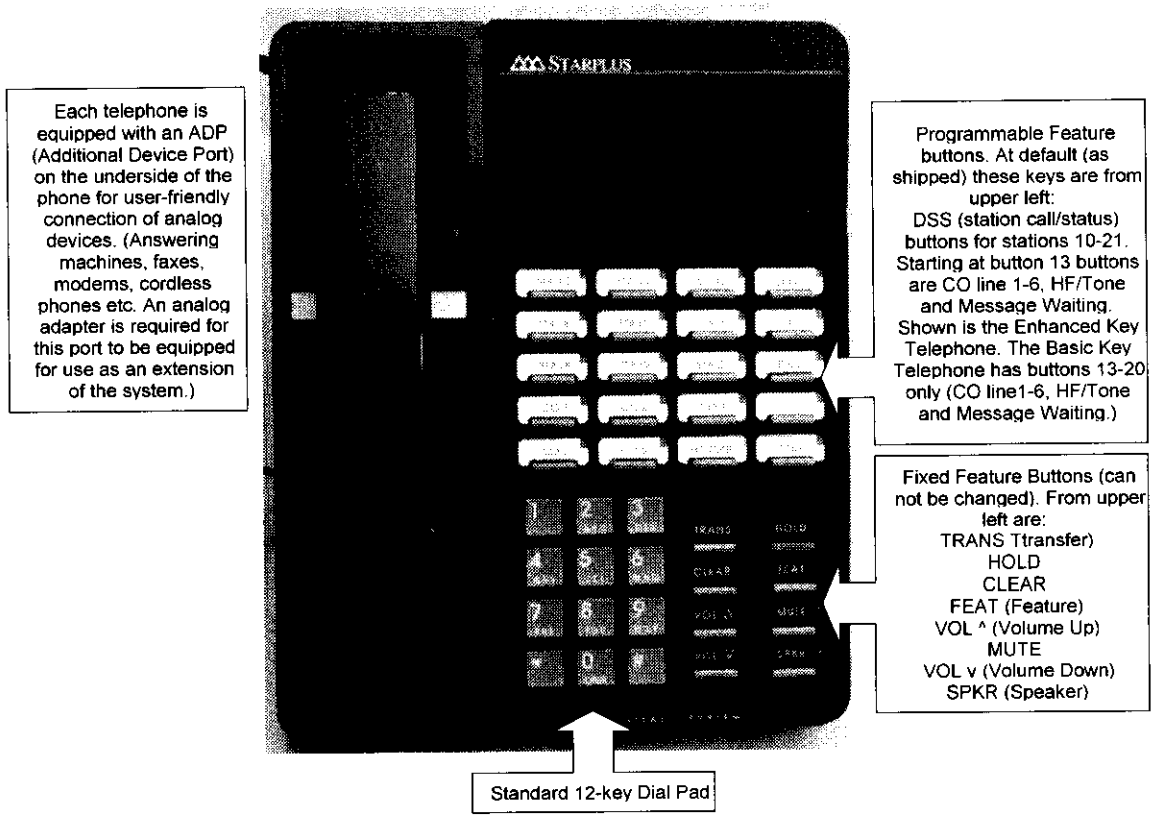
(Note: the Basic Key Telephone is not pictured.)

Enhanced Key Telephone:

The Enhanced Key Telephone is fully equipped for hands-free, speakerphone operation. The Enhanced Key Telephone may make and receive calls hands-free. This key telephone is expanded to twenty-eight (28) buttons. 8 fixed function buttons remain consistent with those of the Basic Key Telephone.

Twenty (20) buttons are user Programmable Feature Buttons equipped with dual color LED's that are pre-assigned default settings for quick power up operation. These buttons are arranged in five rows and four columns. Beginning at the top left button they are assigned the following default values; Station 10 - 21, CO line 1 - 6, HF/Tone and Message Waiting.

The Enhanced Key Telephone is also equipped with a 12 key Dial Pad for dialing intercom numbers, system feature codes and telephone network numbers on CO lines.



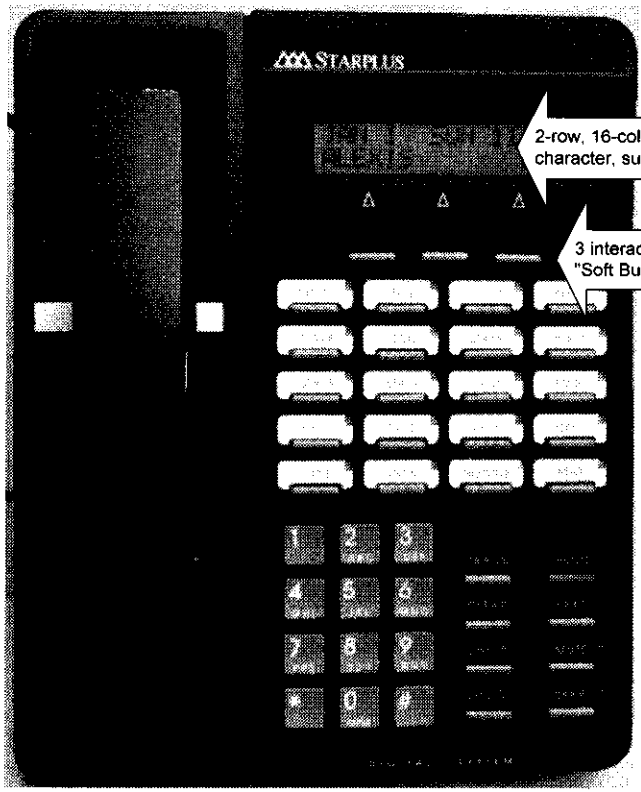
Executive Key Telephone:

The Executive Key Telephone model has a two-row by sixteen column (32-character) dot-matrix Super Twist LCD display, with three interactive Soft Buttons to enhance system features operation.

The Super Twist LCD eliminates the need for contrast adjustment and enhances angled viewing position clarity of displayed data. The display provides a visual reference to call progress and call duration, as well as time and date information. The display also enables the Executive Key Telephone user to send and receive visual advisory and call-back messages. Users may select from six "canned" messages (i.e. "IN A MEETING," "OUT OF OFFICE"), or they may create a custom message. Incoming calls from display telephones to such a station will receive the visual advisory message on their LCD display. In addition display telephone users may leave one of seven call-back messages (i.e. "CALL OPERATOR," "URGENT") on the display of another user's telephone.

The Executive model telephone is fully equipped for hands-free, speakerphone operation. The Executive Key Telephone may make and receive calls hands-free.

The Executive Key Telephone has the same twenty (20) Programmable Feature Buttons as the Enhanced model, but includes three (3) additional interactive Soft Buttons. 8 fixed function buttons remain consistent with those of the Basic Key Telephone .



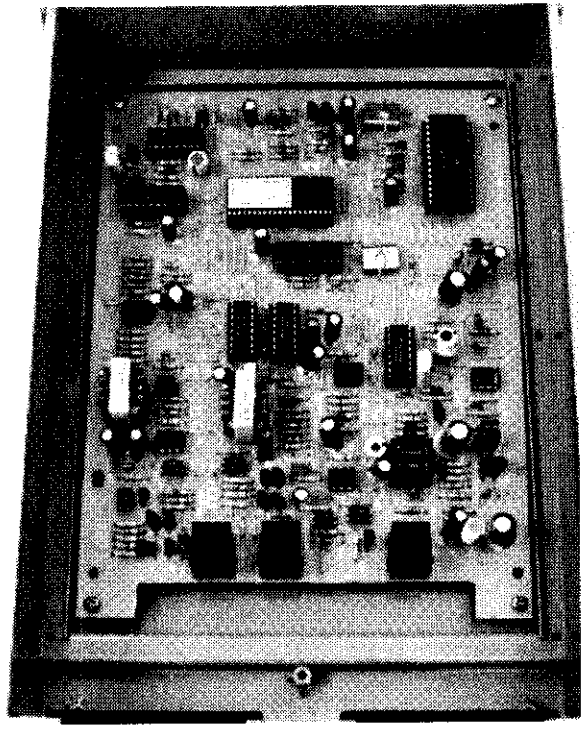
2 Port SLT (Single Line Telephone) Adapter

A 2 Port SLT Adapter is optionally available which will support most auxiliary equipment found on the business premises such as fax machines, answering devices and single line telephones. Each adapter requires an unused digital station port and will yield two (2) analog device interfaces.

The 2 Port SLT Adapter is a wall mount apparatus that is powered from the KSU. The adapter receives both voice channels and data control from the KSU, over one pair of wires. The 2 Port SLT Adapter generates -30VDC and 20-25Hz, 50V square wave ringing for operation of single line telephones, fax machine, answering device, modem, etc. All termination's are by RJ-11 connection.

The Analog Adapter utilizes the B1 channel for voice tip/ring connection to one analog station, and the B2 channel for the other. D channel provides port control to and from the KSU. The adapter provides two DTMF receivers (one for each analog port). Ancillary analog devices connected to the 2 Port SLT Adapter must generate DTMF signaling. (Pulse dial (rotary-dial) telephones/equipment are not supported.)

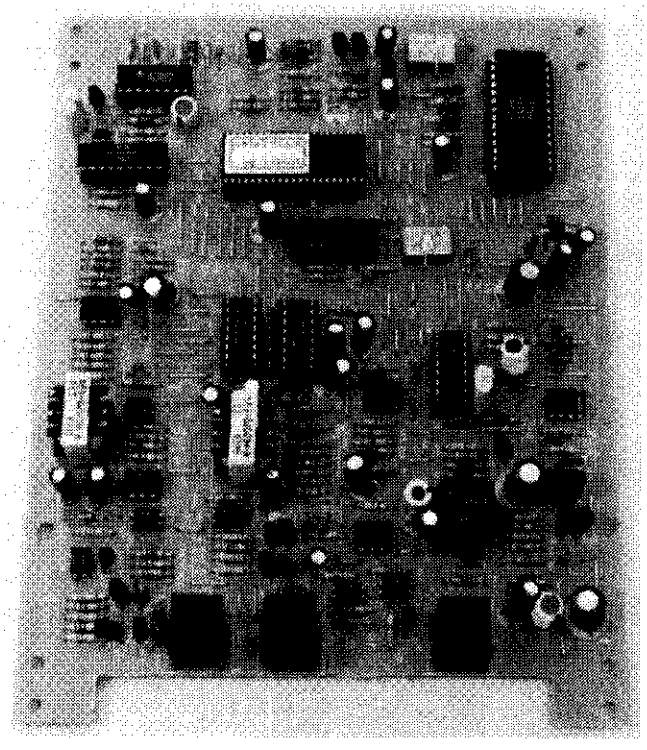
The 2 Port SLT Adapter provides adequate housing space for one 2 Port SLT Expansion.



2 Port SLT Expansion

A 2 Port SLT Expansion module is optionally available and is designed to be installed inside the 2 Port SLT Adapter housing. The 2 Port SLT Expansion provides the same interface capabilities of the 2 Port SLT Adapter and is in fact comprised of the same circuit board used inside the 2 Port SLT Adapter. The 2 Port SLT Expansion is shipped without a mounting enclosure and is installed inside of the 2 Port SLT Adapter to expand analog device interfaces to the Starplus DHS.

Important: the 2 Port SLT Expansion requires its own, dedicated digital Starplus DHS port for operation.



SPECIFICATIONS

Digital Hybrid System Capacities	
Time Slots:	PCM - 32 time slots x 4 Highways (128 voice channels) TDM 64 Time Slots (data processing)
Customer Database memory protection	300 hours on a fully charged battery (the internal Nicad battery requires 14 continuous powered hours of system operation to become fully charged.)
Ports: CO/PBX/Centrex Lines Digital Stations Standard Single Line Telephones	 12 (Note: 16 Stations max. with this configuration.) 24 (Note: 9 CO lines max. with this configuration.) 46 (Note: one digital port must be reserved for digital station operation. One digital station port is used for every two SLT ports required.)
DTMF Receivers: 2 Port SLT Adapter 2 Port SLT Expansion Option Module	 2 (One for each SLT port.) 2 (One for each SLT port.) 2 (Shared for advanced call processing system features: DISA, ECF, ABR.)
DTMF Senders:	Unlimited. (DTMF signal generation is derived from the core system tone resource. Tone combinations are available as needed.)
Tone Detectors: (Used to monitor call progress tones; Busy Tone, Ring-back Tone, etc.)	2 (Shared for advanced call processing system features; DISA, ECF, ABR. etc.)
Contacts:	1 LBC contact is available via the Option Module.
Conference circuits:	8 - 4 party conference circuits.
DISA circuits:	Any number of CO lines may be programmed for DISA operation.
System Attendants:	1 + 1 Alternate Position for overflow call handling.
Hunt Groups: Members per group: Group Types:	8 24 Pilot Hunt Group or Voice Mail Group

Digital Hybrid System Capacities (cont.)

Voice Mail Groups: Members (ports): Integration Method: VM Message Waiting: VM Control codes:	1 (Selected as VM type from HG.) 24 In-band #96 + station number to turn VM button LED on. #*96 + station number to turn VM button LED off. Disconnect Digit(s): 8 digits max. Prefix for intercom calls: 4 digits max. Prefix for transferred calls: 4 digits max. Suffix for intercom/transferred calls: 2 max.
CO Line Loop Current sensing:	Interrupt programmable from 50ms to 2500ms.
Paging:	8 Internal Page Extension Groups 1 External Page Port(via Option Module) 1 Internal All Call 1 System (Internal/External) All Call
System Speed Dialing:	80 Total, 16 digits per bin.
Station Speed Dialing (DKT & SLT):	20 Total per station, 16 digits per bin.
Last Number Redial:	16 digits per station
Save Number Redial:	16 digits per station
User Saved Number (Memo):	20 digits per station
Callback request per station:	1
Camp On by a busy station:	1
Stations Camped on to a station:	1
Stations Camped on to a busy line:	1
Message - Executive Notification:	6 preprogrammed 1 personal per station
Message - Executive Preprogrammed:	6 preprogrammed 1 personal per station
Message Waiting:	40 simultaneous
Name in Display:	1 per station, 7 characters max.
Class Of Service (COS):	8 (0-7) per Day, 8 (0-7) per Night
Toll Restriction To/From Tables:	100 entries, 10 digits per entry
Forced Verified Account Codes:	100 bins, 8 digits max.
Unverified Account Codes:	8 digits max.
Call Pick Up Groups:	8 Extension Groups.
Station Lock Password:	4 digits max. per station.
CDB Programming Password:	6 digits ("000000" at default).
System Reminder Alarm:	8 time settings.
Station Alarm:	1 per station.
Ring Schemes:	3
Distinctive Ring Tones:	4 per station.
External Call Forward:	1 incoming line, 1 outgoing line.

Electrical Specifications

AC Power source:	Dedicated 117/230vac ± 15%, 47-63Hz single phase
Power consumption:	1.5A maximum @ 120vac (180 watts)
Power Supply fuse: AC input: DC output:	 2A 250v 1A 125v
Idle Channel Noise	-74 dB
Cross Talk Attenuation	75 dB (@ 1kHz)
Ringing Sensitivity	40v RMS 25 Hz
Ringer Equivalence Number	1.5
CO Line Signaling	DTMF amplitude (-5 dB,-7 dB) +- 2 dB, @ approx. 2 Vpp Pulse Dialing ratio 60/40 @ 10 PPS
Music source / Background Music	0 dBm at 600 ohm input impedance 1/8th inch phono jack
Contact rating (Option Module LBC):	1A @ 30VDC 0.5A @ 90VAC 30Hz 1/8th inch phono jack
External Page Port	0 dBm at 600 ohms 1/8th inch phono jack

Environmental Specifications

Operating Temperature:	0° to 40° C, 32° to 104° F
Recommended Operating Temperature:	70° to 78° F
Storage Temperature:	32° to 104° F
Operating Relative Humidity:	5% to 90% (non-condensing)
Heat Dissipation (BTU):	300

Unit Specifications

Part Number	Description	Dimensions:			Weight
SP7000-00	Basic KSU	L W H	460 mm 270 mm 105 mm	18.4 in. 10.8 in. 4.2 in.	4.0Kg 8.8in.
SP7110-00	Option Module	L W H	212 mm 140 mm 22 mm	8.48 in. 5.6 in. 0.88 in.	0.4Kg 0.88in.
SP7100-00	3X8 Expansion Module	L W H	215 mm 130 mm 22 mm	8.6 in. 5.2 in. 0.88 in.	0.4Kg 0.88in.
SP7100-10	6 Port CO Module	L W H	215 mm 130 mm 22 mm	8.6 in. 5.2 in. 0.88 in.	0.3Kg 0.66in.
SP7420-00	2 Port SLT Adapter	L W H	320.5 mm 184.5 mm 65 mm	12.82 in. 7.38 in. 2.6 in.	0.4Kg 0.88in.
SP7440-00	2 Port SLT Expansion	L W H	198 mm 149 mm 22 mm	7.92 in. 5.96 in. 0.88 in.	0.7Kg 1.54in.
SP7314-71	Dark Gray - Executive Key Telephone	L W H	234 mm 188 mm 64.5 mm	9.36 in. 7.52 in. 2.58 in.	1.2Kg 2.64in.
SP7312-71	Dark Gray - Enhanced Key Telephone	same as above			
SP7311-71	Dark Gray - Basic Key Telephone	same as above			
SP7314-08	Off-White - Executive Key Telephone	same as above			
SP7312-08	Off-White - Enhanced Key Telephone	same as above			
SP7311-08	Off-White - Basic Key Telephone	same as above			

Maximum Cable Length

Digital Key Telephone (Distance measures in linear feet of cable from KSU to DKT.)	26 AWG - 255m (850 ft.) 24 AWG - 425m (1416 ft.) 22 AWG - 700m (1983 ft.)
Standard Single Line Telephone (Distance measures in linear feet of cable from KSU to SLT.) (2-Port SLT Adapter may be placed anywhere in between.)	26 AWG - 195m (650 ft.) 24 AWG - 340m (1133 ft.) 22 AWG - 476m (1586 ft.)

Dialing Specifications

DTMF Dialing mode:	
Frequency deviation:	± 1%
Rise time:	3ms
Duration of DTMF signal:	programmable 50-150ms (70ms default)
Inter-digit time:	programmable 50-150ms (70ms default)
VM Port DTMF duration:	programmable 60-150ms (120ms default)
VM Port Inter-digit time:	programmable 60-150ms (120ms default)
Pulse Dialing mode:	
Pulse dial rate:	10 pulses per second
Pulse Make/Break ratio:	60/40

FCC Registration Numbers

For systems configured for Key System operation (each CO line appears on its own dedicated button).	D6XTAI-23085-KF-E
For systems configured for hybrid operation (CO lines may be accessed by dial codes and Pool/Loop buttons).	D6XTAI-23086-MF-E

Audible Signals

Signal	Frequency	Cadence
CO Line Ringing:		
Scheme 0	N/A	300ms On, 400ms Off, 300ms On, 4 seconds Off
Scheme 1	N/A	1 second On, 3 seconds Off
Scheme 2	N/A	1 second On, 3 seconds Off
Distinctive 1		follows ring cadence of Ring Scheme selected
Distinctive 2		follows ring cadence of Ring Scheme selected
Distinctive 3		follows ring cadence of Ring Scheme selected
Distinctive 4		follows ring cadence of Ring Scheme selected
SLT	-SLT bell-	follows ring cadence of Ring Scheme selected
Intercom Ringing:		
Scheme 0	N/A	1 second On, 3 seconds Off
Scheme 1	N/A	1 second On, 3 seconds Off
Scheme 2	N/A	300ms On, 400ms Off, 300ms On, 4 seconds Off
Distinctive 1		follows ring cadence of Ring Scheme selected
Distinctive 2		follows ring cadence of Ring Scheme selected
Distinctive 3		follows ring cadence of Ring Scheme selected
Distinctive 4		follows ring cadence of Ring Scheme selected
SLT	-SLT bell-	follows ring cadence of Ring Scheme selected
Message Wait Callback		follows ring cadence of Ring Scheme selected

Environmental Conditions

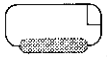
REQUIREMENTS	IN OPERATION	IN STORAGE
Temperature KSU	32° to 104° F 0° to 40° C	-40° to 185° F -40° to 85° C
Temperature - Station Instruments	32° to 113° F 0° to 45° C	-40° to 185° F -40° to 85° C
Relative Humidity (non-Condensing)	5% to 90%	5% to 90%
Altitude	Up to 10,000 ft. (3,048 m.)	Up to 40,000 ft. (12,192 m.)

Mean-Time Between Failure Analysis - System components

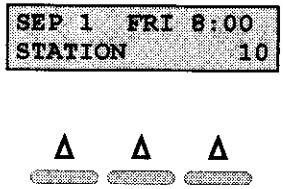
Case Assembly	100.0
Power Supply Unit	193.0
CPU Module	3095.0
Standard Music On Hold Module	325.7
Standard 3X8 Module & 3X8 Expansion Module	5744.0
6-Port CO Line Module	7201.2
Option Module	2866.0
Basic Key Telephone	2988.3
Basic & Enhanced Key Telephone	4205.3
Executive Key Telephone	4275.3
2-Port SLT Adapter & 2-Port SLT Expansion	5000.9
Method: 1. Use the figures above for each unit installed (or to be installed) and calculate the total for this system configuration. 2. Use the total from step 1 in place of the variable "x" in the formula at the right to calculate MTBF for the this system configuration.	**$(1 \div x)(10^9)$ = MTBF hours**

KEY TELEPHONE FEATURES DESCRIPTION & OPERATION

General Conventions:

- Press the CLEAR button to cancel the current operation.
- The FEAT button joined with dial key codes will appear throughout the text. This button (Feature) is used to access most system features.
- System resources are accessed using directory numbers to dial access the resource (station numbering, Hunt Group numbering, etc.)
-  Any feature or resource code may be stored for one-button access under an available Programmable Feature Button.
- "Operation" steps are oriented for the Executive Key Telephone since the interactive LCD prompts encompass all Executive Key Telephone functions.
- Specific "Operation" steps for the Basic and Enhanced Key Telephone are enclosed in brackets "{}" to distinguish operational differences. If there are no specific operation steps listed ({}) the operation of that feature is identical for all key telephone models.
- Database Programming can be executed at any idle Executive Key Telephone. Only one station may enter the Database Programming mode at any time.
- Three LCD interactive Soft Buttons (Δ) are positioned beneath the display on the Executive Key Telephone. These buttons are used during feature operation for interactive display prompt menus. For orientation purposes, the Soft Buttons may be referred to as the left, center and right Soft Buttons.
- Valid programming is confirmed with a single beep tone from the speaker. Invalid programming is alerted with a double beep tone.

The following is an example of the LCD display at an idle Executive Key Telephone. Throughout the manual the LCD will be shown with the associated Soft Button prompts, the actual Soft Buttons are immediately below the bottom line of the display oriented at left, center and right positions.



Universal Soft Button prompts:

Δ
bksp (Backspace): When the new programming data entry is not desired, the station user may press the **bksp** button to erase the last data entered and return to the immediately preceding prompt.

Δ
save (Store): When the new data are entered, the system will check the entered data automatically. If the entry is invalid, the prompt will be refreshed. If the entry is valid, the station user must press the **save** button to confirm entry and continue with the next prompt item.

Δ
chg (Change): Press the **chg** button to modify the current prompted item.

If the data/message to be changed is generated by the system itself, the current programming item will be replaced by new data (toggled between Yes and No, or cycled through several data/messages) when the user presses the **chg** button.

Δ
next: Repeated depressions of the **next** button will present the next selection or the next programmable item within the current category.

Δ
back: Repeated depressions of the **back** button operate similarly to the **next** button where the previous programming category is selected or the previous programming item within the current category is selected.

Δ
show (Display): Press the **show** button to enter into detailed feature item programming of a specific category, or to display current programmed content of the feature.

Feature Access Codes

"F" = FEAT (Features) Key Telephone button

F1	Speed Dialing	F8	Last Number Redial
F2	Call Forward	F9	**Station Feature Setup Codes**
F3	CO line Flash	F91	Station Callback
F4	Do Not Disturb	F92	Station Alarm Clock
F5, F6 & F7	**Station Call Operation Codes**	F93	Camp On - Busy CO line
F51	Save Number Redial	F94	Auto Hold
F52	Background Music	F95	Auto Line Select
F53	Directed Call Pick Up	F96	Message Waiting
F54	Group Call Pick Up	F97	Phone Lock/Unlock
F55	Authority Code	F98	Intercom Mode Select
F56	Voice Over Busy	F99	Station Paging Deny
F57	Private Talk from Conference	F90	Executive Notify
F59	Meet Me Page Answer	F9#	Headset Mode
F50+x	Paging (where "x" is zone to page)	F*+xx	Feature Cancel (where "xx" is the code of the feature to cancel)
F5*	User Saved Number	F#	Station Programming Codes
F68	Call Waiting Allow (Executive Stations Only)	F#3	Feature Button Programming & Inquiry
F60	Conference	F#7	Distinctive Ring Selection
F71	Account Code Entry	F#8	Station Feature Check
F73	Call Park and Call Park Answer	F#0	Attendant Station System Mode
F74	Conference Forced Release	F#*	Customer Database Programming
F77	Unsupervised Conference		
F78	Automatic Busy Redial		
F70	Pause		All others are reserved for future use.

System Numbering Plan

10-81	Station Numbers
82-89	Hunt Groups/Voice Mail Group
9/0	CO Line Group Access Code ("9" is the default code for SLT CO Line access.)
0/9	Operator Code ("0" is the default system Operator (attendant) code.)

Account Code - Forced Verified

Description:

Any station may be forced to enter an account code before making outgoing calls on CO lines. When this feature is invoked the account code entered is compared against an Account Code Table (100 entries maximum) for a match. If a match is found the call attempt is allowed. It should be noted that when a user has entered a valid account code, the station is still monitored for toll restriction according to the station's COS.

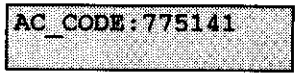
Related Feature(s):
Station Toll Restriction
Auto Line Select
SMDR (Station Message Detail Recording)

Related Programming:
RESOURCE - AC_CODE TABLE
STATION - DAY/NITE CLASS

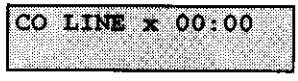
Operation:

Press an idle CO line, call processing tone is heard to prompt the user to enter an account code.

Dial 775141 (up to 8 digits may be entered depending on the programmed Account Code length.)



If 6 digits are the programmed Account Code length and the account code entered matches an Account Code Table entry, confirmation tone is heard and the user is connected to the CO line for out-dialing. When the user hangs up, the entered account code will be displayed in the Account field in the SMDR call record printout.



Or error tone is heard and the CO line is not accessed.

Notes:

1. If an entry error occurs, the station user may re-enter the desired new account code by using the Account Code feature again.
2. The account code digit entry is silent and will not disturb the ongoing conversation.

Account Code Unforced/Unverified FEAT 7 PRS 1

Description:

Any user can enter a personal or departmental account code for future tracking of time spent on customer accounts. A station that enters a reference account code can charge back the time spent on an outside line, plus the estimated costs of the call itself. Up to eight (8) digits may be entered for an account code that will be output through the system SMDR port at the conclusion of the outside call.

Related Feature(s):
Station Toll Restriction
Auto Line Select
SMDR (Station Message Detail Recording)

Related Programming:
RESOURCE - AC_CODE TABLE
STATION - DAY/NITE CLASS

Operation:

```
CO LINE x 00:00
```

While connected to a CO line press FEAT 7 PRS 1

```
AC_CODE:_
 bksp save chg
```

Dial 775141 (up to 8 digits may be entered depending on the programmed Account Code length.)

```
AC_CODE:775141
 bksp save chg
```

When the account code desired is entered, press **save** {press * **at non-display models**}, When the user hangs up, the entered account code will be displayed in the Account Code field in the SMDR call record printout.

```
CO LINE x 00:00
```

At Executive Display telephones **bksp** may be used to erase the previous digit for error correction and **chg** may be used to erase all entered digits for error correction.

Notes:

1. If an entry error occurs, the station user may re-enter the desired new account code by using the Account Code feature again.
2. The account code digit entry is silent and will not disturb the ongoing conversation.
3. The Account Code feature code may be programmed on any programmable feature button.

ADP Jack

Description:

All key telephone types are equipped with an Analog Device Port (ADP) jack. The ADP jack is an open, twisted-pair conductor path that may be extended from the MDF via the second pair of the station cabling. The ADP may be used to extend a SLT system station port or CO line to the digital key

telephone desktop for convenient connection of any analog interface device (answering machine, modem, facsimile machine, etc.).

The ADP jack of any telephone may be wired for connection to the main telephone CO line for use as a power failure standard telephone interface in the event of a power outage.

The standard, two-pair key telephone mounting cord (line cord) provided with each key telephone extends the second station cable pair to the key telephone ADP jack. Any analog device connected to the ADP jack operates independently of key telephone operation. The ADP jack allows complete flexibility of system resources. Used in conjunction with the SLT Adapter and the port gain characteristics of that unit, ADP open wiring allows complete adaptation of the application requirements.

Alarm Clock (Station) FEAT 9 WXY 2 ABC

Description:

Each station may activate its own private station alarm, as a special reminder, anytime during the next 24 hours. Only one station alarm notification can be established at a time. Once the alarm time is reached, the station will receive alert tone ringing over the speaker for six (6) seconds.

Upon completion of the alert ringing, the alarm is automatically canceled. If the alarm is desired at the same time every day, it must be entered each day prior to the desired alarm time. Every station in the system may have its own unique alarm time programmed.

Related Feature(s):
None

Related Programming:
Attendant System Mode - Time

Operation:

A station that has invoked the alarm function will receive tone ringing and the following display (at display telephones) when the alarm time is reached. (A busy telephone will receive the alarm tone ringing while busy and the display when it goes idle.)

```
ALARM REACHED
 ack
```

Press **ack** button **{press * 9 WXY 2 ABC at non-display models}**, confirmation tone is heard.

```
ALARM ACKNOWLEGE
```

Setup:

At an idle station press FEAT 9 WXY 2 ABC, a display telephone will see the current programmed alarm time.

```
ALARM: 10:30
          chg
```

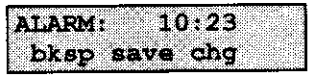
or

```
ALARM: EMPTY
          chg
```

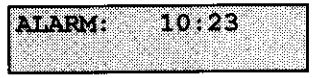
Press **chg** button **{at non-display telephones enter the desired alarm time as HH:MM in 24 hour format,**

confirmation tone is heard and the alarm time is set.}

Dial 1023 on the dial Key Pad



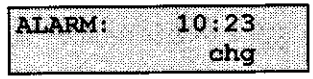
Press **save** button, confirmation tone is heard and the alarm time is briefly displayed.



Any telephone model can cancel a programmed alarm by pressing

FEAT * 9 WXY 2 ABC .

or press FEAT 9 WXY 2 ABC



Press **chg** button

Press **save** button.

Notes:

1. The station alarm clock will be canceled automatically after the initial alarm time is reached.
2. The alert tone will signal with double burst ringing during the effective alerting period.
3. The alarm clock setting is empty for every station.
4. The display of an Executive Key Telephone will be unchanged until ack is pressed or when the station is used for another call.
5. The Alarm Clock feature code may be programmed on any programmable feature button.

Alarm Clock (System)

Description:

The system administrator may establish system-wide alarm notifications through Customer Database Programming for various desired events. There are eight (8) system alarms times that are maintained in the Database Programming. These alarms occur continuously, for the desired times, seven days a week. For instance, if a system alarm is set once for 12:00PM (lunch break), this alarm will occur every day at 12:00PM and does not have to be re-programmed for the following day. The alarm alerting is actually a one minute period of Background Music played over every station's speaker.

Related Feature(s):
Music On Hold
Background Music

Related Programming:
Attendant System Mode - Time

Notes:

1. An external music source is required for this operation. The same music source used for Background Music is applied to the System Alarm Clock.
2. Stations monitoring BGM will not realize any change when a System Alarm is reached.
3. If a station user is on a call (using the handset or speakerphone) during the alarm period, or in Do-Not- Disturb (DND) mode, the music alarm will not play at that busy station.
4. Alarm sound is reset at station if station goes off hook and back on hook.

Alpha-Numeric Display

Description:

The Executive Digital Key Telephone provides a two line Super Twist LCD that supports thirty-two (32) alpha-numeric characters. Super Twist technology provides greatly enhanced viewing from most viewing angles and eliminates the need for contrast adjustment. The LCD is very useful for sending and receiving outgoing and Executive Notify messages. Since user names may be programmed in the system, the display will help identify incoming callers by displaying the user's name instead of a station directory number. Any LCD equipped key telephone may be used for System Database Programming.

The LCD is interactive and will prompt the user with various choices concerning call set-up, handling and completion. The LCD provides help screens for feature button programming, password and security control, and status of incoming calls. All messages, call status, operation prompts and related indications will be displayed in a logical, preset order and priority.

The LCD is complemented by three (3) dynamic soft buttons that support the various interactions between the user and system. The LCD type is super-twist and provides superior viewing at most angles. Every Executive Key Telephone that has an LCD also has twenty (20) programmable feature buttons and speakerphone.

Notes:

1. Display messages each have their own display priority depending on various call/feature operations.
2. The message with the highest priority will be displayed on the LCD at any time.
3. In reference to the time and date message display, the station number or station name will be displayed in the Day service mode; otherwise, the message "night" will be substituted, indicating Night service mode.

Alternate Answering Position (Overflow Attendant)

Description:

A second station can be programmed as the alternate attendant. The alternate answering position serves as a back-up position to the primary attendant. CO ringing will forward to the alternate answering position after the preprogrammed Ring Alternate Position time.

Related Feature(s):
Recall

Related Programming:
CALL HANDLING -RING ALTERNATE POSITION
RESOURCE - ALTERNATE

Notes:

1. Any incoming CO line call ringing more than the programmed Ring Alternate Position time will also ring the overflow attendant, automatically.
2. Any key telephone may serve as the Alternate Answering Position.
3. CO lines that are recalling a the attendant position following a transfer operation will not be directed to the Alternate Answering Position.

Attendant

Description:

One primary attendant is provided in the system for support of necessary services like Line Recall, Forced Incoming ICM Call Forward and manual night service operation.

A second, or alternate, attendant position may be established for common sharing of incoming CO calls or load sharing during peak traffic periods. The attendant position may be occupied by any key telephone type. However, maximum efficiency is gained by use of an Executive Key Telephone, since call handling is enhanced by use of system prompts and messages.

The attendant may establish a private personal password for control of the system service mode (Day/Night/Time), time of day settings and System Speed Dial number programming. The attendant will receive all intercom calls directed to the Attendant Directory Number, as programmed. The attendant station may be connected to any one system station port and be assigned any two-digit ICM station number in the system dialing directory.

One valid station number must be assigned to serve as the attendant. The customer may assign any one station as the attendant through database programming.

Related Feature(s):
- *Do Not Disturb (i.e. Forced DND)*
- *System Service Mode*
- *Time Of Day*
- *System Speed Dial*
- *User Password (F97)*
- *Intercom Call Attendant*

Related Programming:
- *RESOURCE - ATTENDANT*
- *CALL HANDLING - OPERATOR CODE*
- *Attendant Administration (F#0)*
- *User Password (F97)*

Notes:

1. The Attendant's personal 4-digit password is used by the attendant (or any other station) to perform System Administration functions (Service Mode, Time of Day, System Speed Dial programming).
2. Station 10 is the default Attendant Position.
3. Station 10 is assigned CO line ringing for all CO lines at default.

Attendant Administration FEAT # 0 OPER

Description:

The system assigned attendant station is given the ability to administer certain system feature operations. Using the attendant station's password this administration level allows adjustment and programming of the Service Mode (Day/Night/Time), system Date & Time and System Speed Dial. Any Executive Key Telephone may enter the Attendant Administration programming mode if the Attendant station's password is entered.

Operation:

At any Executive Key Telephone press FEAT # 0 OPER.

```
CHK PSWD : _
 bksp save chg
```

Enter the system attendant station's password (at default this password is "0000") then press **save**.

```
SELECT FUNCTION
 svc  time  spd
```

The next menu is displayed. Press **svc** to change the system Service Mode.

```
SERVICE : DAY
 back next chg
```

Press **chg** to select between DAY, NITE and TIME. Once the desired mode is selected press CLEAR to exit Attendant Administration or **back** to change other functions. Press **back**.

```
SELECT FUNCTION
 svc  time  spd
```

Press **time**.

```
SYSTEM TIME
 back next show
```

This display indicates that system time can be adjusted here. Press **show** to continue making changes or **back** for the previous screen. Press **show**;

```
YEAR : yy
 back next chg
```

If the year displayed is correct, press **next**. Otherwise press **chg**.

```
YEAR : _
 back next chg
```

Doing so places the cursor at the first year digit position. Enter the current year and press **save**.

```
YEAR : yy
 back next chg
```

The newly entered year is displayed. Press **next** if more Date & Time information must be entered. Follow the same entry format as prompted by the display for the data fields; MONTH, DAY, WEEKDAY, HOUR and MINUTE.

From the "SYSTEM TIME" prompt press **back** or **next** to return to the main Attendant Administration menu.

```
SELECT FUNCTION
 svc  time  spd
```

To change System Speed Dial numbers press **spd**.

```
SYSTEM SPEED NO
 back next show
```

Press **show** to change or add System Speed Dial numbers.

```
SPEED NO : _
 bksp show chg
```

Enter the System Speed Dial bin number to change (xx).

```
SPEED NO : xx
 bksp show chg
```

Then press **show**.

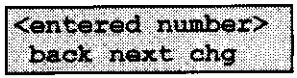
```
EMPTY
 back next chg
```

The present content of the System Speed Dial bin will be displayed. If this is the correct number and no changes are desired, press **back** to return to the previous menu. Otherwise press **chg**.

```
_
 back save chg
```

The cursor is positioned in the first digit position awaiting entry. Enter the desired

telephone number and press **save** when done. When **save** is pressed the previous menu will be displayed.



Press **back** to continue programming other System Speed Dial bins. Press **next** to return to the Attendant Administration main menu or press **chg** if the entered number is incorrect.

Notes:

1. Once **save** has been pressed for a speed number that is entered, CLEAR may be pressed to return to idle telephone operation.
2. CLEAR can be pressed at any time to exit any part of Attendant Administration. Changes are permanent at the moment they are changed using the **chg** Soft Button except where the **save** button is displayed. In that case changes must be saved before exiting to make the change permanent.
3. The Attendant Administration code may be programmed on any programmable feature button.

Authority Code FEAT 5 JKL 5 JKL

Description:

This feature allows a user, with extended dialing privileges, to retrieve this class of service at another less privileged station location. Long distance or restricted CO line calls can be made from locations that are normally restricted. (This feature is frequently referred to as Traveling Class Of Service.)

Related Feature:
Class Of Service

Related Programming:
STATION - DAY/NITE COS
RESTRICTION - CO LN CALL DISCRIMINATION

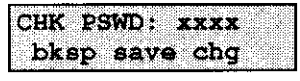
Operation:

When away from your station and you desire to make a CO line call that is restricted at the station where you are, press FEAT 5 JKL 5 JKL.

Enter your station number.

Then press **save** {at non-display telephones enter **station password immediately after your station number, confirmation tone will be heard and CO line dialing is possible according to your station COS.**}

Enter your station password.



Press the **save** button.

Confirmation tone is heard. At this time you may access an idle CO line and dial according to your station COS.

Notes:

1. When setting COS Roaming, the effective time of the following COS is 1 minute before the original Station COS is restored.
2. Other features and programming such as CO line access/ring/receiving assignment are not transferred to the temporary location.
3. The Authority Code feature code may be programmed on any programmable feature button.

Automatic Busy Redial FEAT 7 PRS 8 TUV

Description:

Automatic Busy Redial (ABR) may be used to dial the last busy number dialed. The system will automatically dial the number and then monitor the line for a busy signal. If a busy signal is detected, the system terminates the current connection and attempts to dial the number again. This cycle will continue until the number of Redial attempts designated in the programming are reached. The interval of attempts is also programmable on a system-wide basis.

Related Feature(s):
None

Related Programming:
CALL HANDLING - AUTO BUSY REDIAL - ABR ATTEMPTS
CALL HANDLING - AUTO BUSY REDIAL - ABR INTERVAL

Operation:

To invoke this feature at any station, press FEAT 7 PRS 8 TUV. (Note ABR only operates when the station is idle and has previously dialed a CO line telephone number,)

```
CO LINE x
-->1/10
```

The system will keep trying to connect to the busy number until busy tone is not detected or the maximum number of attempts is reached or the station user invokes any other function.

```
ABR ABANDONED
```

Note:

1. The ABR feature code may be programmed on any programmable feature button.

Automatic Hold FEAT 9 WXY 4 GHI

Description:

Every station user has the option to enable the Automatic Hold feature at that station. The purpose of Automatic Hold is to simplify call handling, avoid accidental "lost" calls, and assist call transfers.

When enabled, Automatic Hold is invoked by skipping from one outside line call to another line or intercom call, or when skipping from an ICM call to an outside line. The need to press the HOLD button on the key telephone is eliminated, except where Exclusive Hold is desired.

(Note: If the user accesses an idle line, and then skips to another line before dialing any digits the first line is not held since the call is considered invalid.)

For users that prefer the comfort of using a HOLD button, every time, the Auto Hold feature should be disabled (factory set operation). The feature code FEAT 9 WXY 4 GHI dialed at any station toggles operation from manual hold to Auto Hold and back. For improved attendant and CO transfer operation, Auto Hold is recommended. For example, with Auto Hold enabled the user can answer an incoming CO call by simply lifting the handset then press the desired DSS/BLF button to place the intercom call and place the CO line on hold in one action. Transfer may then be invoked by pressing the TRANS button.

Related Feature(s):
Call Transfer
Direct Station Selection
Exclusive Hold

Related Programming:
CALL HANDLING - REMIND TIME
CALL HANDLING - RECALL TIME

Operation:

The Automatic Hold feature must be ENABLED by the station user. A conversation is in progress.

```
CO LINE 1  02:30
```

or

```
CONNECT  STA 12
```

Press CO line 2 button

```
CO LINE  2
```

CO Line 2 dial tone is heard and CO line 1 or station 12 is automatically placed on hold.

Setup :

Press FEAT 9 WXY 4 GHI.

Confirmation tone is heard and the new mode is selected. display telephones will see:

```
AUTO HOLD ALLOW
```

To cancel; press FEAT 9 WXY 4 GHI.

Confirmation tone is heard and the new mode is selected. Display telephones will see:

```
AUTO HOLD DENY
```

Notes:

1. For an outgoing CO line call with no digits dialed, Auto Hold operation is ignored. In this case, the abandoned CO line will be released when the next CO line is chosen.
2. Any CO line call will be placed on Exclusive Hold by the Automatic Hold feature, and the LED indication is treated the same as Exclusive Hold operation.
3. If one of the feature buttons is programmed with the Automatic Hold access code, the programming status of this feature will be indicated on its associated red LED. Steady light on the red LED means that this feature has been enabled, otherwise disabled.
4. Holding ICM/external parties will hear Music-On- Hold, if equipped.
5. At default all stations are set for manual hold operation. (Auto Hold Deny).
6. The Auto Hold feature code may be programmed on any programmable feature button.

Automatic Line Selection FEAT 9 WXY 5 JKL

Description:

This feature allows the station user to access a specific outside line or intercom (ICM) automatically when going off hook. If preferred, the feature can be disabled. Automatic Line Selection is programmed by each station user and is invoked whenever the handset is lifted or when the SPKR button is pressed.

During station ringing conditions, an incoming ringing line, recalling line, or ICM call will have priority over an automatic outgoing line selection. If desired, the station user may override the incoming call priority and pre-select an outgoing line by pressing an idle CO line button before lifting the handset.

Related Feature(s):
Private Line
Ringing Line Preference

Related Programming:
STATION - CO LINE ASSIGNM.
See Setup below

Operation:

Lift handset, or press SPKR button

```
ICM
```

or

```
CO LINE x
```

Intercom or CO line dial tone is heard according to the Setup selection.

or

```
CO LINE x  BUSY
camp
```

Busy tone is heard if the specific CO line programmed to access is busy.

Setup:

Press FEAT 9 WXY 5 JKL

```
SELECT : ICM
              chg
```

Press **chg** button repeatedly to select between the following; **"ICM"**, **"OUTG LN"** (any Outgoing Line), **"CO LN** x" (for each of the equipped CO lines) and

"EMPTY" (to cancel Auto Select).

At Basic and Enhanced model key telephones:

Press FEAT **9** WXY **5** JKL **then use the following codes on the dial key pad:**

0 OPER **= ICM (Intercom).**

1 **= Any outgoing line.**

2 ABC **+ x = A specific CO line where "x" is the CO line number. "x" can be any of the following:**

- **1** **=1,** **2** ABC **=2,** **3** DEF **=3,** ... **9** WXY **=9.**
- **0** OPER **=10,** * **=11,** # **=12.**

Press FEAT * **9** WXY **5** JKL **to cancel Auto Select}**

Notes:

1. The desired CO line which is programmed for Automatic Line Selection must be programmed as available for access in the system programming. Otherwise, a warning tone/message will be given to the station user after going off hook.
2. Automatic Line Selection is enabled to select ICM at default.
3. May be used at any key telephone model to cancel Auto Line Select operation. When Auto Line Selection is set to EMPTY (none) no dial tone is heard when the handset is off hook or when the SPKR button is pressed.
4. The Auto Line Selection feature code may be programmed on any programmable feature button.

Background Music FEAT 5 JKL 2 ABC

Description:

When a key telephone is idle, Background Music (BGM) is available through the telephone loudspeaker via one touch of a feature button or by entering the BGM code FEAT 5 JKL 2 ABC. The music is normally provided from a radio, tape player or other external music source connected to the system KSU. BGM and Music-On-Hold are standard features. MOH and BGM channel 1 share a common music source.

When the option card is added to the system, a second BGM channel is available by pressing a Feature Button or entering the code FEAT 5 JKL 2 ABC again. The feature code may be used to toggle between BGM channel 1 (Music-On-Hold), BGM channel 2, and no BGM.

The music volume is preset at the KSU, in association with the Music-On-Hold volume adjustment. A user can set the volume at their own station by adjusting the speakerphone volume level, via the volume up/down buttons.

The BGM is automatically removed when the user receives incoming ring or goes off hook. The music is restored when the station returns to idle.

A feature button may be programmed with the BGM feature code, for one button on/off control. When active, the music is heard as feature confirmation and therefore the button LED is not lit.

Related Feature(s):
Alarm Clock - System
Music On Hold

Related Programming:
RESOURCE - BGM Y/N

Operation:

Press FEAT 5 JKL 2 ABC at any idle key telephone. If an external music source is connected to the system it is now heard over the telephone speaker. Repeated use of the FEAT 5 JKL 2 ABC code or Feature Button programmed for FEAT 5 JKL 2 ABC results in the following toggled operation:

If no Option Module is equipped or if an Option Module is equipped but BGM Y/N is set at "N":

MOH is heard over the key telephone speaker.

Key telephone is returned to idle.

If an Option Module is equipped and BGM Y/N is set at "Y":

MOH is heard over the key telephone speaker.

Music channel 2 (BGM) is heard over the key telephone speaker.

Key telephone is returned to idle.

Notes:

1. BGM is interrupted when an incoming call is signaling or if the station goes off hook. BGM returns when the station becomes idle.
2. An external music source must be connected for BGM to operate.
3. The BGM feature code may be programmed on any programmable feature button.

Battery Back-Up (Memory)

Description:

The system KSU is internally equipped with a rechargeable Ni-Cad battery for maintaining volatile system database programming and station programming during commercial AC power interruption. The memory back-up will maintain the database programming, time and date displays, personal speed dial numbers, feature button programming, etc. for up to seven (7) days of continuous AC power loss. When system AC power is restored, the system will resume operation and the memory battery will be recharged. A discharged battery can require up to 48 hours to reach a fully charged condition.

During AC power interruption, the system will not operate unless System Battery Back-Up is employed.

When the initialization switch at the KSU is operated to the "Reset" position, with the KSU AC power turned off, the Ni-Cad battery is removed from the volatile memory and the system is initialized with a factory configured default program.

Battery Back-Up (System)

Description:

External batteries may be connected to the KSU via the optional Starplus® VC61101 Battery Back-up Unit (BBU). This unit may be equipped with batteries sized to meet the particular customer requirements. The approximate time, in back-up hours, is located in the Battery Sizing chart in the Installation section. In the event of a commercial power outage, the BBU will provide the necessary system voltage (24 volts) to allow full feature key telephone operation until AC power is restored or the battery voltage reaches minimum voltage thresholds and is automatically disconnected to avoid battery damage. This threshold is approximately 21 volts to 21.5 volts.

The amount of system battery operation time is dependent on several factors:

- Number and type of key telephones installed
- System traffic load
- Age of external batteries
- Equipment Room Temperature
- Amp/hour rating of external batteries
- Recovery time since last AC power interruption
- For further information, see Specifications and Installation sections.

Busy Lamp Field

Description:

Depending on user requirements, any Programmable Feature Button can be programmed as a BLF button to monitor a station's status. When the programmed station is off hook or in Do-Not-Disturb, the button LED will light red. This same button is used as a one-button Direct Station Selection (DSS) call button for quick inside calling.

Related Feature(s):
Direct Station Selection
Do Not Disturb
Programmable Feature Buttons

Related Programming:
None

Operation:

The ICM call and DND status for each station is indicated by the red LED associated with the programmed feature button at the key telephone. This same BLF button can be used for one-button ICM calling (DSS) to a specific station.

Note: Each station has a default feature button mapping, refer to the Configuration & Specifications section to determine the default map of the telephone models.

Call Back FEAT 9 WXY 1

Description:

This feature allows a station to queue another busy, DND or idle station. If a Call Back is sent to a busy station, the Call Back sequence is initiated once the called party goes on hook. If a Call Back is sent to an idle station, the Call Back sequence is initiated once that station performs an operation and then hangs up. The Call Back initiator will hear distinctive, quick bursts of ringing tone until he/she acknowledges the Call Back notification by going off hook. Then, the queued station begins ringing in order to complete the Call Back process.

This feature is useful for establishing a call between two stations that are normally very busy or do not closely monitor the telephone visual indications, such as Message Waiting. Call Back FEAT 9 WXY 2 ABC may be programmed under any feature button.

Related Feature(s):
ICM Ring & Voice Call Interchanging (*)
Direct Station Selection
Voice Announce Handsfree

Related Programming:
None

Operation:

Call any station:

(Note: the receiving station must be busy, in DND or in the Tone Ringing mode.)

```
CALLING STA xx
 cbck msg
```

Ringback tone is heard. Or

```
STA xx BUSY
 cbck msg next
```

Busy tone is heard. Or

```
STA XX WAIT
 cbck msg
```

Ringback tone is heard when calling a busy station with Call Wait enabled.

Press **cbck** Soft Button, **{enter** FEAT 9 WXY 1 **at Basic and Enhanced Key Telephones}**

```
CBCK TO STA XX
```

Confirmation tone is heard. Or

```
CALL BACK DENIED
```

Error tone is heard. (Call Back will be denied when there is already a call back request at the called station or when the called station is not in Tone Ring mode.)

Response:

When the called busy party hangs up or when the called idle party takes some action then hangs up the Call Back is invoked. The initiating station will begin to Call Back ring. A display telephone will see:

```
CALL BACK TO xx
     reply del
```

Call Back ringing will continue for 30 seconds at which time the Call Back will automatically be canceled. The initiating station may lift the handset, press the SPKR button or press the reply Soft Button to respond to the Call Back left earlier. When one of these actions is taken:

```
CALLING STA xx
 cbck msg
```

Ringback tone is heard and the originally called station begins to ring. The key telephone user may press the

del Soft Button {or enter FEAT * 9 WXY 1} to cancel the Call Back request

instead of waiting for the 30 second automatic cancellation. When done the display reads:

CALL BACK DELETE

Confirmation tone is heard.

Notes:

1. Only one Call Back may be initiated at a time. A second Call Back request will be denied.
2. If the Call Back initiating party calls a station that is set to Voice Call Allow (FEAT 9 WXY 8 TUV) mode, the caller must first press * to force the destination phone to provide ICM Tone Ringing. Then the Call Back can be made.
3. Each station is allowed one ICM Call Back to or from only one other station, at the same time.
4. The Call Back is canceled after pressing the reply or del button, or by dialing FEAT * 9 WXY 1.
5. For the Executive Key Telephone, if the Call Back is not answered during the ring reply time, the response message will remain until replying or deleting.
6. The Call Back starts under the condition that both the calling and called parties are idle (on-hook).
7. The Call Back feature code may be programmed on any programmable feature button.

Call Forward FEAT 2 ABC

Description:

Several types of Call Forward (CF) are provided for individual station use. ICM calls, transferred CO calls, and incoming CO ringing may be forwarded to another designated station. The forwarding station may elect to have only incoming calls forwarded while the station is busy, when idle, always, or only when unanswered).

A "follow me" capability is provided so that a user can activate CF remotely from another station, and receive calls while at the temporary location.

CF can be pre-programmed on any feature button. When active, the LED on the assigned CALL FORWARD button will light. On an Executive Key Telephone, the display will also indicate that the feature is active and what station is assigned to receive the incoming calls. Regardless of key telephone or single line telephone type, active CF will alert the forwarded station user with a special ICM Reminder Tone.

Related Feature:
Do -Not-Disturb
Message Waiting

Related Programming:
STATION - CO RING ASSIGNMENT
STATION - RECEIVE ASSIGNMENT

Operation:

Note: when Call Forward is active at any telephone, Special Dial Tone is heard when the user accesses intercom dial tone.

The following case sample assumes that station 12 is Busy Call Forwarded to station 16.

Station 10 calls station 12, which is busy on another ICM call. This call is forwarded to station 16, at station 10 Ringback Tone is heard and the display reads:

```
CALLING STA 16
 cbck msg
```

if station 16 is also busy, Busy Tone is heard and the display reads:

```
STA 16 BUSY
 cbck msg next
```

At station 16 ringing is heard and the display reads:

```
STA 10 CALLING
        12 CFW.
```

Executive Key Telephone Setup:

Press FEAT 2 ABC

```
CALL FORWARD
 idle busy next
```

or if DND is currently active Error Tone is heard and the following is displayed. (Call Forward cannot be activated at a telephone in DND.)

```
RELEASE  DND
```

If not in DND press **idle** Soft Button

```
IDLE FWD TO _
 bksp save chg
```

or

Press **busy** button

```
BUSY FWD TO_
 bksp save chg
```

or

Press **next** button

```
CALL FORWARD
direct no follow
```

Press **direct** button

```
DIRECT FWD TO
 bksp save chg
```

or

Press **no** button

```
NO ANSWER FWD_
 bksp save chg
```

or

Press **follow** button

```
FOLLOW FROM _
 bksp save chg
```

Dial xx

```
FOLLOW FROM xx
 bksp save chg
```

Press **save** button

```
CHK PSWD: _
 bksp save chg
```

Enter password for station xx then press **save**. After password check, it will be treated as though the initiating Station xx invokes Direct CF this station. The display will momentarily display the following message while confirmation tone is heard.

```
FOLLOW FROM  XX
```

If station xx is in DND or has messages waiting, Follow Forward will not be allowed and the following will be displayed:

```
OUT OF SERVICE
```

Any call forward mode can be canceled at the station that is forwarded by pressing FEAT 2 ABC.

```
FORWARD DELETE
```

Basic and Enhanced Key Telephone Setup:

FEAT 2 ABC 0 OPER +Sn=IdleCF

FEAT 2 ABC 1 +Sn=BsyCF

FEAT 2 ABC 2 ABC +Sn=all CF

FEAT 2 ABC 3 DEF +Sn+PSWD
=Follow Me CF

FEAT 2 ABC 4 GHI +Sn+x
= No Answer CF

"Sn" = station number

"x" may be 0, 1, 2, 3 or 4 (where 0=10 sec, 1=20 sec, 2=30 sec, 3=40 sec & 4=50 sec.

Notes:

1. The LED of a Programmable Feature Button programmed for CF will be lit steady when CF is active.
2. Only one type of CF can be active at a station at any time.
3. If CF has been enabled, the original CF setting will be deleted prior to new CF programming.
4. CF, DND, and MW features are mutually exclusive. Only one of these three features may be active at the same time.
5. After programming CF, the CF message will be displayed on the LCD depending on its specific display priority.
6. Any station that enabled CF will hear Special Dial (Reminder) Tone instead of normal dial tone when accessing the ICM to make an ICM call. (Special Dial Tone is a stutter dial tone).
7. The system does not allow a station user to set up Call Forward beyond three stations. Only two-step in CF is allowed.
8. Any number of stations may be programmed for CF to the same destination, simultaneously.
9. Call Forward Direct will forward all ICM calls, regardless of busy/idle state.
10. Call Forward No Answer shows a timer value on the display of an Executive Key Telephone which allows the station to adjust the time a call will ring before it forwards. This option remains displayed until some other action is taken at the telephone.
11. The Call Forward feature code may be programmed on any programmable feature button.

Calling Party Identification

Description:

Executive Key Telephones will display the number or name (if programmed) of the internal station that is calling. In addition, transfer recalling lines and forwarded calls will display the original destination station's identity.

Operation:

At an Executive Key Telephone place an intercom call to station xx. As ringback tone is heard the following display is seen:

```
CALLING STA  xx
```

At the Executive Key Telephone receiving this intercom call the following message is displayed:

```
STA nn CALLING
```

Internal ring, the calling party's number "nn" is displayed.

Or when a station User Name is programmed for the calling/called station that name will appear in the display as follows:

```
CARLA CALLING
```

Call Operator 0 OPER (Call Attendant)

Description:

The station that is programmed as the attendant may receive intercom calls by a one-digit code. The Call Operator code is programmable as either 0 or 9. The code is in addition to the assigned two-digit intercom number for the station. The attendant two-digit station number can be assigned to any feature button.

Related Feature:
SLT CO Line Group Access

Related Programming:
CALL HANDLING - OPERATOR CODE
RESOURCE - ATTENDANT

Operation:

Any station accesses the intercom and dials 0 OPER.

Notes:

1. One station must be assigned as the attendant.
2. The code to call the operator is programmable, either 0 or 9. (At default the code is "0".)
3. The Operator Code is mutually exclusive with the SLT CO Line Access Code (0 or 9).
4. At default station 10 is designated as the primary attendant.

Call Park FEAT 7 PRS 3 DEF

Description:

Call Park allows a user to retrieve a CO line parked at his station from any station in the system. Call Park is limited only by the number of station circuits equipped in the KSU. Operation is simplified since Call Park locations coincide with station numbering. CO lines are parked and retrieved by the same Call Park code (FEAT 7 PRS 3 DEF) followed by their pre-assigned station number.

Calls can be retrieved from any station, regardless of model or button assignments. The Call Park code and a specific station number can be pre-assigned to any feature button. CO lines that have been parked are on System Hold and can be accessed at any station.

Related Feature:
System Hold
Call Park Answer

Related Programming:
CALL HANDLING - PARK REMIND

Operation:

A station user is conversing with an outside party on CO Line 1.

```
CO LINE 1  xx:xx
```

Press FEAT 7 PRS 3 DEF

```
CALL PARK _
```

Dial xx

```
CALL PARK TO xx
```

or if there is another CO line call currently parked on STA 12.

```
PARK 12 IS BUSY
```

Notes:

1. Each station has one personal station number used for parking by one CO line call.
2. The number used for parking is identical to the station number.
3. From the user's station, the user can park a CO line call at any station number, even if a key telephone is not assigned to that park number.
4. The Call Park feature code may be programmed on any programmable feature button.

Call Park Answer FEAT 7 PRS 3 DEF

Description:

Call Park Answer uses the same code as the initiating Call Park code. There are two methods of retrieving a parked call. To retrieve a parked (holding) call, the user simply dials the feature code (FEAT 7 PRS 3 DEF) and the associated station number or he may dial the feature code followed by the CO Line number (in two digit format). Call Park Answer is further simplified since the parked CO call is held via System Hold; if the user has CO Line button appearance of the parked CO call he may simply press the flashing CO line button.

If the CO line is placed on System Hold at another station (not parked), anyone may retrieve this call by dialing the Answer code (FEAT 7 PRS 3 DEF) followed by the CO Line number (01-12). This is a useful application of reverse transfer for key telephones that may not have the holding line's button appearance at their location.

Related Feature:
System Hold
Call Park

Related Programming:
CALL HANDLING - PARK REMIND

Operation:

To retrieve a parked CO line call, press FEAT 7 PRS 3 DEF.

CALL PARK ANS _	CO LINE 1 xx:xx
Dial xx (where "xx" is the station number where the call is parked.)	or if station "xx" has no parked call.
	CO LINE UNAVAIL.

Notes:

1. Any station can answer a commonly held (parked) CO line not appearing on that key telephone.
2. Any station can retrieve a "parked" CO line, even if the station is normally not allowed to access or receive a call on that line.
3. A station user who uses "Call Park Answer" for a CO line that does not appear on his station must note (display station only) which CO line is accessed if he is to place that call on hold and retrieve it again.
4. The Call Park Answer feature code may be programmed on any programmable feature button.

Call Pick Up(Direct/Group) FEAT 5 JKL 3 DEF / FEAT 5 JKL 4 GHI

Description:

Calls ringing at another station may be picked up at any other station using the call pick-up features: Direct and Group Call Pick-up. If more than one call is ringing at a station a priority list determines which call is answered when this feature is invoked. If more than one call of the same type is ringing at the station the calls are retrieved on a first-in, first-out basis.

The Call Pick Up priority list is as follows:

CO line calls

A. Camped-on
B. Recalling
C. Transferred
D. Incoming

ICM calls

A. Incoming
B. Voice Call

A station that does not have the outside CO line appearing on a button, or does not have CO Line Receive allowed in programming, may still answer the ringing CO line by accessing the Call Pick-up feature.

Direct Call Pick-up allows a station to retrieve calls ringing at any other station in the system by dialing the Direct Call Pick-up feature code (or pressing a feature button programmed for Direct Call Pick-up) and entering the station number of the ringing station.

Group Call Pick-up allows a station to retrieve calls ringing at other stations within the same station group. See STATION Groups.

A station that wants to use the Call Pick-up feature should not be on another call. For Group Pickup, the retrieving station should be in the same Station Group as the station that is ringing, if the Group Pick-up code is used.

Operation Direct Pick-up:

When you hear a station ringing and know the station number, press FEAT 5 JKL 3 DEF.

```
DIRECT PICKUP_
```

Then dial the station number. If the ringing call was an intercom call the following is displayed.

```
CONNECT STA xx
```

If the ringing call was a CO line ring or transferred CO line the following is displayed.

```
CO LINE x
```

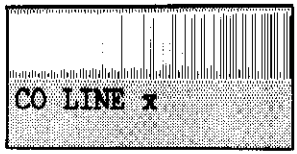
Or if the dialed station number has stopped ringing, error tone is heard and the following is displayed.

```
PICKUP FAILURE
```

Operation Group Pick-up:

When you hear a station in your Station Group ringing press FEAT 5 JKL 4 GHI. If the ringing call was an intercom call the following is displayed.

If the ringing call was a CO line ring or transferred CO line the following is displayed.



Or if the dialed station number has stopped ringing, error tone is heard and the following is displayed.

Notes:

1. A Station that does not have the outside CO line appearing on a button, or does not have CO Line Receive allowed in programming, may still answer the ringing CO line by the Call Pick-up procedure.
2. At default all stations are members of Station Group 1.
3. The Call Pick Up feature code may be programmed on any programmable feature button.

Call Waiting FEAT 6 MNO 8 TUV

Description:

Call Waiting allows the Executive Key Telephone user to receive one burst of warning tone over the speaker, whenever an inside caller is waiting. This feature must be enabled by the Executive Digital Key telephone user and will also affect Voice Over Busy.

If Call Waiting is active, an inside call that is waiting can be answered or rejected by an Executive Digital Key telephone via the LCD Soft Buttons. The Executive Key Telephone user can activate Call Waiting (FEAT 6 MNO 8 TUV) whenever off hook tone signaling is preferred. When activated, inside parties cannot invoke Voice Over Busy (FEAT 5 JKL 6 MNO) unless there is another ICM call currently waiting for the same station. The Call Waiting enable/disable code may be assigned to any feature button.

Operation:

Station 12 makes an intercom call to station 16 who is busy. Ringback tone is heard and the display at station 12 reads:

```
STA      16 WAIT
 cbck msg
```

At station 16 one ring tone is heard and the display indicates the waiting caller.

```
STA      12  WAIT
 reply    reject
```

Press **reply** button

```
CONNECT STA 12
```

The original call will be placed on hold automatically, if Auto Hold Allow is enabled.

At Station 12:

```
CONNECT STA 16
```

Or the busy station (16) presses the **reject** button, the calling station hears busy tone and sees the appropriate busy message.

```
STA      16 BUSY
 cbck msg next
```

Setup:

The Executive Key Telephone may activate Call Wait at any time (while idle or busy).

Press FEAT 6 MNO 8 TUV, confirmation tone is heard and the mode is displayed.

```
CALL WAIT ALLOW
```

Press FEAT 6 MNO 8 TUV, confirmation tone is heard and the mode is displayed.

```
CALL WAIT DENY
```

Notes:

1. This feature applies only to the Executive Key Telephone.
2. Call Waiting Answer will place the current call on hold automatically if Auto Hold Allow is enabled at that Station.
3. If a feature button is programmed for Call Wait Allow, the programming status of this feature will be indicated on its associated red LED. A steady red light indicates that the feature has been enabled.
4. At default Call Waiting is inhibited.
5. Call Waiting does not operate when the called station is in dialing mode or no longer connected to its previous party before going on hook.
6. The Call Waiting feature code may be programmed on any programmable feature button.

Camp On (Busy Station)

Description:

Camp-On is used to privately alert a busy station for immediate consultation. Camp-On alert tone is heard at the busy station every 30 seconds as a reminder. The party currently speaking with the busy station does not hear the tone.

Operation:

When calling a busy station and listening to busy tone. Press **next** {**at non-display press** 2 ABC .}

```
STA     xx BUSY
 cbck msg next
```

Then press **camp**.

```
STA     xx BUSY
 camp voic
```

At a display telephone the display will indicate the Camp On.

```
CAMP ON TO xx
```

Confirmation tone is heard then MOH (if equipped) is heard until the busy party completes his current call and answers the Camp On. When the called (busy) station hangs up, the Camp On will ring through according to the Intercom Mode Selection. If the busy station places the current call on hold the camp on will ring through at his station when it is idle and on-hook.

Or if another Camp On is currently underway at the busy station, this Camp On request will be denied. Error Tone is heard and the following is displayed.

```
CAMP ON FAILURE
```

Note:

Each station can have only one Camp On at the same time.

Camp On (Busy CO Line) FEAT 9 WXY 3 DEF

Description:

This feature allows a user to Camp-On a busy CO line and reserve that CO line for access when it becomes available. When a line is continually busy, the Camp-On feature allows the user to access the line without watching the busy LED status until the CO line is released. A station user may only have one Camp-On active at any time.

Related Feature:
Privacy Release

Related Programming:
STATION - RECEIVE ASSIGNMENT

Operation:

When a desired CO Line is busy, press the CO Line button.

```
CO LINE x   BUSY
 camp
```

Busy tone is heard press the **camp** button. **{At non-display telephones press FEAT 9 WXY 3 DEF .}**

```
CAMP ON CO LN x
```

Or if the CO line is already camped on by another user error tone is heard and the following message is displayed:

```
CAMP ON FAILURE
```

When CO Line 1 is returned (released) to the idle condition it will begin to ring the camped station.

```
LN x
```

Ringing is heard and the CO Line red LED is flashing fast. Press CO LINE 1 button or lift the handset.

```
CO LINE x
```

CO dial tone is heard.

To cancel a Camp On request press FEAT * 9 WXY 3 DEF. At a display phone the following is seen.

```
CO LINE CAMP DEL
```

Notes:

1. Every CO line can be camped by only one station at the same time.
2. Every station can camp only one busy CO line at the same time.
3. The Camp-On Alerting Ring Time is 30 seconds. If the camp on goes unanswered during the 30 second ring time the camp on is canceled.
4. CO lines that have been camped will recall the Camp-On initiator. The camped CO line will become available to other stations if the camped station doesn't answer within 30 seconds.
5. Camp On at a station using a Pooled Group button for access of CO lines is the same as that of a station with CO line button appearances except that to answer a Camp On the user must lift the handset to be connected to the camped CO line.
6. During the time that the Camp-On is recalling the initiator, a new incoming call will take precedence over Camp-On and will be answered when the station goes off hook.

Class Of Service (Day/Night)

Description:

The system provides eight (8) Classes of Service (COS) for assignment of outside line dialing privileges. Each system station may be assigned one day COS and one night COS. The station COS is primarily used for restriction and control of long distance dialing. Toll restriction tables allow customized dialing privileges to be assigned to any or all COS.

System Speed Dial is specially linked with System Speed Dial such that all speed dial bins override toll restriction programming in the toll restriction tables. It should be noted that stations assigned COS 0-5 have access to all System Speed Dial Bins (20-99). Stations assigned COS 6 can only access System Speed Dial Bins 20-39. Stations assigned COS 7 have no access to System Speed Dial.

COS affects the station override of DND where a station with a lower level COS can be overridden by a station with a higher level of COS. For instance, an extension with COS 0 may override a station with COS 1.

COS also affects the operation of Privacy Release. Stations with equal or greater levels of COS may join a busy CO line conversation when Privacy Release is enabled. For example, a station assigned COS 1 may join a CO line conversation with a station assigned COS 1 or lower.

Note: the highest level COS is 0 and the lowest COS level is 7.

Related Features:
- *System Speed Dial*
- *Do-Not-Disturb*
- *Override*
- *Privacy Release*

Related Programming:
- *STATION - DAY/NITE COS*
- *RESTRICTION - CO LN CALL DISCRIMINATION*

Operation:

Station COS is assigned in Database Programming and is not a feature that requires specific operating instructions. A station's COS will determine what digit sequences may be dialed on CO lines.

Clear CLEAR

Description:

The CLEAR button is a fixed button on every model that allows the user to return the telephone to idle condition. Clear button operation will also disconnect a CO/ICM call, clear a previous operation, or exit programming. The clear button is useful in preventing unintentional Hold or False Transfer situations.

- Any call may be dropped by pressing the clear button.
- Any feature programming may be completed or abandoned by pressing the clear button.

Used in conjunction with the Headset Mode and the SPKR button, the CLEAR button may be used to cancel and disconnect calls, whereas, the SPKR button becomes an "answer" button.

CO Line Group Assignment

Description:

The system provides four (4) CO Line Groups for assignment of specific CO lines. The CO Line Group assignment is used for CO Line Pool access.

The CO Line Groups are designated by two-digit notation when programmed on station programmable feature buttons. CO Line Group 1 is programmed by dialing 01, CO Line Group 2 is programmed by dialing 02, etc. An All CO Line Group code is available for programmable feature button assignment by dialing 00 for that feature button.

At default all CO Lines are assigned to group 1.

CO Line Interface

The system provides loop start CO line interface with built-in gas over-voltage protection. Either pulse (rotary) or DTMF signaling is provided. Abandoned call supervision is provided for all CO lines.

The maximum system configuration provides for either nine (9) CO lines or twelve (12) CO lines depending on the specific application requirements and the configuration. Refer to the Configuration section for more details.

CO Line Pool

Description:

The CO Line Pool assignment preserves feature buttons and reduces the number of individual CO line appearances required at a key telephone. The CO Line Pool allows random CO line outgoing access and becomes a virtual "answer" button, with illumination, for receiving incoming or transferred calls. A CO Line Pool button can be assigned to access CO Line Group 1, CO Line Group 2, CO Line Group 3, CO Line Group 4, or All CO Line Groups. Alternatively, CO Line Groups 1- 4 can be assigned to separate distinct feature buttons. If the system is installed as a key system, and not as a hybrid PBX, CO Line Pool buttons and CO Line Group access by code (dial "9") or button are not allowed.

Note: Certain states and telephone companies prohibit PBX-type equipment operation behind Centrex lines.

Related Features:
Programmable User Feature Buttons.

Related Programming:
CO LINE - CO LINE GROUP

Operation:

Press the Feature Button programmed for CO Line Group operation.

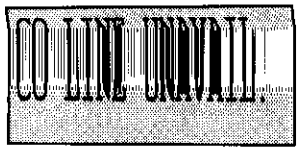
An idle CO line in the associated group will be accessed. (The last CO line in the group is always accessed first. When the feature button is programmed for All Group

operation, the last CO line in the highest group number is accessed first.)

CO LINE x

The Group button LED is green and blinking.

If CO Lines are camped-on by other key telephones or busy, busy tone will be heard and the display will show the following.



Notes:

1. Any Programmable Feature Button may be programmed as a CO Line Group button (Groups 1-4 or All Groups).
2. If a station has multiple CO Line Group buttons programmed without any individual CO line buttons:
3. Incoming calls will be indicated on only one idle CO Line Group button to which the CO line is assigned.
4. An incoming call can only be indicated on its associated CO Line Group button. For example, if CO Line 1 belongs to CO Line Group 1, its incoming status can be indicated either on CO Line Group 1 button or on general CO Line Group button, whichever is pressed.
5. If a station has group button and individual CO line button:
6. An incoming CO line call will be indicated only on an individual CO line button.
7. When pressing an individual CO line button, the LED indication on an assigned group button will not be affected.
8. Pressing an idle CO Line Group button to originate/answer a CO line call, will affect the LED indication of an individual CO line button, (i.e. CO line status will be indicated on both CO line group button and individual CO line button).
9. The LED indication on a CO line group button and an individual CO line button will be treated in the same way.
10. When all CO lines in a certain group are busy, any attempt to access an idle CO line by pressing the CO line group button will receive busy tone, and the system will assign any busy CO line for the station to establish Camp-On Busy CO Line.
11. Special Note: Even if a key telephone has no CO Line or CO Line Group buttons assigned, an outside CO line call can be transferred to the station. There will be no visible LED indication at the called station.

CO Line Signaling

Description:

Incoming CO line calls are indicated by a flashing red LED and distinctive tone from the key telephone speaker. Depending on the programmed database, a station may see incoming call flash indication without an audible indication, and still answer the call. If the station is not assigned CO Line Receive in the database for a specific CO line, incoming calls on that CO line will not flash at the station but instead will display a CO line busy indication.

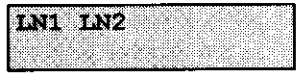
There are three (3) different Ring Schemes that can be selected in the customer database programming, which affect both CO Line and ICM ringing. See Ring Schemes for additional details.

Related Feature:
DND
Call Forward

Related Programming:
RING ASSIGNMENT
RECEIVE ASSIGNMENT

Operation:

There are incoming calls signaling on CO Line 1 and CO Line 2:



Notes:

1. Only those stations with corresponding CO Line ring and receive assignments will display the current incoming CO line call status. CO Line Receive must be enabled for the station.
2. When the remote party abandons the incoming call before it is answered, the incoming call signaling of the affected CO line will be removed after 1.6 to 6.4 seconds, depending on the connected Central Office.
3. At default only the attendant is allowed to receive external CO line ring and can answer all incoming CO line calls.

CO Line Type Assignment

Description:

Each CO line can be assigned as "PBX CO Line" or "Open". The Open assignment is reserved for CO lines equipped on the system, but not connected to telephone company network facilities. The Open type indication alerts the system that this CO line shouldn't be used to place outgoing calls when system features are invoked which initiate automatic CO line selection.

The PBX CO Line type indication invokes other system automatic operations for handling PBX Station-to-Station calls and PBX Trunk calls, separately. When a programmed PBX Trunk access code is dialed, the system is alerted that the user is accessing a telephone company facility to make a network call. When this occurs, the system monitors digits dialed after the PBX access code and compares them against the Allowed Digit Interval table in that station's Class of Service. The programmed PBX Trunk access code

also notifies the system that a pause should be inserted when re-dialing telephone numbers dialed on that CO line beginning with the PBX access code. This operation applies for Speed Dial, Last Number Redial, Save Dialed Number, User Save Number Redial, and Automatic Busy Redial.

CO Line type assignment indicates that the CO line is a direct telephone company facility access CO line. Toll Restriction monitoring is commenced from the first digit dialed and no other special call handling characteristics are implemented on CO lines of this type.

Related Feature:
None.

Related Programming:
CO LINE TYPE
PBX CODE

Note:

1. At default CO Line Type is set to "CO" for all CO Lines.

Conference (Supervised) FEAT 6 MNO 0 OPER

Description:

The system can accommodate eight (8) simultaneous 4-party conferences. Any conference combination may consist of 2 CO lines maximum and any number of system stations to a maximum of 4 parties (members). One inside key telephone station is the controller of the conference and constitutes one conference party (member). Analog stations may be a conference member but cannot set up or control the conference.

Before a conference can be set up with a maximum of 4 parties, a 3 party conference must be established. If desired, one button conference activation is possible by assigning the Conference Feature code (FEAT 6 MNO 0 OPER) to a Feature button.

Related Feature:
Hold

Related Programming:
CALL HANDLING - UNS CNF TIME
CALL HANDLING - UNS
CONFERENCE

Operation:

While connected to a CO line,

```
CO LINE x  00:03
```

or while connected to another system station,

```
CONNECT STA ss
```

press the HOLD button. The current call is placed on hold and intercom dial tone is heard. Press the next CO line to be used and dial the next CO line party or dial another system station.

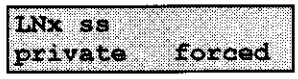
```
CO LINE x  00:01
```

or

```
CONNECT STA ss
```

To join the parties in a conference press FEAT 6 MNO 0 OPER.

Confirmation tone is heard and momentarily the display changes to:



To add the fourth station or CO line and create a 4-party conference, press HOLD button, dial/access the fourth party, and then press FEAT 6 MNO 0 OPER again.

The conference initiator may force release a conference member or talk privately with a conference member.

To Force Release or Talk Privately at an Executive Key Telephone, press the associated LCD Soft Button then choose the station number or CO line to invoke the feature.

To Force Release at a Basic or Enhanced Key Telephone, press FEAT 7 PRS 4 GHI then dial the station number to release or press the CO line to release.

To Talk Privately at a Basic or Enhanced Key Telephone, press FEAT 5 JKL 7 PRS then dial the station number to talk privately or press the CO line to talk privately.

Notes:

1. Maximum number of parties allowed to attend a conference is four (4).
2. Two (2) CO lines maximum may be connected in a conference.
3. A three-party conference must first be established before a fourth party can be added.
4. The station who establishes a conference is called the controlling party, and only the controlling party is allowed to invite or forcibly release any attending internal or external party, or to setup a "private talk" with any one attending party.
5. When adding new parties to a conference and while speaking privately to a particular conference member other members of the conference will be connected to MOH.
6. When the controlling party exits a conference, the most recently invited internal party will be designated as the new controlling party.
7. Each of the calls involved in a holding conference will be placed on Exclusive Hold.
8. When a conference is established, each party will hear a burst of conference tone.
9. The maximum number of simultaneous 4-party conference groups is eight (8).
10. Any conference feature code may be programmed on any available programmable feature button.

Conference (Unsupervised) FEAT 7 PRS 7 PRS

Description:

The system allows the conference controller (key telephone user that established the conference) to exit a conference which the participants were only two outside CO lines and the station. This allows the station user to perform other tasks at the station while the outside CO line parties continue their conversation. This conference is called Unsupervised since no internal system station user is involved as a member of the conference. To establish an Unsupervised conference the user must first establish a Supervised conference. Having done so, the Unsupervised conference feature code FEAT 7 PRS 7 PRS is entered to invoke the Unsupervised conference.

Related Feature:
Hold

Related Programming:
CALL HANDLING - UNS CNF TIME
CALL HANDLING - UNS CONFERENCE

Operation:

While engaged in a conference involving only 2 CO lines and your own station;

```
LNx LNx
private   forced
```

Enter the feature code FEAT 7 PRS 7 PRS. At display telephones the following display will be seen momentarily.

```
UNSUPERVISED CNF
```

If no further action is taken the display returns to idle status. At this time the 2 CO lines are conferenced.

To rejoin an ongoing Unsupervised Conference at the controlling station; enter the Supervised Conference feature code FEAT 6 MNO 0 OPER.

Notes:

1. The station who establishes a conference is called the controlling party, and only the controlling party is allowed to invite or forcibly release any attending internal or external party, or to setup a "private talk" with any one attending party.
2. New conference parties may only be added when the conference controller is a member of the conference. (FEAT 6 MNO 0 OPER)

Database Programming FEAT # *

Description:

All customer unique database is entered from any Executive Key Telephone. During programming, incoming calls will still ring at the Executive Key Telephone being used as the program input device. It is very easy to exit the programming mode, answer the incoming call, and re-enter the programming mode without cumbersome database storage routines.

All customer database programming is battery protected in the event of system AC power loss. The Database Programming password is a six-digit, changeable number that is factory defaulted as (000000).

The customer specific database is entered during installation and affects overall system operation.

Operation:

Press the FEAT (Feature) button then dial # * on the dial pad

Enter the six-digit Password - ("000000" is default).

Press the center Soft Button corresponding to the "show" prompt on the display.

You are now at the beginning of Database Programming, "**SYSTEM TYPE**" for selecting Key System or PBX hybrid type operation. For detailed instructions concerning sub-categories and the sequence of programming exercises, refer to Database Programming.

Depending on the initial setup, the system may operate as a key system only according to the key system (KF) FCC Registration Number, or as a hybrid PBX system which requires the unique (MF) FCC Registration Number.

The selection of Key or PBX is made by the installing company and requires proper notification to the telco regarding the type of service to be provided by the local exchange carrier.

Dial Access To Feature FEAT

Description:

Most of the system provided features may be accessed by entering specific codes, if extra Feature buttons are not available or if some features are infrequently used. The Executive Key Telephone also provide visual prompts and "soft button" entry that eliminate the need to remember certain feature access codes or to unnecessarily assign these features to feature buttons.

All feature codes and certain fixed dual feature buttons (HOLD/EXCLUSIVE) are preceded by the FEAT button. Refer to the Programmable Feature Button section.

Dialing Type Selection

Description:

The dialing type for an outgoing CO line call can be selected through the Database Programming in the CO Line Programming category. The system will dial the telephone number in DTMF or Pulse (rotary) mode according to the programmed Dialing type selection of the associated CO line. Refer to the Database Programming section.

Related Feature:
CO line dialing

Related Programming:
CO LINE - DIALING

Note:

1. At default all CO lines are assigned DTMF dialing.

Dial Intercom (Non-Blocking)

Description:

All intercom call are made by dialing the station's unique two-digit intercom number. If a station feature button is programmed as a DSS/BLF button, it may be used to place an intercom call. Any intercom call can be placed Hands-free without lifting the handset. However, acoustic conditions at the local and/or distant station may dictate the use of the handset to achieve optimum voice connection.

Each station user determines how intercom calls are received; either in Voice Announce Hands-free mode, Voice Announce Privacy mode, or Tone Ringing. The intercom calling station can force the called station from Voice Announce mode to Tone Ring mode by dialing the asterisk (*) key after dialing the station number.

Intercom dial tone may be automatic upon lifting the handset or after pressing the SPKR (speaker) button, if enabled under the Auto Line Select (FEAT 9 WXY 5 JKL) station feature.

Operation:

To place an ICM call:

Dial the station number on the telephone dial pad.

```
CALLING STA xx
 cbck  msg
```

Ringback tone is heard or if the called station is in Voice Announce mode a connection is automatically selected.

```
VOICE CALL   xx
        msg
```

If the called station is busy, busy tone is heard.

```
STA     xx BUSY
 cbck msg  next
```

If the called busy station has Call Wait enabled, ringback tone is heard.

```
STA     xx WAIT
 cbck msg
```

Various other displays and conditions:

STA xx DND

...when the station is in DND.

OUT OF SERVICE

...if the station number dialed is not connected.

YOUR NUMBER

...if the called station is your own station number.

Note:

1. Intercom calls to key telephones selected for Voice Announce - Hands-free or VA - Private (via code FEAT 9 WXY 8 TUV) are "logically" answered by the system at the called station.

Dial Pulse To DTMF Conversion

Description:

When making an outside call on a CO line with Pulse (Rotary) dialing, the digits following * will be sent in DTMF tone mode. Pulse-to-tone changeover can be programmed into any Speed Dial bin, if desired.

Related Feature:
System Speed Dial

Related Programming:
CO LINE - DIALING

Direct Inward System Access (DISA)

Description:

This system feature allows privileged users the ability to remotely access system facilities, based on the time of day and individual password protection. Outside callers reach designated DISA CO lines for making long distance calls over specified facilities. Each DISA CO line has its own Class of Service for dialing privileges. Any number of DISA lines may be assigned incoming DISA access, based on the system service mode (DAY, NIGHT, ALWAYS). Since the remote user's password is only a 4-digit entry, the customer should exercise caution in permitting unauthorized use of the DISA facilities. The CO line-to-CO line Conference time may be set to automatically drop the connected outside parties upon expiration of a pre-programmed amount of time. Talk time can be manually extended by the outside DISA party.

Related Feature:
System Speed Dial
Dial Intercom

Related Programming:
CALL HANDLING - DISA

Operation:

Assuming CO Line 1 is programmed for DISA operation.

Calls into CO line 1 are automatically answered and DISA dial tone is given to the outside party.

CASE 1: (station call)

When the external party hears DISA dial tone he dials the two digit station intercom number. The station dialed will begin ringing for the DISA CO line.

CASE 2: (call operator)

When the first dialed digit is the Operator Code, the CO line call will be directly transferred to the attendant.

CASE 3: (wrong number)

If the entered station number is non-existent, the CO line call will be directly transferred to the attendant.

CASE 4: (time-out)

If the station number is not entered within 10 seconds, the system will divert the call to the attendant station.

CASE 5 : (CO line access)

When the external party hears DISA dial tone he enters a DISA password (24 possible) preceded and followed by the pound (#) digit. Once the password is verified the system prepares to receive the subsequent DTMF digits to determine what feature the external party requests. There are three types of features available: speed dialing, CO line access, and intercom calling.

CASE 5.1: (typical DISA call)

To use system speed dialing, dial: "1 (SPD) + nn", where "nn" is the System Speed Dial Bin (20-99). After 1+nn is dialed, the system will select an idle CO line and dial the stored directory number.

To select a CO line dial: "2x" where "x" any of the following:

- 1 =1, 2 ABC =2, 3 DEF =3, ... 9 WXY =9.
- 0 OPER =10, * =11, # =12.

After a CO line is selected and if that CO line is idle, DISA will connect the line for dialing.

To dial intercom dial: 3+ss where "ss" is the station number..

CASE 5.2: (end call)

When the DISA call is in progress, the outside party may dial 0 OPER # to terminate thecall.

If the specified Talk Time expires, the call will be released.

CASE 5.3: (extend Talk Time)

When the DISA call is in progress, the outside party may dial 0 OPER * to extend the preset conversation time.

CASE 5.4: (unsuccessful attempt)

If the prefix digit is not valid (1,2 or 3), or no phone number is stored in the location of the entered system SPD bin, or the SPD bin is not empty, but an idle CO line is not available, or the selected CO line is busy, the system will divert the call to the system attendant.

Notes:

1. The allowed CO Line-to-CO Line Conference time is programmable for selections of 1, 2, 3, 5, 10, and 15 minutes.
2. The activation time for a DISA CO line is programmable for "Never", Day", "Night" or "Always".
3. DISA CO line COS assignment coincides with Toll Restriction COS Tables.
4. There are 24 sets of passwords available, each 4 digits in length (these passwords correspond to the system stations). When dialing the password, it must be preceded and followed by the pound (#) sign (i.e. # + PSWD + #).

5. Two DISA CO lines may be serviced simultaneously when the option board is installed. In the event that more than two DISA CO lines are signaling for answer, the other incoming DISA CO line calls will receive internal busy tone upon answer by the system.
6. System CO Line-to-CO Line Conference does not have to be enabled in Database Programming.
7. The option board must be installed for DISA to function.
8. At default DISA is inactive for all CO lines.
9. The default COS of day and night for DISA CO line is 0.
10. The default conversation time for CO Line-to-CO Line Conference is 1 minute.

DSS/BLF Button

Description:

Any feature button may be assigned as a combination Direct Station Select (DSS) and Busy LED Field (BLF) monitor button. The DSS/BLF button may be labeled using the station user's name, two-digit ICM number, or both.

The DSS/BLF button allows one button intercom calling to the specific station. This same button will light whenever the specified station is busy (off hook) or in the Do Not Disturb mode.

Related Feature:
Call Transfer
Programmable Feature Buttons

Related Programming:
None

Operation:

Press the feature button assigned as a DSS button for station xx. Ringback tone or busy tone is heard and the an intercom call is placed the following display is one of many that may be displayed.

```
CALLING STA xx
 cbck  msg
```

Other displays are illustrated in the Dial Intercom feature description. DSS button operation streamlines call transfer operation as the button may be used in place of dialing the station's directory number.

Note:

1. The DSS feature is available for all key telephone types.

Discriminating Ringing

Description:

The system supports different ring cadences depending on whether the incoming call is from the outside (CO line), or inside (ICM) party. The "Ring Scheme" is established in the Customer Database Programming.

Related Feature:	*Programming:*
Distinctive Ringing	*RESOURCE - RING SCHEME*

Notes:

1. Intercom and CO line ringing may be differentiated by ring cadence according to the Ring Scheme selection.
2. Ring Scheme 0 is enabled and is depicted in the key telephone User Guide(s).

Distinctive Ringing (Station) FEAT # 7 PRS

Description:

Each key telephone station may have one of four distinctive ringing tones for incoming calls. This feature is helpful in group working environments where the user may distinguish his or her calls from other stations that are also ringing. If desired, the Distinctive Ringing selection code (FEAT # 7 PRS) may be programmed under a Feature button.

Related Feature:	*Programming:*
Distinctive Ringing	*None*

Setup:

Press FEAT # 7 PRS

```
RING TYPE : 1
            chg
```

The current ringing tone is heard. Press **chg**

```
RING TYPE : 2
            chg
```

The new ringing tone is heard.

{At Basic and Enhanced Key Telephones

Press FEAT # 7 PRS **x (where "x" is one of the four ring choices available, 1-4) }**

Notes:

1. At default each station is set at type 1 ringing tone.
2. The Distinctive Ringing feature code may be programmed on a programmable feature button.

Do Not Disturb (DND) FEAT 4 GHI

Description:

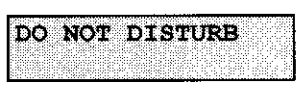
This feature is used to temporarily discontinue ringing on incoming CO calls and stops inside parties from calling while your phone is busy or idle. Certain higher privileged (COS) stations may override a station's DND condition, for special calls or emergencies. At any time, an idle station may immediately divert an incoming tone ringing ICM call to the attendant by pressing the DND button or by entering the DND code (FEAT 4 GHI). A station that is in DND mode is indicated by an illuminated DSS button appearing at all phones. If DND is active, special ICM reminder tone is provided to the station user. If DND is assigned to a feature button, that button will be lit anytime DND is active.

Related Feature:
Call Forward
Call Wait
Dial Intercom
DND Override
Forced Intercom Call Forward

Related Programming:
None

Operation:

DND may be activated while idle or busy. Press FEAT 4 GHI. Confirmation tone is heard and DND display replaces idle display,



DND is canceled in the same way that it is set, press FEAT 4 GHI. Confirmation tone is heard and the usual idle station display returns after the momentary message:

Notes:

1. While DND is active intercom dial tone will be interrupted to remind the user of this feature condition.
2. Do Not Disturb cannot be activated at a station that has invoked Call Forward.
3. DND will block all intercom calls (except DND Override) and CO line ring.
4. If DND is activated during an ICM ringing call, the caller will be immediately diverted to the Attendant (Forced Intercom Call Forward).
5. The DSS/BLF button on other key telephones will be lit steady while DND is active.
6. The DND feature code may be programmed on a programmable feature button.

DND Override

Description:

The Executive Key Telephone user may override DND status at a station that is in DND if the COS of the Executive Key Telephone is a higher privilege (COS). When DND Override is invoked, tone ringing is heard at the DND telephone.

Related Feature:
Do Not Disturb

Related Programming:
STATION - DAY/NITE COS

Operation:

Call Station xx which has enabled DND,

```
STA     xx   DND
   override
```

DND tone is heard and Override option is displayed only if your COS is higher than that of STA xx (Note: COS 0 is a higher privilege than COS 2). Press **override**,

```
CALLING STA xx
 cbck msg
```

if the station is idle, or

```
STA     xx  BUSY
 cbck msg  next
```

if the station is busy, or

```
STA     xx  WAIT
 cbck msg
```

if the station is busy with Call Wait Enabled.

Drop Time-Out

Description:

This feature is enabled in the Database Programming on a per station basis. When enabled, any outgoing CO line will be automatically timed and then dropped, after the system "Warning Tone Timed" is exceeded. This feature is normally used to control outgoing call traffic.

Related Feature:
Warning Time
Warning Tone

Related Programming:
CALL HANDLING - WARNING TIME
STATION - DROP TIMEOUT
STATION - WARNING TONE

Operation:

If the Warning Time is set at 3 minutes and station x is set to Drop Timeout = "Y", the active CO line call will be as usual until 3 minutes of conversation has elapsed.

```
CO LINE 2  03:00
```

changes to:

```
CO LINE DROPPED
```

then back to idle.

Notes:

1. The time limit of Drop Time-out is closely associated with Warning Tone Time programming. If the station's Warning Tone Time is set for 5 minutes and the Drop Time-out feature is enabled, after 5 minutes have expired, the outgoing CO line call in progress will be released automatically. A double beep is also heard.
2. If Drop Time-out is enabled, only outgoing CO line calls at that station are affected.
3. At default no Drop Time-out is enabled.

DTMF Receivers

Description

When the optional Option Module is installed the system provides two (2) DTMF receivers for decoding DTMF signals dialed by outside parties connected to incoming DISA lines. The receivers are also used for External Call Forward and CO Line-to CO Line Conference . During DISA line operation, receivers are released once the DISA ICM call is placed. During External Call Forward and CO Line-to-CO Line Conference, the DTMF receiver is retained on the line to respond to extended Talk Time Length (0 OPER *) (DISA only) or disconnect (0 OPER #) codes entered by the calling parties.

Note:

1. The option board must be installed to provide the two available DTMF receivers.

Emergency Numbers FEAT 1

Description:

The Starplus DHS System Speed Dial feature provides use of emergency number calling at stations that may be otherwise restricted from dialing. All 80 System Speed Dial bins functionally override a station's COS. This capability allows easy adaptation in applications where restriction is required.

The System Speed Dial Emergency Number function is further partitioned by station COS. Station assigned COS 0-5 have access to all 80 System Speed Dial bins, Stations assigned COS 6 have access to System Speed Dial bin 20-39 only and COS 7 stations have no access to System Speed Dial.

In all cases, stations that have access to System Speed Dial can override restrictions that have been established for manually dialed calls for Emergency Numbers. Since the System Speed and Emergency Numbers are controlled by the system administrator, via Database Programming, certain stations may be allowed to use these pre-programmed numbers for business purposes only, while restricting other unauthorized or personal calls.

Related Feature:
System Speed Dial
Attendant Administration
Toll Restriction

Related Programming:
STATION - DAY/NITE COS
RESOURCE - ATTENDANT
RESTRICTION - CO LN CALL DISCR

Operation:

See System Speed Dial

Note:

1. At default all stations have COS 0 and may access the Emergency System Speed Bins.

End-To-End Signaling

Description:

This feature allows digital key telephone stations to generate in-band DTMF tones on ICM calls to an on-site voice mail system. DTMF digits will only be sent to the SLT port when connected to a 2-Port SLT Adapter/Expansion that are programmed as a "VM PORT".

Related Feature:
Voice Mail

Related Programming:
STATION - VM PORT
CALL HANDLING VM DIALING RATIO
SYS APPLICAT. - STA HUNT GROUP

External Call Forward (ECF)

Description:

External Call Forward (ECF) is a pre-programmed method of Call Forward, where one incoming line and one outgoing line are reserved for after-hours forwarding. When an outside caller rings into the system while the ECF service is active, the system will answer and re-direct the call to another external location. System Speed Dial bin 99 is specially linked to ECF such that the number stored in this speed dial bin is the number used for ECF operation. The system maintains the forwarded connection until the programmed "conversation time" expires or whenever the receiving party manually releases the CO Line-to-CO Line connection by dialing a 0 OPER # interpreted as the disconnect code.

Note: the optional Option Module is required for ECF operation.

Related Feature:
System Speed Dial
Attendant Administration

Related Programming:
CALL HANDLING - EXTERNAL FORWARD

Operation:

The CO Line to be answered must be programmed as the ECF Incoming CO line. A separate CO line must be programmed as the ECF Outgoing CO line. In addition, System Speed Dial bin 99 must contain a telephone number where the call is to be forwarded.

When the ECF Incoming CO Line is ringing:

Case 1 : (Normal Operation)

The system will answer the incoming call, seize the outgoing CO Line, and then dial out the telephone number which is stored in System Speed bin 99.

The system will make a CO Line-to-CO Line Conference for the ECF CO Lines. A system DTMF receiver will be connected to detect any service request from the external party.

Case 2 : (Insufficient Condition)

When the incoming ECF CO line is signaling, if the preset outgoing ECF CO line is busy or if System Speed bin 99 is empty, the call will be processed normally.

Notes:

1. The allowed CO line to CO line conference time is programmable, from 1, 2, 3, 5, 10, and 15 minutes.
2. The activation time for ECF feature is also programmable, which can be "Never", "Day", "Night" or "Always".
3. The remote forwarded party on an ECF outgoing CO line can dial 0 OPER # to end the CO Line-to-CO Line Conference.
4. The System CO Line-to-CO Line Conference does not have to be enabled in the Database Programming.
5. The option board must be equipped for ECF to function.
6. ECF is greatly enhanced when Call Abandon is set to "yes" for CO lines that are to be used with ECF. With this setting enabled, the system will disconnect and terminate an ECF CO Line-to-CO Line Conference if either outside party goes on hook.
7. At default ECF is disabled and no CO line is assigned as an incoming or outgoing ECF CO line.
8. The default conversation time for CO Line-to-CO Line Conference is 1 minute.

External Music Source

Description:

The system provides a dedicated phono jack type input to connect an external music source. This single source of music can be monitored at key telephone stations using the Background Music activation code. This source of music is also used for Music-On-Hold. Any CO line party placed on Hold will hear this music source. When the option card is equipped, the original external music source connector and interface board are removed and replaced by similar circuitry for two external music sources. When the option board is installed, the Background Music activation code can be used to listen to the Background Music channel only or the Background Music channel and the Music-On-Hold channel, depending on Database Programming.

The external music source volume can be attenuated at the KSU by use of an adjustable gain control screw. The external music source may be a radio tuner, tape deck, CD player or other source for the system Music-On-Hold and Background Music option.

External Paging FEAT 5 JKL 0 OPER 1

Description:

The system provides one-way, dedicated paging access to a paging amplifier. The External Paging Zone may be accessed individually or with all eight (8) Internal Paging Zones as an All Call Page. The External Page access code (FEAT 5 JKL 0 OPER 1) may be programmed on any feature button.

Feature Cancellation FEAT *

Description:

Certain features, once enabled but no longer required, may be easily canceled by dialing the cancel code.

The features which can be canceled through FEAT * nn are shown below.

FEAT * 9 WXY 1 Call Back Delete

FEAT * 9 WXY 2 ABC Set Alarm Clock Delete

FEAT * 9 WXY 3 DEF Camp on Busy CO Line Delete

FEAT * 9 WXY 5 JKL Auto Line Selection Delete

FEAT * 9 WXY 6 MNO Sn Message Waiting Delete ("Sn" is the station number where the message was left.)

FEAT * 9 WXY 0 OPER Premises Message Delete

Note:

1. Features activated are protected by system memory battery back-up, in the event of commercial AC power failure.

Flash FEAT 3 DEF

Description:

When the Flash code (FEAT 3 DEF) is dialed or a flash programmed Feature Button is pressed, the system will generate a timed, open loop flash condition on any CO line. The Flash should be programmed on a feature button when the system is used behind Centrex or PBX. If Call Waiting service is provided, the Flash feature is used by the key telephone station to answer a second incoming call, while connected to another outside party. (Note: single line stations can not use system generated hook-flash.)

Related Feature:
- *Speed Dial (System and Station)*
- *Last Number Redial*
- *Programmable Feature Buttons*

Related Programming:
- *CO LINE - CO LINE TYPE*
- *CALL HANDLING - FLASH TIME*
- *CALL HANDLING - PBX CODE*

Operation:

While a CO line call is in progress:

```
5551212
```

Press FEAT 3 DEF

```
/
```

CO line loop is opened for the programmed Flash Time. The LCD is refreshed to CO line connected display following flash time-out or 10 sec later.

```
CO LINE 1   XX:XX
```

Last Number Redial will re-issue the flash command.

Press FEAT 8 TUV

```
5551212/
```

"/" will be displayed on the LCD to indicate the Flash code.

Notes:

1. The Flash code may be stored in any speed dial bin.
2. The Flash code may be stored in the Last Number Redial buffer.
3. The Flash time is programmable from 100ms to 1500ms in increments of 100ms (1/10th of a second).
4. When FEAT 3 DEF is entered, the temporary LCD message("\") will be displayed, then the display will return to the previous message unless other digits are dialed.
5. At default the Flash Time is set at 700 ms.

Flexible Button Inquiry

Description:

Programmed flexible buttons can be reviewed at the Executive Key Telephone. The button inquiry is performed while the Executive Key Telephone is idle and requires entry into Flexible Button Programming using the code FEAT # 3 DEF.

Related Feature:
Programmable Feature Buttons

Related Programming:
None.

Operation:

Press FEAT # 3 DEF

```
PRESS FTR BTN
```

Press the feature button to query. The current contents of that button are displayed. (In this example button 20 is pressed.)

```
F96_
     show chg
```

Press **show** to display the feature represented by the code programmed. In this example the feature key code represents Message Waiting.

```
MESSAGE WAITING
```

Momentarily the display reverts back to the previous screen.

Notes:

1. Buttons that have no feature programming will display "UNASSIGNED BTN".
2. Refer to the key telephone button maps in the Configuration section for default button assignments.

Flexible Line Assignment

Description:

In Station Database Programming, the station may be assigned outgoing access to any or all of the system CO lines. The user may program any CO line or Line Group to appear under any one of eight (8)/twenty (20) dual-colored feature buttons. However, the line(s) cannot be used for outgoing calls unless granted outgoing privileges by the system administrator. A station programmed with Line Assignment privileges may retrieve held calls. Refer to the Database Programming.

Related Feature:
CO line ringing

Related Programming:
STATION - RECEIVE ASSIGNMENT

Note:

1. The number of dual-color LED buttons available depends on the key telephone model.

Flexible Receive Assignment

Description:

Stations may be allowed to answer or retrieve from hold, specific CO lines assigned in Database Programming. Receive assignments should be assigned to any stations that need to answer incoming calls. A station does not have to hear ringing or be programmed with Flexible Ring Assignment in order to answer an incoming CO line. Also, Call Pickup can be used to answer the oldest incoming CO calls. During System Night Service operation, Night Service stations will ring and can answer all incoming CO lines, regardless of the normal Day mode configuration. Refer to the Database Programming.

Related Feature:
CO line ringing

Related Programming:
STATION - RECEIVE ASSIGNMENT

Flexible Ring Assignment

Description:

Any station can be programmed to ring for any or all incoming CO lines. The Ring Assignment will not establish ringing at any station that does not also have the Receive Assignment enabled for the associated incoming CO line. In this situation, the CO line appearance would provide a visual indication only, with no method to answer the incoming call by Direct Line Button Access. A designated Night Service station will receive audible ringing and can answer all lines when the system is operating in the Night Service mode. Refer to Database Programming.

Related Feature:
CO line ringing
Flexible Receive Assignment

Related Programming:
STATION - RECEIVE ASSIGNMENT
STATION - CO LINE ASSIGNMENT

Forced Intercom Call Forward FEAT 4 GHI

Description:

Tone ringing intercom calls can be quickly diverted to the attendant position. When an intercom call is ringing press the DND button to force the incoming intercom call to immediately forward to the attendant.

Related Feature:
DND, Call Forward

Related Programming:
None

Operation:

With your station set to Tone Ring (via FEAT 9 WXY 8 TUV) another station is signaling your station.

```
STA xx CALLING
```

You decide you do not want the call and wish it to be handled by the system attendant. Press FEAT 4 GHI.

```
DO NOT DISTURB
```

DND is invoked and the call is immediately forwarded to the attendant.

Notes:

1. If the ICM call in progress is with the attendant, Forced CF will not operate. When DND is invoked, standard DND operation is followed.
2. If forced DND is activated, the operation is treated as if the calling party makes a new ICM call to the attendant .
3. If there is an incoming ICM call ringing at a station where station Call Forward is enabled, the called station cannot activate Forced CF.

Forced Tone Ringing *

Description:

In certain environments where background noise is predominant or where speaker volume has been minimized, a station in Voice Announce mode may not hear the voice of a calling intercom station. This situation may be averted by using the Forced Tone Ringing feature. After connection to a Voice Announce station, the user may dial * (asterisk) to change the ICM call receive mode at the called station from Voice Announce to Tone Ring. After dialing the * key, the called station will ring until the call is answered. If the call remains unanswered, the user may dial the * key again to return to Voice Call Announce mode.

Related Feature:
Dial Intercom
Intercom Signal Mode Selection

Related Programming:
None

Operation:

You have just placed an intercom call to a station in Voice Announce mode (Handsfree or Private) and cannot get a response.

Dial * to change the alert signal at the called station from Voice Announce to Tone Ringing.

A Tone Ringing alert signal is sent and continues at the call station until answered.

Notes:

1. Voice Announce mode can be operated again without hanging up by dialing * again.
2. It is not possible to force a station from Tone Ring mode to Voice Announce mode if that is the mode they have selected.
3. If the caller wants to leave a Callback request at a called station that doesn't answer, the ICM Call Receive mode must be selected to ICM Tone Ring.

Headset Mode FEAT 9 WXY

Description:

Each key telephone provides headset mode operation. When enabled, the SPKR (Speaker) button is also used for headset operation. If the SPKR (Speaker) button is pressed while idle, the telephone operates the headset mode and the handset jack becomes active although the handset remains in the cradle. Used in conjunction with an ancillary headset adapting device, the headset is enabled.

When the SPKR (Speaker) button is pressed again, the speakerphone mode is activated. At any time during any of these modes the handset may be lifted to disengage the headset or speakerphone mode.

Related Feature:
Speakerphone
Programmable Feature Button

Related Programming:
None

Operation:

To activate headset mode:

Press FEAT 9 WXY #

```
HEADSET ENABLED
```

Confirmation tone is heard.

Once engaged, the Headset mode is operated using the SPKR (Speaker) button. To answer an incoming call,

```
STA 12 CALLING
```

press the SPKR button.

```
CONNECT STA 12
```

The SPKR button LED is fast flashing indicating Headset operation.

Press the SPKR button again to switch to Speakerphone mode. The SPKR button LED will be lit steady indicating speakerphone mode operation.

To return to Headset mode, press the SPKR button again. Note: when Headset mode is engaged the SPKR button will toggle operation from Headset mode to Speakerphone mode.

Lift the handset at any time to switch from a headset/speakerphone mode to handset mode.

To return to headset or speakerphone mode from handset mode, press the SPKR button until the desired mode is active (watch LED) and replace handset in cradle.

To cancel headset mode

Press FEAT 9 WXY #

```
HEADSET DISABLED
```

Confirmation tone is heard.

Notes:

1. If a feature button is assigned the FEAT 9 WXY # Headset code, it can be used to start/end headset operation. When the headset is enabled that button will light.
2. ICM Voice calls may be picked up by the headset user by pressing the SPKR button.
3. Incoming CO line calls may be answered by pressing the SPKR button (for automatic priority ring selection) or by pressing the desired specific CO line button.
4. Other features like BGM and muted ring while off hook continue to operate in the same manner.
5. Non-amplified headsets may be powered directly from the key telephone. In most cases this interface permits the key telephone to control the Volume Up/Down and Mute features. Some headsets may require the use of the headset adapter keys to adjust the volume, mute and other headset functions.
6. At default Headset mode is disabled for all stations.
7. The CLEAR button functions as a disconnect key while Headset mode is active.
8. The Headset feature code may be programmed on a programmable feature button.

Hold Abandon

Description:

Each CO line has a programming option that directs the system to monitor distant party disconnect or False Hold conditions. This is a useful network feature in busy office environments where the inside party accidentally presses the HOLD,  ICM or  DSS button while expecting the outside line conversation to be concluded. Anytime the system detects a disconnect signal from the Central Office, an existing Hold condition will be released, freeing that line for future inbound traffic.

Note: the CO line must have loop supervision interrupt signal from the local carrier upon disconnect by the outside party.

Related Feature:
Hold (System)
Hold (Exclusive)

Related Programming:
CO LINE - CALL ABANDON
CALL HANDLING - CALL ABANDON TIM

Operation:

While connected to any CO line,

CO LINE 1 xx:xx

press HOLD, the CO line goes on hold. If the outside, held party disconnects, the system will automatically release the held CO line.

Notes:

1. All types of Hold like System Hold, Exclusive Hold, and Conference Hold are related to the Hold Abandon feature.
2. Certain Central Offices do not provide loop supervision.
3. At default Call abandon is enabled for all CO lines.

Holding Call Answer/Select

Description:

Any station that has a CO line on hold may use the Holding Call Answer feature to access a CO line that was placed on hold at that station. When multiple calls are holding at the station, Holding Call Answer will access the CO line that has been holding for the longest period of time. Holding Call Answer is very convenient at stations that do not have access to all CO lines. For example; when a station has received a CO line or multiple CO line call(s) via transfer but does not have a Programmable Feature Button assigned for the CO line connected, he must use the Holding Call Answer feature to be re-connected to a CO line placed on hold at that station.

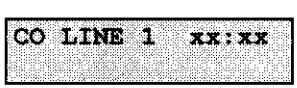
Holding Call Answer may also be used at stations that have CO line appearances on Programmable Feature Buttons as a means of selecting the oldest holding CO line.

Related Feature:
Hold (System)
Hold (Exclusive)

Related Programming:
CO LINE - CALL ABANDON
CALL HANDLING - CALL ABANDON TIM

Operation:

While connected to any CO line,



press HOLD, the CO line goes on hold. If the outside, held party disconnects, the system will automatically release the held CO line.

To be re-connected to the CO line placed on hold, press the HOLD button.

NOTE:

Holding Call Answser will only operate when the telephone station is idle (not busy/engaged in any other function.)

Holding Call Answer may be used to administer two or more holding CO lines. While there are two or more CO lines holding, the user may press HOLD to place a current conversation on hold or Holding Call Answer a CO line already on hold; then press HOLD to toggle the operation from one line to another. With repeated depressions of the HOLD button the user may converse privately with each held party as the system places the current call on hold and answers the next oldest holding CO line.

Note:

1. Holding Call Answer will also operate for intercom calls placed on hold.

Hold - Exclusive

Description:

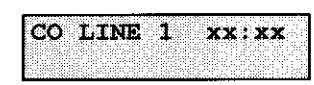
When using the FEAT button and the HOLD button together, a station may place an outside call on a private hold. This Exclusive Hold condition eliminates accidental loss of the outside party because of inadvertent access by the other inside parties. The held line will not flash at other stations but will simply be illuminated in a steady Line-in-Use condition. CO line calls that are transferred will be automatically placed on Exclusive Hold and can only be retrieved at the initiating and destination stations.

Related Features:
Hold

Related Programming:
CALL HANDLING - EX_HOLD TIME

Operation:

During a conversation on a CO line call:



Press FEAT HOLD

Confirmation tone is heard.

Notes:

1. When a CO line call is placed on Exclusive Hold, the green LED at the holding station will flash fast and the red LED at other stations will be lit steady.
2. A CO line call will be returned to System Hold after the effective Exclusive Hold time expires. An alerting tone will be sent to the station which initiated the Exclusive Hold.. The green LED at that station will flash slowly and the red LED at other stations will begin to flash slowly.
3. Exclusive Hold is used only for CO line calls.
4. The Exclusive Hold duration is programmable from 1-8 minutes in the Database Programming.
5. At default the Exclusive Hold time is 4 minutes.

Hold - System

Description:

Any CO line can be placed on system-wide Hold by one button operation of the red HOLD button. A CO line placed on System Holding is easily identified from other system holding CO lines since the green LED will flash at I-Hold rate while other system holding CO lines will be red and flashing System Hold rate. If the Auto Hold Allow feature is enabled by the station user, Hold is automatic whenever switching from one CO line to another or when pressing a DSS feature button. As long as the station is assigned CO line access or Line Receive, that station may pick up calls placed on Hold by another station. A CO line can also be placed on System Hold when using the Call Park feature.

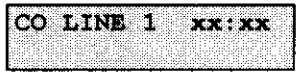
Calls on Exclusive (private) Hold that have exceeded the Exclusive Hold programmed timer, and calls that are recalling from a CO line transfer, will automatically revert to a System Hold condition. There is a distinctive flash rate for a CO line that is on System Hold.

Related Feature:
Call Transfer
Hold Abandon
Hold Reminder

Related Programming:
CALL HANDLING - REMIND TIME

Operation:

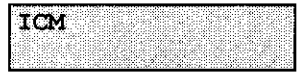
Station 12 is on a CO Line conversation,



the green LED of the CO line button is I-Use flashing.

Press HOLD

CO line green LED is slow flashing. CO Line 1 is placed on System Hold. Intercom dial tone is heard and the display shows:



The user may now invoke some other call process or return to idle while the call is held.

Notes:

1. Pressing the HOLD button will place the current call on System Hold, but will put a conference on Exclusive Hold if you are the controlling party and then temporarily exit to add another party.
2. When an ICM call (conference) is placed on Hold, the steady LED indication of the other station(s) will not change.
3. Any party who is put on Hold will hear music only if provided through the external music source connection.

Hold Reminder

Description:

The system provides a programmable timer to remind the station user of a call that has been left on System or Exclusive Hold. When enabled, each holding CO line will deliver a one burst ring tone over the key telephone speaker, and will repeat the burst tone, for every time period that exceeds the programmed Hold Reminder time. The tone is only supplied to the station that actually placed the CO line or ICM on Hold.

Related Feature:
Hold (System/Exclusive)

Related Programming:
CALL HANDLING - REMIND TIME

Operation:

Currently talking with an outside party on CO Line 1:  	press HOLD. The user may now go on-hook or place other calls. While idle or on other calls the	held CO line will cause the Hold Reminder tone to be generated each time the Remind Time elapses.

Notes:

1. The Hold Reminder time is system programmable and ranges: disabled, 10/30/60/90 seconds. (Default is 30 seconds.)
2. Both ICM and CO line calls are associated with Hold Reminder, if placed on hold.
3. CO line calls that are on System Hold, Exclusive Hold, or Screened Transfer Hold will follow the Hold Reminder programmed condition.

Hour Mode Selection

Description:

Standard 12 hour time or military 24 hour time can be selected for common display at all Executive Key Telephones. The correct system time is entered in database programming along with the Hour Mode Selection, from any Executive Key Telephone station using the database programming password. The "AM" and "PM" indications are not displayed.

Related Features:
- *Attendant Administration*
- *Station and System Alarm*
- *Day/Night Service Mode*

Related Programming:
- *RESOURCE - ATTENDANT*
- *RESOURCE - NITE START*
- *RESOURCE - NITE END*
- *RESOURCE - SYSTEM ALARM*
- *RESOURCE - SYSTEM TIME*
- *RESOURCE - HOUR MODE*

Note:

1. When programming related features, military 24 hour time is referenced.

I-Hold Indication

Description:

I-Hold Indication is a means of easily identifying a call placed on hold at your station from calls placed on hold at other stations. At the station where a CO line call or ICM call is placed on System Hold, the associated button LED will flash at the System Hold rate but will light green as it flashes. Whereas the button LED of the same held CO line at other stations will flash at the System Hold rate and light red as they flash.

I-Use Indication

Description:

The corresponding button LED of any ICM or outside line I am using will be lit green and flash at a distinctive double wink rate. This busy CO line will be lit steady red at other station CO line buttons.

Interactive Soft Buttons Δ

The Executive Key Telephone is equipped with three (3) interactive soft buttons that simplify call operation, and feature/database programming. Various prompts corresponding to current feature status assist the user in accessing system resources.

Last Number Redial FEAT 8 TUV

Description:

The Last Number Redial (LNR) feature automatically accesses the last CO line used to place a call and automatically dials the last number dialed. ICM calls are excluded from LNR rules. If desired, the user may manually select a different CO line and Redial over that line. For manual selection, the user selects the outside CO line first, then invokes the LNR feature. The LNR feature code may be programmed on any available flexible button.

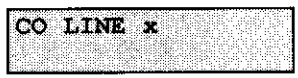
If a hook-flash was previously entered, LNR will repeat the hook-flash in the same sequence as it was used. If a speed dial number was last dialed, LNR will dial the speed dial number plus any manually dialed digits. A maximum of sixteen (16) digits can be stored in the LNR buffer for every station.

Related Features:
Automatic Busy Redial

Related Programming:
RESOURCE - DIAL TONE DET.
RESOURCE - DIAL WAIT TIME

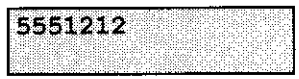
Operation:

A specific CO line may be chosen for use with last number redial by pressing that CO line button.

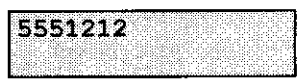


CO dial tone is heard

Press FEAT 8 TUV, the previously dialed number is dialed on the CO line selected.



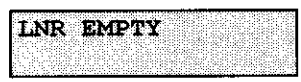
Alternatively the CO line may be automatically selected by the Redial feature. While idle press FEAT 8 TUV.



In the event that all CO lines are busy the executive user will see:

Busy tone is also heard.

If the Last Number Redial buffer is empty error tone is heard and the following is displayed:



Notes:

1. When LNR is invoked, the system will first select the previously used CO line to dial this number. If that CO line is busy, any idle CO line in the same CO line group will be selected . If all CO lines are busy, busy tone will be heard and the display will show "ALL CO LINES BUSY" on Executive telephones.
2. While idle, if a station user presses FEAT 8 TUV the system will automatically select an available CO line and Redial the last number dialed.
3. The database programming data fields Dial Wait Time and Dial Tone Detection directly affect the performance of LNR. When these features are enabled, the telephone will either wait until dial tone is detected on a CO line, or wait for a preprogrammed period of time before digits are dialed from the LNR buffer on the CO line.
4. To LNR immediately depends on whether tone detection is allowed or pause timers apply. If tone detection is allowed, the system will Redial the last number after CO dial tone is detected. Otherwise, the system will Redial the last number only after the pause time for tone detection is exceeded.
5. The LNR feature code may be programmed on a programmable feature button.

Letter Scheme

	Character for nth depressions of dial key "1".					
	1st	2nd	3rd	4th	5th	6th
Scheme 0	Æ	Æ	ø	Ø	à	á
Scheme 1	Ç	Ā	ō	Ń	á	ä
Scheme 2	ò	é	é	è	à	ù
Scheme 3	č	ď	ě	ň	ō	ř
Scheme 4	á	ě	ó	ů	ú	
Scheme 5	Ł	ż	ą	ę		

Description:

Station User Names (programmed into the customer database) may be enhanced for special requirements using the choices available in the Letter Schemes. The end user may select from six different lettering schemes that can be programmed for use at any one installation. While User Names are being entered (in database programming) and while the user is editing an Outgoing Message, the chosen Letter Scheme characters will be accessible with successive depressions of the "1" dial pad key. Use the table at right to determine what letter scheme best suits this installation.

Related Features:
User Names
Message - Outgoing

Related Programming:
RESOURCE - LETTER TYPE
RESOURCE - USER NAMES

Loud Bell Control (optional)

Description:

When equipped with the optional Option Module, the system provides one dry contact closure for interface to an external loud bell device which is associated with incoming CO line ringing. If Loud Bell is assigned to a specific CO line, the incoming call signaling on this CO Line will initiate LBC operation.

The Loud Bell contacts will follow the CO ring cadence programmed in database programming (data field Ring Scheme). The external loud bell ringing device is customer provided. It is recommended that a 24 vdc device be used. An external power source is required.

Related Features:
None.

Related Programming:
CO LINE - LOUD BELL
RESOURCE - RING SCHEME

Meet Me Page FEAT 5 JKL 9 WXY

Description:

Anyone paging internally or externally may be answered for a private "Meet Me" connection. After hearing the page, the paged party can dial the Meet Me Page code (FEAT 5 JKL 9 WXY) from any station and be connected to the person paging. During the Meet Me Page conference, the internal and external paging zones are released. and new pages may be initiated. The Meet Me Page code may be programmed on any available flexible button.

Related Features:
Group Paging
All Paging
External Paging
Page Allow/Deny

Related Programming:
None.

Operation:

A page is currently in progress.

The page may be any zone page or all page.

Press FEAT 5 JKL 9 WXY,

Note: Any station may answer a page using the Meet Me Page code, even if the page announcement is not heard over the station speaker.

Message (Outgoing Messages)

Description:

Executive Key Telephone operation is greatly enhanced for message waiting by interactive display prompts. In addition to using the LCD as the main message center, when sending a message, the Executive Key Telephone user has the option of selecting a preprogrammed script message. There are seven (7) preprogrammed messages that are prompted for the user to select. The first message may be customized by the user at the time it is sent. The user spells the message using the dial pad letters (16 characters maximum). The remaining six (6) messages are preprogrammed in the system and are available to any Executive Key Telephone user. When the desired preprogrammed message is displayed, the user presses the send button (soft button) and the message is sent to the distant station.

Related Features:
Message Waiting

Related Programming:
RESOURCE - PREPROG MESSAGE - OUTGOING MESSAGE

Operation:

When the Executive Key Telephone user dials another Executive Key Telephone the choice to leave a message is extended.

```
VOICE CALL    xx
     msg
```

or

```
CALLING STA xx
cbck msg
```

Press **msg**, the display changes to:

```
MESSAGE TYPE
call me  preprog
```

When the left Soft Button is pressed (**call me**) a regular message indication is left at the called station.

Press **preprog**, the display changes to:

```
EMPTY
 send next chg
```

The first Preprogrammed messages is shown. This first message can be customized for this delivery. If you wish to send a customized message press **chg**.

```
_
 bksp save chg
```

The cursor is positioned at the first character position to allow entry. Characters are entered by pressing dial pad keys. The # dial pad key is used to accept the character in the current position and move to the next and to insert spaces. Any time that a new dial pad key is pressed, the character displayed is accepted and the cursor moves to the next position.

Dial Pad keys will display the Alphabetical characters with each depression as illustrated in the table.

Depressions:	1st	2nd	3rd
Key 1	see note 2		
2	A	B	C
3	D	E	F
4	G	H	I
5	J	K	L
6	M	N	O
7	P	R	S
8	T	U	V
9	W	X	Y
*	see note 3 and 4		
0	Q	Z	_
#	see note 5		

There are also 6 preprogrammed messages that can be used. To select one of these messages press **next**.

```
CALL OPERATOR
 send next
```

Continued depressions of the **next** Soft Button will cycle through the programmed choices. At default these are:

CALL OPERATOR
CALL HOME
CALL SCHOOL
VISITORS WAITING
URGENT
COME SEE ME

When the desired message is displayed, press **send**.

When this is done the receiving Executive Key Telephone Message Wait button will flash and the display reads:

```
MSG FROM STA xx
     show del
```

When **show** is pressed the message selected will be displayed.

Notes:

1. Since Outgoing Message requires an LCD, this feature is only available on Executive Key Telephones.
2. Used to display special characters from the six Letter Schemes possible. Reference the Letter Type feature and associated programming in Resources.
3. When "*" is pressed before any dial key is pressed the numeral of the dial key will be displayed in this character position.

4. When "*" is pressed after a letter has been selected for this character position, the selected letter is forced to lower case.
5. Advances to the next position.
6. (space) and moves to the next position

Message (Executive Notify) FEAT 9 WXY 0 OPER

Description:

Executive Notify is provided to inform callers of the reason the user's station is unattended. An Executive Notify message can be preprogrammed in the system database and may contain up to 16 characters or digits. There are six (6) system preprogrammed Executive Notify messages and one (1) private message which may be edited per station according to individual user preference.

When the user presses the store button to select the desired message, that message will appear on the user's display. Any Executive key telephones that ICM call (tone ring only) the user's station will also view that message on their display.

Related Feature:
ICM Calling

Related Programming:
RESOURCE - PREPROG MESSAGE - EXECUTIVE NOTIFY

Operation:

An Executive Key Telephone user may store an Executive Notify message "OUT FOR LUNCH". When another Executive Key Telephone user calls this station that message will be displayed.

```
OUT FOR LUNCH
 cback msg
```

Once notified of the status of the called Executive Key Telephone user, the calling station may invoke the Call Back feature or leave a message.

Setup:

To set an Executive Notify message at your Executive Key Telephone, press FEAT 9 WXY 0 OPER.

```
EMPTY
 store next chg
```

This first Executive Notify message can be customized by the user for this occasion. To leave a customized message use the dial pad keys to generate the text message desired. Refer to the table provided in the Outgoing Message description for dial pad key character equivalents.

If a customized message is not desired, press **next**.

```
OUT FOR LUNCH
 store next
```

Press **next** until the desired message is displayed. At default the available messages are:

EMPTY(*)
OUT FOR LUNCH
BE BACK SOON
LEFT FOR THE DAY
IN A MEETING
OUT OF OFFICE
ON VACATION
(*Private Editing Message)

Press **store** to display this message and make it ready for Executive Key Telephone users who call your station.

Notes:

1. Since Executive Notify messaging requires an LCD, this feature is only available on Executive Key Telephones.
2. The Executive Notify feature code may be programmed on a programmable feature button.

Message Waiting FEAT 9 WXY 6 MNO

Description:

A busy or unattended station may be notified of a call attempt via the Message Waiting feature. At the Executive Digital Key telephone, the LCD will indicate messages waiting and provide prompts to assist the user in responding to the messages. For non-display telephones (Basic and Enhanced), a message waiting button may be programmed on a flexible button. The red LED for that programmed button will flash to notify the user of messages waiting.

Messages left between Executive models are greatly enhanced by the display. Executive telephone users have the choice of leaving a simple Call Back Message Wait or a preprogrammed message.

Operation:

Call Station xx (no answer or busy):

Establish:

```
CALLING STA xx
 cbck msg
```

or

```
STA     xx BUSY
 cbck msg next
```

Note: "**cbck**" won't be displayed unless called station is in tone mode.

Press **msg** button

If STA xx is an Executive Key Telephone:

```
MESSAGE TYPE
call me  preprog
```

Press **call me** button

```
MSG TO STA xx
```

Confirmation tone is heard.

At STA xx:

```
MSG FROM STA nn
     reply   del
```

The Message Waiting button LED (if programmed) will flash indicating a message is waiting.

To answer a message waiting when more than one message has been left,

```
MSG FROM STA xx
 more reply del
```

press **more** to review the other messages. del may be selected to delete a message left without responding.

Basic and Enhanced Key Telephone users may leave messages by pressing FEAT 9 WXY 6 MNO followed by the station number where the message is to be left.

To cancel a message left at another station press FEAT * 9 WXY 6 MNO followed by the station number where the message was left.

Notes:

1. The total number of allowed message waiting, which are stored in the system buffer, is 48.
2. For Executive Digital Key telephones, the message waiting indication will not be removed until reply or delete is selected.
3. Each station can leave only one message waiting at any one station. (i.e. Station A cannot leave two message waiting at Station B).
4. Each station may receive more than one message waiting from various stations.
5. A flexible button must be assigned on the Basic and Enhanced models in order to receive visual Message Waiting LED indication.
6. At default Programmable Feature Button 20 is assigned as a Message Waiting button.
7. The Executive Digital Key telephone user can leave a message by simply following the prompts on the interactive display, without remembering codes or assigning the Message Waiting code (FEAT 9 WXY 6 MNO) to a feature button.
8. Basic and Enhanced models respond to the Message Wait indication by dialing the feature code FEAT 9 WXY 6 MNO or by pressing a flashing MESSAGE WAIT button, if a flexible button has been programmed for Message Wait. A station may receive multiple messages from other stations. Multiple messages are retrieved in the order that they were left.

Music On-Hold

Description:

Any intercom or CO line call placed on Hold will hear music if the system is equipped with an External Music Source. This music source can be monitored at an idle station as BGM music. There is one music source interface connector in the standard configuration. When equipped, the optional Option Module provides interface for two music sources. One source may be used exclusively for BGM, and the other for BGM and Music-On-Hold.

Mute

Description:

A station user engaged in a conversation on the key telephone may disable voice transmission by pressing the MUTE button. Pressing MUTE again will enable voice transmission. The MUTE button may also be used for Push-to-Talk operation during a Voice Over Busy call connection.

Muted Ringing

Description:

While the user is on another call, incoming ICM/CO line calls will automatically ring at a muted lower level at that station. When the station is idle, incoming calls ring at the loudness level previously programmed from the VOL ▲ / VOL ▼ buttons.

Name In Display

Description:

The station user name or department can be programmed to appear on the LCD of an Executive Key Telephone. The station intercom number will also be displayed when a name has been programmed. The name may consist of upper and lower case letters, plus numbers. DSS/BLF buttons may be conveniently labeled to associate stations by name, instead of station number.

Related Feature:
None.

Related Programming:
RESOURCE - USER NAME

Notes:

1. When a User Name is programmed for stations the "STA" normally displayed at that idle station will be replaced with the programmed name.
2. Names may be seven (7) or fewer characters in length.

Night Service FEAT # 0 OPER (Attendant Administration)

Description:

The system can be programmed for Night Service operation which affects incoming CO line ringing and receive assignments, at pre-designated Night Service stations. Any station may manually switch the system service from day to night mode, or vice versa using the attendant's personal password (Attendant Administration). The Night Service operation may be automatically controlled by a pre-determined time method, manual switch-over from a station, or a combination of both. During Night Service mode, station and DISA COS outside dialing privileges are changed in accordance with the Toll Restriction Night COS programming.

Related Feature:
Attendant Administration

Related Programming:
RESOURCE - ATTENDANT
RESOURCE - NITE START
RESOURCE - NITE END
RESOURCE - SYSTEM TIME

Setup:

See: Attendant Administration.

Notes:

1. Any Executive Key Telephone can be used to change the system service mode provided the Attendant's password is known.
2. If service mode "time" is selected, data fields "night start" and "night end" must be programmed in the database programming.
3. When the system is in the Night Service mode, all Executive Key Telephones will display "night".
4. Station COS dialing privileges may change during night mode to allow or restrict toll dialing privileges.
5. At default the system is always in the DAY mode.

Night Service Station

Description:

Specified stations that normally cannot answer or ring on incoming CO lines may answer and ring for all incoming CO lines during Night Service operation. The station(s) programmed as a Night Service Station will still maintain the same outgoing CO line access privileges as established for normal Day mode operation. All stations are subject to Night station COS Toll Restriction programming, regardless of the Night Service Station assignment.

Notes:

1. The Night Service feature is active only when the system is in Night mode.
2. Any station programmed as a Night Service station will receive CO line ringing for all lines.

On Hook Dialing

Description:

The station user may make outgoing calls without lifting the handset and monitor the dialing status through the built-in speaker. All key telephones provide On Hook Dialing (receive only from speaker). The SPKR button LED is lit when monitoring a call over the built-in speaker.

The Basic key telephone can monitor outside calls and receive one-way paging announcements, but cannot reply unless the handset is lifted. The Enhanced and Executive models provide full hands-free speakerphone operation, in addition to On-Hook Dialing.

Operation:

Press the desired CO line to make a CO line call or dial any station number while on hook. The telephone will automatically activate the associated function (intercom or CO line connection).

Note: when pressing the SPKR button for On-Hook Dialing, the type of line accessed is dependent on the individual key telephone pre-programmed selection of ICM, CO Line or no selection (EMPTY). See Automatic Line Selection FEAT 9 WXY 5 JKL.

Page Allow/Deny FEAT * 9 WXY 9 WXY / FEAT 9 WXY 9 WXY

Description:

Any station user can block one-way pages over the key telephone speaker by dialing the Page Deny code. ICM calls and private voice announcements will still be heard through the speaker. BGM, if enabled, is not affected by the Page Allow/Deny feature. The Page Allow/Deny feature code may be stored on a feature button, if desired.

Related Feature:
Page Announcements

Related Programming:
None.

Operation:

To deny Page announcements at you station press FEAT 9 WXY 9 WXY.

PAGE RECV DENY

In this mode, Internal, Group or All Page announcements are not received over the key telephone speaker.

To allow Page announcements at your station press FEAT * 9 WXY 9 WXY.

PAGE RECV ALLOW

Page Announcements FEAT 5 JKL 0 OPER

Description:

Internal paging by group or system-wide is available to any key telephone or SLT user. Paging is one-way only, without talk-back. Any station can dial a special page "Meet Me" code to establish a private conference with the paging party. The Page Allow/Deny setting does not interfere with a station's ability to make a page or to establish a "Meet Me" paging conference. External Paging is also accommodated, along with combined internal/external All Call, by a unique External Paging code. An External Paging port is provided on the system for one way, non-amplified page output to external paging equipment .

Group paging is allowed by assigning the page receiving stations to departmental Station Groups. Any of the special Group, External, or All Call page access codes may be stored on available flexible buttons.

The busy Page Zone button will not light at your station but the DSS/BLF buttons associated with the stations in the paged group will all light simultaneously.

Related Feature:
DND
Meet Me Page

Related Programming:
STATION - STA GROUP

Operation:

Press FEAT 5 JKL 0 OPER

```
PAGING
all extern next
```

Press **all** to page announce to all internal page zones. Press **extern** to page announce to the external page zone. Or press **next**.

```
PAGING
both group
```

Press **both** to page announce to all internal page zones and the external page zone. Press **group** to select a specific internal page group.

```
PAGE GROUP _
```

When the group number is entered, that zone page is initiated. (Page Group coincides with Station Groups. There are 8 possible Station Groups.)

{Basic and Enhanced Key Telephone Operation:}

Access:

All Call Internal Paging
FEAT 5 JKL 0 OPER + 0 OPER

External Paging:
FEAT 5 JKL 0 OPER + 1

All Page (Int. & Ext.):
FEAT 5 JKL 0 OPER + 2 ABC

Group Paging:
FEAT 5 JKL 0 OPER + 3 DEF + Gn

Notes:

1. If paging fails due to no idle station or a busy external amplifier a page failure display is shown and error tone is heard.
2. Various types of paging may be answered from any idle station. (See Meet Me Page.)
3. The Page Announcement code (or any variation of the code) may be programmed under an available Programmable Feature Button.

Pause FEAT 7 PRS 0 OPER

Description:

A pause is inserted by the user for intentional delay of dialing on outgoing CO line calls. A pause or a combination of pauses may be stored in the Speed Dial bins to allow timed access to special services, while allowing the user to monitor the progress of the call.

If Pause is used frequently, the user may assign the Pause feature code FEAT 7 PRS 0 OPER to a feature button. A pause will be indicated on the Executive Key Telephone display by a "P". Last Number Redial will remember any pauses entered manually during the previous outside call attempt.

Related Features:
Last Number Redial
Speed Dial (System & Station)
Automatic Busy Redial
Pulse-to-Tone Switch-over

Related Programming:
CALL HANDLING - PAUSE TIME

Operation:

During dialing on any CO line or when programming a Speed Dial number, a pause can be inserted by entering code FEAT 7 PRS 0 OPER.

PBX Compatibility

Description:

Any CO line in the system may be programmed as a PBX type facility. Station users may use that PBX facility via a CO line button. To make a PBX call, that CO line button is accessed and the PBX station number is dialed. To use the PBX facility to make an outgoing call, the PBX Trunk code must be dialed to receive outside Central Office dial tone. This code may be programmed into the system as a PBX Trunk access code. Once programmed, the system will identify these codes when dialed and adjust feature operation accordingly.

Related Feature:
Last Number Redial
Automatic Busy Redial

Related Programming:
CO LINE - CO LINE TYPE
RESOURCE - PBX CODE
RESOURCE - PBX AUTO PAUSE

Operation:

CO Line x is connected to a PBX for PBX feature access. The PBX uses the code "9" to access a PBX trunk for out call dialing. (The code "9" has been programmed into the Starplus DHS as the PBX CODE for trunk access.)

When CO line x is accessed,

```
CO LINE 1
```

PBX dial tone is heard. Any PBX feature may be accessed by dialing the PBX feature code. If the digit "9" is dialed, the Starplus is aware that this call is being placed on a PBX trunk (outgoing call).

```
9-
```

A hyphen ("-") is inserted automatically after the dialed digit "9" for better display clarity. Subsequent digits dialed are displayed after the hyphen.

```
9-15551212
```

Notes:

1. When the PBX CODE is programmed, the Starplus DHS will apply station toll restriction when the code is dialed.
2. LNR and ABR will recognize the code and automatically insert a pause following the code when used.
3. The PBX access code may be one or two digits.
4. After the entering PBX access code, the system will automatically stop dialing for a specified time (1 - 9 seconds programmable) and then continue the dialing process.
5. At default no CO line is type PBX.
6. At default the PBX access code is 9.
7. At default the PBX Auto Pause Insertion time is 1 second.

Phone Lock/Unlock FEAT 9 WXY 7 PRS

Description:

The Station Lock/Unlock feature is used to prevent unauthorized outside calling from a station that is left unattended. The feature code FEAT 9 WXY 7 PRS is also used to program the station's private four-digit password number.

Executive Key Telephone Operation:

If a user attempts to place a CO line call from a telephone that is Locked, error tone is heard and the display reads:

```
PHONE LOCKED
```

Setup:

Press FEAT 9 WXY 7 PRS,

```
CHK PSWD:
 bksp show chg
```

Enter this station's User Password (at default it is "0000".)

Press **show**,

```
LOCK TELEPHONE
 pswd yes  no
```

Press **yes**,

```
PHONE LOCKED
```

or

press **no**,

```
PHONE UNLOCKED
```

or

press pswd,

```
NEW PSWD :
 bksp save chg
```

Enter the new station password (up to four digits).

```
NEW PSWD : 1234
 bksp save chg
```

Press **save**.

{Basic and Enhanced Key Telephone Operation:}

Press...

FEAT 9 WXY 7 PRS + PSWD + # = Lock

FEAT 9 WXY 7 PRS + PSWD + * = Unlock

FEAT 9 WXY 7 PRS + PSWD + NEW_PSWD = Change Password

Notes:

1. When a station is locked, only ICM calls can be made from this station. Both incoming ICM/CO line calls and holding lines are allowed to be answered from a locked station (if normally permitted in database programming).
2. A station's private password may be retrieved via the system database administration password. This is useful in the event that a station user has forgotten their personal password.
3. The Attendant designated station Private Password is used to enter Attendant Administration.
4. The Phone Lock feature code may be programmed on a programmable feature button.

Privacy

Description:

By factory default settings, all ICM and CO line calls in progress are considered private, and may not be monitored or breached by other stations. The Privacy Release and Voice Over Busy features may be implemented to supersede Privacy. However, these features are governed by a hierarchy of station COS.

Privacy Release

Description:

Privacy release may be enabled on a system-wide basis to allow multiple users to join a conversation on busy CO lines.

A conversation on a CO line is considered a private conversation and cannot be intruded upon by another user in the system. For installations where the privacy feature may not be desirable, such as in an environment where multiple parties prefer to join on the same CO line, the Privacy Release feature may be enabled. When Privacy Release is enabled through programming, a user may press a busy CO line button at an idle station to join that conversation. A Privacy Release tone may be enabled or disabled. When enabled, a tone will be heard by all parties engaged in a conversation on the CO line when a second or third inside party joins the conversation on that busy CO line.

A user's access to the Privacy Release feature is governed by the Class of Service (COS) level programmed for the station. A station assigned a COS equal to or greater than that of the station engaged in the conversation on the CO line will be allowed to join the conversation. COS levels are 0 through 7,

where 0 is the highest level. For example, a station assigned COS 3 may join a busy CO line conversation established by a station with COS level of 3 or lower (i.e. 4,5,6,7). A station with COS 1 is prohibited from joining a CO line conversation established by a station assigned COS 0.

Related Feature:
Privacy

Related Programming:
STATION - DAY/NITE COS
CALL HANDLING - PRIVACY RLS
CALL HANDLING - PRIV RLS TONE

Operation:

When a station wishes to join a busy CO line conversation they simply press the busy CO line button. When this is done a conference is established with the originally connected station as the conference controller. The controllers display reads:

```
LNx ss  ss
private  forced
```

(See Conference for details of options from the controllers telephone.) The display at station joining the conversation read:

```
LNx ss  ss
```

("ss" in each display indicate the station numbers that are joined in the call.)

Notes:

1. If there are already four parties joined together further attempts by other stations to join the CO line conversation will receive busy indication.
2. A station must have a CO line button appearance of the busy CO line to join.
3. When a Privacy Release call is engaged a conference is established to connect all parties.

Private Line

Description:

The Private Line assignment provides a quick and secure method of programming one or more lines for access by only one station. If the associated Private Line is assigned to a feature button at other stations, the button will light when busy but cannot be accessed from Hold, answered on incoming calls, or used for outgoing access. The Private Line is used exclusively by the station that is assigned the Private To station in Database Programming.

Related Feature:
None

Related Programming:
CO LINE - PRIVATE TO

Notes:

1. Incoming calls signaling on a private CO line will ring its associated station regardless of whether the CO line ring assignment is allowed in programming. Private Line programming will override CO line ring and CO line receive assignments for that station.
2. Other stations programmed to receive ringing are allowed to answer the private line when it is ringing.

Programmable Feature Buttons FEAT # 3 DEF

Description:

Key telephones provide eight (8) or twenty (20) programmable feature buttons, depending on the model. The Basic model has eight (8) dual-colored feature buttons for CO line, station, or feature access code assignments. The Enhanced and Executive models have twenty (20) dual-colored Programmable Feature Buttons.

All system feature codes may be stored on the Programmable Feature Buttons for one-button operation. Certain programmed feature buttons will light when activated (DND, Call Forward, DSS/BLF, etc.), while other transient type feature buttons do not light (Call Pick-Up, Background Music, Last Number Redial, etc.).

To program a feature button, the programmable feature button programming code FEAT # 3 DEF is dialed. After the code is entered, the feature button to be programmed is pressed. Display prompts assist the Executive Key Telephone user through the remaining programming steps. Refer to Basic and Enhanced Setup for non-display key telephones.

Features are separated into three distinct categories for assignment to feature buttons. The user may select CO line, station, or feature for programming on the selected button. Once selected, the appropriate access code is entered. Use the code list at the beginning of this section to determine the feature code.

Related Feature:
Button Inquiry

Related Programming:
STATION - CO LINE ASSIGNM.
STATION - RECEIVE ASSIGNM.
RESOURCE - FEATURE BUTTON COPY

Operation:

Operate any programmed Programmable Feature Button	when the associated code	would normally be entered/dialed.

Setup for the Executive Key Telephone:

Press FEAT # 3 DEF

```
PRESS FTR BTN
```

Press the feature button to be programmed. The current contents of that button are displayed. (In this example button 20 is pressed for programming.)

```
F96_
     show chg
```

Press **show** to display the feature represented by the code programmed. In this example the feature key code represents Message Waiting.

```
MESSAGE WAITING
```

Momentarily the display reverts back to the previous screen. Press the **chg** button to change the button function (contents).

```
SELECT FUNCTION
co ln sta  feat
```

Three feature button categories are available for feature button programming; "**co ln**" (CO lines), "**sta**" (station) and "**feat**" (feature).

To program a Programmable Feature Button for access to a CO line:

press **co ln**.

```
CO LINE _
 bksp save chg
```

Enter the CO line number to be used on the selected button. An intercom button may also be assigned in this sequence. The allowable range includes CO lines, CO line Groups and ICM button assignment. Use the following list to program the function desired:

0 OPER 0 OPER =All CO line Groups

0 OPER 1 = CO Line Group 1

0 OPER 2 ABC = CO Line Group 2

0 OPER 3 DEF = CO Line Group 3

0 OPER 4 GHI = CO Line Group 4

0 OPER 5 JKL = ICM (Intercom)

1 = CO Line 1

2 ABC = CO Line 2

3 DEF = CO Line 3

4 GHI = CO Line 4

5 JKL = CO Line 5

6 MNO = CO Line 6

7 PRS = CO Line 7

8 TUV = CO Line 8

9 WXY = CO Line 9

1 0 OPER = CO Line 10

1 1 = CO Line 11

1 2 ABC = CO Line 12

Press **save** when you have made the desired entry. Press the next Programmable Feature Button to be programmed. If button 1 is pressed:

```
STATION        10
          chg
```

again the current contents are displayed. Press **chg** to change the function.

```
SELECT FUNCTION
co ln sta  feat
```

To program a station DSS/BLF button:

press **sta**.

```
STATION _
 bksp save chg
```

Enter the station directory number for this button, then press **save**.

To program a button for a system feature:

press the **feat** soft button.

```
FTR CODE:_
 bksp save chg
```

Press the FEAT button.

When this button is pressed a "**F**" will be inserted in the display to **show** it's presence.)

```
FTR CODE:F_
 bksp save chg
```

Enter the desired feature code, then press **save**.

{Setup for the Basic and Enhanced Key Telephone:}

For each feature button to be programmed, press FEAT # 3 DEF + the Programmable Feature Button then...

If a system feature is to be programmed:

press 2 ABC + FEAT + the system feature code then press HOLD .

If a DSS/BLF button is to be programmed:

press 1 +Sn+ HOLD .

(Sn is the desired station number.)

If a CO line is to be programmed:

press 0 OPER +Cn+ HOLD .

(Cn is the desired CO line number or code for CO line group. Use the table above for CO line number codes.)

Notes:

1. On non-display models, the HOLD button is used to store feature button setup data.
2. To erase any feature button's program simply press save at the data entry prompt. **{For non-display telephones, press FEAT # 3 DEF + the Programmable Feature Button to change/erase + 0 OPER HOLD .}**
3. When an invalid code is entered error tone is heard and CODE UNAVAILABLE is displayed at display key telephones.
4. Programmable feature button assignment for CO lines can be misleading since a station user may program a feature button for access of a specific CO line, although that station user may or may not have access to that CO line via programming established in the database programming. In situations where the station user programs access of a CO line on a feature button, the station is still governed by database programming and would still be unable to access the CO line if restricted from doing so for outgoing, incoming, and holding calls.
5. Valid feature codes must be in the form of either "Fn" or "Fnn" where "F" is the feature button and "n" is either a single-digit or two-digit code, including asterisk (*) and pound (#) entered from the dial pad.
6. The programmed access code string, when activated, will be checked by the system from the beginning. If the leading digit(s) is recognizable, the remaining digit(s), if any, will be ignored. The string 'FEAT 4 GHI 1 4 GHI', for example, will be treated as 'DND' (FEAT 4 GHI) and the unnecessary string '1 4 GHI' are ignored.
7. Any feature button programmed with a code previously assigned to a different feature button will cause the previously programmed feature button to become unassigned.
8. Programmable Feature Buttons cannot be programmed for CO Line Group operation when the system is configured for "KEY" system operation.

Pulse-To-Tone Switch-over *

Description:

When the system is connected to Dial Pulse (rotary) outgoing CO lines, the user may manually force the system to output DTMF tones for access to special services over the same Dial Pulse CO line.

Operation:

As a station user is dialing on a dial pulse CO line, the user may dial * (asterisk) to invoke Pulse-to-Tone Switch-over. All digits following the asterisk will be sent as DTMF digits.

Notes:

1. The asterisk (Pulse-to-Tone Switch-over code) can be programmed in any speed dial bin.
2. Dialing type conversion can only be from pulse mode to tone (DTMF) mode, not from DTMF back to pulse.

Recall

Description:

Transferred CO lines will recall to the transferring station if the call is unanswered after the Recall Time elapses. During the recall, the outside party continues to hear transfer Ring-back tone. During recall, the CO line reverts to System type Hold and thus any station with normal CO line receive privileges may retrieve the recalling line.

Related Feature:
CO Line Call Transfer

Related Programming:
CALL HANDLING - RECALL TIME

Operation:

When a CO line that has been transferred recalls, the display at Executive Key Telephones | will indicate where the initial transfer was routed; |

```
LNx RECALL
STATION      xx
```

Note:

1. Recalls are not directed to programmed Alternate Attendant station.

Reminder Tones

Description:

Any station that has DND or Call Forward enabled will hear a reminder tone whenever ICM dial tone is accessed. The reminder tone is a distinctive interrupted "stutter" dial tone that precedes the normal ICM dial tone. Once a digit is dialed, reminder tone is removed until the next time ICM is accessed.

Ringing Line Priority

Description:

Ringing Line Priority is a system-wide feature that automatically connects incoming calls based on a predetermined priority. The ringing station is automatically connected to the priority ringing facility, upon lifting the handset or pressing the SPKR button.

Ringing Line Priority can be overridden at the station by first pressing a direct appearing line, CO Line Group, feature button or by dialing an intercom number on hook.

The priority is:

Intercom Call Back
Camped CO Line
Recalled CO Line call
Transferring CO Line call
Incoming CO Line call
Incoming ICM call

Operation:

When your station is ringing, lift the handset or press the SPKR button to pick up the incoming call.

Save Dialed Number FEAT 5 JKL 1

Description:

Save Dialed Number (SDN) is normally used whenever you want to retain a telephone number for later use. Unlike Last Number Redial, the user can save the number to be dialed later. Once entered that number will be recalled when the code is dialed regardless of what has transpired at the station since it was entered.

The Save Dialed Number feature code FEAT 5 JKL 1 may be stored on any feature button for one-button storing or dialing operation. When used, the SDN code or button will automatically select the same CO line initially used for the original outgoing call.

Related Feature:
None.

Related Programming:
RESOURCE - DIAL TONE DET.
RESOURCE - DIAL WAIT TIME

Operation:

After dialing a number that is busy or is not answered,

```
5551212
```

press FEAT 5 JKL 1 .

```
SAVE DIALED NUM
```

Momentarily the display will return to the previous screen.

Later when you wish to re-dial the saved number press FEAT 5 JKL 1 . The system attempts to get the same CO line used when the number was saved. If it is busy another CO line in the same group is accessed and the number is dialed.

Errors that may occur:

If the SDN buffer is empty the user will see:

```
NO SAVED NUMBER
```

or if all CO lines are busy:

```
ALL CO LINES BSY
```

Error tone is heard.

Note:

1. The SDN is a maximum of sixteen (16) digits.

Single Line Telephone (2-Port SLT Adapter)

Description:

A 2-Port SLT Adapter is provided for connection of standard, two-wire, analog telephone equipment to the digital network of the system. Common uses of the 2-Port SLT Adapter would be voice mail, facsimile machines, modems, and general purpose telephones where full-featured digital telephone instruments are not required.

The 2-Port SLT Adapter is a self-contained, system-powered apparatus that creates two (2) separate analog station ports from one system 2B+D digital key telephone port. The housing accommodates the electrical components of the 2-Port SLT Adapter and the 2-Port SLT Expansion. The 2-Port SLT Expansion PCB is exactly the same PCB and function as the 2-Port SLT Adapter PCB function; made available to economically increase the system SLT capacity within one housing. (One 2-Port SLT Expansion may be added to the 2-Port SLT Adapter housing.)

The 2-Port SLT Adapter and 2-Port SLT Expansion each provide two dedicated DTMF receivers for decoding the dialed digits from the connected device. (Each analog port has a dedicated DTMF receiver.) To place calls, the analog telephone must provide DTMF tone signaling which is decoded by the adapter

for call processing instructions. Twenty-five (25) cycle (frequency) ringing is provided by each analog adapter for the attached analog device.

Since each 2-port adapter provides dedicated DTMF receivers and ringing generators, and because the system has a non-blocking digital ICM bus, the single line telephones (SLTs) are not traffic sensitive and do not require special traffic balancing. For more information on the analog adapters, refer to Configuration - Specifications and Installation sections.

Related Feature(s):
Voice Mail

Related Programming:
STATION - STA POSITION
CALL HANDLING - SLT_HOOKFLASH

Notes:

1. Any single line (2500 type) telephone equipment can be connected to the system using the 2-Port SLT Adapter and 2-Port SLT Expansion.
2. Directory Numbers (System Numbering Plan) 58-81 are assigned to B2 channels for SLT use at default.
3. Directory Numbers can be changed in Customer Database Programming.

SMDR (Station Message Detail Recording)

Description:

This feature allows the system administration to track all incoming and outgoing CO line traffic, chronologically by station number.

SMDR is output from the "SMDR" RS232 serial port located on the optional Option Module. An external serial printer or call accounting device may be connected for permanent record keeping or call cost accounting. Data communications is one direction only through this port and is programmable for data rate selection in database programming. If entered, an account code may also be output for each call record.

SMDR information includes CO line used, station number, time and date the call was placed, number dialed, duration of the call, Ring Time to Answer, an account code if entered and a comment for special call handling record. The system will also provide ring-in duration and call processing information relative to the call as it was handled by the system. Refer to the chart below for data examples.

```
0        1         2         3         4         5         6         7
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789
STA  TRK  DGT_DIALED          RING  DATE  TIME      DURATION    ACCOUNT BR CMT
XX   XX   XXXX...XXXX         MM:SS XX/XX HH:MM:SS  HH:MM:SS    XXXXXXXX    XXXX
11   01                       00:00 01/02 11:15:55  00:00:47            $  LNH
```

Data Field Description:

MM = minute
HH = hour
SS = second
STA = Station number/Incoming DISA CO line number/Incoming ECF CO line number
TRK = CO line number, 2 digits with prefix 0
DGT_DIALED = Telephone number (outgoing call only, maximum 16 digits, left aligned)
RING = CO Line incoming ringing duration before answer (Incoming call only)
DATE = Day/Month (DD/MM)
TIME = Start time of call conversation
DURATION = Conversation time
ACCOUNT = Account code entered for billing purposes (maximum 8 digits, left aligned)
BR = Battery reversal detected (Option)
CMT = Comment (Option)
LNH = CO line call held by another station, later answered and released by the output station number
LNC = CO line call is invited into conference, but is released by the output station number
DISA = CO line call is established through DISA feature
ECF = CO line call is established through ECF feature

A carriage return (CR) is generated after each record output.

The following are sample records.

```
10   03   1234567890123456          01/02 11:10:36 00:02:54  12345678 $  LNC
14   01   5551212                   01/02 11:09:43 00:03:51           $
10   01                        00:32 01/02 11:15:03 00:00:52           $
11   01                        00:00 01/02 11:15:55 00:00:47           $  LNH
```

Related Feature:
Account Codes Unverified/Forced Verified

Related Programming:
RESOURCE-SMDRX_RATE

Operation:

Station 10 dials 555-1212 from CO Line 6 and talks 66 seconds:

Press the CLEAR button or go on hook and disconnect the CO line call. A call record is generated. The following call record will be printed out if the connected printer is ready.

```
10   06   5551212                01/02 11:09:43 00:01:06           $
```

Notes:

1. The system will retain 44 records in the event the external device (printer) becomes inoperative. These records will print the moment the device is reconnected.
2. Data format is no parity, eight (8) data bits, one (1) stop bit. Baud rate is adjustable.
3. At default the SMDR RS232C serial port is set at 9600 BPS.
4. CO line calls must exceed 10 seconds for an SMDR record to be generated.

Speed Dialing FEAT 1

Description:

Speed Dialing allows the station user to store frequently dialed numbers in bins. These numbers are easily accessed and automatically dialed by the system when the Speed Dial feature code is entered followed by the bin number. The feature code and bin number may be stored on any feature button for instant one-button operation.

Each station may store twenty (20) personal (station) speed numbers in memory. There are also eighty (80) Speed Dial bins allocated for system-wide use. The telephone number for each System Speed bin is programmed in the customer database programming. If the station has an appropriate Class of Service (COS) assigned, that station may retrieve and out-dial the System Speed number by entering the Speed Dial feature code and the bin number (20-99).

System Speed Dial numbers (bins 20-99) override station COS. Therefore, these bins are appropriate for storing emergency number since they may be dialed from stations that are normally out-dial toll restricted.

Related Feature:
External Call Forward
Attendant Administration

Related Programming:
RESOURCE - DIAL TONE DET.
RESOURCE - DIAL WAIT TIME

Operation:

To make an outgoing call using Speed Dialing:

Press FEAT 1 + the bin number; the stored number is dialed.

Or, you may first press an idle CO line.

```
CO LINE x
```

CO dial tone is heard. Press FEAT 1,

```
SPEED NO : _
```

Enter the bin number containing the number to dial (00-99). The moment the last digit of the bin number is entered the digits stored in the bin are dialed on the CO line.

If the bin number entered contains no digits:

```
SPEEDNO IS EMPTY
```

Executive Key Telephone Setup:

To program a personal speed dial number (bin 00-19), press FEAT # 1 while idle.

```
SPEED NO : _
 bksp show chg
```

Enter the bin number to program (00-19). **bksp** and **chg** can be used to correct errors in the bin number at this point. When the desired speed bin is displayed press **show**.

```
EMPTY
              chg
```

The current contents of the bin are displayed. If the contents are acceptable and no change is desired you may press HOLD to return to the bin entry screen or CLEAR to exit without change.

To change the contents of the bin, press **chg**.

```
_bksp save chg
```

Enter the number to save in this speed bin (up to 16 digits). Then press **save**. (Or to erase a bin, enter no number then press **save**.) The number is momentarily displayed then the speed bin entry screen is displayed. Enter other speed dial bins to be programmed or press CLEAR to exit.

Basic and Enhanced Key Telephone Setup:

FEAT # 1 + bin number (00-19) + digit(s) to store + HOLD

Confirmation tone is heard.

To erase a bin:

FEAT # 1 +bin number (00-19)+ HOLD

Confirmation tone is heard.

Special Setup Note:

For all key telephone models: To chain speed dial bins together; enter (as part of the digits to store) FEAT 1 + bin the number of the speed dial bin to dial following the digits entered for this speed dial bin.

Notes:

1. Each station has twenty (20) personal Station Speed bins.
2. Station Speed Dial codes range from 0 OPER 0 OPER to 1 9 WXY.
3. System Speed Dial codes range from 2 ABC 0 OPER to 9 WXY 9 WXY.
4. Only an Executive Key Telephone can program System Speed Dial bins using Attendant Administration.
5. System Speed Bin 9 WXY 9 WXY is used for External Call Forward, when equipped.
6. SPEED bins may be chained, Pause and Flash may be stored in a Speed Number. Chain, Pause and Flash occupy one character position. Chain is entered by pressing FEAT 1 followed by the bin number. Pause is entered by pressing FEAT 7 PRS 0 OPER, Flash by pressing FEAT 3 DEF.

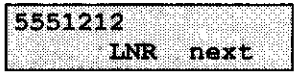
Station Feature Status Check FEAT # 8 TUV

Description:

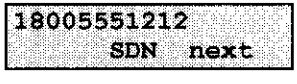
The Executive Key Telephone user can quickly determine the status of all user-controlled features. This feature is useful for the technician as well as the user since some feature conditions may not be evident if they are not programmed on an available programmable feature button. The current status can be sequentially observed using the soft interactive buttons.

Operation:

Press FEAT # 8 TUV



the LNR buffer is displayed. Press **next**.



the SDN buffer is displayed. Subsequent depressions of the **next** button display the status of the remaining features:

- User Saved Number
- Day COS
- Night COS
- Auto Hold mode setting
- Phone Lock status
- Voice Announce mode setting
- Call Wait setting
- Page Receive setting
- Night Station status

Station Groups

Description:

The system provides eight (8) Station Groups for partitioning the system into separate departments or related features. Members of a Station Group have the ability to pick up incoming or transferred calls from other associated members in the same group, via the Group Call Pickup code (FEAT 5 JKL 4 GHI). Unlike Directed Call Pickup, you do not have to know or remember the ringing stations intercom number.

As a Station Group member, you also receive Internal Zone Pages directed to your Station Group. Station Groups are assigned in the Database Programming.

Note:

1. At default all stations are in Station Group 1.

Station Numbering Plan

Description:

All stations receive a two-digit ICM number for inside calling. The two-digit directory ranges from 10-81. Before a station can be assigned a directory number already in use, the other station must be re-assigned to a new vacant number. Refer to Database Programming.

System Time

Description:

The system provides a built-in timer to track System Time for reference in certain features such as System Night Service Mode Change, SMDR Call Message Recording, Alarm Clock Check, etc. Refer to Database Programming.

This clock is battery protected from power failure by a battery provided inside the KSU. System Time can be changed at any Executive Key Telephone using the attendant password.

Toll Restriction

Description:

The Digital Hybrid System provides sophisticated monitoring of digits dialed on CO lines. If a digit or range of digits dialed on a CO line doesn't correlate with the Allow Digit Interval table, the CO line is released immediately. On any non-allowed call, the station user will receive error tone and the CO line button LED will extinguish. At an Executive Key Telephone the user will see "Call Restricted" on the LCD. The Toll Restriction Allow Digit Interval table may be constructed in a matrix format and associated to any of the Classes of Service (COS). Stations may be assigned a separate COS for Day System Mode operation and Night System Mode operation.

Related Feature:
COS Assignment
Digit Interval Table Programming
System Speed Dialing
Night Service

Related Programming:
RESTRICTION - CO LN CALL DISCR
STATION - DAY/NITE COS
CALL HANDLING - DISA - DAY/NITE COS

Operation:

CO line calls placed must appear in the Digit Interval Allow Table and marked for association with the COS assigned the station attempting the call or the attempt will fail.

Notes:

1. At default all stations are assigned with day and night COS 0.
2. The Digit Interval Table is empty except for interval 1 where the number range from 0 to 9 is programmed. (Since COS 0 is marked for use with this Table entry CO line calls are possible at all stations at default.)
3. At default, no user is allowed to dial asterisk (*) or pound (#) as the first dialed digit on the CO lines.
4. There are one-hundred (100) Interval Table entries available for programming.
5. System Speed (20-99) Override assigned toll restriction dialing COS.
6. COS ranking affects the station's ability to override a station in DND and to use the Privacy Release feature to join existing conversations.

Tone Detector

Description:

When the Option Board is equipped, the system provides one shared tone detector which is used for certain features to detect the call status of the CO line call in progress. Those features which use the tone detector include DISA, External Call Forward, Last Number Redial and Save Dialed Number, Automatic Busy Redial, and Dial Tone Detection.

The logical rules for sharing the tone detector are described below :

Only one station is allowed to wait for the tone detector to become available.

When the tone detector is currently assigned to a station, the maximum allowed time to wait for CO dial tone is 6 seconds (default).

If no CO dial tone is detected within 6 seconds, the tone detector will be returned to idle, or assigned to another waiting station. The telephone number, if entered, will then be dialed.

In the unlikely event that more than one station requests a tone detector at exactly the same moment, those stations will hear internal busy tone immediately, although a tone detector may be available.

Tone/Inter-digit Duration Selection

Description:

Depending on the outside plant environment, type of Central Office, and customer's specialized dialing requirements, the DTMF "on" time and inter-digit time for manually dialed or system automatically dialed digits may be modified. Typically, no modification of tone inter-digit duration is required. However, in some installation environments, where outside plant equipment is becoming antiquated or line conditions are poor, tone duration and/or inter-digit duration timing may be increased to offset these poor conditions. Tone duration and inter-digit duration may be assigned any value 50 ms to 150 ms.

Notes:

1. A longer tone duration or inter-digit duration time will cause a slower output of manual or automatic system-dialed numbers.
2. A longer DTMF "on" time and/or inter-digit tone time can be used to ensure more reliable interaction with remote voice mail and similar remote DTMF dial pad actuated devices.
3. At default DTMF duration is set to 70 milliseconds.

Transfer

Description:

There are two (2) types of transfer that may be used in the system: screened and un-screened. For any completed transfer, the outside line is on Exclusive Hold and can only be retrieved by the transferring station or the destination (ringing) station. A screened transfer occurs when the outside caller or line is announced to the inside destination. The transfer is automatic and the desired inside party is connected to the outside party the very instant that the transferring station completes the transfer.

On an un-screened transfer, the outside party hears Music-On-Hold (if equipped) and the line remains on System Hold until the transfer is completed. Once the transferring station calls another station, without waiting for voice reply or answer of ICM tone ringing, the outside line now rings at the destination station. The outside party hears PBX-like ring-back tone until the destination lifts the handset (and is automatically connected to the transfer ringing line) or the original transferring station recovers the line before or after the recall interval begins.

Transfer is used whenever a call needs to be directed to a specific station, without accidental interference from other inside stations.

Related Features:
Call Waiting (Executive Key Telephone)
Recall

Related Programming:
CALL HANDLING - RECALL TIME

Operation - Intercom call transfer:

While talking with another station on the system intercom, press HOLD, then dial the destination station number. You may wait for the called party to answer or you may transfer the intercom call Un-screened by pressing the TRANS (transfer) button. Intercom calls that are transferred follow the Intercom Mode Selection mode at the destination station (VA-Hands-free/Private or Tone Ring).

Talk Transfer (Screened) is accomplished by allowing the called party to answer your call before completing the transfer by pressing the TRANS button. When this method is used the transferred party is immediately connected to the called party.

Operation - CO Line Call Ring Transfer (Un-screened):

While speaking on a CO line,

```
CO LINE x  xx:xx
```

press the HOLD button.

```
ICM
```

Intercom dial tone is heard, CO Line 1 goes on Hold. Other Stations see CO Line 1 on System Hold.

Dial the destination station number or press a DSS button programmed for that station.

```
CALLING STA xx
 cbck msg
```

or

```
VOICE CALL    xx
      msg
```

press TRANS.

```
RING TRANSFER xx
```

Ringing is heard at the destination station. All other stations see the CO line change to Exclusive Hold status (steady LED). Outside party hears MOH change to system Ringback tone until the station answers.

Operation - CO Line Call Ring Transfer (Screened):

While speaking on a CO line,

```
CO LINE x  xx:xx
```

press the HOLD button.

```
ICM
```

Intercom dial tone is heard, CO Line 1 goes on Hold. Other Stations see CO Line 1 on System Hold.
Dial the destination station number or press a DSS button programmed for that station.

```
CALLING STA xx
 cbck msg
```

or

```
VOICE CALL    xx
      msg
```

Allow the called (destination) station to answer your intercom call, then press TRANS.

```
TALK TRANSFER xx
```

The CO line party is connected directly to the destination station. Note: if the destination station answers your intercom call in Voice Announce Handsfree mode and does not go off hook to connect with you on an intercom channel the CO line will ring transfer to the destination station.

```
RING TRANSFER xx
```

Notes:

1. The effective ring transfer recall time for any CO line call is programmable, between 16/30/60/90/120 seconds. The default time is 30 seconds.
2. When a transferred CO line recalls the CO line number and the destination (transferred to) station number will be displayed.
3. Once the outside line is changed from "Hold" to "Transfer" status, the outside party will hear Music-on-Hold change to system-provided Ring-back tone (similar to PBX operation).
4. CO lines that are transferred to another station will remind-ring at the transferring station according to the Hold Reminder timer programming until the call has been answered at the station where the call was transferred.

Special Note: **Do not press the CLEAR button when processing an incoming call. This will disconnect the outside party and return the CO line to idle condition. The TRAN/CONF button will return the transferring set to idle condition, after transferring the outside party.**

User Name Programming

Description:

An alphanumeric, seven-character title may be assigned to each station in the system. This title will be displayed on Executive Key Telephones in place of the standard "STATION" message.

Station user names are programmed in the customer database programming. The names may consist of upper and lower case letters.

Related Features:
Various call processing

Related Programming:
RESOURCE - USER NAME

Voice Announce Handsfree/Privacy FEAT 9 WXY 8 TUV

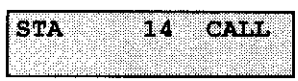
Description:

The Enhanced and Executive key telephone models provide the ability to receive incoming ICM calls in Voice Announce Hands-free mode. When signaled, this mode allows the user to reply to the calling party, using the speakerphone microphone, without lifting the handset. The Basic key telephone model is not equipped with a speakerphone microphone and, therefore, will not operate for Voice Call Allow Hands-free.

Voice Announce - Privacy may also be selected for intercom calls received. In this mode the callers voice will be connected to the telephone speaker but the microphone is muted. Therefore calls may be announced to your station while maintaining a private environment.

Operation:

When the station is set for Voice Announce Handsfree mode, other stations calling this station on the intercom are connected automatically by the system to the key telephone speaker and microphone. When another station calls the hands-free station:



The display at the calling station reads:

Notes:

1. The SPKR (Speaker) button LED will be lit during hands-free operation.
2. To receive incoming ICM calls with Hands-free Answer-back, the Enhanced or Executive key telephone must have Voice Announce - Hands-free FEAT 9 WXY 8 TUV enabled.

Setup:

Press FEAT 9 WXY 8 TUV. Three different tone cadences are heard to confirm the three modes of operation along with visual indications on a Programmable Feature Button programmed for FEAT 9 WXY 8 TUV (Intercom Mode Selection) and the display of the Executive Key Telephone.

Each time FEAT 9 WXY 8 TUV is pressed or a button programmed for FEAT 9 WXY 8 TUV is pressed, the next mode in sequence is selected, the associated tone is heard and associated visual indication is given:

Mode	Button LED	LCD Display	Tone Heard
Voice Announce - Handsfree	green LED	VA-HF MODE	long solid tone
Voice Announce - Private	red LED	VA-PRIVACY MODE	short, quick tone
Tone Ring Mode	no LED lit	TONE RING MODE	double burst tone

Voice Mail Integration (FEAT 6 MNO 4 GHI)

Description:

The system provides Voice Mail Integration via analog single line telephone station ports. Special database programming fields allow seamless, automatic system handshaking and mailbox resource control. A station user may program a feature button with the Voice Mail feature code (FEAT 6 MNO 4 GHI). When programmed, the button provides an indication of voice messages waiting and quick access to the voice mail system where messages can be retrieved.

Four (4) database fields are available in the customer database programming to customize the integration of the connected voice mail system in order to streamline operation. The system can be made to handle transfers and ICM calls to voice mail in separate manners that best accommodate that call handling.

Voice Mail Integration is accomplished through the use of the system's Hunt Groups. When a Hunt Group is tagged as type "Voice Mail", all voice mail special handling is invoked.

Related Features: Call Forward
Hunt Group

Related Programming:
CALL HANDLING - VM DIALING RATIO
SYS APPLICAT - STA HUNT GROUP - VM

Operation:

A station that uses VM regularly should program a Programmable Feature Button for use with the VM code (FEAT 6 MNO 4 GHI). Please refer to the Programmable Feature Button feature description to program a button with that code.

When the VM system has messages for any station it will cause the VM button red LED to flash. The display at Executive Key Telephones will show:

```
VM FROM MAILBOX
    reply
```

The user may retrieve messages from VM by pressing the VM button or pressing the center Soft Button (reply) in the LCD. The system will send the appropriate digits (if properly programmed) to the VM system so that the user's password need only be entered to retrieve messages.

A station may forward calls to the VM system using the Call Forward operations described in this section and the VM Hunt Group number. Calls that are forwarded to VM from a station will be forwarded to the user's mailbox such that no digit entry is required. The caller will be greeted by the user's greeting message and be prompted to leave a message. Once a message is left, the VM system will light the VM button LED and indicate messages waiting in voice mail in the LCD display at Executive Key Telephones.

Note:

1. The VM system must be programmed to light VM buttons in this manner: #96+station number to light the LED, #*96+station number to turn off the LED.

Special Note:	When an answering machine is connected to the system via a 2 Port SLT Adapter and In-Band (DTMF/Touch Tone) digits must be sent to the answering machine to control its functions, the SLT port must be programmed as type "VM".

Voice Over Busy FEAT 5 JKL 6 MNO

Description:

Any busy key telephone may receive a voice announcement from a calling station. When Voice Over Busy is used, the busy station will hear the calling party's voice over the same receive path currently in-use. For instance, while the user is engaged in a conversation on the key telephone, a person at another system station may call the user and be heard. The distant party engaged in the conversation with the user will not hear the other station's voice announcement to the user. Upon receiving the Voice Over Busy, the user may choose to speak with the calling station by switching the transmit path to that intercom station. This is accomplished by pressing the MUTE button. The user can toggle the MUTE button in a push-to-talk manner to switch between parties. The user also has the option to reject the Voice Over Busy request.

Voice Over Busy operates regardless of the current mode at the busy station (i.e. the station may be speaking in speakerphone or handset or headset mode). Voice Over Busy may be denied at any station using the VOB Allow/Deny code.

Related Features:
Various call processing
Call Waiting

Related Programming:
None.

Operation:

Call any busy station (that doesn't have Call Wait enabled).

```
STA     xx BUSY
 cbck msg  next
```

Busy tone is heard. Press the **next** button.

```
STA     xx BUSY
 camp voic
```

Press the **voic** button.

```
VOICE TO STA xx
```

The busy station sees:

```
STA     xx VOICE
      reject
```

The busy station may choose to reject the VOB announcement by pressing the **reject** button **{at non-display telephones press FEAT 5 JKL 6 MNO to reject}**. In this case the busy station display will read:

```
REJECT VOICE
```

then return to previous display data. The VOB initiator's display will read:

```
VOICE REJECTED
```

and is returned to idle.

At the time VOB is initiated the VOB initiator may speak to the busy station without being heard by the party connected to the busy station. If while listening the VOB initiator, the busy station user wants to speak to the VOB initiator he can press the MUTE button to switch his transmit path from the primary party to the VOB party. Successive depressions of the MUTE button will toggle the transmit path from one party to the other.

Notes:

1. The Executive Key Telephone will not receive Voice Over Busy calls when the Call Waiting feature (FEAT 9 WXY 9 WXY) is enabled.
2. Voice Over Busy may be denied by any station user with the Voice Over Allow/Deny code. To allow Voice Over Busy calls at your station press FEAT 9 WXY *. To deny Voice Over Busy at your station press FEAT * 9 WXY *.
3. Stations that are connected to a CO line and currently have the MUTE function invoked when a VOB call is received will remain in the CO line muted status until the VOB call is complete. Following the VOB call the mute function may be released by pressing the MUTE button.
4. The Distinctive Ringing feature code may be programmed on a programmable feature button.

Volume Control

Description:

Digitally stored volume levels are available for five key telephone functions; BGM, Ringer, Handset, Speaker and Headset. The level is adjusted for each function while in use. The adjustment information is saved for the next time that function is used (except for handset mode). The Ringer volume adjustment allows for 4 (four) volume levels. All other modes allow for 8 (eight) volume levels.

Notes:

1. Ring loudness may be adjusted while on hook (idle) as well as during an active ring signal. If adjusted on hook, the new ring volume will confirmed by a single ring burst over the key telephone speaker.
2. The Volume Control affects the receiving loudness only. The distant party will not detect an increase in the user's key telephone volume.

Warning Tone

Description:

A system Warning Tone may be heard repeatedly on specific stations that have exceeded a preset time limit on outgoing calls. This feature is useful in a lobby or retail environment where lengthy outgoing calls are discouraged.

Related Features:
Drop Time-out

Related Programming:
STATION - WARNING TONE
CALL HANDLING - WARNING TIME

Operation:

If a station is set for Warning Tone and the Warning Time is set at 3 minutes, the user will hear Warning Tone when 3 minutes has elapsed. The tone will repeat every 10 seconds until the call is disconnected.

Notes:

1. This feature is not recommended as a "Toll Saver" option and should be used only for specific applications.
2. Warning Tone is only delivered on outgoing CO line calls.

SINGLE LINE TELEPHONE FEATURES DESCRIPTION & OPERATION

The Starplus Digital Hybrid System features and operation for single-line telephones and other analog devices are described here. This list of features and operation pertains to SLTs and analog devices connected to the Starplus DHS via the 2-Port Analog Adapter and 2-Port Analog Expander.

Rules of Operation:

- When setting or changing feature status, the single line telephone (SLT) will hear confirmation tone, which is a long uninterrupted tone indicating successful operation. The user must go on hook and back off hook before attempting other call processing or feature status changes.
- When setting the feature status, the SLT will receive error tone if the feature access code combination is incorrect.
- When error tone is heard, the SLT must hang up and lift the handset again to attempt any further operation.
- SLT features DND, Call Forward, and Message Waiting (when a Message Waiting indication has been left at the SLT) alert the SLT user that the feature is active by an interrupted (stutter) dial tone.

Adding SLTs to the Starplus DHS has the significant advantage of port-gain. When the SLT interfaces are installed (2-Port SLT Adapter and 2-Port SLT Expansion) the station numbering is assigned based on B1 voice channel numbering in the low range (as numbering used for digital key telephones) and on B2 voice channel numbering in the high range. To demonstrate the application, consider a 2-Port SLT Adapter installed on the first digital key telephone port. The station numbers provided by this SLT adapter would be "10" for the B1 channel station and "58" for the B2 channel station.

SLT Feature Access Codes

10-81	2 Digit ICM Calling	#72	Privacy Station (on busy)
F	Hold	#73	Call Park Answer
*F*ss	Call Transfer where ss=station number	#73+0+cc	Call Park Answer a Specific CO Line (where cc is the CO #)
F#+ss	Call Brokering where ss=station number	#73	Specific Station Park Number
2	Camp On (while listening to busy)	#8	Last Number Redial (with line selection)
9/0	CO Line Access	#91	ICM Call Back (idle/busy)
#1+nn	SPEED Programming where nn=bin#. (Station speed bins 00-19 or System bins 20-99)	#*91	ICM Call Back Cancel
#2	ICM Call Forward/Cancel	#92 + hh/mm	Station Alarm (Hour/Minute)
#2+0+ss	Idle (immediate) Forward	#*92	Station Alarm Cancel
#2+1+ss	Busy	#93	Camp On-CO Line
#2+2+ss	Direct (busy/idle)	#*93	Camp On CO Line Cancel
#2+3+ss	Password = Follow Me	#96	Send Message Waiting (while ICM ringing/busy)
#2+4+ss +x	No Answer after x rings (x may be 0/1/2/3/4)	#*96	Message Waiting Cancel
#4	Do Not Disturb	#97 + Pswd + #	Station Lock
#50	Paging	#97 +Pswd + *	Station Unlock
#500	All Call Internal Paging	#97 + Pswd + nnnn	New Password (where nnnn is the new password)
#501	External Paging only	*1+ 00-99	Speed Dialing
#502	System All Call Paging	*3 + (1-8)	Specified CO Line Access
#503+gg	Group Paging (g may be 1-8)	*4 + x	CO Line Group Access (where x is 0-4, "0" is any group)
#53+ss	Directed Call Pickup ss=station #	*6	Hold Retrieve
#54	Group Call Pickup	*7+ ss	Other Station Hold Retrieve
#55	COS Following		
#56	Voice Over Busy		
#59	Page Meet Me Answer	**Note: "*F*" above represents a Hook Flash.**	

System Numbering Plan

10-81	Station Numbers
82-89	Hunt Group/Voice Mail Group
9/0	CO line All Group Access Code ("9" is default may be changed to "0" if desired.)
0/9	Operator Code ("0" is default may be changed to "9" if desired.)

Authority Code [#55]

Description:

Any station user may use his own station Class of Service (COS) while using a remote station for CO line dialing.

Operation:

Lift handset and dial #55sspppp (where "ss"=the station number with the desired authority and "pppp"=that station's password.)

Call Brokering

Description:

Single Line Telephone (SLT) station users may connect to a second party and alternate between connections. This feature is desirable when a SLT user wants to maintain the connection of the parties and at the same time keep them separate from each other.

Related Feature:
Music-On-Hold

Related Programming:
CALL HANDLING - SLT
HOOK_FLASH

Operation:

The user is engaged in a conversation on intercom/CO line call A:

Press Hook Flash.

Intercom dial tone is heard (the original conversation party is placed on hold).

Dial Station # (XX) or CO line call.

Ringback tone

When the new internal party B answers:

Press Hook Flash

Talk with the held party of call A and place the party of call B on hold.

Press Hook Flash

Talk with the held party of call B and place the party of call A on hold.

Call Hold [Flash]

Description:

CO line calls and ICM calls may be placed on Hold.

Related Feature:
Music-On-Hold
Hold Reminder
Hold Recall

Related Programming:
None.

Operation:

While connected to a CO line	Intercom dial tone is heard
or intercom call press Hook Flash.	(the party is placed on hold). Hang up.

Notes:

1. When an intercom/CO line call is placed on Hold and the holding party hangs up, after the Hold Reminder time is elapsed, the system will ring the hold activating station with internal or external ring signal. If Hold Reminder is disabled, 30 seconds after the call is placed on hold, the system will give the holding party recall ring (internal ring for held ICM call and external ring for held CO Line call).
2. If Call Abandon is set and properly functioning, calls placed on hold will be released if the outside party disconnects.
3. To answer Hold Recall at an SLT, lift the handset.

Call Hold Retrieve [*6]

Description:

Since multiple calls may be placed simultaneously at an SLT, the Call Hold Retrieve feature may be used to access a call previously placed on Hold.

Operation:

When the SLT user wishes to retrieve a held call, lift the handset. ICM dial tone is heard. Dial *6.	Talk with the original held party. If no intercom/CO line call has been placed on hold by the user or if the line on hold has been picked up elsewhere;	lift handset (intercom dial tone is heard) Dial *6 Error Tone is heard.

Call Hold Retrieve Other Station[*7]

Description:

This feature is used to access CO lines that are placed on hold at other stations.

Operation:

To pick up a held call at another station, lift handset. Dial *7.	Dial station number where call is holding. Talk with the held external party.	Note: if no CO Line call is holding at that station error tone is heard.

Call Operator (Call Attendant) [0]

Description:

The system Attendant station may be easily called by one dialed digit code. At default this code is "0".

Related Feature:
None.

Related Programming:
CALL HANDLING - OPERATOR CODE

Operation:

Lift handset Intercom dial tone is heard. Dial 0.	Ringback tone (Attendant is idle) or	Busy tone (Attendant is busy).

Notes:

The code dialed for the system attendant (0 or 9) is dependent on Database Programming of Operator Code. If "9" is programmed, that is the code that must be used to call the system attendant.

The Operator access code (0/9) is mutually exclusive with the outside CO line access code.

Call Transfer [Flash+ss]

Description:

To transfer a call from your station to another station.

Operation:

While connected to current call, press Hook Flash.	Intercom dial tone is heard and the original ICM call is placed on Hold. Dial Station number.	Ringback tone is heard Hang up to complete the transfer.

Notes:

1. When a CO line call is transferred the system rings the new station with external ring signal.
2. When transferring a call the held internal party becomes the new calling party and hears Ring-back tone.
3. CO Line Call Transfer is allowed for idle or busy transfers.
4. A SLT cannot transfer a CO line call to a station that is in DND.

Do Not Disturb (DND) [#4]

Description:

SLT stations may place their telephones in DND mode to avert incoming calls.

Related Feature:	*Related Programming:*
DND Override	*None.*

Operation:

Calls to a station in DND will hear DND Tone.

Setup:

To set DND:	**To cancel:**	Dial #4
lift handset, intercom dial tone is heard.	Lift handset, Reminder Tone is heard (Dial Tone is interrupted in quick even segments when first connected.)	Confirmation tone is heard.
Dial #4, confirmation tone is heard.		Hang up. DND is cancelled
Hang up. DND is active.		

Notes:

1. Reminder Tone is heard each time the user goes off hook to make calls when DND is active to remind the user of the DND condition.
2. When a SLT is in DND, DSS button LED's at other stations will flash.

Call Forward [#2]

Description:

The SLT user may forward telephone calls to another station, VM or Hunt Group using four call type criteria. The SLT user may also use Follow Me Forward to extend calls at another station to this station.

Operation:

Calls to this station will follow the forward scheme selected.

Setup:

For Idle Call Forward; lift handset and dial #20xx (where "xx" is the destination desired)

For Busy Call Forward; lift handset and dial #21xx (where "xx" is the destination desired)

For Direct Call Forward; lift handset and dial #22xx (where "xx" is the destination desired)

For No Answer Call Forward; lift handset and dial #24xxt (where "xx" is the destination desired and "t" is the Time to ring before forwarding: 0 = 10 seconds, 1=20 seconds, 2=30 seconds, 3=40 seconds and 4=50 seconds.)

For Follow Me Call Forward; lift handset and dial #23sspppp (where "ss" is the station number to forward to this location and "pppp" is the password of the station to forward.)

To cancel Call Forward dial #2.

Intercom Calling

Operation:

Lift handset, intercom dial tone is heard.

Dial the desired station, Hunt Group or VM Group number.

The user may hear any of the following:

Ringback Tone if the station called is in Tone Ring (or similar) mode.

Busy Tone if the called station is busy.

Error Tone if the called station is out of service, or DND is enabled.

Voice Announce Tone if Voice Announce is enabled.

When the SLT is busy, DSS button LED's at other stations will light steady red.

Speed Dialing [*1]

Operation:

Lift handset, intercom dial tone is heard. Dial *1, silence is heard.	Dial SPD bin to dial. The system will occupy an allowed idle CO line to dial	the telephone number stored in the SLT speed bin.

Setup:

Lift handset, intercom dial tone Dial #1, silence is heard.	Dial SPD bin for programming. Station Speed Dial bins range from 00-19.	Enter the desired outside phone number. Press Hook Flash. Confirmation Tone is heard.

Notes:

1. When speed dialing, either private speed dial number or system speed dial number is allowed.
2. Usage of System speed dial numbers is based on SLT's Class of Service assignment.

CO Line Access [9/0]

Description:

CO line access is simplified at an SLT by dialing a CO line access code. The code may be 9 or 0, depending on Database Programming. CO line group access codes are also available. Refer to the SLT Numbering Plan for additional information.

Related Feature:
Call Operator (Call Attendant) [0]

Related Programming:
CALL HANDLING - OPERATOR CODE

Operation:

To access any idle CO line:	**To access a specific CO line:**	**To access any idle CO line in a specific CO line group:**
Lift handset, intercom Dial Tone is heard. Dial 9 CO dial tone is heard, the system will occupy the CO line which was used last, as the first choice for outgoing calls.	Lift handset, intercom Dial Tone is heard. Dial *3c (where "c" is the CO line number/code for the desired CO line. 1-9 = CO lines 1-9, 0 = CO line 10, * = CO line 11 and # = CO line 12.)	Lift handset Lift handset, intercom Dial Tone is heard. Dial *4g (where "g" is the CO Line Group number desired. Groups are 0 - 4. "0" is any group.)

Notes:

1. An SLT station may dial access any CO line that has been allowed in database programming.
2. The dial codes "9" and "0" are mutually exclusive. When one or the other is programmed as the Operator Code the remaining is assigned for out dialing at SLT stations. Dial access 9/0 will access the highest available line regardless of line groups.
3. The CO line(s) permitted for outgoing selection in any CO line Group, or individually, are dependent on the station programming for CO line access.

Call Park Answer [#73]

Operation:

Lift handset + #73 + 0 + c (where "c" is the CO line number/code for the desired CO line. 1-9 = CO lines 1-9,	0 = CO line 10, * = CO line 11 and # = CO line 12.) **or...**	Lift handset +#73 + sn (where "sn" is the Station Number)

Call Pickup (Direct) [#53]

Description:

Ringing calls at unattended stations may be retrieved using the Direct Pick-Up code.

Operation:

Lift handset +#53 + sn (where "sn" is the Station Number)

Call Pickup (Group) [#54]

Description:

Ringing calls at unattended stations may be retrieved via the Group Pick-Up code, assuming that the station invoking the feature is in the same Station Group as the ringing station.

Operation:

Lift handset + #54

Camp On Busy Station [2]

Operation:

When the called station is busy press "2" while listening to Busy Tone.

Camp On Busy CO Line [#93]

Description:

A SLT station may Camp On to a busy CO line such that the CO line will ring the SLT station when it becomes available.

Operation:

When a CO line access attempt results in Busy Tone,	press #93 (while listening to busy).	To cancel the CO line Camp On, Lift handset and dial #*93.

Station Alarm [#92]

Description:

A SLT may instruct the system to ring the telephone at a predetermined time for use as a reminder.

Setup:

Lift handset + #92hhmm (where "hh"=the hour in military format and "mm"=the minute). To cancel:	Lift handset and dial #*92 Note: Station Alarm will operate only one time for each setting. If an alarm is desired at the same time every day,	that time must be entered every day.

Intercom Call Back [#91]

Description:

When the SLT user calls another system station that is busy he may leave a Call Back request at the station. When the Call Back request is invoked the SLT station will ring when the busy station goes on hook. Once the SLT answers the Call Back ringing, a new intercom call is placed to the station previously dialed.

Operation:

When listening to Busy Tone after dialing a station number, dial #91.	Confirmation Tone is heard. To cancel:	Lift handset + #*91

Last Number Redial [#8]

Operation:

Lift handset + #8, System accesses last used CO line and	re-dials the last outside dialed telephone number.

Message Waiting (Send/Respond)[#96]

Operation:

To leave a message at any telephone: lift the handset and dial #96ss (where "ss"= the station	number where the message is to be left.)	**To cancel a message that was previous left:** lift the handset and dial #*96ss.

Paging [#50]

Operation:

All Call Internal - Lift handset + #500 External Paging Only - Lift handset + #501	System All Call Paging - Lift handset + #502	Group Paging (Zones) - Lift handset + #503g (where "g" = Station Group 1-8)

Meet Me Page [#59]

Operation:

When a page announcement is heard, lift the handset and dial #59.

Phone Lock/Unlock [#97]

Description:

The Station Lock/Unlock feature is used to prevent unauthorized outside calling from a station that is unattended. The feature code "#97" is also used to program the station's private four-digit password.

Setup:

Lock - lift handset and dial #97pppp# (where "pppp" is the current password).

Unlock - lift handset and dial #97pppp* (where "pppp" is the current password).

Change Password - lift handset and dial #97pppp + new four digit password (where "pppp" is the current password).

INSTALLATION

Installation Outline

(1) Plan the installation, including the Key Service Unit (KSU) and main distribution frame (MDF) location, station locations, cable runs, and optional equipment.

(2) Run cables to the key telephone and single-line telephone locations from the MDF to each location. (Wiring topology is referred to as Star-Wiring configuration. No cable should loop from one telephone location to another.)

(3) Run wiring to any optional equipment, such as external paging equipment, loud bell signaling devices, music sources, etc.

(4) Mount the MDF backboard and attach the punch-down terminal block(s) on the backboard.

(5) Terminate station cables on punch-down terminal block(s) on the MDF.

(6) Terminate station cables on modular jack assemblies at the station locations.

(7) Mount the KSU on the MDF backboard. Use the provided mounting template to aid in spacing the mounting screws.

(8) Install optional 3X8 Expansion Modules inside the KSU as required.

(9) Install the Option Module if required.

(10) Route telephone and CO line port interface connections through the appropriate KSU opening and terminate all industry standard wiring on punch-down terminal block(s) on the MDF.

(11) Route ancillary device cabling through the appropriate KSU opening and terminate as required (music source, printer/computer for SMDR, external paging equipment, etc.)

(12) Cross-connect the CO lines and station ports to station cables on the corresponding punch-down terminal block.

(13) Install the station instruments and any optional station equipment, such as headsets or single line telephones.

(14) **Operate the RAM memory initialization switch from its factory set "OFF" (toward left) position to the "ON" (toward right) position. Very important notice: if the RAM Initialization switch was not in the "OFF" position prior to this installation. It must be moved to the "OFF" position and allowed to stay in the "OFF" position for 2 minutes while the system is NOT powered. This critical step is detailed in the "Power Up Initialization" topic at the end of this chapter.**

(15) Plug the AC power cord into the dedicated AC outlet and power up by operating the AC power switch to the on position.

(16) Observe the power/CPU heartbeat LED for flashing status after 4-6 seconds.

(17) Refer to the Database Programming section of this manual to program the system.

Pre-Installation Checklist

To make installation easier, use the checklist on the following pages when preparing to install the system.

(Hardware specifications are included in the SPECIFICATIONS section.)

Establish Suitable Environmental Conditions for the System:

- Place the KSU within 5 feet (1.5 meters) of an isolated, dedicated, 105-125VAC, 57-63Hz, 15A, single-phase commercial power source.

  NOTE: This must be an isolated, dedicated AC circuit for proper operation. All three wires (power, neutral, and ground) must be run separately from the outlet to the breaker panel without being bonded to any other wire or circuit. Do not plug any other equipment into this outlet. To maintain the protection provided by the isolated, dedicated circuit, the length of the AC power cord limits the distance between the KSU and the outlet; **Do not use an extension cord.**
- To protect the system from lightning damage or other AC power line disturbances, a surge protector should be installed.
- Select the KSU location to minimize cable run length. Station instruments connected to the system must not exceed specified limits (using 26AWG wire).
- The KSU location should not be exposed to direct sunlight, high humidity, heat, dust, or strong magnetic fields (such as those generated by heavy motors, copy machines and some kitchen appliances).
- The MDF should consist of a 3/4-inch plywood backboard large enough to mount all hardware and equipment allowing all components ample space for adequate ventilation and servicing. Allow additional room for external apparatus, if used.
- For cooling purposes, ample air space (at least four inches on the top, bottom, and left and right sides) should be provided for the KSU.
- SMDR/SMDA output device(s) must be placed within 50 feet (15 meters) of the KSU (limited by RS-232C standard wiring practices).
- The equipment should be located in a climate-controlled room adhering to the Environmental Specifications listed in the Specifications section.

  NOTE: When installing the KSU and station instruments, allow a sufficient margin for error in case of air conditioning failure, routine maintenance, plant shutdown, etc. As a general rule, if conditions are suitable for office personnel, they are also suitable for KSU and station instrument operation. A properly controlled environment will help to extend the operating life of the equipment.

From UL 1459, a product safety specification governing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network's interface.
- Use caution when installing or modifying telephone lines.

Assembling the Necessary Tools and Supplies:

- Use unshielded, twisted multi-pair (three pair recommended) cable to run from the MDF to all station instruments (key telephone and single-line DTMF telephones). Digital key telephones only need one twisted pair to operate.
- Six conductor modular jack assemblies for all station instruments (recommended).
- Standard punch-down terminal block(s) (66M1-50 type) as required.
- Industry-standard, 25-pair cable(s) with a 50 pin **male** Amphenol/AMP type connector for connection from each equipped 3X8 module to the MDF.
- AC voltage surge/spike protector.
- Standard telephone hand tools and mounting hardware for the KSU, MDF backboard, punch-down terminal block(s), modular jack assemblies for CO lines, etc.

Preparing the Main Distribution Frame:

The Main Distribution Frame (MDF) is the point at which the KSU, station instruments, CO lines, and miscellaneous equipment are connected to one another. It is extremely important that the connections be made carefully and accurately.

Assemble the MDF as follows:

1. Mount a sufficiently sized 3/4-inch plywood backboard at the proper location for use as the MDF.
2. Plan the layout of all required MDF components allowing for expansion.
3. Locate the Telco provided CO/Centrex lines at the demarc and extend them to the MDF location.

KSU Installation

The Key Service Unit is shipped in its own protective master carton and contains the following:

Basic KSU

1 mounting template

1 System Installation & Maintenance Manual

Open the carton and verify that all items are complete and undamaged. Remove all packing material and store for future use in the event that return shipment is required.

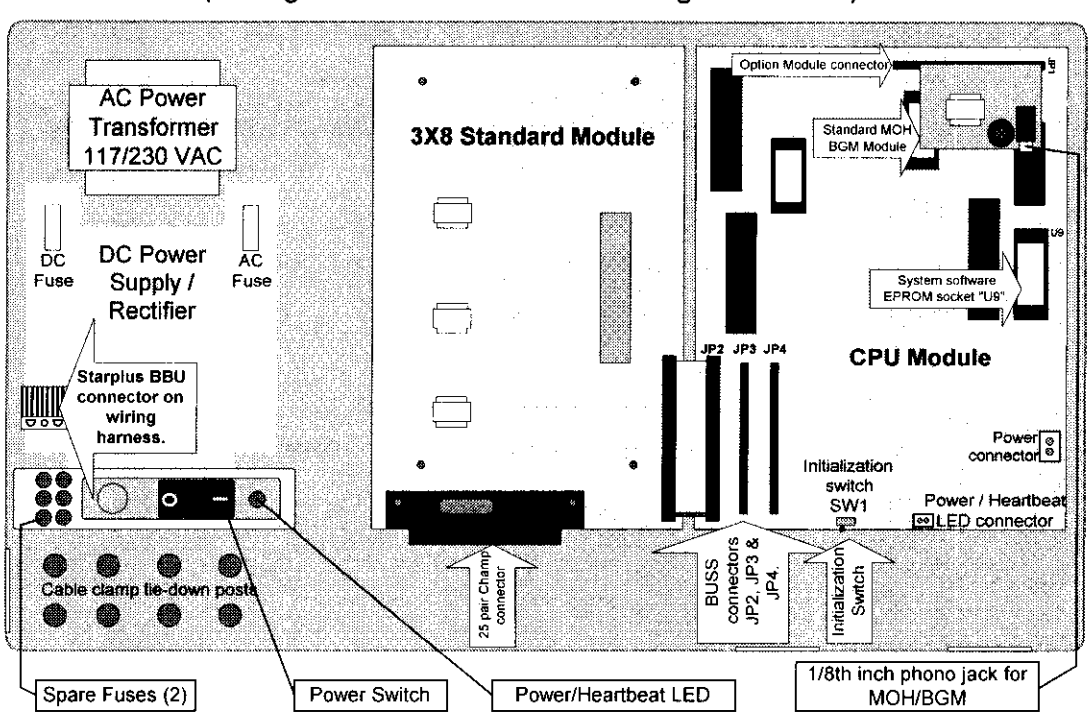
Mounting the KSU

1. Using the mounting template as a guide, mark the two (2) mounting screws locations on the MDF backboard.
2. Pre-drill two (2) screw holes and install two, $\frac{3}{4}$ inch, pan-head No. 10 screws into the backboard with a regular screwdriver. The screw heads should protrude about 1/4-inch from the backboard plywood surface.
3. Lift the KSU over the two screws allowing the screws to extend into the KSU slotted mounting holes. As the KSU is allowed to rest in place on the mounting screws it will slip over the screw shanks until the top of the slot is reached. Properly installed the KSU power transformer (where the KSU AC power cord is located) is positioned in the upper left corner. The power switch and Power/Heartbeat LED are positioned at the left side of the KSU toward the bottom.

   Note: It is very important that the KSU be correctly mounted to allow proper power supply heat dissipation.

KSU Components

Basic KSU
(Configured for 3 CO lines and 8 Digital Stations)



Standard 3X8 Module:

The Standard 3X8 Module (factory installed in the Basic KSU) requires one (1) 25 pair Amphenol type (male) ended station cable to extend the interface ports to the MDF. The station cable is plugged into the female Amphenol connector at the base (orientation assumes a properly mounted KSU) of the Standard 3X8 Module. **Note: System power should be OFF before plugging in the station cable or while working on the station punch-down block. (Although each port is over-current protected, unnecessary shorting should be avoided.)**

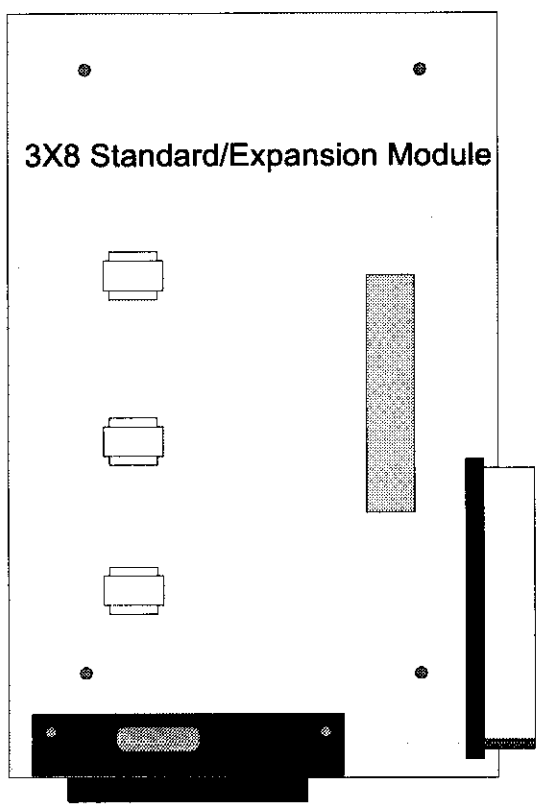
The cable is then routed out of the KSU through an opening at the lower left of the KSU housing. A cable restraint clamp is provided and may be used to secure cables exiting the KSU. The 25 pair cable is then terminated on a punch-down terminal block on the MDF for interconnection. See the punch-down terminal block wiring diagram for Standard 3X8 Module & 3X8 Expansion Module cable pair designations.

3X8 Expansion Module

The 3X8 Expansion Module is installed to expand system capacity and is housed in the KSU in stacking fashion over the Standard 3X8 Module. Two 3X8 Expansion Module maximum can be installed in the KSU. The 3X8 Expansion Module is shipped with 4 stand-off mounting posts.

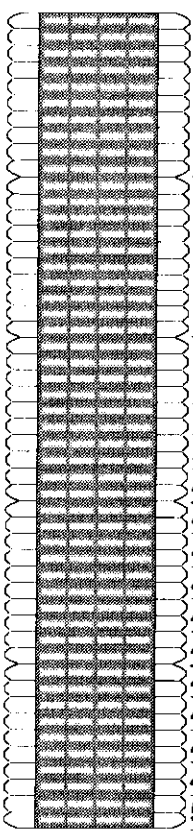
Follow these steps when installing a 3X8 Expansion Module:

1. Be sure that KSU power is turned off.
2. Remove the KSU cover.
3. Connect grounded wrist strap to a suitable earth ground.
4. Locate the screws used to secure the 3X8 module or 6 Port CO Module already in place.
5. Remove one of module securing screws only. (So that the existing board stays in place.)
6. Retain the screw removed in step 2.
7. Insert one of the stand-off posts into the screw position where the screw from step 2 was removed.
8. Tighten securely by hand, then snug tight using a small hand tool. It is very important not to over-tighten any screw or stand-off post as damage to the board may occur.
9. Repeat steps 4 through 8 until all module screws are replaced with stand-off posts.



10. Position the 3X8 Expansion Module over the stand-off posts installed and use the screws removed in that process to secure it in place on the stand-off posts.
11. Once mounted, carefully insert the BUSS Ribbon Cable into the next available Expansion BUSS Connector on the CPU board.
12. Replace KSU cover and secure with cover screws.
13. Restore KSU power when all wiring is complete.

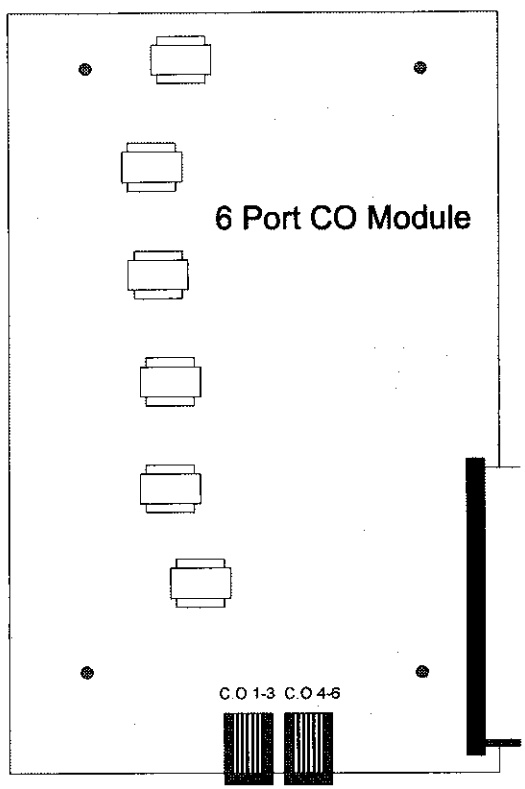
66M1-50 wiring designations for 3X8 Modules



CA Pair	Pair Color	Designation	Standard 3X8 Module	1st 3X8 Expansion Module	2nd 3X8 Expansion Module
26/1	White/Blue	n/c			
27/2	White/Orange	CO Line Port 3	CO 3	CO 6	CO 9
28/3	White/Green	CO Line Port 2	CO 2	CO 5	CO 8
29/4	White/Brown	CO Line Port 1	CO 1	CO 4	CO 7
30/5	White/Slate	n/c		Not applicable when the 6-Port CO Module is installed in this position.	Not applicable when the 6-Port CO Module is installed in either Expansion Module position.
31/6	Red/Blue	n/c			
32/7	Red/Orange	n/c			
33/8	Red/Green	n/c			
34/9	Red/Brown	n/c			
35/10	Red/Slate	n/c			
36/11	Black/Blue	n/c			
37/12	Black/Orange	n/c			
38/13	Black/Green	n/c			
39/14	Black/Brown	n/c			
40/15	Black/Slate	n/c			
41/16	Yellow/Blue	n/c			
42/17	Yellow/Orange	n/c			
43/18	Yellow/Green	Station Port 1	STA 10	STA 18	STA 26
44/19	Yellow/Brown	Station Port 2	STA 11	STA 19	STA 27
45/20	Yellow/Slate	Station Port 3	STA 12	STA 20	STA 28
46/21	Violet/Blue	Station Port 4	STA 13	STA 21	STA 29
47/22	Vilet/Orange	Station Port 5	STA 14	STA 22	STA 30
48/23	Violet/Green	Station Port 6	STA 15	STA 23	STA 31
49/24	Violet/Brown	Station Port 7	STA 16	STA 24	STA 32
50/25	Violet/Slate	Station Port 8	STA 17	STA 25	STA 33

6 Port CO Module:

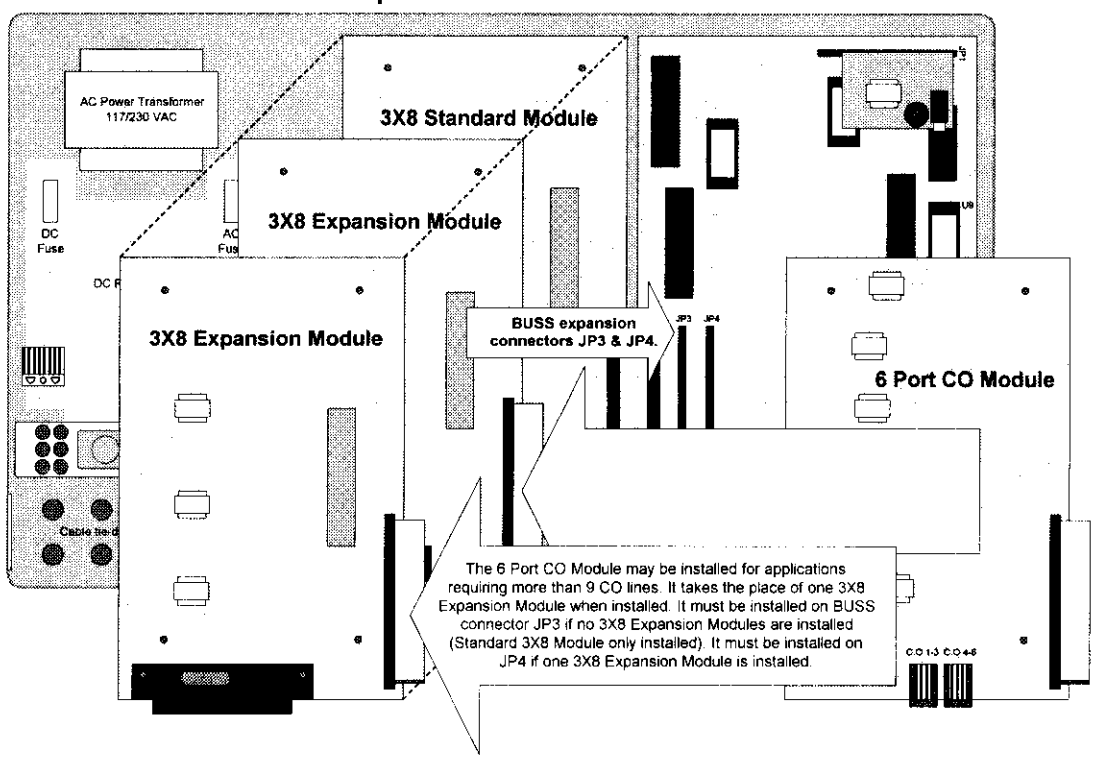
The 6 Port CO Module is installed to increase system capacity of CO lines. The 6 Port CO Module is shipped with two 6 conductor cords, two surface mount modular jacks and four stand-off posts. Regardless of how many 3X8 modules are installed, only one 6 Port CO Module may be installed. The 6 Port CO Module must be the last module installed. That is; if a 6 Port CO Module is first installed as the first Expansion Module (JP3) and a 3X8 Expansion Module is then installed at a later date, the 6 Port CO Module must be moved to the last expansion position (JP4). Follow these steps when installing the 6 Port CO Module:



1. Be sure that KSU power is turned off.
2. Remove the KSU cover.
3. Connect grounded wrist strap to a suitable earth ground.
4. Locate the screws that secure the 3X8 module already in place.
5. Remove one of module securing screws only. (So that the existing board stays in place.)
6. Retain the screw removed in step 5.
7. Insert one of the supplied stand-off posts into the screw position where the screw from step 5 was removed.
8. Tighten securely by hand, then snug tight using a small hand tool. It is very important not to over-tighten any screw or stand-off post as damage to the board may occur.
9. Repeat steps 5 through 8 until all module screws are replaced with stand-off posts.
10. Position the 6 Port CO Module over the stand-off posts installed and use the screws removed in that process to secure it in place on the stand-off posts.
11. Once mounted, carefully insert the BUSS Ribbon Cable into the next available Expansion BUSS Connector on the CPU Module. When the Option Module is installed it is necessary to remove the Option Module screws and lift the Option Module away from the CPU Module for clear access to the CPU Module BUSS Connectors (JP3 & JP4).
12. Replace KSU cover and secure with cover screws.
13. Restore KSU power when all wiring is complete.

Special Note:	The 6 Port CO Module must be installed in the last available Expansion Buss Connector on the CPU Module. That is, if a 6 Port CO Module is installed on JP3 a 3X8 Expansion Module will not function if installed on JP4. So, if a 3X8 Expansion Module is added after a 6 Port CO Module was previously added, the 6 Port CO Module must be removed from JP3, the new 3X8 Module installed to JP3 and the 6 Port CO Module reinstalled onto JP4.

KSU Expansion Module Installation



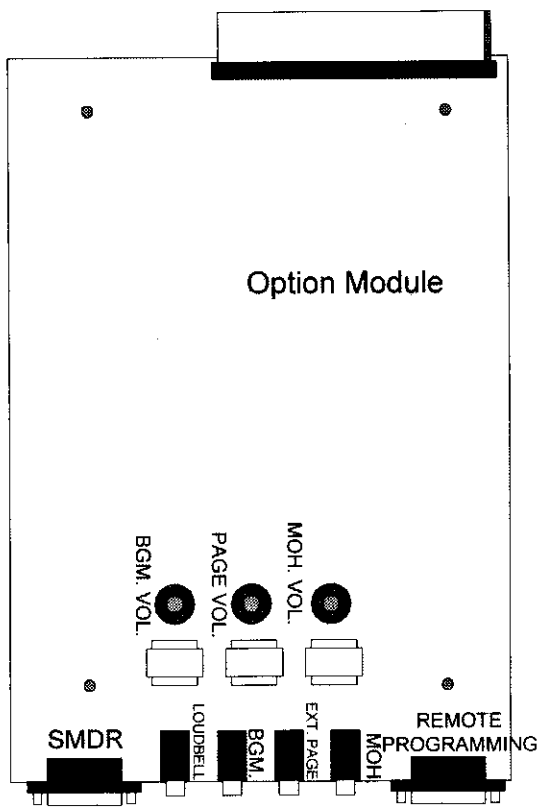
Option Module

The Option Module is installed to facilitate advanced call processing features like External Call Forward, Automatic Busy Redial, etc. (Generally, features that require enhanced call monitoring via Tone Detectors and DTMF receivers.) The Option Module is equipped with two DTMF receivers and two Tone Detectors. In addition the Option Module provides two music source inputs (one that replaces the Standard MOH/BGM Module), one external page zone port and one Loud Bell Control contact.

Follow these steps when installing the Option Module:

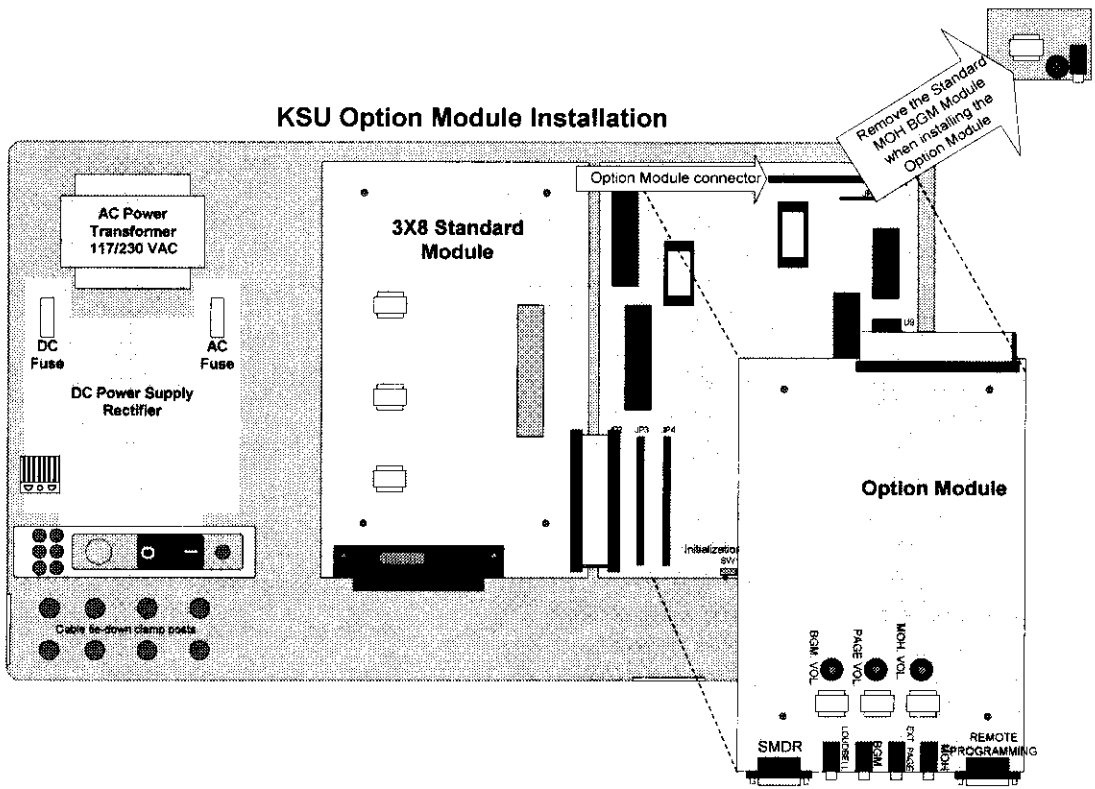
1. Be sure that KSU power is turned off.
2. Remove the KSU cover.
3. Connect grounded wrist strap to a suitable earth ground.
4. Locate the Standard MOH/BGM Module already in place. Notice that there is one screw that secures the Standard MOH/BGM Module to the CPU Module.
5. Remove the MOH/BGM Module screw and MOH/BGM Module. Then remove the short stand-off post used to mount the Standard MOH/BGM Module.
6. Retain these pieces in the event that the Option Module is to be eliminated and standard MOH/BGM operation is again desired.

   NOTE: The Standard MOH/BGM Module is NOT a separately stocked replacement part. To replace a Standard MOH/BGM Module a Basic KSU must be purchased!
7. Install one of the stand-off posts supplied with the Option Module into the position previously occupied by the short stand-off post. Use step 11 as a guide for tightening the stand-off post. Locate the remaining three screws used to secure the CPU Module.

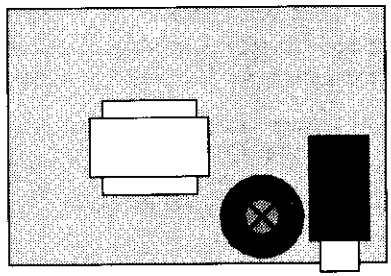


8. Remove one of the module securing screws at a time. (So that the CPU Module stays in place.)
9. Retain the screw removed in step 5.
10. Insert one of the Option Module stand-off posts into the screw position where the screw from step 5 was removed.
11. Tighten securely by hand, then snug tight using a small hand tool. It is very important not to over-tighten any screw or stand-off post as damage to the module may occur.
12. Repeat steps 8 through 11 until all module screws are replaced with stand-off posts.
13. Position the Option Module over the stand-off posts installed such that the ribbon cable and connector are oriented at the top right of the module (Assuming correct KSU installation.)

14. Locate the Option Module connector located on the CPU Module labeled "JP1" and carefully attach the Option Module ribbon cable to JP1 assuring that all connector pins are properly aligned. It is very important that all pins make contact to the connector and that no pins become bent in this process.
15. Use the screws retained in step 9 to secure the Option Module to the stand-off posts installed.
16. Replace KSU cover and secure with cover screws.
17. Restore KSU power when all wiring is complete.



Standard MOH/BGM Module



The Standard MOH/BGM Module is shipped with the Basic KSU and will never likely be reinstalled if ever removed. In the event that the Option Module was installed and the Standard MOH/BGM Module is to be re-installed, follow these steps:

1. Turn off KSU system power.
2. Remove the KSU cover.
3. Connect grounded wrist strap to a suitable earth ground.
4. Locate the four screws used to secure the Option Module to the Option Module stand-off posts.
5. Remove each screw carefully to assure that no damage to the Option Module results when the last screw is removed. Retain these screws.
6. Lift the Option Module away form the CPU Module and unplug the Option Module ribbon cable from the Option Module connector (JP1) of the CPU Module.
7. Locate the four Option Module stand-off posts.
8. Remove the upper right stand-off post and replace with the Standard MOH/BGM Module stand-off.
9. Remove each of the other stand-off posts one at a time and replace with the screws removed in step 5.
10. Carefully push the Standard MOH/BGM Module connector onto the MOH/BGM connector (JP5) on the CPU Module.
11. Use one of the screws removed in step 5 to secure the Standard MOH/BGM Module in place.
12. Replace KSU cover and secure with cover screws.
13. Restore KSU power.

Grounding Requirements

The KSU must be properly grounded. The power cord third-wire ground is sufficient for this KSU. DO NOT use a three-wire to two-wire adapter when connecting AC power as the AC cord third-wire ground is the only KSU ground source. Test the AC receptacle for proper wiring and presence of ground.

***NOTE**: According to UL 1459, "the attachment-plug receptacle in the vicinity of the product or system are all to be of a grounding type, and the grounding conductors serving these receptacles are to be connected to earth ground at the service equipment."*

Voltage Surge/Spike Protection

To reduce the effects of AC voltage surges and spikes that may cause system malfunctions, false logic, and/or damage to the electronic components, it is recommended that a surge/spike protector be installed. Check the manufacturer's specifications to ensure that the device meets the following requirements:

- Clamp voltage transients at 300 volts within 5 nanoseconds when exposed to wave-forms as described in the ANSI/IEEE Standard C62.41-1980 (IEEE 587).
- Reduce RFI/EMI noise by at least 20dB at frequencies between 5kHz and 30MHz.

230VAC Operation

When installing the KSU in a location that will use a 230VAC power source it is necessary to strap the AC power transformer for 230VAC operation. The transformer is equipped with three primary winding tap leads colored Red, Brown and Black. The Black and Brown leads are used for 117VAC operation. (This is the factory wired configuration.) The Black and Red leads are used for 230VAC operation.

Use the steps below to make the 230 volt AC field strap adjustment:

1. Make sure that the KSU power switch is turned off and that the KSU power cord is not connected to any AC power receptacle.
2. Since the KSU is shipped configured for 117VAC operation, locate the Brown power transformer lead and cut it mid-way between the power transformer and the KSU power switch.
3. Tape (or otherwise insulate) and store the brown lead extending from the power transformer.
4. Strip approximately 10 mm (half-inch) of insulation from the end of the remaining portion of the Brown lead (going toward KSU power switch).
5. Locate the factory insulated Red transformer lead and cut the insulated tip off.
6. Strip approximately 10 mm (half-inch) of insulation from the end of the remaining portion of the Red lead.
7. Using an appropriate splice connector (wire-nut, etc. in conformance to local electrical code), join the Red and Brown leads and insulate.

Connecting CO Lines

CO lines connections for the 3X8 Standard and 3X8 Expansion Module(s):

1. The CO line connections (as well as station connections) are made to the 3X8 Standard Module and Expansion Module(s) via the 25 pair connector located along the bottom edge of the installed module. (Refer to the illustrations in the table for cable pair designations.)
2. Once the 25 pair cable is terminated on an industry standard 66M1-50 block, cross-connect (jumper wire) should be used to extend the CO line pair from the terminal block to the Telco Demarcation block. Plan to use at least one pair of bridging clips for each CO line connected so that service of any one specific CO line is simplified.

CO lines connections for the 6 Port CO Module.

1. CO line interface to the 6 Port CO Module is made through two RJ25 type modular connectors on the 6 Port CO Module located along the bottom edge of the installed module. CO line ports 1-3 of the 6 Port CO Module are connected through RJ25 connector "CO 1-3" (positioned toward the left/center of the installed module) and ports 4-6 of the 6 Port CO Module are connected through RJ25 connector "CO 4-6" (positioned toward the right/center of the installed module).
2. The 6 Port CO Module is shipped with two 3-pair line cords and two 3-pair terminal blocks for connection on the MDF. Once terminated the individual pairs of the 3-pair terminal blocks are extended to the Telco Demarcation block. Plan to use at least on pair of bridging clips for each CO line connected so that service of any one specific CO line is simplified.

6 Port CO Module jack	Module jack pin	Cable Pair (if applicable)	Jack wire color	Designation
CO 1-3	4	White/Blue	Green	CO line port 1 Tip
	3	Blue/White	Red	CO line port 1 Ring
	2	White/Orange	Black	CO line port 2 Tip
	5	Orange/White	Yellow	CO line port 2 Ring
	1	White/Green	White	CO line port 3 Tip
	6	Green/White	Blue	CO line port 3 Ring
CO 4-6	4	White/Blue	Green	CO line port 4 Tip
	3	Blue/White	Red	CO line port 4 Ring
	2	White/Orange	Black	CO line port 5 Tip
	5	Orange/White	Yellow	CO line port 5 Ring
	1	White/Green	White	CO line port 6 Tip
	6	Green/White	Blue	CO line port 6 Ring

CO line termination notes:

1. It is the installers responsibility to assure that CO line connections are made in such a way that proper CO Hunting will sequence from the first CO line button to the last, in order on key telephones.

Note:	*If incoming CO lines Hunt from a main telephone number and are also used for outgoing (both-way CO line) service, always prioritize the incoming line order so that the last choice incoming trunks appear on the higher number CO line positions. This is because the system automatically selects idle trunks for outgoing calls, by searching from CO line 12, to CO line 11, and so on to CO line 1. This technique may avoid a "head-on" or "Glare" condition where a user trying to place an outgoing call inadvertently answers a ringing line.*

2. Typically lightening protection is provided at the premise service entrance by the Telco service provider. However, if there is no lightning protection or the installation involves customer owned cable linking buildings together such that this equipment is installed at a remote site with outside plant wiring connected directly to any port of the system; the installation must include lightning protection. Install gas discharge tubes with silicon avalanche suppressers to ground on each CO line and any port extended from the KSU over outside plant wiring. This must be done external to the system.

3. Test each CO Line at the MDF for dial tone, correct ringing sequence, Telco number assignment and polarity. *Note: The System CO Line interface circuits are polarity guarded and will properly DTMF signal on any DTMF capable CO line.*

4. Once the system is powered up, the following CO Line interface/signaling characteristics must be verified in System/Trunks Data Base Programming:

    - CO Line Group programming
    - DTMF ON Tone Duration
    - CO or PBX CO line
    - Flash Time (Call Waiting, Centrex, PBX)
    - PBX Access Codes (if PBX extension line is used)
    - Extension(s) access to outgoing and incoming lines.
    - Private Trunk Assignment
    - DISA or ECF Trunks Assignment
    - Loud Bell Control
    - Hold Abandon
    - Dial Tone Detection
    - Dial Wait Time

Station Cabling

Floor plans should be developed to aid in proper station cabling in a star (home run) configuration from the KSU. The cables are run from the station locations to the STN block at the MDF. Refer to KSU Station Cable Diagram.

Both ends of each cable should be labeled with the station's circuit number. The circuit number designates the station port position in the KSU.

When the system is initialized, the intercom numbers are assigned in order from port 1 (intercom number 10) to port 24 (intercom number 33).

Running Cable

***NOTE**: It is recommended that three-pair cable and four-conductor (minimum) modular jacks be used for all station connections.*

From the MDF location, run unshielded, three-pair (six-conductor) twisted cable to all key telephone locations and DTMF single-line telephone locations. Follow these guidelines:

- Install proper type cable for the application according to the National Electrical Code and local building codes.
- Avoid cable runs parallel to fluorescent light fixtures or AC lines not in conduit. If these obstacles are unavoidable, run the cables across them at right angles.
- Do not run station cables inside electrical conduit already occupied by AC wiring. (To do so is a violation of the National Electrical Code.)
- Do not run station cables near equipment with electric motors or through strong magnetic fields, such as those generated by large copy machines, arc welding equipment, heavy motors, etc.
- Do not place station cables where they can be stepped on or where they can be rolled over by office furniture.
- If using multi-pair (25-pair) cable runs to multiple station locations do not include AC ringing single-line sets, AC-ringing auxiliary equipment, or CO lines in a cable being used for key telephones. **Key telephones should always be isolated in separate dedicated cable runs.**
- Do not exceed the measurements for the station cable lengths (using 26AWG wire) listed in the Loop Limit chart. The ohm values are loop measurements; feet (meter) values are the maximum one-way distances from the KSU. (See "Station Loop Resistance Test").

Terminating The Cables at Station Locations:

Terminate key telephones and DTMF single-line telephone cables on four-conductor modular jack assemblies at each station location.(4 conductors provide 2 pair wired to the telephone. Although only one pair is required for key telephone operation, the second pair is wired through to the ADP jack for a variety of applications at the desktop.) (For exceptions to this, refer to the NOTE under "Running Cable" above.)

Cable Pair	Jack wire color	Designation
White/Blue	Green	Telephone voice & data XT lead.
Blue/White	Red	Telephone voice & data XR lead.
White/Orange	Black	ADP Jack Tip lead.
Orange/White	Yellow	ADP Jack Ring lead.

Do not mount the modular jack assemblies on the wall at this time; they will be wall mounted later when the station instruments are installed.

Notes

1. Since the digital station equipment is not polarity sensitive reversing the digital telephone pair has no affect on operation.
2. The Station Interface circuits are current limited and are not fused.

Station Loop Resistance Test:

Perform the loop resistance test for each station cable individually.

1. No equipment can be connected to the cable pair to be tested. If a jumper wire is already in place it must be removed for this test (or unplug the Amphenol type connector from the associated 3X8 Module). Be sure that the station instrument is not connected to the modular jack assembly.
2. Place a short across the RED and GREEN wires on the modular jack assembly at the station end.
3. At the MDF, measure the resistance across the WHITE/BLUE and BLUE/WHITE wires of the cable under test. The reading should not exceed the limits (for twisted pair, unshielded 26 AWG cable) listed in the table below (ohm values are the loop measurements; feet/meter values are the maximum one-way measurements from the KSU).

TYPE OF INSTRUMENT	LOOP RESISTANCE LIMIT	26 AWG (see Specifications)
Basic Key Telephone	130 ohm	850 ft. (255m)
Analog Adapter (from KSU to SLT) Note: the 2-Port SLT adapter may be installed anywhere inbetween.	180 ohms	650 ft. (195 m)

NOTE: *Excessive and/or improperly made connections increase the resistance of a cable, which reduces the allowable cable run length.*

4. Remove the short after the test is complete.
5. Repeat this test for each station cable.
6. Reconnect the station cable jump wires (or plug in the 3X8 Module connector).
7. Plug in the instruments.

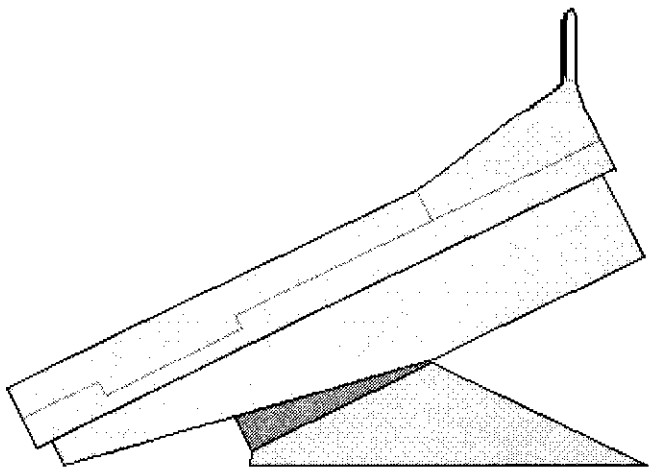
Installing Key Telephones

Key telephones may be mounted with three different orientations; Low Profile Desk Mount, High Profile Desk Mount or Wall Mounted. Packaged inside each key telephone carton are the following components:

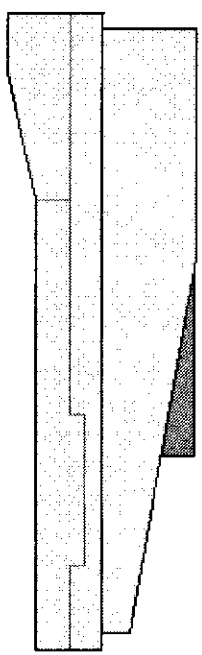
- key telephone
- key telephone handset
- 7 foot line cord
- 4 inch line cord (for wall mounting)
- 12 foot handset cord
- small base wedge mount assembly
- large base wedge mount assembly

Note that the two wedge mount assemblies (large and small) are affixed at the factory. This configuration is used for High Profile Desk Mounting.

Remove the components from the carton and determine which mounting components are required. Most telephones will be installed using both mounting wedges (small & large) for the High Profile Mounted position. Reference the illustration at left and attach the Base Mount wedges.



1. The small wedge is always used for the various telephone mounting positions.
2. The small wedge has locking tabs at one end and hooks at the other end used in a hinging fashion to attach the small wedge to the telephone.



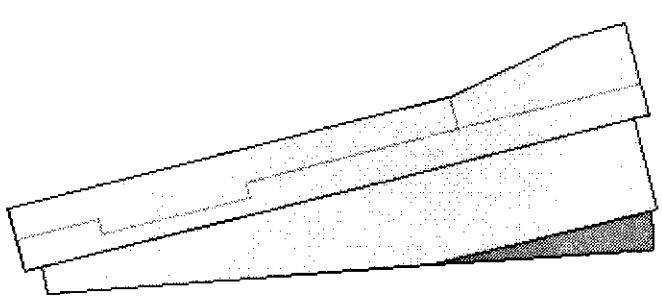
When the telephone is to be wall mounted:

1. Remove the two small screws that secure the small and large wedges together.
2. Store the larger wedge for possible use later. (The large wedge is not used when wall mounting the key telephone.)
3. Then position the smaller wedge as in the illustration at the right for wall mounting. Once in position, the smaller wedge and key telephone bottom housing provide for standard 630 type wall mount wall jacks.

When the key telephone is to be desk mounted in the Low Profile position:

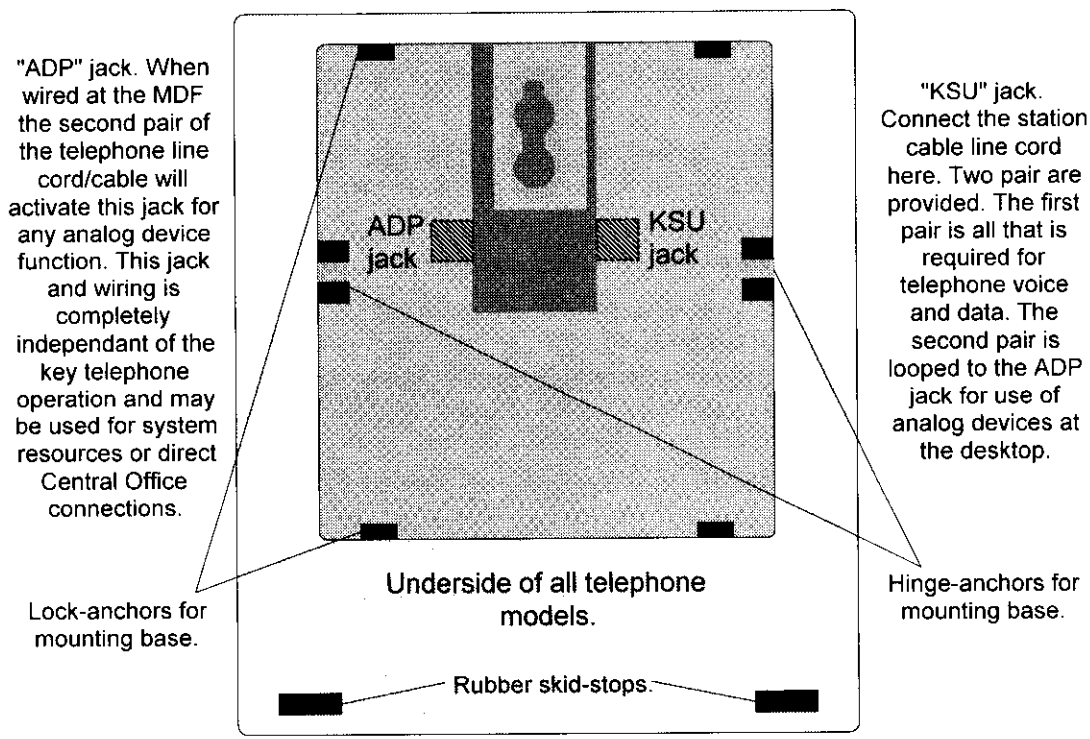
1. Remove the two small screws that secure the small and large wedges together.
2. Store the larger wedge for possible use later. (The large wedge is not used when mounting the key telephone in the Low Profile position.)
3. Position the smaller wedge as illustrated below.

   Note when using this mounting position it is important that the line cord be channeled through the slots in the telephone bottom housing such that the smaller wedge locks them in place when in position.



Each key telephone has two modular jack connectors on the underside of the instrument. Both are located in a recessed connector cavity. When the telephone is held so that the rubber anti-skid feet are downward (no mounting wedge installed) the modular jacks face one another in the cavity. The modular jack at the left side of the cavity is the "ADP" connector and may be connected to an analog device at the desktop. (The ADP jack is only active when connected for operation at the MDF.) The modular jack at the right side of the cavity is the "KSU" jack and should be connected to the wall jack and station cabling for connection to the system KSU.

Refer to the following diagram for modular jack locations:



SMDR/SMDA Output Device

The output device or the Station Message Detail Recording (SMDR) must meet the requirements and match the RS232C pin-out described below. **The RS232C cable connecting the SMDR device to the KSU must not exceed 50 feet (15 meters) in length.** The optional Option Module is required for SMDR operation.

To connect an output device to the KSU:

1. Match the baud rates on the output device and the system. Refer to Programming Section for the proper baud rate programming.
2. Turn on the AC power to both the device and the system before connecting the RS232C cable to Port 2 on the KSU. This prevents any electrical surges from being transmitted by the interface.
3. Carefully connect the RS232C DB-9 male end of the interface cable from the device to the "SMDR" RS232C DB-9 female connector located at the bottom edge toward the left of the Option Module.

The SMDR serial port output is one way to the printer or other Call Accounting device. Note: the KSU end is considered DCE and printer is DTE.

9 PIN TO 25 PIN CONNECTION CABLE

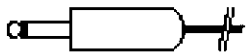
DCE	MALE DB-9	DESIGNATION	FEMALE DB-25	DTE
K S U	1	DCD	8	P R I N T E R
	2	TD	3	
	3	RD	2	
	4	DSR	20	
	5	GND	7	
	6	DTR	6	
	7	CTS	4	
	8	RTS	5	
	9	RI	22	

The SMDR port baud rate is programmable from 110 to 19,200 BPS. (See Database Programming.)

Data Format is: 8 data bits, 1 stop bit, No parity bit.

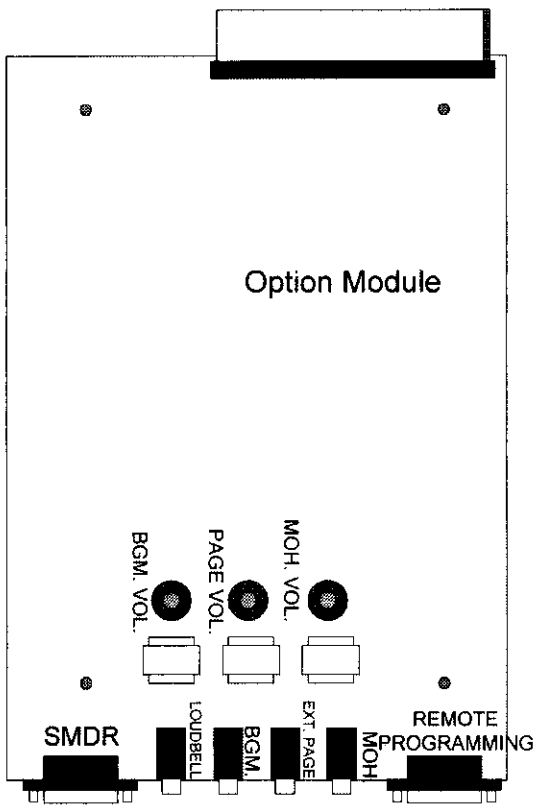
Connection of the SMDR serial port to a computer for call accounting is usually quite simple since a straight-through cable will typically mate the devices.

External Paging Equipment (optional)



The system provides a **one way** paging output at the KSU from the Option Module when installed. An 1/8-inch phono jack labeled "J3 EXT PAGE" is provided for connection of an external paging amplifier. The input specifications for the external paging equipment should accept a 600 ohm and 0 dBm interface.

Install the external paging equipment as follows:



1. Cut a length of shielded cable to run from the amplifier to the KSU.
2. Attach an eighth inch male phono plug to one end of the cable.
3. Connect the other end of the cable to the amplifier high-impedance input according to the manufacturer's instructions.
4. Connect the paging speaker(s) to the amplifier using speaker cable.
5. Plug in the amplifier's AC power cord. DO NOT use the same AC outlet being used for the KSU.
6. Insert the eighth-inch phono plug into the jack labeled "EXT. PAGE" located on the bottom edge of the installed Option Module. (The "Ext. Page" phono jack on the Option Module is the center right phono plug. See diagram.)
7. Set the paging amplifier's volume control to the lowest setting and turn ON the external amplifier.
8. From a station location, make a page by lifting the handset, and **dialing F501** (the external page feature code).
9. Adjust the amplifier to the desired level while announcing the page.
10. "PAGE VOL" may be adjusted to attenuate the output signal in the event the signal is to strong for the connected amplifier input (over-driving input).

Notes on multi-zone and talk-back external paging:

1. *If the one way paging equipment requires DTMF signaling from the key telephone, then an unused* CO Line should be dedicated for proper page interface.

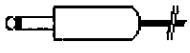
2. *For talk-back paging or multi-zone external paging, the manufacturer recommends using a vacant CO line port for best operation.*

3. *A 600 ohm interface is provided on every CO line therefore any available CO line may be used for paging.*

4. *Since all CO line dialing is subject to toll restriction, a CO line port will not connect the stations audio until at least one DTMF digit is dialed.*

5. *It may be necessary to assign the CO line being used for paging as a PBX type trunk with one or two digit access. Therefore, normally toll restricted extensions may still make external pages, without being restricted.*

External Music Source - Standard MOH/BGM Module

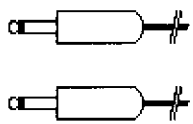


The Basic KSU is shipped with the Standard MOH/BGM Module. This module is located on a stand-off post toward the upper right corner of the CPU Module when viewing the installed KSU. The module provides a 1/8-inch phono jack labeled "JK1 MOH JACK" for direct connection to an external radio tuner, CD/tape player or other music source. The system music input impedance is 20K ohms. A trim POT (potentiometer) is also provided on the Standard MOH Module for signal attenuation. To adjust the music level:

- Set the trim POT (labeled "VR1 MOH VOL") at about mid-point.
- Access an idle CO line and dial into the system on another CO line.
- When the system begins to ring, press HOLD to place the first call on hold.
- Answer the ringing CO line. You should hear the Music On Hold from the previous (now holding) CO line.
- Adjust the music level at the source. That is, use the volume control of the radio (or other music source) to adjust the MOH level to a desirable level.
- If the music begins to sound distorted do not increase the source level any further. Rather, adjust the source level down slightly and use the trim POT (labeled "VR1 MOH VOL") for further adjustment.
- If a comfortable, desired music level cannot be obtained using these techniques it is likely that the music source is not properly matched to the MOH input circuitry.

  NOTE: *In some circumstances, there may be broadcast restrictions associated with the music. Check with the music's original distributor and/or the radio station for copyright and broadcast restrictions concerning background music and music-on-hold.*

External Music Source - Option Module



The Option Module may be installed for several feature upgrades. One of these upgrades is the addition of a second music source. When installed the Option Module provides an MOH 1/8-inch phono jack labeled "J2 MOH" (located at the bottom edge of the Option Module toward the right) that replaces the music circuit of the Standard MOH/BGM Module and an 1/8-inch phono jack labeled "J4 BGM" that adds a second BGM channel. (J4 is located at the bottom edge of the Option Module toward the center left.)

To install the external music source:

If using a radio as the music source, place it 5 to 10 feet away from the KSU to avoid RFI generated by the KSU.

1. Attach an 1/8-inch, two-conductor, phono plug to one end of a length (5 feet minimum) of shielded cable.
2. **EITHER**: connect the other end of the cable to the speaker output terminals of the music source.

   OR: if the music source has an earphone jack, attach another 1/8-inch phono plug (or other specified connector) to the other end of the cable, and plug it into the earphone jack on the music source.
3. Plug in the AC power cord for the music source. If possible, use a separate AC outlet than the one being used for the KSU. Turn on the AC power to the music source.
4. Insert the 1/8-inch phono plug into the appropriate music source jack inside of the KSU.
5. Since the "MOH" music source serves to provide both Music On Hold and Background Music it is best to adjust the input level such that Music On Hold is at a comfortable level. To set a desirable MOH level:
   - Set the trim POT (labeled "VR1 MOH VOL") at about mid-point.
   - Access an idle CO line and dial into the system on another CO line.
   - When the system begins to ring, press HOLD to place the first call on hold.
   - Answer the ringing CO line. You should hear the Music On Hold from the previous (now holding) CO line.
   - Adjust the music level at the source. That is, use the volume control of the radio (or other music source) to adjust the MOH level to a desirable level.
   - If the music begins to sound distorted do not increase the source level any further. Rather, adjust the source level down slightly and use the trim POT (labeled "VR1 MOH VOL") for further adjustment.
   - If a comfortable, desired music level cannot be obtained using these techniques it is likely that the music source is not properly matched to the MOH input circuitry.
   - ***NOTE:*** *In some circumstances, there may be broadcast restrictions associated with the music. Check with the music's original distributor and/or the radio station for copyright and broadcast restrictions concerning background music and music-on-hold.*
6. The BGM music level can be attenuated using the trim POT "VR3 BGM VOL".

Headset Installation

The system supports integrated headset operation. Customers may take advantage of this standard system feature at any key telephone. Most headsets will operate without extra equipment or need for additional steps in user operation.

Installation

A headset adapter that uses a rocker type switch to select between Headset and Handset use is desirable. The headset adapter is plugged directly into the Handset jack. The telephone handset is then plugged into the headset adapter.

Non-amplified headsets receive operating voltage from the headset circuitry built into the phone. See the headset manufacturer's instructions for information regarding compatibility, power source (power adapter or batteries), and special options.

Note: On amplified headsets with self-powered (battery) headset adapters, the key telephone MUTE operation may not mute the headset. This is because the key telephone MUTE function removes system battery from the microphone at the handset jack. External power supplied to the headset will maintain its microphone voltage and allow the user to override the key telephone MUTE operation. In this case the headset adapter Mute function must be used. (See headset manufacturer's instructions for more details.)

Battery Back-up

In the event of commercial AC power outage, the system can maintain full operation if battery backup is used. When Battery back is required, the Starplus Battery Back up Unit is used. Follow the instructions supplied with the BBU to install batteries in that unit. Refer the chart below for system operating current draw to select the right battery size for the desired back up duration.

BATTERY SIZING CHART

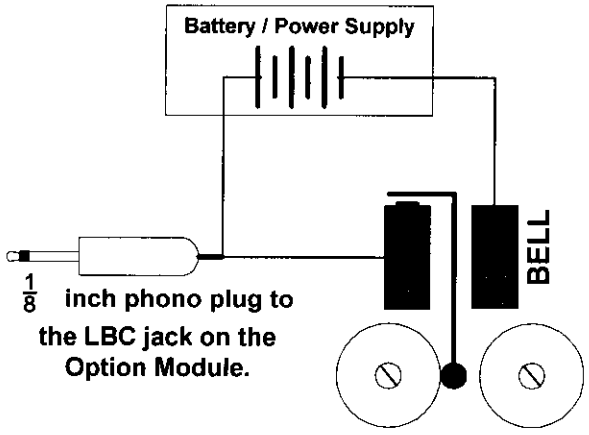
System Size (maximum draw for size considered)	Discharge Rate	Up Time (Hours)	Required Battery Amp-Hour rating
1 - 3X8 Module installed	0.75 AmpDC	1	1.5AH
		4	4AH
		8	7.5AH
		24	30AH
2 - 3X8 Modules installed	1.6 AmpDC	1	3AH
		4	8AH
		8	16AH
		24	40AH
3 - 3X8 Modules installed	2.5 AmpDC	1	5AH
		4	15AH
		8	25AH
		12	40AH
1 - 3X8 Module and 1 - 6 Port CO Module installed	0.8 AmpDC	1	1.5AH
		4	4AH
		8	7.5AH
		24	30AH
2 - 3X8 Modules and 1 - 6 Port CO Module installed	1.7 AmpDC	1	3AH
		4	8AH
		8	16AH
		24	40AH

Loud Bell Control (optional)

When the Option Module is installed the system provides a dry contact closure to signal externally powered alerting devices for any incoming CO Line call. Transferred CO Lines that recall system wide will also activate the LBC, in the same cadence as for an incoming CO Line ring.

Installation

1. Determine which CO lines should operate the Loud Bell Control (LBC) relay. Program each of these lines separately for **LOUD BELL = Y**. See CO LINE PROGRAMMING
2. Cut a length of cable to run from the MDF to the Option Module.
3. Attach a male 1/8 inch phono plug to one end of the cable.
4. Then insert the 1/8 inch phono plug into the "LOUDBELL" jack (left-most 1/8 jack along the bottom edge of the Option Module).



5. Terminate the other end of the cable on an industry standard 66M1-50 block for interconnection to the loud bell and power source.
6. Terminate the Loud Bell and power supply leads on an industry standard 66M1-50 block.
7. Using cross-connect (jumper) wire connect each of the three LBC components (contact, bell and power source) in series fashion.

   Note: *The LBC output on the KSU only provides interrupted dry contact closure, during the ringing period of incoming CO Lines.*

No voltage is supplied by these contacts. **CAUTION: Do not connect 110 VAC power to these terminals.** Standard ringers operate from 90VAC/20Hz signal voltage from the CO. An external ringing generator will be required if using standard ringer(s) as the Loud Bell.

Alternatively, low voltage Loud Bell devices may be used. When using low voltage bells/signals a suitable power supply is required.

CAUTION: Do not exceed 0.5 Amperes on the LBC.

2-Port SLT Adapter

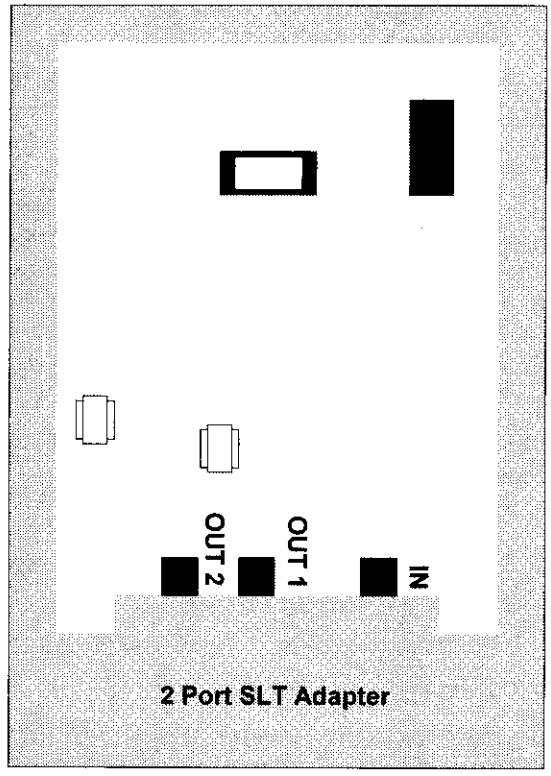
The 2-Port SLT Adapter is used to connect analog single line telephones (SLT) and other analog devices to the system. The analog device must provide DTMF (touch tone) signals in order to make intercom calls, access outside lines and to activate system features. Some examples of analog devices are; telephone answering device (TAD), facsimile machine (FAX) or modem.

Note: *The* 2-Port SLT Adapter *is not an OPX device as determined by FCC Rules.*

The 2-Port SLT Adapter is designed for installation at the MDF but may be positioned anywhere along the cable path between the KSU and the SLT (or other analog device). **Note: do not exceed the maximum cable length from KSU to SLT regardless of where the 2-Port SLT Adapter is installed.**

To install the 2-Port SLT Adapter:

1. The 2-Port SLT Adapter is contained in a wall mount enclosure with pre-drilled flanges for simple mounting. Properly mounted the hinged cover will open upward and lock into position for servicing.
2. Inside the enclosure, the 2-Port SLT Adapter PCB is seen with three modular jacks along the bottom edge of the PCB. One oriented toward the right side of the 2-Port SLT Adapter PCB is labeled "IN". The other two jacks are labeled "OUT1" and "OUT2".
3. Extend each of these jacks to the MDF using modular cords and terminal blocks.
4. Once on the MDF, connect the "IN" jack to the desired digital station port to be used for analog device interface. This connection requires that the Green and Red wires (White/Blue pair) be used.
5. The modular jack "OUT1" is now operational as an analog device port with the same station number that would have been used by a digital key telephone connected to this port.
6. The modular jack "OUT2" is also now operational as an analog device port with a station number assigned from the upper range (B2 voice channel). The number assigned is from 58 to 81. Determining the number is done by association; if the B1 voice channel station number connected to the 2-Port SLT Adapter is 11 then the B2 voice channel station number is 59. Use this relationship in numbering to determine the B2 channel station number. Or simply dial an Executive Key Telephone from the B2 station port and read the display.

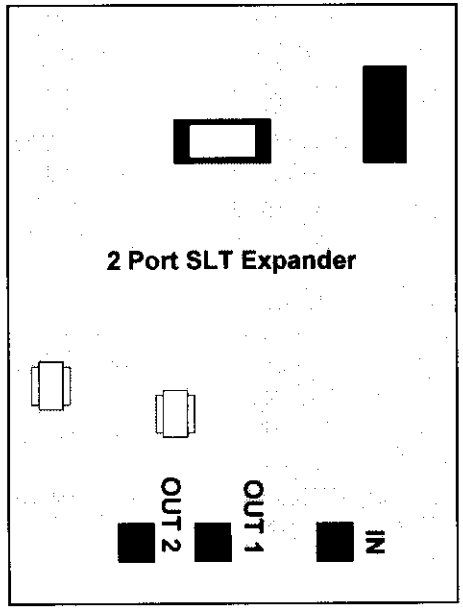


2-Port SLT Expansion:

The 2-Port SLT Expansion is a single PCB identical to the PCB of the 2-Port SLT Adapter. One 2-Port SLT Expansion may be housed in the 2-Port SLT Adapter enclosure. The expansion is shipped with screws used to secure it to the existing 2-Port SLT Adapter PCB stand-offs. Since the PCB and circuit function are identical to the 2-Port SLT Adapter, follow the installation wiring instructions provided above for the 2-Port SLT Adapter.

To install the 2-Port SLT Expansion into the 2-Port SLT Adapter enclosure:

1. Position the 2-Port SLT Expansion over the stand-off posts that are factory installed on the 2-Port SLT Adapter PCB.
2. Using the screws supplied with the 2-Port SLT Expansion, secure the 2-Port SLT Expansion PCB to the stand-off posts.



Note: Only one 2-Port SLT Expansion can be installed in a 2-Port SLT Adapter housing.

Wire polarity

The Analog Adapter is not polarity sensitive, in its association to the incoming 2B+D feed cable ("IN" jack). However, certain older DTMF type equipment connected to the A/A may not have polarity guard. If the attached SLT device cannot DTMF signal (can't break Intercom Dial Tone), then the TIP/RING pair coming from "OUT1" or "OUT2" will need to be reversed.

The Analog Adapter is a self-contained, locally powered, digital-to-analog converter with built-in circuits:

- CODECS
- 2 DTMF Receivers (one dedicated to each port)
- Digital Port Interface (2B+D)
- 20/25Hz, 50v minimum square wave Ringing Generator
- 2 Analog Ports, -30vdc

The Analog Adapter generates common ringing voltage signal for the two (2) independent analog ports. External, transferred and internal calls will signal in accordance with the System Programmed "Ring Scheme".

The A/A interprets hook-switch (flash) depressions and DTMF (not rotary/pulse) signals from the attached SLT for feature requests, intercom calling or outside line access. The DTMF signals and hook-switch operation are translated and communicated to the system CPU for call processing, toll restriction and other services. Incoming calls are connected automatically when the A/A "senses" an off-hook condition, regardless of whether the attached device is an SLT, FAX, modem or TAD.

The System Database allows the installer to adapt to varying kinds of analog equipment, in a PBX like environment. The system can be programmed to ignore hook-switch "bounce" or false transfer requests. (See SLT Hook-flash under the Call Handling programming category). By setting the **minimum** open loop (flash) detection time in software, false transfers that sometime occur during on-hook transfers are eliminated. Default programmed minimum hook-flash detection time is 100 msec. The minimum hook-flash detection is selectable from 60-1400 msec (.06 - 1.4 seconds).

Similarly the system can establish a **maximum** open loop (flash) detection time for differentiating between a valid transfer request and a request to disconnect an established call. Default setting is 400 msec. The maximum open loop detection time can be selected from 100 to 1,500 msec.(.1 seconds to 1.5 seconds).

NOTE: *In no case will the system allow the programming of the minimum detection time to exceed the maximum time. Generally, most SLT equipment can be accommodated by setting the minimum detection to 300 msec. and the maximum detection to 800 msec.*

CAUTION: The above "flash" detection scheme is only for supervising the SLT user operation within the key system. If the system is used behind a PBX, or if custom Centrex features are provided over the incoming CO lines, then the system FLASH programming is separately programmed. The system FLASH established a fixed period of time that the system will generate an open loop (flash) condition to the serving CO or PBX, for the affected CO line. An SLT user is not allowed to directly flash the outside line terminated at the KSU.

Special Note:	When an answering machine is connected to the system via the 2 Port SLT Adapter/Expansion and In-Band (DTMF/Touch Tone) signaling is required at the answering machine to operate answering machine features, the installer must program the associated SLT port as type "VM".

Power Up Initialization

After installing the system, the system must be initialized so that DEFAULT DATA is loaded.

1. Locate the database INITIALIZATION switch "SW1" on the CPU Module. It is located at the bottom edge of the CPU Module oriented in the center. It is also labeled "ON" and "OFF".
2. This switch controls connection of the dynamic RAM battery circuit. When switched OFF, customer volatile database programming is not protected by the memory battery in the event power is lost. In normal operation this switch will be ON at all times.
3. To load default at this time turn KSU power OFF.
4. Operate the INITIALIZATION (SW1) to the "OFF" (left) position.
5. Allow the system and switch to remain in this state for approximately 2 minutes.
6. Operate the INITIALIZATION (SW1) to the "ON" (right) position.
7. Restore system power.
8. Observe the CPU/Power LED. After approximately 4-6 seconds the LED should begin to flash.
9. If the LED remains unlit or lit without flashing, repeat the above steps from step 3. Further problems require manufacturer assistance.
10. Once the power up sequence is complete DEFAULT DATA is loaded and the system should be fully operational.

Enter Database Programming

In order to make changes to the DEFAULT DATA BASE Program, you must enter DATA BASE programming from an idle EXECUTIVE (display model only) Key Telephone.

The customer specific database is entered during installation and affects overall system operation.

Depending the initial setup, the system may operate only as a Key system and utilize the Key system (KF) FCC Registration Number, or as a hybrid PBX system which requires a different unique FCC (MF) Registration Number.

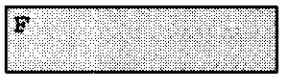
The selection of KEY or PBX operation is made by the installing company and requires proper notification to the Telco regarding the type of service to be provided by the local exchange carrier.

To Begin:

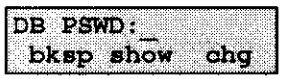
The idle set display should look something like this:

Steps:

Press the **FEAT** (Feature) key.



"F" is displayed, dial # * on the keypad.



The system DEFAULT password is requested.

Enter the six-digit DEFAULT password - **000000**

Press the center Soft Button corresponding to **show.**

Observe the display

The first database parameter is displayed.

Press **chg**

Note: *If customer changes system type from PBX to KEY system, the contents in programmable feature keys where trunk group number had been programmed before will not be affected or changed. Consequently, depression of those feature keys associated with KEY type mode will not operate.*

When checking those feature keys via key inquiry function, depression of soft key SHOW during verification will generate a warning message of "CODE UNAVAILABLE".

or press **next**

The next database category is displayed. Please refer to the Database Programming section of this manual to continue programming customer specific data.

DATABASE PROGRAMMING

POWER UP INITIALIZATION

Important! It is of the utmost importance to load default customer data when a system is first installed or when severe power disturbances cause reason to doubt the customer database integrity! Before continuing with any customer database programming follow these steps to assure that default data is properly loaded.

From the installation section: (if this procedure was previously done continue with Database Programming.)

Power Up Initialization

After installing the system, the system must be initialized so that DEFAULT DATA is loaded.

1. Locate the database INITIALIZATION switch "SW1" on the CPU Module. It is located at the bottom edge of the CPU Module oriented in the center. It is also labeled "ON" and "OFF".
2. This switch controls connection of the dynamic RAM battery circuit. When switched **OFF**, customer volatile database programming is **not protected** by the memory battery in the event power is lost. In normal operation this switch will be ON at all times.
3. To load default at this time turn KSU power OFF.
4. Operate the INITIALIZATION switch (SW1) to the "OFF" (left) position.
5. Allow the system and switch to remain like this for approximately 2 minutes.
6. Operate the INITIALIZATION switch (SW1) to the "ON" (right) position.
7. Restore system power.
8. Observe the CPU/Power LED. After approximately 4-6 seconds the LED should begin to flash. Since volatile customer database RAM was unprotected by the RAM battery while the system was off and the INITIALIZATION switch was also off, the RAM verification procedure detects errors and force loads default data.
9. If the LED remains unlit or lit without flashing, repeat the above steps from step 3 allowing more time at step 5. Further problems require manufacturer assistance.
10. Once the power up sequence is complete DEFAULT DATA is loaded and the system should be fully operational.

Database protection:	Customer Database programming is protected from loss during power interruptions by an internal Nicad battery. This battery will maintain customer database programming for up to 300 hours on a fully charged battery. For a battery to become fully charged the system must be powered continuously for 14 hours.

Enter Database Programming

To make changes in the customer database, you must enter Database Programming from an idle Executive display model only) Key Telephone. (Any Executive Key Telephone connected to any station port will serve as the programming entry terminal.)

Depending on initial setup, the system may operate only as a Key system and utilize the Key system (KF) FCC Registration Number, or as a hybrid PBX system which requires a different unique FCC (MF) Registration Number.

The selection of KEY or PBX operation is made by the installing company and requires proper notification to the telco regarding the type of service to be provided by the local exchange carrier.

The display of the idle key telephone should look something like this:

```
JAN 1 MON 12:05
STATION      10
```

Press the FEAT button. The display changes as seen below:

```
F
```

Dial # * on the keypad.

```
DB PSWD:
 bksp show chg
```

Δ Δ Δ

You are now prompted to enter the system Database Programming password. At default this password is "**000000**". Enter the six-digit DEFAULT Password - 000000.

```
DB PSWD: 000000
 bksp show chg
```

Δ

Press the center Soft button ( ) corresponding to the "**show**" seen on the display. The display shows the first customer database programming category "System Type". There are two choices in this category, "PBX" or "KEY". This selection determines how the system will be used in terms of CO line facilities access. When the selection PBX is made (default) system pooled access functions are allowed for access of CO lines connected to the system. When the "KEY" selection is made, all

pooled CO line access functions are inhibited. (It should be noted that programming related to pooled access functions are never inhibited at the telephone or in customer database programming. When System Type is set to "KEY" these functions will simply not operate when an attempt is made to do so.)

Notice:	The FCC Registration number provided to the telephone operating company servicing this equipment is directly related to the programming of this category.

```
SYSTEM TYPE:PBX
 back next chg
```

Press the right Soft Button (▲) ("**chg.**") and watch as the value stored for the System Type is changed from one of the available choices to the other with each depression.

```
SYSTEM TYPE:KEY
 back next chg
```

Allow the selection desired to remain displayed. Notice that programming is *real-time*. That is, no save operation is required. At the moment the "**chg**" button is pressed and the value displayed, that operation becomes functional. (This is true for any database field where the "**chg**" button selects from the available data field values. In other areas of programming where data is entered from the dial key pad, the "**save**" Soft Button must be pressed to save that entered data. At the time the "**save**" Soft Button is pressed, that data becomes functional.)

Notes:

1. If customer changes system type from PBX to KEY system, the contents in programmable feature keys where CO line group number had been programmed before will not be affected or changed. Consequently, depression of those feature keys associated with KEY type mode will not operate.
2. When checking those feature keys via key inquiry function, depression of soft key SHOW during verification will generate warning message of "CODE UNAVAILABLE".

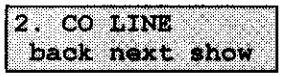
When the center Soft Button "**next**" is pressed the next sequential programming category is displayed.

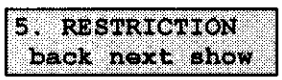
```
1. STATION
 back next show
```

Or if the left Soft Button "**back**" is pressed the last programming category is displayed.

```
6. SYS APPLICAT.
 back next show
```

The two Soft Buttons (left and center) "**back**" and "**next**" can be pressed repeatedly to move through the programming categories in a menu fashion. The programming categories and associated displays are as follows:





Notice that the System Type category appears only following Database Programming entry and the DB Programming password. Pressing "**back**" and "**next**" will not re-display this category.

Note :	Only one Executive key telephone can be used to do system programming simultaneously. Otherwise a warning message will be received.

Conventions:

The three LCD interactive Soft Buttons are instrumental in the programming process. Programming must be performed at an Executive model key telephone since the Soft Buttons associated to the interactive LCD display constitute the means of all data entry. LCD display menu prompts seen during programming are comprised of the following:

Δ
back and **next** generally allow movement through Database Programming menus.

Δ
back
Press the **back** button to go back to the previous programming item or category.

next

Press the **next** button to go to next programming item or category.

show (Display)

Press the **show** button to display the next menu level or programmed data.

chg. (Change)

Press the **chg** button to modify the content of the current programming item.
Generally, **chg** will cause the current data item to update from the allowed values for that data item. In this case the new data is functional at the time it is displayed.
In other cases where the system does not generate specific values for the current item (such as password entry), the data item field allows entry from the dial pad and the Soft Buttons **save** and **bksp** are made available to edit the data item content.

bksp (Backspace)

Press **bksp** while editing a data item field to erase any input one character at a time. When the desired value is displayed, press **save** to store the data and start system use of that data.
Note that the **chg** button may be pressed any time while editing or after the **save** is pressed to re-enter new data.

save (Store)

For data items requiring input from the dial pad (such as password entry) press **save** to store the data and start system use of that data.
While data is entered, the system will check the entered data automatically. If the data entry is invalid, the programming prompt will be refreshed. If the data is valid, the station user must press the **save** button to confirm, then the system will allow the programmer to proceed to the next item or category.

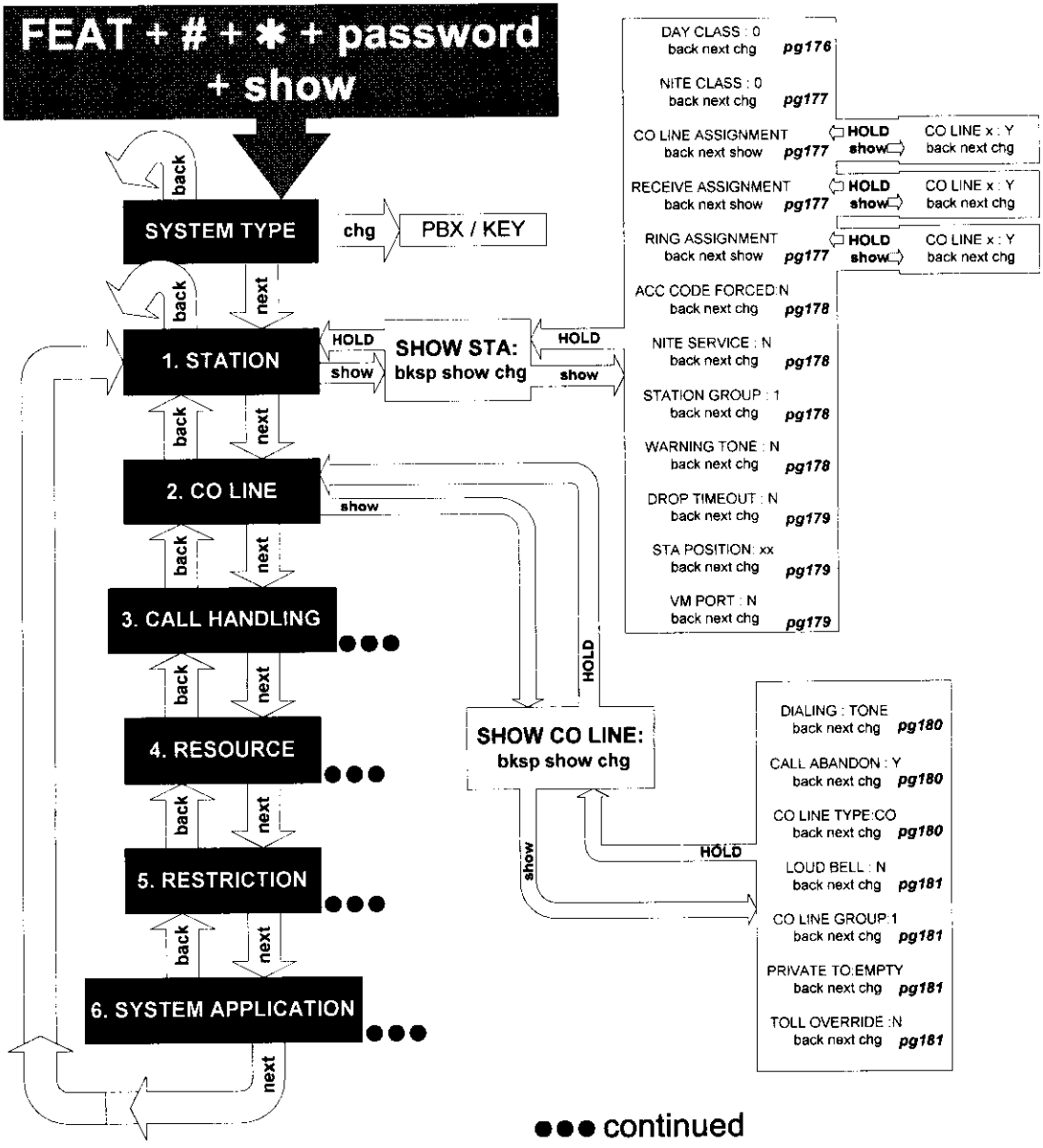
exit/abort (**HOLD** button)

The **HOLD** button is not a LCD prompted operation. However the **HOLD** button may be pressed to exit any programming menu level to the previous menu level or to **abort** data entry in any field requiring dial pad key input. When **HOLD** is used to abort any key pad entry item the previous data is restored.

Database Programming Tree

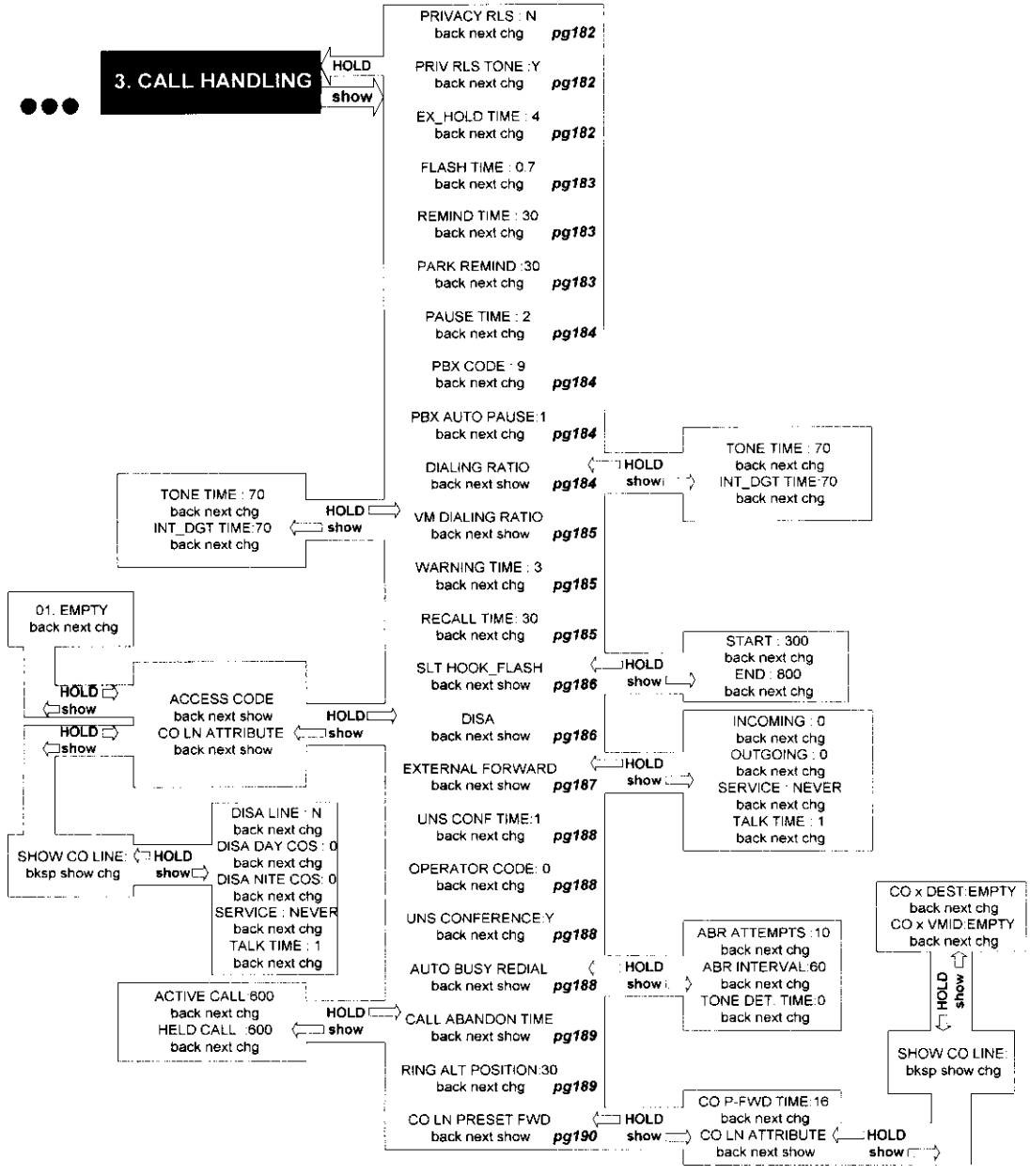
The next few pages consist of a programming tree that illustrates the menu levels of Database Programming. The Database Programming Tree also serves as the table of contents/index for the programming section. A page number is listed beside each programming category indicating where specific data entry and category details can be found. Once the Database Programming Forms (Appendix A.) are complete for this installation, use the conventions mentioned above and the completed forms to program the system.

DHS Database Programming Tree and Index



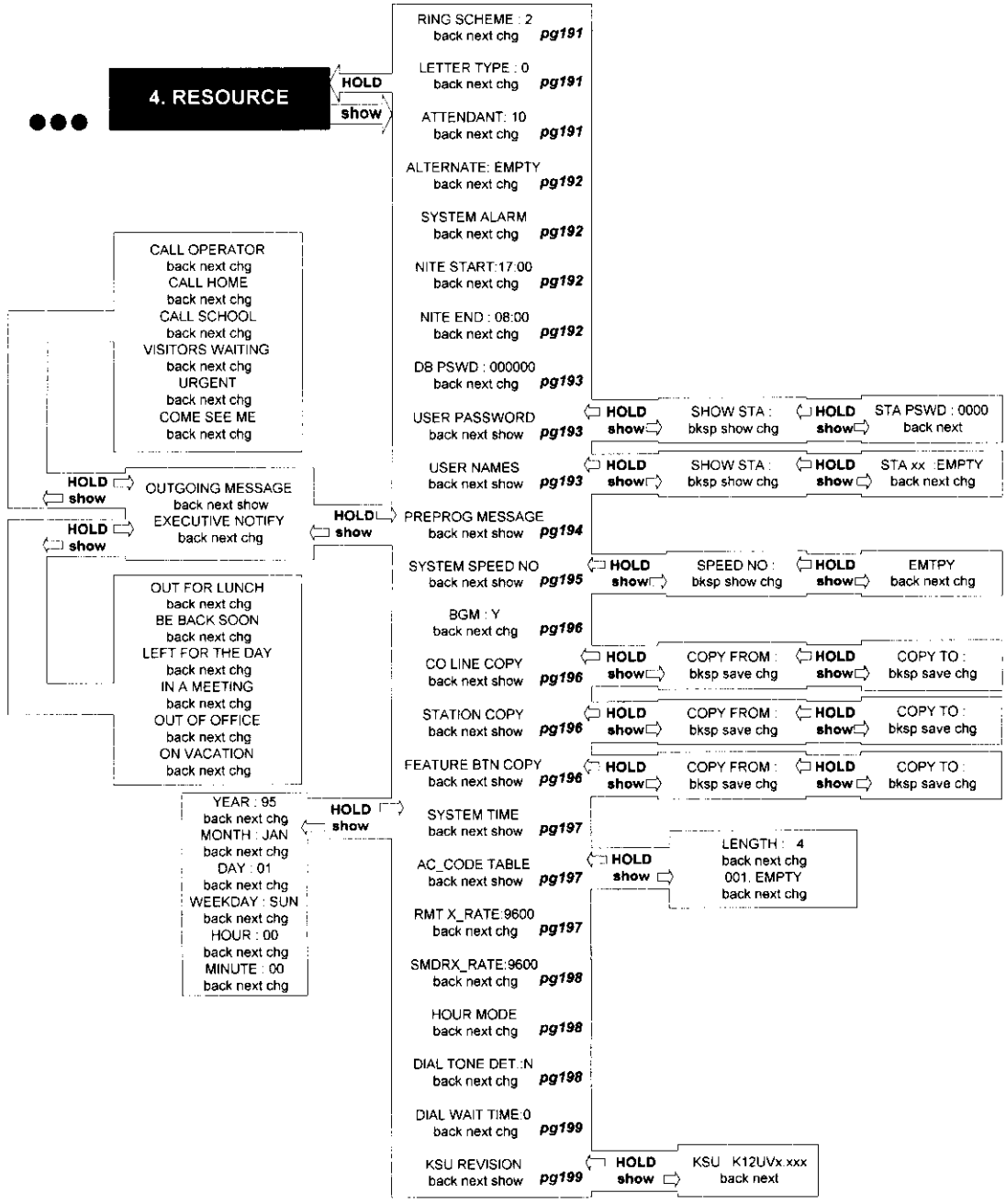
DHS Database Programming Tree

and *index* (cont.)



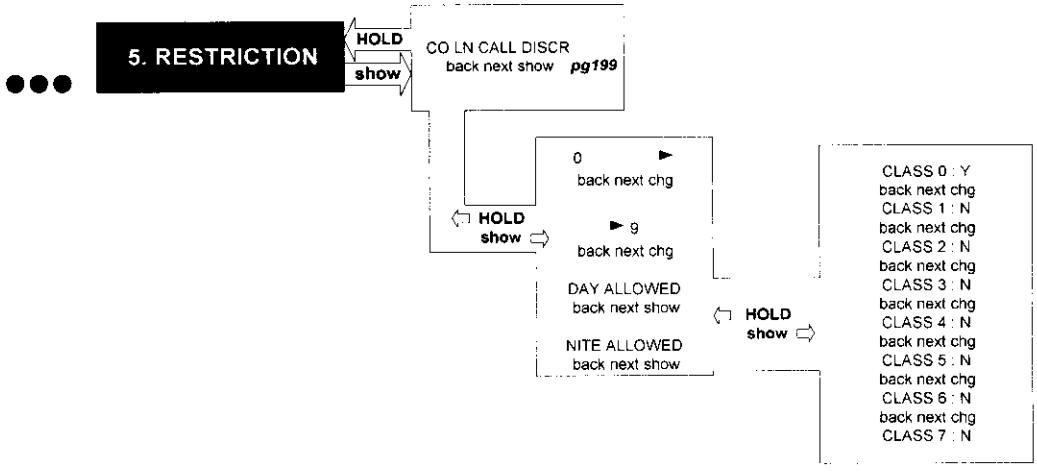
DHS Database Programming Tree

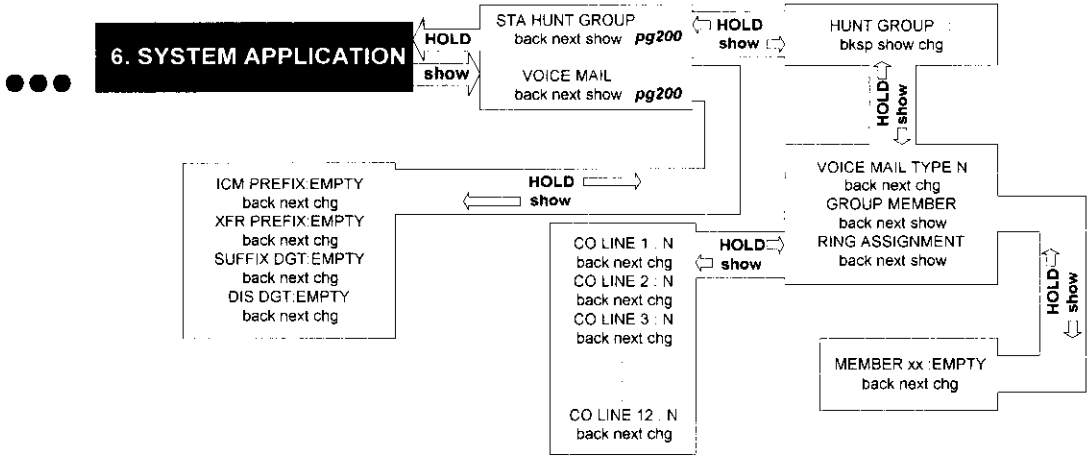
and index (cont'd)



DHS Database Programming Tree

and *index* (cont.)





System Type

Description:

The system may be programmed for compliance to the appropriate CO line access functionality corresponding to the FCC registration number provided to the serving telephone company. When the "MF" registration number is used, CO lines may be accessed by any system means (direct CO line button access or Pooled CO line access). This type of operation is referred to as "PBX" operation.

When the "KF" registration number is used, CO lines may only be accessed by a direct button assignment. That is, no Pooled CO line access function will operate when this mode is selected. Single Line Telephones must use specific CO line access codes when dialing out.

Note: local tariffs vary from one vendor to another, specific rules concerning CO line access should be derived from the serving telephone company. Check with your telephone company provider for more details.

Range : **PBX/KEY**

Default : **PBX**

1. Station [Show Station]

Description:

When the Show Station prompt is displayed the programmer should enter the two-digit station number to be programmed. Once entered the center Soft Button "**show**" is pressed to enter into station programming parameters for that station number.

Range : **10-81**

Default : **N/A**

Day Class

Description:

Each station may be assigned one COS (Class Of Service) for the Day system mode of operation. This COS is directly referenced in the Restriction, CO Line Call Discrimination, Digit Interval Table programming. The Digit Interval Table allows the programmer to be selective of which stations will be given the ability to dial specific digit intervals by assigning table entries to those COS's desired. (For example a station with COS 1 may be allowed to dial a digit interval of "1800" and a station with COS 2 may be allowed to dial only those numbers beginning with a digit from 2-9.

COS also dictates which stations will be given the privilege of Overriding DND and joining an existing CO line conversation via the Privacy Release feature.

COS "0" in these cases is considered the highest level where COS "7" is the lowest.

Considering this, a station with a higher COS will be given the option of overriding DND at a station with a lower COS.

Privacy Release allows a station to join a CO line conversation in progress when the joining station's COS is equal or higher than the COS of the station engaged in the current conversation.

COS also dictates the station's ability to use System Speed Dial. COS levels 0-5 allow full use of System Speed Dial bins 20-99. COS level 6 allows the use of System Speed Dial bins 20-39 only and COS level 7 restricts System Speed Dial access completely.

Range : **0-7**

Default : **0**

Nite COS

Description:

Reference the description above for qualities of COS programming. Nite COS specifically allows the programmer to assign a different mode of operation to any station for system Night Mode operation.

Range : **0-7**

Default : **0**

CO Line Assignment

Description:

CO Line Assignment allows complete flexibility of CO line access privileges. Each station in the system may be programmed to be allowed or denied access of any of the 12 CO lines.

Range : **1-12 "Y/N"**

Default : **1-12 "Y"**

Receive Assignment

Description:

Receive Assignment allows complete flexibility of CO line incoming signaling. Each station in the system may be programmed to follow CO line ringing condition of any of the 12 CO lines. This is not a ring assignment; rather a means of restricting certain stations from accessing CO lines that are ringing. When set to "Y" the station CO line button (if programmed on the telephone) will flash incoming ring flash while calls come into the system on that CO line.

Range : **1-12 "Y/N"**

Default : **1-12 "Y"**

Ring Assignment

Description:

Ring Assignment allows complete flexibility of CO line incoming ring signaling. Each station in the system may be programmed to ring on any of the 12 CO lines. When set to "Y" the station will ring when calls come into the system on that CO line. (Note: Receive Assignment must also be set to "Y". That is if Receive Assignment is set to "N" and Ring Assignment is set to "Y", the CO line will NOT ring at the associated station when calls come into the system on that CO line.

Range : **1-12 "Y/N"**

Default : **1-12 "Y" for station 10 only, all others are 1-12 "N"**

Account Code Forced

Description:

Any station in the system may be forced to use an account code when outgoing calls are made. When this parameter is set to "Y" there must also be valid account codes programmed into the Account Code Table. The account code entered at a station that is Account Code - Forced will be verified against the table for a match. If a match is found the outgoing call attempt is allowed, if not the call attempt is denied.

Range : **"Y/N"**

Default : **"N"**

Nite Service

Description:

Any station in the system may be assigned as a Nite Service station. A Nite Service station will ring for calls coming into the system CO lines while the system is in Night mode. Note: Other ringing programming is unaffected by this programming. Stations assigned to ring on CO lines in Station Ring Assignment programming continue to ring in the Nite Service mode.

Range : **"Y/N"**

Default : **"N"**

Station Group

Description:

Stations may be assigned to one of eight available Station Groups. Station Groups dictate what station (internal) page group announcements will be heard over the station speaker and the Group - Pick up group to which the station belongs.

Range : **1-8**

Default : **1**

Warning Tone

Description:

Warning Tone may be applied to any station where outgoing call length is to be limited. When set to "Y" this station will receive a warning tone over the connected voice path when the Warning Time (see Call Handling) has expired. Once engaged the tone will be heard every 10 seconds until the CO line call is terminated.

Range : **"Y/N"**

Default : **"N"**

Drop Time-out

Description:

Similar to Warning Tone above, Drop Time-out may be applied to any station where outgoing call length is to be restricted. When set to "Y" this station will receive a warning tone over the connected voice path when the Warning Time (see Call Handling) has expired. 10 seconds later the current call will be terminated.

Range : **"Y/N"**

Default : **"N"**

Station Position

Description:

Station numbering can be changed for any station port between the range of 10-81. If the current assigned station number is not desired or must be changed the programmer may select any of the available station directory numbers to reassign this port.

Range : **10-81**

Default : **B1 channel of Port 1-24 (Key Telephones) 10-33**
B2 channel of Port 1-24 (SLT's) 58-81

Voice Mail Port

Description:

Single Line Telephone ports that are to be used for connection to a Voice Mail system must be assigned type "VM". This identifies the port to the system software for special handling.

Range : **"Y/N"**

Default : **"N"**

2. CO Line [Show CO Line]

Description:

When the Show CO Line prompt is displayed the programmer should enter the two-digit CO line number to be programmed. (Note: when CO line 1 is to be programmed enter a "01". When CO line 12 is to be programmed, enter "12".) Once entered the center Soft Button "**show**" is pressed to enter into CO Line programming parameters for that CO line number.

Range : **01-12**

Default : **N/A**

Dialing

Description:

Dialing type is a selection of either Tone (DTMF) dialing or Pulse (Rotary) dialing.

Range : **TONE/PULSE**

Default : **TONE**

Call Abandon

Description:

Call Abandon is a CO line setting that monitors the CO line for distant party hang up. When set to "Y" the Starplus DHS will monitor that CO line throughout the call duration for interruption in loop current. When an interruption occurs that is at least as long as the programmed Call Abandon Time the system recognizes that interruption as distant party disconnect and forces the CO line on-hook.

Note: this feature is especially useful with Voice Mail operation because the system will send disconnect digits to a VM port when loop current interruption is detected.

Range : **"Y/N"**

Default : **"Y"**

CO Line Type

Description:

A CO Line Type is selected to identify specific CO lines. Type "CO" designates a typical CO line connection. Type "PBX" designates a CO line position that is connected to a PBX line (an extension off of another telephone system). This designation will cause system software to search the PBX code entry of digits dialed on a line marked PBX so that toll restriction may be applied following the PBX code. In addition, Last Number Redial, Auto Busy Redial and the Saved Number Redial features will reference the programmed PBX code to insert a Pause between the PBX code and the remaining dialed digits.

A third CO Line Type "OPN" is made available so that the programmer can mark CO line positions equipped in the system but not connected to any telephone company CO line facility. This instructs the system software to bypass this CO line for any automatic or pooled (group) access of CO lines.

Range : **CO/PBX/OPN**

Default : **CO**

Loud Bell

Description:

When set to "Y" the Loud Bell Contact will operate ring cadenced closure while this CO line is ringing.

The ring cadence of the Loud Bell contact follows the Ring Scheme programmed in Resource.

Range : **"Y/N"**

Default : **"N"**

CO Line Group

Description:

There are four CO line group assignments that may be assigned to CO lines. Grouping is usually done to segment CO lines into group types (i.e. CO, PBX, WATS, FX, etc.). CO line grouping allows system users to dial access to a particular CO line type by group access codes.

When CO line groups are accessed the higher number idle CO line is selected as the first choice. (Example: if CO lines 4-6 are in the group dialed for access the group is searched for an idle CO line from CO line 6, then CO line 5, etc.)

Range : **1-4**

Default : **1**

Private To

Description:

Private To is a programming time saver. This parameter allows the programmer to assign a specific CO to one station for their personal exclusive use. This setting over-rides CO Line Assignment programming. When a station is assigned as the Private To station of a CO line, that station exclusively receives ringing and access privileges to that CO line.

Range : **10-81**

Default : **EMPTY**

Toll Override

Description:

Any CO line may be marked Toll Override "Y". When set to "Y" a restricted station may access that CO line and dial out.

Range : "Y/N"

Default : "N"

3. Call Handling

Privacy Release

Description:

Privacy Release is a system wide setting that affects how the privacy feature functions at stations busy on CO line conversations. When set to "Y" the Privacy feature is effectively removed for stations with a lower level COS when a station with a higher or equal COS wants to join the CO line conversation in-progress. To join a CO line conversation in-progress a station with higher or equal COS simply presses the busy CO line button. Refer to the description under Day Class for more details on rules of joining calls in progress.

When set to "N", no station will be able to join an existing CO line conversation by simply pressing the busy CO line button.

Note: Privacy Release will only function by pressing a CO line button. Group access (Pool) buttons cannot be used to invoke Privacy Release.

Range : "Y/N"

Default : "N"

Notice:	Disabling of the Privacy feature may be limited by federal, state or local law, so check the relevant laws in your area before disabling privacy.

Privacy Release Tone

Description:

Privacy Release Tone works in conjunction with Privacy Release. When set to "Y" a tone will be heard on the voice path of the in-progress call when a station joins a conversation via Privacy Release. When set to "N", no tone is heard. Disabling the tone can be useful for monitoring of call group employees and training requirements.

Range : "Y/N"

Default : "Y"

Notice:	Disabling of the Privacy feature may be limited by federal, state or local law, so check the relevant laws in your area before disabling Privacy Tone.

Exclusive Hold Time

Description:

Calls placed on Exclusive Hold will remain on Exclusive Hold for the duration of this timer. When the timer expires the holding line will change from Exclusive Hold flash to Recall Flash and alert the station user with one tone ring over the telephone speaker. When the timer expires a second time and the CO line remains on hold the station will receive a second alert tone and the CO line holding condition will change to System Hold so that any station may access the holding line.

Range : **0-8 minutes (where 0 is infinite)**

Default : **4 minutes**

Flash Time

Description:

Flash is typically used on CO lines that are equipped with special features from the telephone company such as Call Waiting. Flash may also be used on CO lines connected to a PBX or to Centrex lines for call transfer on those lines. The Flash time must be set to coincide with the required timing parameter of the connected line to operate correctly. Typically a value from 600 milliseconds to 800 milliseconds is used for these features. A higher flash time may be set to allow the user to invoke flash to restore dial tone on the connected CO line. This setting is typically 1.5 seconds (1500 milliseconds).

Range : **0.1 seconds (100 milliseconds) to 1.5 (1500 milliseconds)**

Default : **0.7 seconds (700 milliseconds)**

Remind Time

Description:

CO line calls placed on System Hold will remain on System Hold until answered. The Remind Time can be programmed to alert stations of calls that have been placed on System Hold at their station. The station that placed a call on System Hold will hear a reminder tone over the key telephone speaker once each time the Remind Time expires.

Range : **0/10/30/60/90 seconds**

Default : **30 seconds**

Park Remind

Description:

Similar to Remind Time, Park Remind will alert stations of CO lines parked at their location once each time the Park Remind time expires.

Range : **30/60/90/120/150/180 seconds**

Default : **30 seconds**

Pause Time

Description:

Whenever the system Pause code is manually dialed while connected to a CO line or when it is programmed into a speed dial bin, the system will pause dialing digits for the length of time programmed here.

Range : **1.5/2/3.5/5 seconds**

Default : **2 seconds**

PBX Code

Description:

One PBX Code may be assigned in the system. This code will be referenced each time a user accesses a CO line marked type "PBX". The first digit dialed on a PBX line will be monitored for a match against this digit. If the first dialed digit and the programmed PBX Code digit match, restriction is applied on all digits following this digit. (The PBX Code is usually the digit dialed on a PBX line to access a PBX trunk for out dialing.)

In addition, Last Number Redial, Auto Busy Redial and the Saved Number Redial functions use this programming to automatically insert a pause between the PBX Code dialed and any subsequent dialed digits to allow the PBX time to generate outside (trunk) dial tone before sending digits to dial on the trunk.

Range : **00-99**

Default : **9**

PBX Auto Pause

Description:

Used in association with the PBX Code programmed above, when the system detects a PBX code dialed on a PBX type line, the pause time programmed here is inserted between the dialed PBX code and any remaining digits.

Range : **1-9 second**

Default : **1 second**

Dialing Ratio

Description:

The Starplus DHS provides precise digit dialing by means of timed DTMF digit on-time and timed inter-digit time ("Senderized" dialing). This function virtually eliminates mis-dialed telephone numbers. The factory default setting will typically work in every installation and will not require adjustment. However, if the system is installed where the telephone company equipment is aged or poor line conditions exist, it may be necessary to increase digit duration and inter-digit timing. Timing can be adjusted such that dialing automatically emulates slow, methodical depressions of the dial pad keys.

Note: increasing the digit duration and inter-digit time may also be desirable for applications where the user must dial into an off-site voice mail system or other dial pad key operated device that does not respond well to faster dialing modes.

There are two Dialing Ratio parameters that may be programmed; TONE TIME and INT_DGT TIME. "Tone Time" is the actual duration of DTMF tone that the system will send for each dial pad key pressed while connected to a CO line. "Int_Dgt Time" is the minimum actual time between DTMF digits that the system will wait before sending the next dialed digit DTMF tone.

Range : **TONE TIME is adjustable from 50 ms (milliseconds) to 150 ms**
INT_DGT TIME is adjustable from 50 ms to 150 ms

Default : **TONE TIME is set at 70 milliseconds**
INT_DGT TIME is set 70 milliseconds

VM Dialing Ratio

Description:

The VM Dialing Ratio parameter is provided for interface of an on-site voice mail system. Since voice mail systems may emulate an auto-attendant or other modes that require DTMF signaling through a recorded announcement, DTMF signals sent to the voice mail system via the VM Port often require digit duration's longer than those desired for CO line dialing. The VM Dialing Ratio allows the programmer to adjust the DTMF digit and inter-digit duration specifically for use on these VM Ports.

There are two VM Dialing Ratio parameters that may be programmed; TONE TIME and INT_DGT TIME.

Range : **TONE TIME is adjustable from 60 ms (milliseconds) to 150 ms**
INT_DGT TIME is adjustable from 60 ms to 150 ms

Default : **TONE TIME is set at 120 milliseconds**
INT_DGT TIME is set 120 milliseconds

Warning Time

Description:

Warning Time is directly related to Warning Tone and Drop Time-out. The time programmed here is used by these two features to set operation. When the Warning Time has expired, stations subject to Warning Tone and Drop Time-out will receive the associated tone/disconnect.

Range : **1-8 minutes**

Default : **3 minutes**

Recall Time

Description:

Recall Time is associated to CO Line Transfer. When the CO line has been transferred to another station it will transfer ring at that station for the duration of the Recall Time. When the Recall Time expires the CO line will begin ringing at the station that initially transferred the call.

Range : **16/30/60/90/120 seconds**

Default : **30 seconds**

SLT Hook Flash

Description:

Single Line Telephone operation requires that the user of a SLT hook flash to invoke call routing features such as Hold and Call Transfer. The Starplus DHS must monitor the timing of a hook flash at a SLT to distinguish a hook flash request from a hang up request. A hook flash request is typically any depression of the hook switch lasting less than 0.8 seconds (800 ms), however users may also use the hook switch to disconnect the current call and request dial tone for a second call. If this operation occurs too quickly the system will interpret the request as a hook flash request. For this reason the hook flash timing may be adjusted to cater to the practices of the user.

Note: it is recommended that SLT stations installed be equipped with a TAP or FLASH button and the guaranteed disconnect feature. (Many SLT models offer these features.) These features will greatly enhance SLT operation and performance.

SLT Hook Flash is divided into two programmable data fields; START and END. The START field entry determines the minimum on-hook duration that will be accepted as a hook flash. The END data field entry determines the maximum on-hook duration that will be accepted as a hook flash. Note: if the SLT station user stays on-hook for any time exceeding the END time programmed, the previous call will be disconnected.

Range: START **60/100/200/300/400/500/600/700/ 800/900/1000/1100/1200/1300/1400**

END **100/200/300/400/500/600/700/800/ 900/1000/1100/1200/1300/1400/1500**

Default : START **300 milliseconds**

END **800 milliseconds**

Note: The system software will always maintain a hook flash time of 100 milliseconds minimum. It is not possible to program a hook flash time that provides no hook flash operation time.

DISA (Direct Inward System Access)

Description:

Any CO line(s) may be programmed as DISA lines. Calls ringing into the system on CO lines designated as DISA lines will be automatically answered by the system and allowed to access system resources (stations and CO lines). A special DISA code must be entered to allow access of CO lines for out going calling. Restrictions are imposed on DISA CO lines according to the COS assigned the DISA CO line.

There are six data fields associated to DISA programming; ACCESS CODE, DISA LINE, DISA DAY COS, DISA NITE COS, SERVICE and TALK TIME.

In DISA ACCESS CODE, 24 codes may be entered to check for out dialing privileges. DISA LINE is set to "Y" or "N" for any of the CO lines indicating its use as a DISA CO line. DISA DAY/NITE COS is assigned per CO line and assigns a restriction level to callers using DISA for out going calls. SERVICE allows the programmer to set the DISA operation to actuate during specific system modes. TALK TIME sets the preset time limit of any DISA call. (This time limit may be extended during operation if the user dials an * (asterisk). Doing so will allow the conversation to continue for a second period of time equal to the TALK TIME.)

Range :	**ACCESS CODE**	**24 codes maximum each 4 digits long**
	DISA LINE	**Y/N**
	DISA DAY COS	**0-7**
	DISA NITE COS	**0-7**
	SERVICE	**NEVER/DAY/NITE/ALWAYS**
	TALK TIME	**1/2/3/5/10/15**
Default :	**ACCESS CODE**	**EMPTY**
	DISA LINE	**none assigned**
	DISA DAY COS	**0**
	DISA NITE COS	**0**
	SERVICE	**NEVER**
	TALK TIME	**1**

External Call Forward

Description:

One CO line in the system may be designated as the External Call Forward CO line. When this CO line rings it is automatically answered by the system and routed to another CO line where a predetermined telephone number is dialed. The two lines are connected together in a conference and allowed to remain connected for the duration of the TALK TIME.

Note: System Speed Dial bin 99 must be programmed with a telephone number that will be used as the ECF destination number for this feature to operate.

ECF programming has four data fields; INCOMING, OUTGOING, SERVICE and TALK TIME. INCOMING is the CO line to be answered by the system. OUTGOING is the CO line to be used by the system for the outgoing call. SERVICE is the setting that allows the feature to operate only during certain system modes of operation. TALK TIME is the preset time

limit of the ECF call. (ECF may be disconnected prior to the expiration of the TALK TIME by the remote party by dialing "0#" at any time during the ECF call.)

Range :	INCOMING	0-12
	OUTGOING	0-12
	SERVICE	NEVER/DAY/NITE/ALWAYS
	TALK TIME	1/2/3/5/10/15
Default :	INCOMING	0
	OUTGOING	0
	SERVICE	NEVER
	TALK TIME	1

Unsupervised Conference Time

Description:

CO lines that are left unattended in conference (Unsupervised Conference) will be allowed to remain in this status for the duration of the Unsupervised Conference Time. Users that are familiar with the conference operation can extend this time during operation by dialing "*".)

Range : **1/2/3/5/10/15**

Default : **1 minute**

Operator Code

Description:

The Operator Code may be changed from "0" to "9" to meet special application needs.

Range : **0/9**

Default : **0**

Unsupervised Conference

Description:

Station users may leave two CO line connected parties in conference unsupervised. That is, the station user does not have to remain connected to the CO lines to maintain the conference connection. This setting allows or disallows this function.

Range : **Y/N**

Default : **Y**

Auto Busy Redial

Description:

The Auto Busy Redial function will attempt to Redial a busy number for a preset number of attempts. Three data fields are programmed for ABR operation; ABR ATTEMPTS, ABR INTERVAL and TONE DET. TIME. The ABR ATTEMPTS determines how many attempts will be made to reach a busy number before the system aborts the feature. The ABR INTERVAL determines how often attempts are made (time between attempts).

TONE DET. TIME determines how long the system waits following the last digit dialed to connect the system Tone Detector. The default setting of 4 seconds should be adequate for most calls, however in some cases where the Central Office may be slower than usual or the number dialed requires a lot of time before any call progress tone is heard (some long distance calls may be affected), it is necessary to extend the TONE DET. TIME. The system has a built-in 2.5 second timer. The TONE DET. TIME Is added to this time; so at default the system waits 6.5 seconds after the last digit is dialed before it samples the line for call progress tones.

If you find that the system cancels an ABR attempt when the number dialed is busy, try extending the ABR - TONE DET. TIME. If you find that the user hears many busy tones for a dialed number that is busy before the system reacts to the busy signal, try shortening the ABR - TONE DET. TIME.

NOTE: The Option Module is required for ABR to function.

Range :	**ABR ATTEMPTS**	**0-10 (where "0" will not make any attempt)**
	ABR INTERVAL	**16/30/60/90/120**
	TONE DET. TIME	0-9
Default :	**ABR ATTEMPTS**	**10**
	ABR INTERVAL	**16 seconds**
	TONE DET. TIME	**4**

Call Abandon Time

Description:

Call Abandon Time is set for two modes ACTIVE CALL and HELD CALL. This time represents the minimum interruption in loop current during these modes of operation that must be detected to force a CO line on-hook. Any CO line marked Call Abandon "Y" will follow the associated timer programming.

Range :	**ACTIVE CALL**	**50 - 2500 milliseconds**
	HELD CALL	**50 - 2500 milliseconds**
Default :	**ACTIVE CALL**	**600 milliseconds**
	HELD CALL	**600 milliseconds**

Ring Alternate Position

Description:

One station may be assigned as the alternate answering position. CO calls that go unanswered at the attendant assigned telephone will ring at the Alternate Position following expiration of this timer.

Range : **30/60/90/120/150/180**

Default : **30**

Preset Forward - CO Line Preset Call Forward

Description:

Each CO line in the system may be preprogrammed for a specific forward destination. CO Line Preset Call Forward is similar to No Answer forward operation in that a timer ("CO P-FWD TIME") is preset for all CO lines marked for this forward. When a CO line rings into the system the timer is started, if the timer expires before the call is answered the designated preset forward destination begins to ring in addition to other programmed ringing locations.

There are three data fields associated to CO Line Preset Call Forward; CO P-FWD TIME, COxx DEST and COxx VMID. CO P-FWD TIME is one timer referenced by all CO lines set for preset forward. COxx DEST is the destination set for the CO line being programmed. COxx VMID is a six-digit field that can be programmed with a digit string used when the forward destination is a VM type Hunt Group. This digit string can be used to divert the CO caller to the correct voice mail menu prompt. There is a COxx VMID field for each CO line.

Range :	**CO P-FWD TIME**	**6/10/16/22/30/40**
	COxx DEST	**10-81 (stations)**
		82-89 (Hunt Groups/VM Groups)
	COxx VMID	**000000-999999**
Default :	**CO P-FWD TIME**	**16**
	COxx DEST	**EMPTY**
	COxx VMID	**EMPTY**

4. Resource

Ring Scheme

Description:

The system may be set to three different ringing schemes.

	Scheme 0	Scheme 1	Scheme 2
ICM Tone Ringing	1s ON, 3s OFF	1s ON, 3s OFF	300ms ON, 400ms OFF, 300ms ON, 4s OFF
CO Line Ringing	300ms ON, 400ms OFF, 300ms ON, 4s OFF	1s ON, 3s OFF	1s ON, 3s OFF

In Scheme 0 and 2 ringing is differentiated by cadence so that a user is aware of the type of call ringing at his station by the tone cadence. In Scheme 1 ringing of both intercom calls and CO line calls is the same. This option is provided when the application requires that ringing adhere to RS-478 ring cadence specifications.

Range : **0/1/2**

Default : **2**

Letter Type

Description:

The displayed characters for the messaging features and the Name in Display feature can be adjusted to accommodate special character requirements. When programming display messages the digit "1" dial pad key is pressed to insert special characters. One of six possible Letter Types may be selected for use when dial pad key "1" is pressed multiple times. Use the chart at the right to determine which Lettering Type Scheme is desired for this installation. While viewing Letter Type inn the programming mode, press the **chg** Soft Button to select the desired scheme.

	Character for nth depressions of dial key "1".					
	1st	2nd	3rd	4th	5th	6th
Scheme 0	Æ	Æ	ø	Ø	å	Å
Scheme 1	Ç	Ā	Ō	Ñ	Å	Ä
Scheme 2	ò	é	é	è	à	ù
Scheme 3	č	ď	ě	ň	ō	ř
Scheme 4	Á	É	Ó	Ü	Ú	
Scheme 5	Ł	Ż	Ą	Ę		

Range : **0/1/2/3/4/5**

Default : **0**

Attendant

Description:

One station may be assigned the attendant station. This station will receive all recall indications and calls not properly routed.

Range : **1-81**

Default : **10**

Alternate

Description:

One station may be assigned the Alternate Position. This station will receive all CO ringing in over-flow fashion from the attendant station. When calls ring longer than the Ring Alternate Position Time, these calls will begin to ring at the Alternate station.

Range : **10-81**

Default : **EMPTY**

System Alarm

Description:

Eight alert signals may be scheduled. When an alert time is reached all system stations will receive BGM over the telephone speaker for one minute. This feature can be useful in schedule sensitive applications.

Range : **00:00 - 23:59**

Default : **All eight are EMPTY**

Nite Start

Description:

The system may be set to operate in Time mode which allows the system to automatically change Service Mode from Day to Night Mode and back again. This time can be set for one time each day. The Nite Start time will switch the system into Night Mode at the designated time.

Range : **00:00 - 23:59**

Default : **17:00**

Nite End

Description:

Nite End works in conjunction with Nite Start. The Nite End time entry designates when the system is to begin Day Mode operation.

Range : **00:00 - 23:59**

Default : **08:00**

Database Password

Description:

The default Database Programming Password may be changed from "000000" to any other six-digit numeral sequence.

Range : **000000-999999**

Default : **000000**

User Password

Description:

Each station in the system is assigned a default password of "0000". This may be changed if the associated security feature operation (Phone Lock, Remote COS, etc.) is required.

Range : **0000-9999**

Default : **0000**

User Names

Description:

A User Name may be assigned to each station in the system. This can be useful as an administrative aid as well as providing a user friendly prompt at display telephones while idle and during call processing. When a User Name is not programmed, the display at Executive Key Telephones will display "STATION". Multiple depressions of the dial pad keys cause alphabet characters to appear. Use the following chart when programming User Names.

Depressions: Key	1st	2nd	3rd
1	Used to display special characters from the six Letter Type schemes possible. Reference the Letter Type feature and associated programming on page 191.		
2	A	B	C
3	D	E	F
4	G	H	I
5	J	K	L
6	M	N	O
7	P	R	S
8	T	U	V
9	W	X	Y
*	• When pressed before any dial key is pressed the numeral of the dial key will be displayed in this character position. • When pressed after a letter has been selected for this character position, the selected letter is forced to lower case.		
0	Q	Z	"_" and moves to the next position.
#	(space) and moves to the next position		

Range : **7 characters maximum.**

Default : **EMPTY**

Preprogrammed Messages

Description:

Station messaging is enhanced at the Executive Key Telephone by use of Programmed Messaging. There are two types of Preprogrammed Messages; OUTGOING MESSAGE and EXECUTIVE NOTIFY. The OUTGOING MESSAGE works with Message Waiting and allows the Executive Key Telephone user to leave a text message at another Executive Key Telephone.

EXECUTIVE NOTIFY is a message that may be enabled to notify other Executive Key Telephone callers of the users status. This message will be displayed whenever another Executive Key Telephone user calls the Executive station with the Executive Notify feature enabled.

The first message prompted at the Executive Telephone for both OUTGOING MESSAGE and EXECUTIVE NOTIFY can be customized by the user during setup. The remaining messages can be preprogrammed here.

Range : **Messages may be 16 characters or less.**

Default : **OUTGOING messages**

- **CALL OPERATOR**
- **CALL HOME**
- **CALL SCHOOL**
- **VISITORS WAITING**
- **URGENT**
- **COME SEE ME**

EXECUTIVE NOTIFY messages

- **OUT FOR LUNCH**
- **BE BACK SOON**
- **LEFT FOR THE DAY**
- **IN A MEETING**
- **OUT OF OFFICE**
- **ON VACATION**

System Speed Numbers

Description:

There are 80 System Speed Dial Numbers that can be programmed for access by stations according to COS assignments. Stations with COS 0-5 can access all 80 System Speed Dial Numbers. Stations with COS 6 can access only System Speed Dial Numbers 20-39. Stations with COS 7 cannot use System Speed Dial Numbers.

Notes:

1. System Speed Dial Numbers over-ride station dialing restrictions.
2. System Speed Dial Numbers may be chained for increased capacity.
3. To enter a CO Line Flash in a Speed Dial bin enter "F"+3 (where "F" is the FEAT button).
4. To enter a Pause in a Speed Dial bin enter "F"+70 (where "F" is the FEAT button).

5. To enter a bin chaining command (@) in a Speed Dial bin enter "F"+1+nn (where "F" is the FEAT button and "nn" is the speed dial bin number to attach to the end of this speed bin).
6. When the code "F70" or "F3" are entered into a speed dial bin they occupy one digit position.
7. When the code "F1nn" is entered into a speed dial bin it occupies three digit positions.
8. System Speed Dial bin 99 is used for External Call Forward when that feature is used.
9. Regardless of speed bin chaining, no speed dial number can exceed 32 digits in length.
10. System Speed Dial Numbers can also be programmed through Attendant Administration using the Attendant station's password.

Range : **0-9, *, #, pause (F70), flash (F3) and F1nn (chaining). 16 char. max.**

Default : **All are EMPTY**

BGM

Description:

When the Option Module is installed a second music source may be connected to the system for listening at key telephone stations. If this source is not used it may be desirable to disable that BGM channel. When BGM is set to "N" the second music source will not be connected to a station that has toggled the BGM code (F52), only the first music channel source (MOH) will be toggled at the telephone. When set to "Y" both music channels will be toggled by successive operations of the BGM code (F52).

Range : **Y/N**

Default : **Y**

CO Line Copy

Description:

CO Line Copy is provided to assist in programming multiple CO lines with the same data. Follow the displayed instructions to copy one CO line data fields to another.

Range : **N/A**

Default : **N/A**

Station Copy

Description:

Station Copy is provided to assist in programming multiple stations with the same data. Follow the displayed instructions to copy one station's data fields to another.

Range : **N/A**

Default : **N/A**

Feature Button Copy

Description:

Feature Button Copy is provided to assist in programming multiple stations with the same button programming. Once a station's feature buttons are programmed using the station feature Programmable Feature Buttons (F#3) that station's button programming may be copied to other system stations in this database programming function. Follow the displayed instructions to copy one station's button data to another.

Range : **N/A**

Default : **N/A**

System Time

Description:

Provided to set system time and date information. Use the prompts displayed to set the fields; YEAR, MONTH, DAY, WEEKDAY, HOUR and MINUTE.

Note: System Time can also be set through Attendant Administration using the Attendant station's password.

Range : **N/A**

Default : **N/A**

Account Code Table

Description:

When a station is Forced Account Code (that is they must enter an account code to dial any outside telephone number), the account code entered is verified against the entries in this table. Up to 100 entries may be made in the Account Code Table. The account code length may be four to eight digits in length to increase the security of valid account code entry.

Range :	**LENGTH**	**4-8**	
		bins 001-100 :	**0000-99999999**
Default :	**LENGTH**	**4**	
		bins 001-100 :	**EMPTY**

Data Link

Description:

The Data Link programming option is not implemented at this time. This is a future CTI function.

Range :

Default :

RMT X_RATE (Remote Terminal Transmission Rate)

Description:

When the Option Module is installed the DB-9 pin RS-232 port labeled "REMOTE PROGRAMMING" can be connected to a modem or directly to a Personal Computer to use the PC based Database Programming software. RMT X_RATE is the baud rate setting of this port.

Range : **110/300/600/1200/2400/4800/9600/19200 BPS**

Default : **9600 BPS**

SMDRX_RATE (SMDR Transmission Rate)

Description:

When the Option Module is installed the DB-9 RS-232 port labeled "SMDR" can be connected to a printer, Personal Computer or other call accounting collection device to collect Station Message Detail Recording. SMDRX_RATE is the baud rate setting of this port.

NOTE: CO calls must be in progress for a minimum of 10 seconds for an SMDR record to be generated for that call.

Range : **110/300/600/1200/2400/4800/9600/19200 BPS**

Default : **9600 BPS**

Hour Mode

Description:

The displayed hour format at Executive Key Telephones may be selected for 24 hour format or 12 hour format.

Range : **12/24**

Default : **12 Hour format**

Dial Tone Detect

Description:

In some applications Central Office equipment may be aged or line treatment may be applied to CO lines such that dial tone is slow when a station accesses a CO line to dial out or when using system dialing automation features like LNR, SNR and ABR. This situation often represents a problem since dialing on the CO line may begin before dial tone is available to receive the digits dialed.

When the Option Module is installed the system Tone Detectors (on that module) may be used to detect the presence of dial tone before dialing begins. This function will affect both automated features and manual dialing. When engaged the function has the effect of delayed dialed digits when manually dialing. It is recommended that this feature only be used in cases where dialing problems persist.

NOTE: Dial Tone Detect requires the Option Module to function. However, if CO dial tone is slow and dialed digits are being sent before CO dial tone is ready, the Dial Wait Time may be used to eliminate the problem by imposing a fixed wait period before digits are sent.

Range : **Y/N**

Default : **N**

Dial Wait Time

Description:

Similar to the Dial Tone Detect feature, Dial Wait Time can be used to delay out dialing based on a timer instead of a Tone Detector for applications where the Option Module is not installed or where the provided dial tone cannot be properly detected by the built-in Tone Detectors. This feature should only be used in cases where dialing problems persist.

Range : **0-8**

Default : **0 (no delay)**

KSU Revision

Description:

This data parameter is provided as a convenience to easily determine the KSU software version installed. When the programmer presses **show** the current KSU software version is displayed.

Range : **N/A**

Default : **N/A**

5. Restriction

CO LN CALL DISCR - DGT INTERVAL

Description:

The system provides 100 digit interval tables to apply call restrictions. Each table is comprised of four data fields; From, To, DAY ALLOWED and NITE ALLOWED. The From and To data fields allow the programmer to enter a range of allowed digits up to ten digits each in length. This flexibility allows the programmer to enter only the digits significant to the dialing restriction desired. (Note: the words "From" and "To" are not displayed, rather the From table is denoted with a " " symbol following the table entry and the To table is denoted with a " " symbol preceding the table entry.)

Consider the default entry in Table bin 001 where the From entry is "0" and the To entry is "9". In this case (default) stations assigned a COS corresponding to the table (all stations at default) can dial any telephone number so long as the first dialed digit is a 0-9. Note that at default all stations are restricted from dialing a "*" or "#" as the first dialed digit.

A specific number may be allowed for any COS by using a table entry with a constricted range. Consider a table programmed as; From "1800" To "1800". This table entry allows the user assigned the associated COS to dial only numbers beginning with 1800.

The data fields DAY ALLOWED and NITE ALLOWED enable the programmer to assign any Day/Night COS to operate with the table entry. There is a separate DAY/NITE ALLOWED field for each table entry for complete flexibility in dialing restriction assignment.

Range :	**Table bins 001-100**	**0000000000-9999999999, ##########,********** COS 0-7 Y/N**	
Default :	**Table bin 001**	**0-9 COS 0 COS 1-7**	** Y N**

6. System Application

Station Hunt Group

Description:

Up to eight hunt groups may be assigned. Hunting is always in a linear fashion. Each Hunt Group can contain 24 members. Hunt Group directory numbers are 82-89. One Hunt Group may be assigned as a Voice Mail type Hunt Group for system voice mail integrated operation. There are three data fields in hunt group programming; VOIC MAIL TYPE, GROUP MEMBER and RING ASSIGNMENT.

VOIC MAIL TYPE can be assigned to only one hunt group. The members of this hunt group should only be SLT ports and those ports should also be marked as VM type in Station programming.

GROUP MEMBER is used to program the station members of this hunt group. RING ASSIGNMENT is used to program ringing of CO lines into this hunt group.

Range :	**VOIC MAIL TYPE**	**Y/N**
	RING ASSIGNMENT	**Y/N for CO lines 1-12**
	GROUP MEMBER	**10-81**
Default :	**VOIC MAIL TYPE**	**N**
	RING ASSIGNMENT	**N for CO lines 1-12**
	GROUP MEMBER	**EMPTY**

Voice Mail

Description:

When a voice mail system is connected to the Starplus DHS via SLT ports the operation of the voice mail system can be greatly enhanced by preprogramming digit code strings that allow the caller entering voice mail to be diverted to the appropriate menu level. The code that must be entered may be different depending on the call type (CO transfer to VM, intercom call to VM, etc.)

The Starplus DHS provides four code strings fields; ICM PREFIX, XFR PREFIX, SUFFIX DGT and DISC. DGT. The Starplus DHS always sends the station directory number to the voice mail system to be used as the voice mail box identification digits. These digits are either preceded or appended with the digits programmed into the four fields.

ICM PREFIX (Intercom Prefix) digits are digits that must proceed the station directory number when a station user calls VM to retrieve messages. When programmed correctly the station user will be delivered to his voice mail box and prompted to enter his password. The Intercom Prefix may be 4 digits in length.

XFR PREFIX (Transfer Prefix) digits are digits that must proceed the station directory number when a CO line call is transferred to VM. When programmed correctly a call that is transferred to VM will be prompted by the station users mail box greeting prompt and may leave a message without further dial code digit entry. The Transfer Prefix may be 4 digits in length.

SUFFIX DGT (Suffix Digit) these digits are applied to intercom calls placed to the VM system as an aid to direct the caller to his personal greeting where he is required to enter only his password to retrieve messages. Digits programmed as Suffix Digits will be appended to the station directory number. That is, after the station directory number is sent to the VM system the Suffix Digits will then be sent. The Suffix may be 2 digits in length.

DISC. DGT (Disconnect Digits) these digits will be sent (without station directory number digits) to the voice mail system whenever a station user listening to voice messages disconnects or when a CO line caller hangs up while leaving or listening to messages. The purpose of the Disconnect Digits is to make the voice mail port available to new voice mail callers quickly. Disconnect Digits may be 8 digits in length.

Range :	**ICM PREFIX**	**0000-9999, ****, ####**
	XFR PREFIX	**0000-9999, ****, ####**
	SUFFIX DGT	**00-99, **, ##**
	DISC. DGT	**00000000-99999999, ********, ########**
Default :	**ICM PREFIX**	**EMPTY**
	XFR PREFIX	**EMPTY**
	SUFFIX DGT	**EMPTY**
	DISC. DGT	**EMPTY**

MAINTENANCE AND TROUBLE SHOOTING

Maintaining the Starplus DHS digital telephone system is a combination of customer database changes, facilities and apparatus moves, adds and changes. These requirements are handled properly by practicing the techniques, illustrations and step-by-step instructions listed in the previous sections of this manual.

When installed properly the Starplus DHS performs relatively maintenance-free. From time to time the digital telephone instruments may become dirty or dusty and require cleaning. We suggest the use of a clean, dry cotton (or other soft, absorbent) cloth to wipe the instrument clean. Use of chemicals to clean the telephone plastics is NOT recommended since some chemicals can cause permanent damage to the telephone finish. If deep soiling conditions exist for the telephone to be cleaned, use of specialized telephony cleaning solutions may give satisfactory results. When trying any cleaner for the first time we suggest that it be applied to the telephone instrument underside in a small sample area to assure that the desired results are obtained before proceeding.

The System trouble-shooting procedures is a logical approach to fault identification, analysis, and correction. The key system may generate symptoms of problems that actually occur outside of the office environment. Problems such as system restarts (from temporary AC power interruption), fading (from the long distance carrier), or dropped calls (caused by internal user randomly pressing holding CO Line buttons) all are common situations that are not the result of a system component or software failure.

The System Trouble-shooting Section attempts to provide the service technician with some quick, and reliable, tools to diagnose installation related or service related problem reports.

Component failures at the KSU are limited to power distribution (fuses), improper or shorted wiring, CO or station interface failure, or auxiliary circuit problems.

CPU/Power LED

The CPU/Power heartbeat LED is located on the front of the KSU adjacent to the power switch. If the AC input and DC output power circuits are operating, the LED will be on steady. If the CPU is running, not locked up or failed, the LED should be flashing at a fast rate. The Initialization switch should be in the right ("ON") position.

Symptom	Diagnostic aid	Cause	Action
No system operation. LCD telephones have no display. No LED's lit at any telephones.	CPU Heartbeat / Power LED Dark	No AC input KSU Cord Power On Switch AC Fuse DC Fuse	1. Check commercial AC outlet. 2. Verify that both ends of AC cord are plugged in. 3. Switch the KSU AC power switch to the "ON" position. 4. Inspect and replace KSU exterior AC input fuse located on right side of KSU. 5. Inspect and replace system DC output fuse located on the right side of KSU.

Symptom	Diagnostic aid	Cause	Action
No system operation. LCD telephones may have data frozen on displays. No LED's lit at any telephones or intermittent. CPU is locked up.	CPU Heartbeat / Power LED Lit	Initialization Switch	1. Verify initialization switch operated to the "ON" position (located along the bottom edge of the CPU Module inside the KSU). When the Initialization switch is in the "ON" position it is toward the right. If the Initialization switch is not in the "ON" position at the time the KSU is powered, the Power Up Initialization sequence at the end of the Installation section should be followed. If the system was properly initialized proceed to step 2. 2. Power down/up and observe system recovery. (The system power should remain off for a least 5 seconds for this test.) If no heartbeat is seen proceed to step 3. 3. Power down. Remove KSU cover and detach all station cabling (25 pairs) and power up. (The system power should remain off for a least 5 seconds for this test.) If no heartbeat is seen proceed to step 4. 4. Power down. Inspect for the following: a) Loose or unplugged 3X8 Expansion Module, 6 Port CO Module or Option Module ribbon cables. b) Improperly aligned ribbon cables. c) Improper installation of the system software EPROM located in socket U9 CPU Module. d) Operate the initialization switch to the "OFF" (left) position. 5. **NOTE: This is an emergency action since the unique battery protected customer database will be erased and system will boot up with the default programming.** Return initialization switch to "ON" (right) position. 6. If CPU/POWER LED is still not flashing, replace KSU. 7. Initialize and test according to the Power Up Initialization sequence.

Key Telephone / SLT telephones dead.

Symptom	Diagnostic aid	Cause	Action
Telephones/station apparatus dead.	CPU Heartbeat / Power LED flashing.	Shorted station pair(s).	1. At MDF, remove cross connect (jumper) wires at the punch-down (66M1-50) block going to all affected stations. Reconnect stations one by one verifying that each power up correctly.
	Key telephone		2. When one is found that will not power up; disconnect the telephone at the user location and replace with a **known working** telephone.
		Bad key telephone.	3. If the new station power up is normal, replace the first connected key telephone.
			4. If the new station also does not power up, follow the remaining steps for the individual station.
			5. If none power up; remove all cross connect wiring that run between the 3X8 Module 66 block and the station cable 66 block. Then connect one station directly to the 3X8 Module 66 block station pair.
		Shorted station cable.	6. If the key telephone power up is normal inspect, repair or replace the station cable.
		Shorted KSU-MDF cable.	7. If the key telephone does not power up; inspect, repair or replace the 25 pair cable from the 3X8 Module to the MDF.
			8. Once the 25 pair cable from the 3X8 Module to the MDF is inspected, repaired or replaced; connected the **known working** telephone directly to the 3X8 Module 66 block station pair.
		3X8 Module ribbon cable not properly aligned during installation.	9. If the telephone still will not properly power up, power down the system and inspect the 3X8 Module ribbon cable for properly aligned installation. If any problem exists here correct it and power up the system.

continued...

Key Telephone / SLT telephones dead cont.

Symptom	Diagnostic aid	Cause	Action
		3X8 Module bad. CPU Module bad.	10.If no problems can be found at the ribbon cable connector, replace the 3X8 Module. 11.If the problem persists, replace the KSU.
NOTE:	The key telephones use only one twisted cable pair for power, data control and voice communications. There are no fuses for station interface protection. Instead, a current sensing poly-switch limits excessive current going to each station. If a station cable pair is shorted or a telephone's DC power supply is damaged, the poly-switch will temporarily open to protect the KSU 3X8 Module circuitry.		

Erratic Key Telephone operation.

Symptom	Diagnostic aid	Cause	Action
Erratic operation Erratic LED's Erratic LCD Display Faint data noise during background conversation	Digital Volt/Ohm meter.	Cable distance is too long for gauge of cable used, non-standard telephone cable being used or multiple digital stations fed from one common cable.	If a key telephone is not receiving clear 2B+D signal from KSU, test the cable: 1. With station cable cross connect (jumper) wire removed and key telephone unplugged, place a short circuit across the inside wiring cable pair at the user (jack) end of the cable. 2. With a DVOM, measure the short circuit resistance one way. Compare to limits of the loop resistance in the Loop Resistance Chart in the Installation section. Each key telephone should operate on a dedicated, unshielded, twisted pair cable, to avoid data noise and interference between adjacent cable pairs. A short circuit reading also indicates that the cable pair does not have an open (break).

Key telephone Cannot Be Heard

Symptom	Diagnostic aid	Cause	Action
Other party cannot hear you. (handset)	Key telephone (other station)	Component Failure	1. Lift handset, dial another station. Talk. 2. Replace handset assembly and repeat Step 1. 3. Replace handset cord and repeat Step 1. 4. If still no transmit, the key telephone will need to be replaced.

Key telephone Cannot Hear

Symptom	Diagnostic aid	Cause	Action
Cannot hear (handset).	Key telephone	Component Failure	1. Lift handset, ICM tone should be heard over the handset. 2. Press SPEAKER key, observe red LED and place handset on hook. If ICM tone is heard over the loudspeaker, but was not heard through the handset in Step 1, exchange handset assembly with another known working unit. 3. If ICM tone is still not heard, after repeating the test in Step 1, replace the coiled handset cord. If the cord is defective, the original handset is probably okay. If ICM dial tone still cannot be heard, replace key telephone.
Note:	The above test sequence requires that the feature "Auto Select" be set for intercom operation ("ICM").		

Speakerphone Cannot Be Heard

Symptom	Diagnostic aid	Cause	Action
Other party can't hear you on your speakerphone.	Key telephone/Other Station	Connection, component failure	1. Press ICM and listen for ICM tone the over speaker. Call a known good working station. The distant party should be using the handset. **NOTE: The Basic key telephone does not provide speakerphone operation.** 2. If other party cannot hear you, lift handset and verify proper handset operation. 3. Remove key telephone top housing (do not unplug ribbon cables) and inspect the microphone located at the front right corner of the plastic button housing. Insure that the microphone is securely attached to the main PCB. 4. Re-assemble and repeat Step 1. If the connected station still cannot hear you, replace the key telephone.

No Sound From Speaker

Symptom	Diagnostic aid	Cause	Action
No sound over speaker.	Key telephone	Connection, component failure	1. Press SPEAKER button (red LED). 2. If you can hear ICM tone over the handset, but not the speaker, replace the key telephone.

Static / Noise During Conversation

Symptom	Diagnostic aid	Cause	Action
Static and/or noise can be heard during a conversation.	Logic of elimination		1. Can you hear the static now? If so, is it on intercom handset to handset calls?
			2. If yes, do you hear the static when you call any other ICM stations? (The problem may be the telephone called or calling you.).
		Station cable wiring.	3. If static on ICM and CO line calls, verify wall jack connection & MDF connections. Correct any problems found.
		Bad component.	4. If noise persists, replace handset cord.
		Telco problem.	5. If static only on outside CO calls, do other stations hear similar static noise?
		Telco problem.	6. If other stations hear static, is it only on one CO line? Which one?
		Telco problem.	7. If on several CO lines, the Telco may have a wet cable. Disconnect the CO line from the KSU, and using a dial test handset (buttset), place a call and listen for static. If noise is present, contact the Telco.
		KSU-MDF wiring	8. If noise is present only when the KSU is connected to the CO lines, inspect, repair or replace the CO line feeder cables that plug into the KSU interface modules (3X8 and 6 Port CO).
		Possible module problem.	9. If noise is still present on a certain CO line, and CO incoming line cord has been exchanged, move this cord (CO line) to another KSU line position. If noise is now removed on the new CO line interface, something is bad with the KSU input jack.
			10.Call Customer Service.

Other CO Line Problems

Symptom	Diagnostic aid	Cause	Action
Holding line, no one there.	System Programming		1. If the customer complains of seeing many holding lines, and when accessed, no one is on the other end, calls may be left in an abandoned state.
		Outside caller abandons call.	2. If the serving Central Office (Telco) provides disconnect supervision, the KSU should be programmed (on a per CO line basis) to recognize an abandoned call (default). When the outside holding party hangs up, the CO line interface detects change in CO voltage for the associated line. The KSU then removes the inside Hold indication at all telephones and restores the line to idle.
		User error.	3. Auto Hold Allow may be enabled at a station that is unsure of the proper operation of this feature. If so, insure that inside users do not accidentally place calls on Hold while skipping from one CO line to another, refer to the Key telephone User Guide. By programming "Auto Hold Deny" (code F94) at the abusing stations, incoming CO lines will not be accidentally placed on Hold.

Lines Stay Busy

Symptom	Diagnostic aid	Cause	Action
Lines sometimes show busy even though no one else is in the office, or no one is using the line.	System Programming	Customer confusion, Programming error	Verify CO line programming for DISA, External Call Forwarding, and Day/Nite Service. The system will hold up certain trunk-to-trunk calls until a forced disconnect interval time is reached.

Button Programming is Lost/Changed at One Key telephone

Symptom	Diagnostic aid	Cause	Action
1.SLT users cannot access CO lines by dialing "9" and cannot access an idle trunk in a Trunk Group when dialing "*4N". 2.Key telephone users cannot program a Trunk Group to appear under one feature key.	Executive Key telephone	Improper system database programming. If the system configuration is determined to be a key system, then according to FCC Rules and local Telco tariffs, dial or button access of trunks by trunk group is not allowed.	If system configuration desired is PBX (or hybrid operation) and the local Telco is notified of the appropriate "MF" hybrid/PBX FCC Registration Number, then change system operation type in database programming to "PBX".

Button Programming is Lost/Changed at One Key telephone

Symptom	Diagnostic aid	Cause	Action
Previously programmed feature buttons now do not work or have different features assigned.	Executive Key telephone Display	Unauthorized customer reprogramming	1. See if customer has a User Guide and understands feature button programming. 2. Compare the current system database and station feature button programming with the completed programming worksheets. 3. Feature button program memory is retained at the KSU, memory protected by a Ni-Cad battery. If system power is removed for longer than 7 days, all system database programming may be lost and default database loaded. This would, however, affect other customer unique system programming along with all other key telephones feature button programming.

APPENDIX A. DATABASE PROGRAMMING FORMS

Use the following forms to complete the customer specific programming applications prior to actual system programming. For several database fields some forms do not provide an entry area for all possible programming since the majority of installation applications will not require changes to all data in all program fields.

Please makes copies of these forms prior to use. Use copies (or multiple copies) for actual programming work sheets.

Database Programming - System Type

Data Parameter:	Default	Range	New Value
System Type	PBX	PBX/KEY	

Database Programming - CO Line Data

Data Parameter:	Default	Range:	New CO line values-->	1	2	3	4	5	6	7	8	9	10	11	12
Dialing Type	Tone	Tone/Pulse													
Call Abandon	Y	Y/N													
CO Line Type	CO	CO/PBX/EMPTY													
Loud Bell	N	Y/N													
CO Line Group	1	1-4													
Private To	EMPTY	10-81/EMPTY													
Toll Override	N	Y/N													

Database Programming - Station Data

Data Parameter:		Default	Range:	New Assignments: Sta → 10	11	12	13	14	15	16	17
Day COS		0	0-7								
Night COS		0	0-7								
CO Line Assignment	1	Y	Y/N								
	2	Y	Y/N								
	3	Y	Y/N								
	4	Y	Y/N								
	5	Y	Y/N								
	6	Y	Y/N								
	7	Y	Y/N								
	8	Y	Y/N								
	9	Y	Y/N								
	10	Y	Y/N								
	11	Y	Y/N								
	12	Y	Y/N								
CO Line Receive Assignment	1	Y	Y/N								
	2	Y	Y/N								
	3	Y	Y/N								
	4	Y	Y/N								
	5	Y	Y/N								
	6	Y	Y/N								
	7	Y	Y/N								
	8	Y	Y/N								
	9	Y	Y/N								
	10	Y	Y/N								
	11	Y	Y/N								
	12	Y	Y/N								
CO Line Ring Assignment	1	Sta 10 - Y	Y/N								
	2	Sta 10 - Y	Y/N								
	3	Sta 10 - Y	Y/N								
	4	Sta 10 - Y	Y/N								
	5	Sta 10 - Y	Y/N								
	6	Sta 10 - Y	Y/N								
	7	Sta 10 - Y	Y/N								
	8	Sta 10 - Y	Y/N								
	9	Sta 10 - Y	Y/N								
	10	Sta 10 - Y	Y/N								
	11	Sta 10 - Y	Y/N								
	12	Sta 10 - Y	Y/N								
AC Code Forced		N	Y/N								
Night Service		N	Y/N								
Station Group		1									
Warning Tone		N	Y/N								
Drop Timeout		N	Y/N								
Station Position		Consecutive starting at 10.	10-81								
VM Port		N	Y/N								

Database Programming - Call Handling Data

Data Parameter:				Default	Range	New Value
Privacy RLS				Y	Y/N	
Privacy RLS Tone				Y	Y/N	
Excl. Hold Time				4	0-8 Minutes	
Flash Time				0.7	0.1-1.5	
Remind Time				30	0/10/30/60/90	
Park Remind				30	30/60/90/120/150/180	
Pause Time				2	1.5/2/3.5/5	
PBX Code				9	0-9	
PBX Auto Pause				1	1-9	
Dialing Ratio	Tone Time			70	50/60/70...150	
	Inter-Digit Time			70	50/60/70...150	
VM Dialing Ratio	Tone Time			120	60/90/120/150	
	Inter-Digit Time			120	60/90/120/150	
Warning Time				3	1-8	
Recall Time				30	16/30/60/90/120	
SLT Hookflash	Start			300	60/100/200/300...1400	
	End			800	100/200/300...1500	
DISA	Access Code	01		EMPTY	0000-9999	
				EMPTY	0000-9999	
				EMPTY	0000-9999	
		24		EMPTY	0000-9999	
(Make copies of	CO Line Attrib.	1	DISA Line	N	Y/N	
this form for			Day COS	0	0-7	
additional space			Night COS	0	0-7	
as required.)			Service	NEVER	NEVER/DAY/NITE/ALWAYS	
			Talk Time	1	1-15	
		12	DISA Line	N	Y/N	
			Day COS	0	0-7	
			Night COS	0	0-7	
			Service	NEVER	NEVER/DAY/NITE/ALWAYS	
			Talk Time	1	1-15	
External Call Fwd	Incoming			0	0 (None), 1-12	
	Outgoing			0	0 (None), 1-12	
	Service			NEVER	NEVER/DAY/NITE/ALWAYS	
	Talk Time			1	1-15	
Uns. Conf. Time				1	1-15	
Operator Code				0	0/9	
Unsupervised Conf.				Y	Y/N	
Auto Busy Redial	ABR Attempts			10	0-10	
	ABR Interval			16	16/30/60/90/120	
	Tone Det. Time			4	0-9	
Call Abandon	Active Call			600	50-2500	
	Held Call			600	50-2500	
Ring Alt Position				30	30/60/90/120/150/180	
CO LN Preset FWD	CO P-FWD Time			16	6/10/16/22/30/40	
	CO Line Attrib.	1	VMID	EMPTY	000000-999999	
		2	VMID	EMPTY	000000-999999	
			VMID	EMPTY	000000-999999	
		12	VMID	EMPTY	000000-999999	

Database Programming - System Application Data

Data Parameter:					Default	Range	New Value
Station Hunt Group	Hunt Group	1-24	Voice Mail Type		N	Y/N	
			Group Member	1	EMPTY	10-81	
				2	EMPTY	10-81	
				3	EMPTY	10-81	
				4	EMPTY	10-81	
				5	EMPTY	10-81	
				6	EMPTY	10-81	
				7	EMPTY	10-81	
				8	EMPTY	10-81	
				9	EMPTY	10-81	
				10	EMPTY	10-81	
				11	EMPTY	10-81	
				12	EMPTY	10-81	
				13	EMPTY	10-81	
				14	EMPTY	10-81	
				15	EMPTY	10-81	
				16	EMPTY	10-81	
				17	EMPTY	10-81	
				18	EMPTY	10-81	
				19	EMPTY	10-81	
				20	EMPTY	10-81	
				21	EMPTY	10-81	
				22	EMPTY	10-81	
				23	EMPTY	10-81	
				24	EMPTY	10-81	
			Ring Assignment	1	N	Y/N	
				2	N	Y/N	
				3	N	Y/N	
				4	N	Y/N	
				5	N	Y/N	
				6	N	Y/N	
				7	N	Y/N	
				8	N	Y/N	
				9	N	Y/N	
				10	N	Y/N	
				11	N	Y/N	
				12	N	Y/N	
Voice Mail	ICM Prefix				EMPTY	0000-9999, P, *, #	
	XFR (Transfer) Prefix				EMPTY	0000-9999, P, *, #	
	Suffix Digit				EMPTY	00-99, P, *, #	
	Disconnect Digit				EMPTY	00000000-99999999, P, *, #	

Database Programming - Restriction Data

CO Line Call Descrimination		From (10 digits max.)	To (10 digits max.)	Day Allowed (COS)								Night Allowed (COS)							
				0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7
Interval: (default shown)	001	0	9	Y	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
	002																		
	003																		
	004																		
	005																		
	006																		
	007																		
	008																		
	009																		
	010																		
	011																		
	012																		
	013																		
	014																		
	015																		
	016																		
	017																		
	018																		
	019																		
	020																		
	021																		
	022																		
	023																		
	024																		
	025																		
	026																		
	027																		
	028																		
	029																		
	030																		
	031																		
	032																		
	033																		
	034																		
	035																		
	036																		
	037																		
	038																		
	039																		
	040																		
	041																		
	042																		
	043																		
	044																		
	045																		
	100																		

Database Programming - Resource Data

Data Parameter:		Default	Range	New Value
Ring Scheme		2	1/2/3/4	
Letter Type		0	0/1/2/3/4/5	
Attendant		10	10-33	
Alternate		EMPTY	00:00-23:59	
System Alarm	1	EMPTY	00:00-23:59	
		EMPTY	00:00-23:59	
		EMPTY	00:00-23:59	
	8	EMPTY	00:00-23:59	
Night Start		17:00	00:00-23:59	
Nite End		08:00	00:00-23:59	
DB Programming Password		000000	000000-999999	
User Password	10	0000	0000-9999	
	11	0000	0000-9999	
	12	0000	0000-9999	
	13	0000	0000-9999	
	14	0000	0000-9999	
	15	0000	0000-9999	
	16	0000	0000-9999	
	17	0000	0000-9999	
User Names	10	EMPTY	7 Characters max.	
	11	EMPTY	7 Characters max.	
	12	EMPTY	7 Characters max.	
	13	EMPTY	7 Characters max.	
	14	EMPTY	7 Characters max.	
	15	EMPTY	7 Characters max.	
	16	EMPTY	7 Characters max.	
	17	EMPTY	7 Characters max.	
Preprogrammed Messages	Outgoing	CALL OPERATOR	16 Characters max.	
		CALL HOME	16 Characters max.	
		CALL SCHOOL	16 Characters max.	
		VISITORS WAITING	16 Characters max.	
		URGENT	16 Characters max.	
		COME SEE ME	16 Characters max.	
	Executive Notify	OUT FOR LUNCH	16 Characters max.	
		BE BACK SOON	16 Characters max.	
		LEFT FOR THE DAY	16 Characters max.	
		IN A MEETING	16 Characters max.	
		OUT OF OFFICE	16 Characters max.	
		ON VACATION	16 Characters max.	

Database Programming - Resource (continued)
System Speed Dial

(Note when External Call Forward is used, System Speed Dial bin 99 exclusively is used for the number to dial when calls are routed via ECF.)

20		40		60		80	
21		41		61		81	
22		42		62		82	
23		43		63		83	
24		44		64		84	
25		45		65		85	
26		46		66		86	
27		47		67		87	
28		48		68		88	
29		49		69		89	
30		50		70		90	
31		51		71		91	
32		52		72		92	
33		53		73		93	
34		54		74		94	
35		55		75		95	
36		56		76		96	
37		57		77		97	
38		58		78		98	
39		59		79		99	

Database Programming - Resource (continued)

Data Parameter:		Default	Range	New Value
BGM Source		Y	Y/N	
The data parameter fields: CO Line Copy, Extension Copy, Feature Button Copy and System Time are updated as required.				
Account Code Table	Length	4	4-8	
	001		012	
	002		013	
	003		014	
	004		015	
	005		016	
	006		017	
	007		018	
	008		019	
	009		020	
	010			
	011		100	
Data Link (future)				
RMT X_Rate PC Program port BPS		9600	110/300600/1200/2400/ 4800/9600/19200	
SMDRX_Rate SMDR port BPS		9600	110/300600/1200/2400/ 4800/9600/19200	
Hour Mode		12	12/24	
Dial Tone Detect		N	Y/N	
Dial Wait Time		0	0-8	
KSU Revision	Display only.			

APPENDIX B. SINGLE LINE TELEPHONE USER'S GUIDE

The following page is prepared for duplication as needed. The page may be copied, two-sided for use as reference cards for SLT users. The following page of this appendix is intended to be the master copy only. The binding will allow easy duplication while not removing the page.

More detailed SLT (analog port) operation description can be found in the section titled Single Line Telephone Features Description and Operation.

Note: if the Operator Code is changed from "0" to "9" in database programming the directory number card descriptions must be changed to reflect that programming change.

SLT Feature Access Codes			
10-81	2 Digit ICM Calling	0	Operator Code
F	Hold		
*F*ss	Call Transfer where ss=station number	#73+0+cc	Call Park Answer a Specific CO Line (where cc is the CO num)
F#+ss	Call Brokering where ss=station number	#73+ss	Specific Station Park Number (where ss is the station number)
2	Camp On (while listening to busy)	#8	Last Number Redial (with line selection)
9/0	CO Line Access	#91	ICM Call Back (idle/busy)
#1+nn	SPEED Programming where nn=bin#. (00-19)	#*91	ICM Call Back Cancel
#2	ICM Call Forward/Cancel	#92 + hh/mm	Station Alarm (Hour/Minute)
#2+0+ss	Idle (immediate) Forward	#*92	Station Alarm Cancel
#2+1+ss	Busy	#93	Camp On-CO Line
#2+2+ss	Direct (busy/idle)	#*93	Camp On CO Line Cancel
#2+3+ss	Password = Follow Me	#96	Send Message Waiting (while ICM ringing/busy)
#2+4+ss+x	No Answer after x rings (x may be 0/1/2/3/4)	#*96	Message Waiting Cancel
#4	Do Not Disturb	#97 + PSWD + #	Station Lock
#50	Paging	#97 + PSWD + *	Station Unlock
#500	All Call Internal Paging	#97 + PSWD + nnnn	New Password (where nnnn is the new password)
#501	External Paging only	*1+ 00-99	Speed Dialing
#502	System All Call Paging	*3 + (1-8)	Specified CO Line Access
#503+gg	Group Paging (g may be 1-8)	*4 + x	CO Line Group Access (where x is 0-4, "0" is any group)
#53+ss	Directed Call Pickup ss=station #	*6	Hold Retrieve
#54	Group Call Pickup	*7+ ss	Other Station Hold Retrieve
#55	COS Following	82-89	Hunt Group/Voice Mail Group
#56	Voice Over Busy	9	CO line All Group Access Code
#59	Page Meet Me Answer	Note: "*F*" above represents a Hook Flash.	

To place an intercom Call:

Lift handset, intercom dial tone is heard.

Dial the desired two-digit station, Hunt Group or VM Group number.

To place an outgoing (CO line) call.

Lift handset, intercom dial tone is heard.

Dial the CO line code; the code used depends greatly on programming.

9 accesses any CO line.

*3cc accesses a specific CO line (where "cc" is the CO line number)..

*4g access a CO line group (where "g" is the group number 1-4).

Authority Code [#55]

Lift handset.

Dial #55sspppp (where "ss"=the station number with the desired authority and "pppp"is that station's password.)

Call Brokering

While on an intercom or CO line call;

Press Hook Flash.

Intercom dial tone is heard (the original conversation party is placed on hold).

Dial Station # (XX) or CO line call.

Press Hook Flash to switch between parties.

Call Hold

While connected to a CO line or intercom call press Hook Flash.

Intercom dial tone is heard (the party is placed on hold).

Hang up.

Call Hold Retrieve [*6]

When the SLT user wishes to retrieve a held call, lift the handset.

ICM dial tone is heard.

Dial *6.

Talk with the original held party.

Call Hold Retrieve from Other Station[*7]

Lift handset.

Dial *7.

Dial station number where call is holding.

Call Operator (Attendant) [0]

Lift handset

Dial 0.

Call Transfer

While connected to current call, press Hook Flash.

Dial station number.

Hang up to complete the transfer.

Do Not Disturb (DND) [#4]

Lift handset, intercom dial tone is heard.

Dial #4

Confirmation tone is heard.

Hang up. DND is active.

To cancel:

Dial #4

Call Forward[#2]

Idle Call Forward; lift handset and dial #20xx ("xx" is destination)

Busy Call Forward; lift handset and dial #21xx ("xx" is destination)

Direct Call Forward; lift handset and dial #22xx ("xx" is destination)

No Answer Call Forward; lift handset and dial #24xxt ("xx" is destination and "t" is the Time to ring before forwarding: 1 = 10 seconds, 2=20 seconds, 3=30 seconds and 4=40 seconds.)

Follow Me Call Forward; lift handset and dial #23sspppp (where "ss" is the station number to forward to this location and "pppp" is the password of the station to forward.)

Speed Dialing [*1]

To dial:

Lift handset, intercom dial tone is heard.

Dial *1 + bin (00-99)

Dial SPD bin to dial.

The system will occupy an allowed idle CO line to dial the telephone number stored in the SLT speed bin.

To program:

Lift handset, intercom dial tone

Dial #1, silence is heard.

Dial SPD bin for programming. Station Speed Dial bins range from 00-19.

Enter the desired outside phone number.

Press Hook Flash.

Confirmation Tone is heard.

Call Park Answer [#73]

Lift handset + 73 + 0 + c ("c" may be 1-9 for CO lines 1-9, 0 for CO 10, * for CO 11 or # for CO 12)

or

Lift handset +#73 + sn (where "sn" is the Station Number)

Call Pickup (Direct) [#53]

Lift handset +#53 + sn (where "sn" is the Station Number)

Call Pickup (Group) [#54]

Lift handset + #54

Camp On Busy Station [2]

When the called station is busy press "2" while listening to Busy Tone.

Camp On Busy CO Line

When a CO line access attempt results in Busy Tone, press #93 (while listening to busy).

To cancel the CO line Camp On, Lift handset and dial #93.

Station Alarm [#92]

Lift handset + #92hhmm (where "hh"=the hour in military format and "mm"=the minute).

To cancel: lift handset and dial #*92

Intercom Call Back [#91]

When listening to Busy Tone after dialing a station number, dial #91.

To cancel: lift handset + #*91

Last Number Redial [#8]

Lift handset + #8, System accesses last used CO line and re-dials the last outside dialed telephone number.

Message Waiting (Send/Respond)[#96]

To leave a message at any telephone, lift the handset and dial #96ss (where "ss"= the station number where the message is to be left.)

To cancel a message that was previous left, lift the handset and dial #*96.

Paging [#50]

All Call Internal - Lift handset + #500

External Paging Only - Lift handset + #501

System All Call Paging - Lift handset + #502

Group Paging (Zones) - Lift handset + #503g (where "g" = Station Group 1-8)

Meet Me Page [#59]

When a page announcement is heard, lift the handset and dial #59.

Station Lock/Unlock [#97]

Lock - lift handset and dial #97pppp# (where "pppp" is the current password).

Unlock - lift handset and dial #97pppp* (where "pppp" is the current password).

Change Password - lift handset and dial #97pppp + new four digit password (where "pppp" is the current password).

VOICE COMMUNICATIONS

"The Communication Experts"

(800) 593-6000

OFF, FLAT SIDE TO FRONT

300 7 2 EVEN NO HANDSHAKE

DIALING RATIO P184 P173
(CALL HANDLING)

BGM CHANGE TO NO P196 P173
(RECOURCES)

STA ~~COPY~~ COPY P196 P173
(RESOURCES)

AUTO HOLD FEAT 94 ON/OFF
(P11 USER)

DIRECT CALL PICK UP
(P19) USER

FEAT BUTTONS
(P47)

ACCESS CODES FEATURE P5
F3 CO FLASH

• Telephone Systems • Service • Sales • Installation • Upgrades • Moves • Overhead Paging Systems • Design • Computer Network Wire Installation & System Moves • Voice Mail • Voice Mail Answering Service • Automated Attendants •

411 East Huntington Dr, Ste. 214 • Arcadia, CA 91006-5246 • (818) 821-4800
350 S. Milliken Ave. Ste. N. • Ontario, CA 91761 • (909) 390-2464

ALL 8 DIP SWITCHES OFF, FLAT SIDE TO FRONT

Part No. SP7050-00

Revision 1a
January 22, 1996

PRINTED IN UNITED STATES OF AMERICA