

STARPLUS[®]

digital systems

HYBRID KEY TELEPHONE SYSTEMS

SYSTEM DESCRIPTION, OPERATION, and SPECIFICATION GUIDE

(Sections 100, 200 thru 220, 300 thru 330, 400 of the
General Description, Installation and Maintenance
Manual)



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ISSUE CONTROL SHEET

ISSUE	DATE	CHANGE
Preliminary	August 1991	First release of Starplus Digital Systems System Description, Operation, and Specifications Guide.

SECTION 100

INTRODUCTION

100.1 PURPOSE

This manual provides the information necessary to program, install, operate and maintain the Starplus Digital (SPD) Key Telephone System.

100.2 REGULATORY INFORMATION (USA)

The Federal Communications Commission (FCC) has established rules which allow the direct connection of the Starplus Digital (SPD) Key Telephone System to the telephone network. Certain actions must be undertaken or understood before the connection of customer provided equipment is completed.

A. Telephone Company Notification

Before connecting the Starplus Digital (SPD) Key Telephone System to the telephone network, the local serving telephone company must be given advance notice of intention to use customer provided equipment and provided with the following information:

- The telephone numbers to be connected to the system.
- The Ringer Equivalence Number also located on the KSU: 1.9
- The Universal System Ordering Code (USOC) jack required for direct interconnection with the telephone network: RJ21X

SPD 1428 FCC Registration Numbers:

- For systems configured as a key system:
(button appearances)
DLPHKG-65152-KF-E
- For systems configured as a Hybrid system:
(dial access codes)
DLPHKG-65153-MF-E

SPD 2856 FCC Registration Numbers:

- For systems configured as a key system:
(button appearances)
DLPHKG-65102-KF-E
- For systems configured as a Hybrid system:
(dial access codes)
DLPHKG-65101-MF-E

B. Incidence of Harm

If the telephone company determines that the customer provided equipment is faulty and possibly causing harm or interruption to the telephone network, it should be disconnected until repairs can be made. If this is not done, the telephone company may temporarily disconnect service.

C. Changes in Service

The local telephone company may make changes in its communications facilities or procedures. If these changes should affect the use of the Starplus Digital (SPD) Key Telephone System or compatibility with the network, the telephone company must give written notice to the user to allow uninterrupted service.

D. Maintenance Limitations

Maintenance on the Starplus Digital (SPD) Key Telephone System is to be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs except as specifically noted in this manual. If unauthorized alterations or repairs are made, any remaining warranty may be voided.

E. Notice of Compliance

The Starplus Digital (SPD) Key Telephone System complies with rules regarding radiation and radio frequency emissions by Class A computing devices. In accordance with FCC Standard 15 (Subpart J), the following information must be supplied to the end user:

CAUTION

"This equipment generates and uses RF energy and if not installed and used in accordance with the Instruction Manual, may cause interference to Radio Communications. It has been tested and found to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference, when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case

the user, at his own expense, will be required to take whatever measures may be required to correct the interference."

F. Hearing Aid Compatibility

All Starplus Digital (SPD) Terminals are Hearing Aid Compatible, as defined in Section 68.316 of Part 68 FCC Rules and Regulations.

G. OPX Circuit

The Starplus Digital (SPD) Key Telephone System may be equipped with Single Line Adapters (OPX) modules which provide a 48 volt FCC registered 2500- type single line off-premise extension interface port.

- Each OPX port when used to support an off-premise extension requires an OL13C network circuit.
- An FCC registered interface such as a RJ21X is also required to connect to the public network.

100.3 REGULATORY INFORMATION (CANADIAN)

- Department of Communications (DOC)
Certification Number: 526 2933 A
- Load Number: 100
- Standard Connector: CA11A/CA21A
- Canadian Standards Association (CSA)
File Number: LR57228-27

A. Notice

The Canadian Department of Communications' label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. This Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above condition may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

B. Explanation of Load Number

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the load numbers of all the devices does not exceed 100.

C. Maintenance Limitations

Maintenance on the Starplus Digital (SPD) Key Telephone System is to be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs except as specifically noted in this manual. If unauthorized alterations or repairs are made, any remaining warranty may be voided.

D. Notice of Compliance

The Starplus Digital (SPD) Key Telephone System complies with Class A or Class B limits of the Canadian Radio Interference Regulations. In accordance with FCC Standard 15 (Subpart J), the following information must be supplied to the end user:

CAUTION

This equipment generates and uses RF energy and if not installed and used in accordance with the Instruction Manual, may cause interference to Radio Communications. It has been tested and found to

comply with the limits for a Class A or Class B computing device, pursuant to Subpart J or Part 15 of the FCC Rules, which are designed to provide reasonable protection against such interference, when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference."

E. OPX Circuit

The Starplus Digital (SPD) Key Telephone System may be equipped with Single Line Adapters (OPX) modules which provide a 48 volt FCC registered 2500- type single line off-premise extension interface port.

- A DOC registered interface such as a CA21A is also required to connect to the public network.

100.4 UL/CSA SAFETY COMPLIANCE

The Starplus Digital (SPD) Key Telephone System has met all safety requirements and was found to be in compliance with the Underwriters Laboratories (UL) 1459 Second Edition and Canadian Standards Association (CSA) CS-03 Standard. The Starplus Digital (SPD) Key Telephone System is authorized to bear the UL and CSA marks.

SECTION 200

KEY STATION FEATURE DESCRIPTIONS

The System and Key Station features of the Starplus Digital (SPD) Key Telephone System are listed and described below in alphabetical order. An abbreviated feature index is provided in Table 200-1.

200.1 ACCOUNT CODES

An account code is the last field within Station Message Detail Recording (SMDR), that provides the ability to track specific calls by entering a non-verified, variable length (up to 12 digits) identifier. The use of forced Account Codes is optional, offered on a system wide basis.

200.2 ATTENDANT RECALL

When a line has been left on hold for a programmable period of time, the station placing that line on hold will be recalled. If that station fails to answer the recall, the call will be recalled to the attendant(s) for handling. There can be three attendants per system. Transferred, Parked and Camp-on recalls will also recall the Attendant.

200.3 AUTOMATIC LINE ACCESS

Each station, key or SLT, may have their phone programmed to access a particular CO Line such as a private line or a line from a Group of CO lines upon going off-hook. This is useful in Centrex or PBX applications when station users have dedicated or individual lines. Outside line dial tone is received just by going off-hook, without the need to dial an access code.

200.4 AUTOMATIC NIGHT SERVICE

The system may optionally be programmed to go into and out-of night service automatically. This method does not require the attendant to activate or deactivate night service on a daily basis. The automatic night service is enabled and disabled on a programmable daily schedule including Saturday and Sunday schedules. A time can be set to enable Night Service and to Disable Night Service on a per day basis.

200.5 AUTOMATIC PAUSE INSERTION WITH SPEED DIAL

If a flash command is placed into system speed dial numbers, station speed dial numbers, save number redial or last number redial, a pause will automatically be inserted after the flash. A pause will also be automatically inserted after a PBX dialing code has been used.

200.6 AUTOMATIC PRIVACY

Privacy is automatically provided on all calls. If one station is conversing, another station cannot intrude on that line. The Automatic Privacy feature can be disabled, allowing another station to join in on existing CO line conversations.

200.7 AUTOMATIC SELECTION

The user can select an outside line, intercom station, speed dial button, or dial a feature and automatically place the phone in the dialing mode without pressing the ON/OFF button or lifting the handset.

200.8 BACKGROUND MUSIC

Each Digital Terminal user may receive music over their speaker when an optional music source is connected to the system. This feature can be allowed or denied on a system-wide basis by programming.

200.9 BATTERY BACK-UP (MEMORY)

A NICAD battery is located on the Central Processing Board (CPB) to protect system memory in case of commercial power outage or the system power being turned off for a period of time. Battery Back-up Memory retains all system features including both system and station speed dial during a power outage.

200.10 BUSY LAMP FIELD (BLF)

When a button on a Digital Terminal is assigned as a DSS, it also serves as a Busy Lamp Field to display the status of that telephone.

200.11 CALL ANNOUNCE - PRIVACY

Each telephone user can set their intercom signaling switch to receive intercom call announcements without having the calling party hear any conversations in progress.

200.12 CALL BACK

A station can initiate a call back request to another busy station. As soon as that station becomes idle, the station that left the call back request is signaled.

200.13 CALL FORWARD: STATION

A. Call Forward - All Calls

This feature allows a station the ability to have all their calls (internal or external) forwarded immediately to a designated station, a UCD

Table 200-1 Alphabetical Feature Index

FEATURE	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
Account Code	S	N	Printer
Attendant Recall	S	N	N
Automatic Line Access	S	N	N
Automatic Night Service	S	N	N
Automatic Pause Insertion w/Speed Dial	S	N	N
Automatic Privacy	S	N	N
Automatic Selection	S	N	N
Background Music	S	N	Music Source
Battery Backup (Memory)	S	N	N
Busy Lamp Field (BLF)	S	N	N
Call Announce Privacy	S	N	N
Call Back	S	N	N
Call Forward: Station			
Call Forward - All Calls	S	N	N
Call Forward - Busy	S	N	N
Call Forward - No Answer	S	N	N
Call Forward - Busy/No Answer	S	N	N
Forward to Pilot (UCD, VM, Hunt)	S	N	N
Station Off-Net Forward (via speed dial)	S	N	N
Call Forward: Preset			
Call Forward Preset to Stations	S	N	N
Call Forward Preset to Hunt Groups	S	N	N
Call Forward Preset to Off-Net (via speed dial)	S	N	N
Call Forward Preset to UCD Groups	S	N	N
Call Forward Preset to Voice Mail Groups	S	N	Voice Mail System
Call Forward: CO Lines			
Incoming CO Lines Off-Net (via speed dial)	S	N	N
Calling Station Tone Mode Option	S	N	N
Call Park	S	N	N
Call Pick-up:			
Group Pick-up	S	N	N
Directed Call Pick-up	S	N	N
Call Transfer	S	N	N
Camp-On	S	N	N
Camp-On Recall	S	N	N
Canned Toll Restriction	S	N	N
Centrex Compatibility	S	N	N
Centrex/PBX Transfer	S	N	N
Chaining Speed Bins	S	N	N
CO Line Access	S	N	N
CO Line Class of Service	S	N	N

S = Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required

Table 200-1 Alphabetical Feature Index (Cont'd)

FEATURE	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
CO Line Control (contact)	S	N	N
CO Line Groups	S	N	N
CO Line Loop Supervision	S	N	N
CO Line Queue	S	N	N
CO Line Incoming Ring Assignment:			
Assigned Per CO Line	S	N	N
CO Ring Detect	S	N	N
Conference:			
Add-on Conference	S	N	N
Multi-Line Conference	S	N	N
Unsupervised Trunk-to-Trunk Conferencing	S	N	N
Conference Enable/Disable	S	N	N
Data Base Printout (dump)	S	N	Printer
Day/Night Class of Service (COS)	S	N	N
Default Button Mapping	S	N	N
Dial Pulse Sending	S	N	N
Dialing Privileges	S	N	N
Direct CO Line Ringing:			
To Stations	S	N	N
To UCD Groups	S	N	N
To Hunt Groups	S	N	N
To Off-Net (via speed dial)	S	N	N
To Voice Mail Groups	S	N	Voice Mail System
Direct Station Selection	S	N	N
Directed Call Pick-up	S	N	N
Direct Inward Station Access (DISA):	O	DTMF Rcvr	N
Programmable Access	S	N	N
CO Line Group Access	S	N	N
Station Access	S	N	N
Do Not Disturb (DND)	S	N	N
One-Time Do Not Disturb	S	N	N
DTMF Sending	S	N	N
Emergency Transfer	O	OPX/PFTU	48V Supply or 12V
End to End Signalling	S	N	N
Exclusive Hold	S	N	N
Executive Override	S	N	N
Executive/Secretary Transfer	S	N	N
External Night Ringing	S	N	Paging Equip
Flash	S	N	N
Flash on Intercom	S	N	N
Flash with Speed Dial	S	N	N

S = Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required

Table 200-1 Alphabetical Feature Index (Cont'd)

FEATURE	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
Flexible Attendant(s)	S	N	N
Flexible Button Assignment	S	N	34 Button
Forced Account Codes	S	N	N
Group Call Pick-up	S	N	N
Headset Compatability	S	N	Headset
Headset Mode	S	N	Headset
Hearing Aid Compatible	S	N	N
Hold Preference	S	N	N
Hold Recall	S	N	N
Hot Line/Ring Down	S	N	34 Button
Hunt Groups: (8 x 8)			
Pilot Hunting	S	N	N
Station Hunting	S	N	N
Hunt Group Chaining	S	N	N
Intercom Calling	S	N	N
Intercom Signaling Select	S	N	N
Last Number Redial (LNR)	S	N	N
LCD Interactive Display	S	N	34 Button Display
Least Cost Routing (LCR):			
LCR 3 Digit Tables	S	N	N
LCR 6 Digit Tables	S	N	N
Route List Tables	S	N	N
Insert/Delete Tables	S	N	N
Weekly Time Tables	S	N	N
Daily Start Time Tables	S	N	N
Exception Tables	S	N	N
Default LCR Database	S	N	N
LCR Routing for Toll Information	S	N	N
Loop Button CO Line Access	S	N	N
Loud Bell Control (LBC)	S	N	Gen & Bells
Meet Me Page	S	N	N
Message Waiting	S	N	N
Message Waiting Reminder Tone	S	N	N
Music On Hold	S	N	Music Source
Mute Key	S	N	N
Name in LCD Display	S	N	34 Button Display
Night Service:			
Manual Operation	S	N	N
Automatic Operation	S	N	N
Weekly Night Mode Schedule	S	N	N
Night Class of Service (COS)	S	N	N

S = Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required

Table 200-1 Alphabetical Feature Index (Cont'd)

FEATURE	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
Universal Night Answer (UNA)	S	N	N
Night Ringing Assignment	S	N	N
External Night Ringing	S	N	Paging Equip
Off-Hook Preference	S	N	N
Auto Line Access	S	N	N
Auto Feature Access	S	N	Keypad
Hot Line/Ring down	S	N	Keypad
Intercom Access	S	N	Keypad
User Programmable Preference	S	N	Keypad
Off-Hook Signalling	S	N	N
Off-Premise Extensions (OPX)	O	SLA (OPX)	48V Supply
On Hook Dialing	S	N	N
On-Line Programming	S	N	N
Page/Relay Control			
SPD 1428 system	O	N	Relay/Sensor Module
SPD 2856 system	S	N	N
Paging			
External Paging	S	N	Paging Equip
Internal Paging	S	N	N
Paging Access Restriction	S	N	N
Pause Timer	S	N	N
PBX Dialing Codes	S	N	N
Personalized Messages	S	N	N
Personalized Message Code on a Flex Key	S	N	N
Pool Button Operation	S	N	N
Preferred Line Answer	S	N	N
Privacy Release:			
Per Station Option	S	N	N
Per CO Line Option	S	N	N
Private Line	S	N	N
Pulse-To-Tone Switchover	S	N	N
Range Programming	S	N	N
Remote Administration (Database)	S	N	PC Term & Modem
Remote System Monitor and Maintenance	S	N	PC Term & Modem
Save Number Redial (SNR)	S	N	N
Single Line Telephone (SLT) Compatibility	O	SLT/OPX/RG	2500 Type SLT
Station Message Detailed Recording (SMDR)	S	N	Printer
Speakerphone	S	N	N
Station Class of Service	S	N	N
Station Speed Dial	S	N	N

S = Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required

Table 200-1 Alphabetical Feature Index (Cont'd)

FEATURE	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
System Capacity:			
up to 14x28 Configuration	S	N	Expansion KSU
up to 28x56 Configuration	S	N	N
System Hold	S	N	N
System Speed Dial	S	N	N
Toll Restriction (Table Driven)			
Transfer Recall	S	N	N
Uniform Call Distribution (UCD): (8 x 8)			
Alternate UCD Group Assignments	S	N	N
Overflow Station Assignment	S	N	N
Incoming CO Direct Ringing	S	N	N
Recorded Announcements (RAN)	O	N	RAN Device
Number of Calls in Queue Display	S	N	N
UCD Auto Wrap-up with Timer	S	N	N
UCD No-Answer Return to Queue Timer	S	N	N
UCD Available/Unavailable Mode	S	N	N
Universal Night Answer (UNA)	S	N	N
Voice Mail Groups: VM (8 x 8)			
In Band Signaling Integration	O	OPX/48V PS	Voice Mail System
Voice Mail Message Waiting Indication	S	OPX/48V PS	N
Voice Mail CO Disconnect Signal Pass thru	S	N	N
Voice Mail Tone Mode Calling Option	S	N	N
Volume Control	S	S	N

S = Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required

group pilot number, Voice Mail group number, or Hunt group. (See Note)

B. Call Forward - Busy

This feature allows a station the ability to have their calls forwarded to a designated station, a UCD group pilot number, Voice Mail group number, or Hunt group when their station is busy. (See Note)

C. Call Forward - No Answer

This feature allows a station the ability to have their calls forwarded to a designated station, a UCD group pilot number, Voice Mail group number or Hunt group number when there is no answer at the station. No answer calls forward when the system-wide "no answer timer" expires. (See Note)

D. Call Forward - Busy/No Answer

Allows a stations the ability to forward a combination busy/no answer calls to a designated station, a UCD group pilot number, Voice Mail group number, or Hunt group. No answer calls forward when the system-wide "no answer timer" expires. Initial CO ringing, transferred CO ringing and intercom ringing calls can all be forwarded. Calls that ring to an idle station will be call forwarded after expiration of the No Answer ring timer. (See Note)

E. Call Forward - Off-Net

Stations will be allowed to forward intercom and transferred CO line calls to an off-net location. This allows a station to reroute calls that would normally be lost. Calls can be forwarded to home or another off-net site. Initially ringing CO calls cannot be forwarded with this feature (see incoming CO lines Off-Net Forward feature).

NOTE: Initial Ringing Incoming: calls will forward to groups, (ie: UCD, Voice Mail, Hunt) if the station forwarded is the only station assigned to ring on the CO line.

200.14 CALL FORWARD: PRESET

This feature allows the system data base to be configured so that incoming CO Lines, which are programmed to ring at a particular station, can be forwarded elsewhere in the system predetermined by programming. This feature is active if the station ringing is not answered in a specified time. This is particularly useful in "overflow" applications where a Voice Mail or Auto Attendant may be in use.

A station may have one designated preset forward location defined in the data base.

Preset Call Forward is chainable only to other predetermined preset forward stations specified in the database up to a chain of 5 stations.

Chainable Preset Call Forwarding will force the incoming CO Line to ring at each station preassigned in the database for the Preset Forward Ring Timer specified in the database before forwarding.

Each station in the system may, independently, have incoming CO calls preset forwarded to the following destinations:

A. Preset Call Forward - Stations

Each Digital Terminal user may have preset in the database Initial Ringing Incoming to be directed to another station in the system, if the call goes unanswered for a predetermined amount of time.

B. Preset Call Forward - Hunt Groups

CO Lines can be preset forwarded to ring into a Hunt Group from any station. A CO line will not preset forward to a busy Hunt group, however each time the preset forward timer expires (for a total of five attempts) the group will be checked for an idle station. If a member of the group is idle the call will then be presented to that member.

C. Preset Call Forward - UCD Groups

CO Lines can be preset forwarded to ring into a UCD Group from any station. A CO line will not preset forward to a busy UCD group, however each time the preset forward timer expires (for a total of five attempts) the group will be checked for an idle station. If a member of the group is idle the call will then be presented to that member.

D. Preset Call Forward - VM Groups

CO Lines can be preset forwarded to ring into a Voice Mail Group from any station. A CO line will not preset forward to a busy Voice Mail group, however each time the preset forward timer expires (for a total of five attempts) the group will be checked for an idle Voice Mail port. If a VM port is idle the call will then be presented to Voice Mail.

NOTE: Calls will forward only if they ring nowhere else.

E. Preset Call Forward - Off-Net

CO Lines can be preset forwarded to ring Off-Net via speed dial from any station. After the expiration of the preset forward timer, the system will select an idle CO line and dial the off-net location, then connect the two CO lines.

200.15 CALLING STATION TONE MODE OPTION

This feature will provide an easy means for a Calling station to override a desired stations H (handsfree) or P (call announce) intercom switch setting. A dial code has been added that is dialed in front of the extension number to force the tone ringing.

200.16 CALL PARK

An outside line can be placed into one of eight (8) parking locations and can be retrieved by any station that has a direct line appearance or an available loop button. Parked calls have their own recall timer and will recall the originating station and if still unanswered, the attendant(s).

200.17 CALL PICK-UP:

A. Group Pick-up

Stations can be placed in one or more of four pick-up groups. Stations within a group can pick up tone ringing intercom calls, transferred, incoming, or recalling outside line calls for another station in that group.

B. Directed Call Pick-up

A station can pick up an intercom call, transferred, incoming, or recalling outside line call to a specific unattended station. The call must be a tone ringing call.

200.18 CALL TRANSFER

An outside CO line can be transferred from one keyset to another. By using the TRANS button, screened (announced) or unscreened transfers can be made. The line being transferred rings on the keyset and provides Exclusive Hold flashing indication to the receiving party's keyset. Any number of attempts can be made to locate someone by calling different keysets without losing the call. If a line is transferred to a busy station, it will receive muted ringing.

200.19 CAMP-ON

A station may alert a busy party that an outside line is on hold and waiting for them by using the CAMP-ON button. To camp on a call, press the TRANS button to transfer the call to the desired busy station, then press the CAMP ON button. The busy party will receive a muted ring over the keyset speaker, and a visual flashing CAMP ON LED. By pressing the CAMP ON button, the person called places his existing outside call on hold and is connected to the person placing the Camp On. He can then pick up the call on the appropriate line. Calls cannot be camped on when a station is in DND or in Conference.

200.20 CAMP-ON RECALL

When a station does not answer a Camp On, that call will recall the person placing the Camp On, and if unanswered by them, will recall the attendant(s).

200.21 CANNED TOLL RESTRICTION

The system provides an easy means of applying the most common form of toll restriction where 1+ and 0+ along with 976, 555, and 411 type of calls are restricted with all local calls and 1-800, 911, 1-911, and 1-611 type of calls are allowed. This canned toll restriction is applied through the use of a single pre-built Class-of-Service and can be assigned to stations using range programming.

200.22 CENTREX COMPATIBILITY

The Starplus Digital (SPD) Key Telephone System provides features that are Centrex compatible so that Centrex users can utilize the Starplus Digital (SPD) Key Telephone System to enhance their Centrex capabilities. The system actually simplifies and provides easier access to many Centrex features by offering the following features:

A. Flex Button Programming

Flexible button programming allows Centrex users to program complex Centrex dial codes onto a key set button for easy one touch access to Centrex features.

B. Off-hook Preference

Both Digital Terminals and Single line telephones may be programmed to have their personal Centrex line accessed automatically just by lifting the handset or pressing the ON/OFF button. Internal features to the Starplus Digital (SPD) Key Telephone System are still made available to Digital Terminals by accessing intercom before going off-hook.

C. Private Line appearance

The Starplus Digital (SPD) Key Telephone System allows for private line assignment on an unlimited bases. Each station may have sole access to a particular outside line if desired and may also be assigned to receive incoming ringing on that line.

D. Programmable Flash Timer

CO line flash is a momentary opening on a CO line used for signaling. When using the Starplus Digital (SPD) Key Telephone System in a Centrex environment the CO line flash is to signal the intention to transfer a caller using Centrex transfer. The CO line flash timer is programmable on a per CO line bases to facili-

tate a mixture of Centrex and CO lines within the same system.

E. Programming *, #, and Hook-Flashes Into Speed Dial

Many Centrex codes utilize a hook-flash followed by in many cases the digit [*] and or [#]. The Starplus Digital (SPD) Key Telephone System allows these codes to be programmed as a part of system or station speed dial sequences.

200.23 CENTREX/PBX TRANSFER

When Centrex or PBX lines are connected to the Starplus Digital (SPD) Key Telephone System, users may, by using the Flash button, transfer callers to other Centrex or PBX extensions. Additionally, the Flash command may be included within a Speed Bin and programmed onto a flex button for one button transfer.

200.24 CHAINING SPEED BINS

Speed dial bins may be chained together by simply pressing one speed bin, then another and another as required.

This is helpful for accessing Long Distant carriers or banking services when Account Codes may be required.

200.25 CO LINE ACCESS

Through programming, telephones are allowed or denied access to particular outside lines or line groups.

200.26 CO LINE CLASS OF SERVICE

Each CO Line may be programmed with a Class-of-Service to provide dialing privileges. The Starplus Digital (SPD) Key Telephone System uses an array between CO Line Class-of-Service and Station Class-Of-Service to offer a wide variety of dialing privilege possibilities.

200.27 CO LINE CONTROL (CONTACT)

There are seven control contacts which may be individually programmed as either CO Line Control (to control ancillary equipment) or Loud Bell Control to control a customer provided ringing device to external areas. When programmed as CO Line Control and assigned to a CO line, the corresponding contact will close whenever that CO line is accessed by a station. (One contact for each 4x8 port card)

200.28 CO LINE GROUPS

Outside lines can be placed in one of eight groups if the customer's business requires such grouping. Stations are then individually assigned access to

these lines and given the ability to dial on particular lines.

200.29 CO LINE LOOP SUPERVISION

The Starplus Digital (SPD) Key Telephone System can be programmed to monitor CO lines while on-hold or connected to RAN devices or Voice Mail systems or in Trunk-to-Trunk connections for disconnect signal provided by the Telco.

After a disconnect signal is detected, the Starplus Digital (SPD) Key Telephone System will release the CO lines and automatically place them back in service.

200.30 CO LINE QUEUE

When all the outside lines in a group are busy, stations can be placed in queue awaiting a line in the same group to become available. If a station doesn't answer the queue signal within 15 seconds, that station is dropped from the queue.

200.31 CO LINE INCOMING RINGING ASSIGNMENT

Each CO line may be programmed (in data base admin) so that incoming ringing on the specified CO line(s) may be assigned initial ringing to one of the following destinations:

- one or more stations (Keyset or SLT)
- To a UCD, Voice Mail or Hunt Group
- Off-Net (via Speed Dial)

The ring-in will follow Day Ring assignments unless Night Service mode is active, in which case all incoming CO calls will follow Night Ring assignments.

When ringing is assigned to a keyset, a direct line appearance or an idle Loop button must be available to receive the call. Station call forwarding of initial ringing CO call is possible and can be directed to other keysets with an available Loop button or direct appearance.

If the initially ringing CO call cannot ring at the destination assigned, it will ring at the first Attendant station.

NOTE: You cannot Station Call Forward an initially ringing CO call to UCD, Voice Mail, or Hunt groups if the line is assigned to ring at more than one station.

200.32 CO RING DETECT

The duration of the ringing signal from the CO or the PBX is matched with ringing detection circuitry in the KSU. The ring detect can range from 200 to 900 msec, programmed in 100 msec increments. This timer helps prevent false ringing.

200.33 CONFERENCE

There are three different types of conferencing:

A. Add On Conference

Up to five internal parties can engage in a conference, or four internal parties with a limit of one external party.

B. Multi-Line Conference

One internal station can engage in a conference with two outside parties.

C. Unsupervised Conference

The conference initiator can exit a conference with two outside parties and leave them in an unsupervised conference. The initiator can re-enter the conference at any time. The Starplus Digital (SPD) Key Telephone System can automatically terminate the call when both parties hang up, when Loop Supervision is provided by the telco and enabled in the data base.

A programmable conference timer will disconnect the unsupervised conference if the initiator does not re-enter.

200.34 CONFERENCE ENABLE/DISABLE

This feature will allow the system to be administered on a per station basis for the ability of a station to initiate a conference.

200.35 DATA BASE PRINTOUT (DUMP)

Through a system programming command, either portions of or a complete data base dump can be printed using the RS232C connector located on the Starplus Digital (SPD) Key Telephone System Central Processing Board (CPB).

200.36 DAY/NIGHT CLASS OF SERVICE (COS)

This feature allows stations that are a certain COS during the day, to be assigned a different COS when the system is put in the night mode. The night COS goes into affect when the system is placed into the night mode, manually or automatically. This prevents the misuse of phones after hours.

200.37 DEFAULT BUTTON MAPPING

The Starplus Digital (SPD) Key Telephone System allows for 28 flexible buttons on each Enhanced or Executive Digital Terminals to be flexibly assigned to CO/PBX lines, DSS buttons, Speed Dial or Feature buttons. However the system will power up with a default button mapping as shown in Figure 200-1.

200.38 DIAL PULSE SENDING

Each CO interface circuit for outside lines can be programmed to send dial pulse or DTMF signals.

Dialing speed and break/make ratios are programmable.

200.39 DIALING PRIVILEGES

The system provides a flexible means of providing toll or dialing restriction. Through the assignment of class of service (both station and outside line) many combinations of allow and deny numbers can be set. Both area and office codes can be screened for allow/deny privileges.

200.40 DIRECT INWARD SYSTEM ACCESS (DISA)

Allows as many as three simultaneous outside line calls to be programmed to provide direct access to the system and the use of features such as WATS lines, intercom dial tone or the ability to dial out on outgoing trunks without going through the attendant. The duration of a Trunk to Trunk DISA call can be set by the system administrator.

A. Programmable Access

A 3-digit security code can be assigned in the system database to restrict unwanted use of the DISA circuits. Each DISA line can be programmed independently for 24 hour DISA use or night DISA use only.

B. CO Line Group Access

Incoming DISA callers may access all line groups such as FX or WATS lines or other outgoing services from home or while away from the office.

C. Station Access

DISA callers may dial any station directly without going thru the attendant.

If a DISA caller attempts to call a station that is busy or does not answer the system will return ICM dial tone at the end of a programmable timer (Preset Forward Timer). This will allow the DISA caller to try another station without having to dial into the system again.

D. Trunk-to-Trunk:

The DISA Trunk-to-Trunk (or Conference) mark on the CO line governs a DISA callers ability to access other outside lines. CO lines must have DISA Trunk-to-Trunk enabled to allow a DISA caller to establish an outgoing trunk-to-trunk connection. This allows for specific CO line access restriction on DISA calls.

200.41 DIRECT STATION SELECTION

The user with DSS buttons assigned at their Digital Terminal can call an intercom station by simply

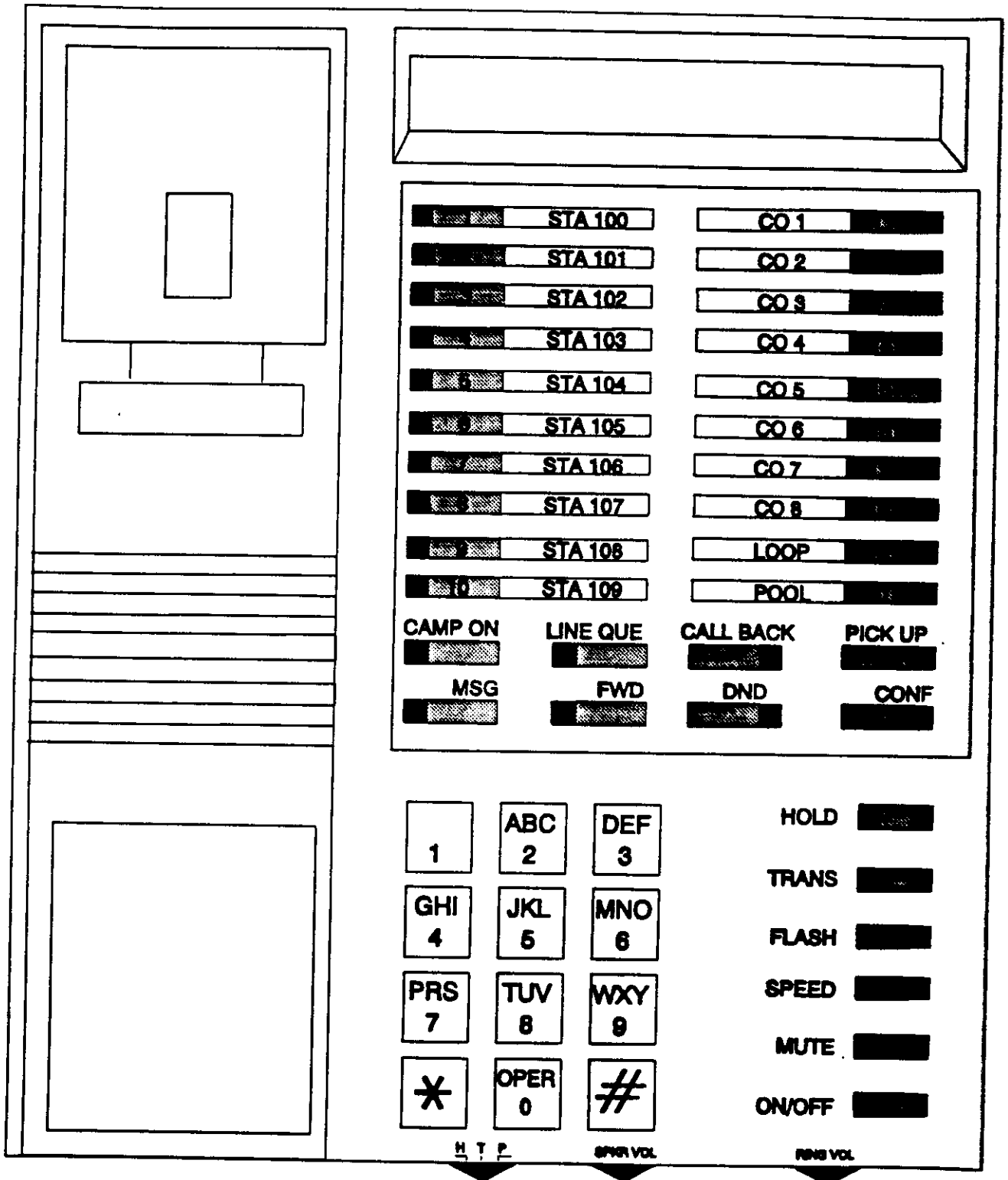


Figure 200-1 Default Button Mapping

pressing the appropriate DSS button. The called station is automatically signaled.

200.42 DIRECTED CALL PICKUP

A. Call Pick-up - Station

A station can pick up an intercom call, transferred, incoming, or recalling outside line call to a specific unattended station. The call must be a tone ringing call.

B. Call Pick-up - UCD Groups

Stations outside of a UCD group can pick up an intercom call, transferred, incoming, or recalling outside line call ringing to a specific UCD station. The call must be a tone ringing call.

200.43 DISABLE OUTGOING CO LINE ACCESS

This feature allows the first Attendant station to dial a code and disable a CO line from outgoing CO calls. This applies to all station(s) that have access to that line. Incoming status is not affected. This feature is a part of the "Maintenance" package.

200.44 DO NOT DISTURB (DND)

Placing a keyset in DND will eliminate incoming outside line ringing, intercom calls, transfers and paging announcements. A ringing station may go into DND to silence ringing. The attendant can override a station in DND. The station in DND can use the telephone to make normal outgoing calls. A station can be denied this feature through programming.

A. One-Time Do Not Disturb

Allows a station user to turn off muted ringing that occurs while off hook (handset or ON/OFF) on another call. Useful when having an important conversation and do not wish to be disturbed by ringing. The station, while off hook, (ON/OFF or handset) depresses the DND button which eliminates muted ringing. When the station goes on-hook the DND button is extinguished and DND is canceled.

200.45 DTMF SENDING

Each CO interface circuit for outside lines can be individually programmed to send DTMF (tone) or dial pulse signals.

200.46 EMERGENCY TRANSFER

Each OPX box will provide power transfer to specified customer provided SLT's.

200.47 END TO END SIGNALLING

This feature indicates the capability of the system to accept DTMF tones from stations, send them through the public network and have them received at the distant end for computer access, or a variety of control functions or inward call completion at a distant switching system.

200.48 EXCLUSIVE HOLD

When a line is placed on Exclusive Hold, no other station in the system can retrieve this call. Hold may be programmed to be activated on the first or second depression of the Hold button. CO Lines while in a transfer hold are always placed in an Exclusive Hold condition.

200.49 EXECUTIVE OVERRIDE

This feature allows certain stations to be designated as executive stations with the ability to override and "Barge in" on other keysets engaged in conversation on a CO line. Stations engaged in intercom conversations can be overridden, however, the intercom call will be dropped when the override occurs.

In addition to the station programmable option a system programmable option will enable or disable a warning tone when the station marked as an executive is cut into the conversation. This is useful for UCD agent supervisor or training personnel who require a service observing option.

NOTE: A decrease in volume may occur on the CO line after the barge-in occurs and each user will receive a conference display message on their keysets.

CAUTION: USE OF THIS FEATURE WHEN THE EXECUTIVE OVERRIDE WARNING TONE IS DISABLED MAY BE INTERPRETED AS A VIOLATION OF FEDERAL OR STATE LAWS, AND AN INVASION OF PRIVACY. CONSULT COUNSEL WITH RESPECT TO APPLICABLE LAW BEFORE INTRUDING ON CALLS USING THIS FEATURE.

200.50 EXECUTIVE/SECRETARY TRANSFER

There are four sets of Executive/ Secretary pairings available. When the Executive station is busy or in DND, the Secretary station will receive intercom calls and transfers. The Secretary station can signal the Executive in DND by using the Camp On feature.

200.51 EXTERNAL NIGHT RINGING

The system can be programmed so that CO lines marked for UNA will provide ringing out the external page ports when the system is placed into Night mode.

200.52 FLASH

Provides telephone users with the ability to terminate an outside call or transfer a call behind a PBX

or Centrex and restore dial tone without hanging up the handset. A FLASH button is located on each Digital Terminal.

200.53 FLASH ON INTERCOM

This feature enables key station users to utilize the Flash Key to terminate pages and intercom calls. While connected to a page zone or another internal station pressing the Flash key will terminate the call and return intercom dial tone.

200.54 FLASH WITH SPEED DIAL

A flash can be programmed within a speed dial number. When this is done, a pause will automatically be inserted before the remaining speed dial digits are sent.

200.55 FLEXIBLE ATTENDANT

Any three Digital Terminals in the system can be assigned as attendant stations. These stations will receive recalls and can place the system into Night Service. The attendant stations must be either Enhanced or Executive stations.

200.56 FLEXIBLE BUTTON ASSIGNMENT

Each Digital Terminal has 28 flexible buttons which can be individually programmed. One of the following seven operations can be selected for each button: Also refer to Sec. 200.22.

- Outside line. Automatically accesses assigned line. (Assigned in database)
- DSS/BLF. Automatically signal assigned station and provides BLF for off-hook and DND. (User programmable)
- Feature. Any feature with a dialing code (ie: Personalized Messages, Paging, Account Code, Call Park, Music, etc.) can be assigned to a flexible button. (User programmable)
- Group Access. (ie: UCD, Hunt, Voice Mail group pilot numbers) (User programmable)
- Speed dial. Automatically dials a Speed number. (System, Station, Saved Number Redial, Last Number Redial) (User programmable)
- Pooled group access. Some or all outside lines can be grouped; pressing this button accesses the highest numbered unused CO line in that group. (Assigned in database)
- Loop. Used to answer a transferred call on a line for which a user does not have a button assigned. (Assigned in database)

200.57 FORCED ACCOUNT CODES

The Starplus Digital (SPD) Key Telephone System allows the system to be arranged so that station users must enter an account code before placing an

outside call. Account codes can also be used as a Traveling Class-of-Service to upgrade a restricted stations class-of-service for unrestricted dialing. Account codes must be entered before the call when forced.

200.58 FORCED LEAST COST ROUTING (LCR)

The Starplus Digital (SPD) Key Telephone System may be programmed on a per station basis to force the use of LCR for outgoing accessed. This allows the system administrator to maintain greater control over dialing patterns and the lines used for placing outgoing CO calls.

200.59 GROUP CALL PICK-UP

Stations can be placed in one or more of four pick-up groups. Stations within a group can pick up tone ringing intercom calls, recalling outside line ringing, or transferred outside line calls for another station in that group.

200.60 HEADSET COMPATIBILITY

The electronic Digital Terminals are designed to allow the connection of an industry standard, electret mic compatible, modular headset. The user connects the modular headset to the handset jack on the telephone leaving the handset in place. The ON/OFF button on the Digital Terminal is then used to activate the headset.

200.61 HEADSET MODE

Each Electronic Digital Terminal can be individually programmed for headset operation. When programmed, an industry standard Headset with it's adapter box may be connected to a Digital Terminal for headset use. This allows handset or headset operation by switching the selector switch on the adapter box. Speakerphone operation and call announce on intercom are disabled while a station has enabled headset mode.

Once programmed in station programming the user may then select between headset mode or normal handset/speakerphone mode by simply dialing a code or pressing a user programmable flex button.

200.62 HEARING AID COMPATIBLE

All Electronic Digital Terminals and Single Line Telephones are hearing aid compatible in compliance with the FCC Part 15, section 68.316. This allows the telephone to be used in conjunction with users wearing hearing aids.

200.63 HOLD PREFERENCE

This allows either Exclusive or System hold as the primary hold on the first depression of the HOLD button, depending on programming.

200.64 HOLD RECALL

When an outside call has been on Hold for a programmable length of time, recall ringing tone is sent to the station placing the call on Hold. If this station does not answer the recall, a recall tone is sent to the attendant(s).

200.65 HOT LINE/RING DOWN

Electronic Digital Terminals may be programmed to immediately call or ring down a particular station or outside number upon going off hook. This is performed by programming the stations Off-Hook preference to activate a DSS or Speed dial feature key.

200.66 HUNT GROUPS

The system can be arranged for up to eight (8) Hunt groups. Each Hunt group can contain up to eight stations each. Each Hunt group is independently arranged to utilize either a pilot hunting technique or station hunting technique.

A. Pilot Hunting

Incoming CO, transferred CO, and intercom calls can be directed to a pilot extension number of a Hunt group. The system will search sequentially (in the order the extensions were entered in the data base programming) for an idle station in the group and will ring that station. Calls directed directly to stations (by calling the extension number) within the hunt group will not hunt but receive call progress tones of the extension dialed.

B. Station Hunting

Incoming CO, transferred CO, and intercom calls that are presented to a busy, or DND station, that is a member of a Station Hunt group, will search sequentially (in the order the extensions were entered in data base programming) for an idle station in the group and will ring that station. Calls can also be directed to the groups pilot number for hunting.

C. Hunt Group Chaining

Hunt Groups can be chained or joined together forming larger Hunt Groups. This is accomplished by assigning a pilot hunt group number as the last member of a group.

200.67 INCOMING CO LINES OFF-NET FORWARD (VIA SPEED DIAL)

Allows the first attendant to forward incoming CO calls to an off-net location. The attendant can forward a group of CO lines or all CO lines to a off-net location. The attendant must have a direct appearance of the CO line(s) to be forwarded. Off-net

forwarding is accomplished via use of a speed dial bin.

200.68 INTERCOM CALLING

The System's architecture allows non-blocking of intercom calls. A station is reached on intercom by dialing the associated three-digit number.

200.69 INTERCOM SIGNALING SELECT

Users can control the method by which they receive intercom calls and signals. A convenient intercom signal switch is located on each Digital Terminal for easy selection. The choices are:

- Handsfree (H)(left position). The station user, upon hearing a tone burst and voice announcement over the speaker, can reply handsfree.
- Tone Ringing (T)(center position). A standard tone ring notifies the party of an incoming intercom call. The called party answers by lifting the handset or moving the switch to the handsfree (H) position or pressing the ON/OFF button.
- Privacy (P)(right position). The station user receives a burst of tone and a voice announcement over his/her speaker. The microphone is deactivated for privacy. The called party must lift the handset or press the MUTE button to answer the call.

200.70 LAST NUMBER REDIAL (LNR)

Permits the automatic redialing of the last telephone number dialed on an outside line. Up to 32 digits can be stored. Outside line selection of the same line used is automatic.

200.71 LCD INTERACTIVE DISPLAY

The 34 button Executive Digital Terminal provides the user with visual indication of call status. Calls to and from other extensions, number dialed, line used and camp-on are some of the features displayed.

200.72 LEAST COST ROUTING (LCR)

Allows the system to automatically select the least costly route available according to the number dialed, the time of day/day of week, the class of service (COS) assigned to the station/trunk group priority level assigned.

A. LCR 3-Digit Table

This table is divided into 2 sections: "Leading 1" ("1" is dialed before the number) and "Non Leading 1" (no "1" is dialed before the number). This gives the system the ability to handle call routing in areas that require a "1" before a long

distance number as well as in areas that do not require the "1".

B. LCR 6-Digit Table (Office Codes)

The 6-Digit Table can include 20 office code maps. Each map can be programmed to route up to 800 office codes to one of the 16 possible route lists. Each map must be associated with a specific area code in the 3-Digit Table. Several different office code maps can be used with the same area code to provide additional routing flexibility.

C. Route List Tables

Up to 16 different routes can be programmed. Each route can contain up to 4 route lists - one for each of the 4 time periods. Up to 7 CO line groups (routing choices) and their corresponding Insert/Delete Tables may be programmed within each route list.

D. Insert/Delete Tables

There are 20 Insert/Delete Tables. Up to 20 digits, including pauses, can be inserted and up to 16 digits deleted. Digits can be inserted before or after the number dialed, but can be deleted only from the beginning of a number dialed.

E. Weekly Time Tables

The least costly route for a particular dialed number may be different at different times of the day and on different days of the week. To accommodate this situation, there are 2 Time-of-Day tables - Daily Start Time Table and Weekly Schedule Table.

The Weekly Time table determines which one of the 4 Routes LCR should use based on the Time-of-Day and Day-of-the-Week.

F. Daily Start Time Tables

The Daily Start Time tables allow the user to match the Time Periods discount structure to the carriers rate schedule.

G. Exception Tables

This table is used to route operator assisted calls and any other calls which would use a 1- or 2-digit number rather than a 3-digit area code.

H. Default LCR Database

In an effort to decrease installation and set up time usually associated with LCR a default LCR data base has been incorporated. The default LCR data base will provide basic routing for all local and long distance dialing.

I. LCR Routing for Toll Information

This feature adds provisions to the LCR call processing which will allow common call routing for all toll information calls.

1-(XXX)555-1212, (XXX)555-1212, 1-555-1212 and 555-1212 calls will all be intercepted and sent to a selected route in the Route List Table. Numbers dialed will be integrated and if it is determined to be a toll information call, either preceded with an area code or without or with a leading digit 1 or not, the call will be sent to the route designated in programming.

200.73 LOOP BUTTON CO LINE ACCESS

A station not having a direct appearance for a CO line will receive incoming CO calls and transferred CO calls under the loop button. Only one call at a time can be connected to a keyset on the loop button. If more than one loop button is on a key set, the loop buttons may be conferenced together. If all programmed Loop buttons on a keyset are busy or have a CO call on hold, the party attempting to transfer a CO line to that station will receive busy tone and cannot transfer the call to that station. If a transfer is attempted, the CO line will recall the initiator immediately.

CO lines are also presented to a Loop when dialing out using LCR or when using speed dial to dial out and the line chosen does not appear on the key station.

200.74 MEET ME PAGE

Users may answer a page call from any phone in the system by dialing a special code. The party who initiated the page must remain off-hook.

200.75 MESSAGE WAITING

Stations that are busy, unattended, or in DND can be left a message indication by other stations in the system. Up to five messages can be left at one keyset. Upon return to the station, the user can press the flashing MSG WAIT button to ring each party in sequential order.

200.76 MESSAGE WAITING REMINDER TONE

A key station with a message waiting can be reminded at a timed interval with a tone.

200.77 MUSIC ON HOLD

A music source, when connected to the system, provides music to all lines on Hold, parked calls, transferred calls and calls waiting to be answered by Uniform Call Distribution (UCD).

200.78 MUTE KEY

Pressing the MUTE button while in the speaker-phone mode or using the handset will disable the

microphone but not affect the speech coming over the speaker or handset. Pressing the illuminated MUTE button again will reactivate the microphone.

200.79 NAME IN LCD DISPLAY

This feature allows every extension (Key or SLT) the capability to program the users name, for that station, so that people using display telephones will see the name instead of the station number on their display. The name is programmed at each station by the user and may be up to seven (7) letters in length.

200.80 NIGHT SERVICE

A. Manual Operation

The Attendant(s) can control the use of Night Mode manually by pressing the NIGHT (DND) button. An LED will indicate when the system is in Night Mode operation.

B. Automatic Night Mode Operation

The Starplus Digital (SPD) Key Telephone System can be programmed so that the system is automatically placed into night mode. A programmable weekly time schedule allows the system administrator to preset the time the system is placed into night mode and removed from night mode on a daily basis including weekend operation.

The Attendant(s) can override the Automatic Night mode schedule simply by pressing the NIGHT (DND) button.

C. Weekly Night Mode Schedule

A programmable weekly night mode schedule provides for 24 hour, 7 day a week automatic night mode operation. The system can be put into and out of night mode automatically on a daily basis.

D. Night Class of Service (COS)

The system allows each station to be assigned a different COS for night operation. The night COS goes into effect when the system is put into night mode manually or via the automatic schedule. Prevents the misuse of phones after hours.

E. Universal Night Answer (UNA)

Incoming CO lines can be programmed for Universal Night Answer (UNA). Stations which do not have access to a line during the day can answer that line while the System is in the Night Mode by dialing a UNA code.

F. Night Ringing Assignments

Each CO line may be individually programmed for Night ringing to other stations, to Hunt groups, UCD groups, Voice Mail groups, or off-net via speed dial. When the system is placed into night mode, manually or automatically, ringing will follow the night ringing assignments for each CO line.

G. External Night Ringing

The system can be programmed so that CO lines marked for UNA will ring on the external page speakers.

200.81 OFF-HOOK PREFERENCE

A. Auto Line Access

Each station, key or SLT, may have their phone programmed to access a particular CO Line such as a private line or a line from a Group of CO lines upon going off-hook. This is useful in Centrex or PBX applications when station users have dedicated lines. Outside line dial tone is received just by going off-hook, without the need to dial an access code.

B. Auto Feature Access

In addition to auto line access Digital Terminals have the ability to have their off-hook preference select a DSS or feature button upon going off-hook or pressing the ON/OFF button.

C. Hot Line/Ring Down

Electronic Digital Terminals may be programmed to immediately call or ring down a particular station or outside number upon going off hook. This is performed by programming the stations Off-Hook preference to activate a DSS or Speed dial feature key.

D. Intercom Access

When off-hook preference is enabled, at a key station, that station may still obtain intercom dial tone for accessing internal stations or other system features. This is done either by pressing an intercom button or dialing their own intercom station number prior to going off-hook.

E. User Programmable Preference

Based on a station programmable option Digital Terminals may be given the ability to enable, disable or change their off-hook preference by dialing a code. This option can be denied in station programming on a per key station basis.

200.82 OFF-HOOK SIGNALLING

If a station has been programmed to receive direct outside line ringing and is busy on another call, that station will receive muted ring to indicate another call is ringing in. Additionally CO calls may be "camped-on" to a busy station and receive muted ringing.

200.83 OFF-PREMISE EXTENSIONS (OPX)

The Off-Premises Extension Box (OPX) provides 1 FCC registered 2500-type single line interface ports. This enables the use of 1 off-premise 2500 telephone sets. A precise tone plan is provided to OPX stations. A 48 volt power supply is required when installing an OPX Box.

200.84 ON HOOK DIALING

The Digital Terminal user can place calls without lifting the handset. If the speakerphone is disabled, the handset must be lifted to converse.

200.85 ON LINE PROGRAMMING

Changes to the system data base can be made without interrupting normal system operation. Programming may be performed using a key station terminal connected to the system (Sta 100) or via an external terminal either on-site or remotely.

200.86 PAGE/RELAY CONTROL

The SPD 1428 and SPD 2856 systems offer relays that may be individually programmed for: External Page, Loud Bell Control, CO Line Control, Power Failure Transfer, and Recorded Announcement uses. Up to four Relay/Sensor interface modules may be installed on either system. Each relay/sensor interface module contains three (3) independent relays and three (3) sensing input circuits. In addition, each 4x8 CO/Station Interface card of the SPD 2856 system contains a Relay Contact (for up to seven (7) "on-board" relays) that may also be assigned to any of the functions mentioned above.

200.87 PAGING**A. External Paging**

There are four (4) external paging zones available in the SPD 1428 and seven (7) available in the SPD 2856 systems. External Paging requires a three-digit dialing code. External paging requires an externally provided amplifier and paging system. One (1) make and one (1) break contact are provided with the page zone on the 4x8 CO/Station board. Since no "on-board" relay contacts are available on the SPD 1428 for external paging, the Relay/Sensor Interface module is used for this purpose.

B. Internal Paging

There are four internal paging zones available in the Starplus Digital (SPD) Key Telephone Systems. A station can be in any or all zones or in no zone at all. Stations not assigned to a page group can still make page announcements, if allowed in station programming. Stations can be assigned to a page group in order to receive pages but not allowed to make page announcements. Since no "on-board" relay contacts are available on the SPD 1428 for internal paging, the Relay/Sensor Interface module is used for this purpose.

C. Paging Access Restriction

Programming on a per-station basis, can deny any station the ability to make any type of page.

200.88 PAUSE TIMER

When dialing a speed number, a timed pause between digit sending can be placed in the number. The length of this pause can be programmed in the system database.

200.89 PBX DIALING CODES

The System will allow five one or two-digit access codes to be entered into memory. When one of these codes is dialed, this signals the KSU that toll restriction is to be applied at the next dialed digits after the code. If one of these codes is not dialed, toll restriction does not apply. This allows the dialing of PBX extensions 100, 110, 111, etc. This functions on lines marked as PBX type lines in programming.

200.90 PERSONALIZED MESSAGES

Each station (Key and SLT) can select a pre-assigned message to be displayed on the LCD of the Digital Terminal calling that station. There are ten possible messages which can be displayed:

- VACATION
- RETURN MORNING
- RETURN AFTERNOON
- RETURN TOMORROW
- RETURN NEXT WEEK
- BUSINESS TRIP
- MEETING
- HOME
- ON BREAK
- LUNCH

A. Personalized Message Code on a Flex Key

This feature allows a key station user to program the pre-selected message code [633] under a Flex key. This speeds access of the pre-selected messages.

200.91 POOL BUTTON OPERATION

The Pool Group Key is used primarily to access CO lines that do not appear on a station so that outgoing calls may be made. Pooled group keys are associated to CO line groups and may be programmed for use on any of the flexible line buttons. CO lines are accessed in descending order of priority starting with the highest numbered available (not busy) CO line in a CO line group.

Stations may have as many POOL buttons as their are CO line groups (7). Multiple POOL buttons for the same group are also allowed.

200.92 PREFERRED LINE ANSWER

A station with Preferred Line Answer can answer any assigned outside, transferred, or recalling line, or queue callbacks by lifting the handset or pressing the ON/OFF button.

200.93 PRIVACY RELEASE

Privacy is insured on all communications in the system. If desired, the customer may elect to disable the Automatic Privacy feature. Thus allowing another station to join in on existing CO Line conversations.

A. Per Station Option

Each station may be programmed to give the station the capability to join an existing conversation simply by pressing the CO line button that is in use. A warning tone is presented to all parties when the station enters the conversation. The CO line must also have privacy disabled to allow the cut-thru.

B. Per CO Line Option

This feature allows each CO line to be individually programmed for privacy. This feature is useful for maintaining security on such lines as Data lines, Private lines, or special circuits requiring privacy. If privacy is disabled on a CO line then, while in use, another station may enter the conversation simply by pressing the CO line button. A warning tone is presented to all parties prior to actual cut-thru. The station attempting to enter the conversation must also have privacy disabled.

200.94 PRIVATE LINE

Private line programming allows certain lines to ring at a specific station only. When placed on Hold, these lines are active at the programmed station only. A private line can be transferred to other stations.

200.95 PULSE-TO-TONE SWITCHOVER

When commanded, the system will change the signaling on an outside line from dial pulse to DTMF (tone), allowing the use of common carriers behind a dial pulse outside line. This can be done manually when dialing, or can be stored within a speed dial number.

200.96 RANGE PROGRAMMING

The Starplus Digital (SPD) Key Telephone System allows for range programming when programming Co lines and Stations. Range programming allows you to program all parameters alike for the entire range or you can change or modify a few items that will be copied to all members in the range.

200.97 REMOTE ADMINISTRATION

The Remote Administration feature allows authorized personnel to access the administration programming via a terminal device (portable terminal device or personal computer with communications software package).

The feature permits the review and entry of the customer database in the same manner as via the telephone at "admin" extension 100. The terminal device can be connected directly to the RS232 connector on the CPB board, or can be accessed by a telephone modem linking the CPB's RS232 connector (via a CO line) to a remote location.

200.98 REMOTE SYSTEM MONITOR AND MAINTENANCE**A. Remote System Monitor**

The Remote Monitor feature provides remote access to the installed system for diagnostic purposes. These capabilities benefit Service personnel enabling them to support the end user remotely. Different levels of access, via password, allows authorized personnel to trace, monitor and "up-load" critical information directly from the Starplus Digital (SPD) Key Telephone System. This provides a more accurate means of acquiring system information that leads to a quick resolution of problems that may occur. This is all done without interfering with ongoing call processing or normal system operation, and in many cases may be performed without a site visit.

Capabilities allowed and reserved for this "High level troubleshooting" in addition are:

- Monitor Mode
- Enable & Disable Event "Trace"
- Dump "Trace Buffer" (up-load)

B. Remote System Maintenance

The Remote Maintenance feature allows the Interconnects' technical staff to review the systems configuration data and individual card slot configuration data. This can be done "on site" using a data terminal or remotely using modem to modem access to a remote data terminal.

200.99 SAVE NUMBER REDIAL (SNR)

Any number dialed on an outside line can be saved permanently to be used at any time. This number is saved until a new number is stored.

200.100 SINGLE LINE TELEPHONE (SLT) COMPATIBILITY

The Starplus Digital (SPD) Key Telephone System supports industry standard 2500 Type (DTMF) single line instruments. A maximum of 55 single line telephones may be installed and operate on the SPD 2856 Digital Terminal System. OPX Boxes are required.

200.101 STATION MESSAGE DETAIL RECORDING (SMDR)

The Starplus Digital (SPD) Key Telephone System provides one industry standard RS-232C port for dual purpose use and a second port is optional for SMDR output, each allowing connection to an external printer or call accounting device. The system provides details on both incoming and outgoing calls. This feature is programmable to allow all calls or just outgoing long distance calls to be recorded. The system tracks calls by outside line, number dialed, time of day, date, station that placed the call and duration of call. Account codes may also be entered and recorded.

200.102 SPEAKERPHONE

Both Enhanced and Executive Digital Terminals are equipped with a speakerphone. However, the speakerphone can be programmed to work in one of three ways:

- Normal speakerphone operation.
- Disabled for outgoing and incoming CO calls but handsfree on intercom allowed.
- Headset operation allowed.

200.103 STATION CLASS OF SERVICE

Each station is assigned a Class of Service which governs that stations dialing privileges. Day Class of Service and Night Class of Service assignments to stations provide the system administrator additional control over station dialing, preventing misuse of phones after hours. Six uniquely defined Classes of Service are available for assignment to stations on a per station basis and all six are available for day

and night assignment. Station Class of Service works in conjunction with CO line Class of Service to provide the most flexible means for offering custom toll restriction. As a part of the Dialing privilege assignment through Class of Service the system offers two programmable Allow and Deny tables for additional customization of a toll restriction plan for a particular customer. In addition, each station can reference up to 4 special area code tables.

200.104 STATION SPEED DIAL

Each station user can program up to 20 frequently dialed numbers of up to 24 digits in length. Pauses, flash commands, pulse-to-tone switchover, and NO-DISPLAY characters take up digit spaces. There are a total of 1120 speed locations to be divided among all telephones.

Numbers are dialed by use of the SPEED button and a two-digit code. This feature can additionally be assigned to any of the 28 buttons in the flexible button field on each keyset for one-button activation.

200.105 SYSTEM CAPACITY**A. Up to 14x28 Configuration:**

The SPD 1428 system will support a maximum of 14 outside CO circuits and 28 station circuits.

B. Up to 28x56 Configuration

The SPD 2856 system will support a maximum of 28 outside CO circuits and 56 station circuits.

200.106 SYSTEM HOLD

When a line is placed on System Hold, any station in the system with access to that line can retrieve the call.

200.107 SYSTEM SPEED DIAL

Up to 80 commonly dialed numbers can be programmed into System Speed Dial for use by stations allowed this feature. These numbers can be up to 24 digits including pauses, flash commands, pulse-to-tone switchover, and no-display characters. The last 40 numbers will not be monitored by toll restriction.

200.108 TOLL RESTRICTION (TABLE DRIVEN)

The system provides a flexible means of providing toll restriction to internal stations of the Starplus Digital (SPD) Key Telephone System. Each station is assigned a Class of Service for day mode operation and one for night mode operation these station COS's work in conjunction with a CO line Class of service to allow for customized toll restriction. Two (2) Allow and Deny tables along with four (4) special tables afford the system administrator to devise a

variety of complex toll restriction or dialing privilege schemes.

200.109 TRANSFER RECALL

Screened and unscreened transfers will recall the initiating party if unanswered for a programmable length of time, and then if unanswered, will recall the attendant.

200.110 UNIFORM CALL DISTRIBUTION (UCD)

Eight Uniform Call Distribution (UCD) groups can be programmed, each containing up to eight 3-Digit station numbers. Each group is assigned a pilot number. When this number is dialed, the first available agent in that group is rung. Calls are routed to the station that has been on-hook for the longest period of time.

A. Alternate UCD Group Assignments

An alternate UCD group can be programmed so that if stations in one group are busy, the alternate group will be checked for an available station.

B. Overflow Station Assignments

An overflow station may be assigned to route callers in queue to a designated station after a specified time. The overflow station may not be one of the UCD group stations.

C. Incoming CO Direct Ringing

CO Lines can be programmed to ring directly into a UCD group. When all agents are busy and RAN is enabled, the system will answer the caller and present the 1st RAN announcement automatically.

D. Recorded Announcements (RAN)

Recorded announcement devices can be assigned to provide up to two different messages, if all stations in a UCD group are busy. The two messages are available to all eight (8) UCD groups in different configurations. A RAN device can provide an announcement to one caller at a time. Subsequent callers will be queued onto the message on a first-in basis.

E. Number of Calls In Queue Display

There are two methods of viewing UCD Group call queue status.

1. In-service UCD agents and the assigned overflow station will see the quantity of calls in queue on the LCD of their station for the UCD group of which they are a member. If every member of a UCD group is busy and calls are in queue, the "XX CALLS IN QUEUE" display will be seen at all UCD members of that group.

NOTE: If a UCD member is taken out of the group (ie. DND, Call Forward, Unavailable etc.) they will not receive calls in queue information.

2. Any station not assigned in a UCD group can view the number of calls in queue for any given UCD Group. To view the number of calls in queue the station user dial's the Calls In Queue code (or presses a programmed FLEX button with this code) then enters the UCD group desired. The LCD will display, on a real time basis, the number of calls in queue for that group.

F. UCD Auto Wrap-Up w/ Timer

After completion of a UCD call (on-hook) the agent will not be subjected to another UCD call for the duration of the Auto Wrap-Up timer (regardless of the number of calls in queue), allowing the agent to finish call related work or access other facilities. This will allow agents to remove themselves from the group (ie. DND, Unavailable, Call Forward or originate another call). The auto wrap-up timer is programmed as part of the UCD data base. (System-wide)

G. UCD No-Answer Timer

If a call routed to a station via UCD is not answered by the UCD Agent/Station before the No-Answer timer expires, the call will be returned to UCD Queue with the highest priority. In addition, the station that failed to answer the ringing UCD call will be placed into an unavailable state.

H. UCD Available / Unavailable Mode

Stations programmed into a UCD group may log off and on to their assigned UCD group by dialing an Available/Unavailable code. When an agent is in the Available mode that agent will receive UCD calls in the normal manner. When an agent is in the Unavailable mode that agent will no longer receive UCD type calls, however may receive non-UCD calls. Agents that have logged off by going Unavailable will receive a visual reminder that they are logged off with a flashing LED and or a LCD display message.

200.111 UNIVERSAL NIGHT ANSWER (UNA)

Incoming CO lines can be programmed for Universal Night Answer (UNA). Stations which do not have access to a line during the day can answer that line while the System in the Night Mode by dialing a UNA code. In order to utilize this feature, a loop button must be present on the station.

200.112 VOICE MAIL GROUPS (VM)

The Voice Mail feature automatically handles unanswered calls. Stations may forward calls to a voice mail group (for leaving mail) or may call the voice mail group directly (to retrieve mail) with no assistance from the attendant. Up to eight (8) voice mail groups can be configured in the system. Each group can contain up to eight voice mail stations, each of which interfaces with a port on an OPX box. Each voice mail "station" can be shared by a number of actual users. An OPX Box and a 48 vdc power supply are required when utilizing the Starplus Digital (SPD) Key Telephone System Voice Mail "In-Band" integration.

A. VM In-Band Signaling Integration

The Starplus Digital (SPD) Key Telephone System integrates with a wide range of Voice Mail systems through the use of "In-Band" signaling.

B. VM Message Waiting Indication

When Voice Mail has received a voice message for a user who has a station on the Starplus Digital (SPD) Key Telephone System, the VM connected to the system will leave a message waiting indication at the VM users station. When the station user retrieves their mail, the VM system will cancel the message waiting indication left at a station via a VM port.

The message waiting indication will appear on the programmed Voice Mail (group) button. If such a button has not been programmed, a voice mail message waiting indication will appear on the MSG WAIT button as a normal message waiting signal.

C. VM CO Disconnect Signal - Pass Thru

To avoid Voice Mail ports from being tied up, as a result of CO line callers abandoning the call or not exiting the VM system properly, a disconnect signal has been provided to notify the VM system that a CO caller has abandon. "Silence" is provided to the VM port followed by "busy tone" to aid the VM system to recognize that an intercom caller has abandoned the call.

Disconnect digits may also be programmed.

D. VM Tone Mode Calling Option

Voice mail systems and/or Automated Attendants can utilize the Calling Station Tone Mode option. This is useful when using supervised transfer or call screening options on voice mail or auto attendant(s) requiring ringback tone for proper call handling.

200.113 VOLUME CONTROLS

Both speaker and tone ringing volume can be separately adjusted by utilizing the two slide switches on the right side of the keyset.

SECTION 210

SINGLE LINE TELEPHONE FEATURE DESCRIPTION

Single Line telephones have access to most of the system and station features listed in the previous section, however, the additional features listed below are unique to Single Line Telephones. (An OPX Box and 48 vdc power supply must be installed in the system for proper SLT operation) An abbreviated feature index is provided in Table 210-1.

210.1 ACCOUNT CODE

SLT stations may enter an account code, up to 12 digits in length, to identify calls for billing/tracking purposes. The account code may be entered either before the call or during the call (the outside caller is placed on-hold while the account code is entered if during the call.). The account code is recorded on the SMDR printout. Account codes are non-verified and can vary in length from 1 to 12 digits.

210.2 AUTOMATIC LINE ACCESS

SLT's may have their station programmed to access a particular CO Line such as a private line or a line from a Group of CO lines upon going off-hook. This is useful in Centrex or PBX applications when station users have dedicated or individual lines. Outside line dial tone is received just by going off-hook, without the need to dial access codes.

210.3 CALL FORWARD

Single line telephones may direct intercom calls and transferred CO lines to be forwarded to another station. SLTs have access to all forwarding options that Key station users have:

- Call Forward - All Calls
- Call Forward - No Answer [7]
- Call Forward - Busy [8]
- Call Forward - Busy/No Answer [9]
- Call Forward - Off-Net [*]
- Preset Call Forward

210.4 CAMP ON

A busy station can be notified that an outside line is on hold and waiting for them. The busy station is notified of this by a beep tone. Single line telephones can receive a camp on indication or initiate one by using an access code.

210.5 CONFERENCE

An SLT user can initiate a conference with an outside line and one other internal station.

210.6 CONFERENCE WITH PERSONAL PARK

Single Line Telephones (SLT) can initiate a conference between two outside (CO) calls. The Personal Park feature is used in conjunction with the SLT conference code to make this possible. A combination of features are derived from these dial codes (Personal Park, Flip/Flop, and Multi-line Conference).

210.7 DIRECT OUTSIDE LINE ACCESS

Single line telephones can access outside lines by dialing CO line group access codes 9 or 81-87.

210.8 DIRECT OUTSIDE LINE RINGING

Single line telephones can be set up to receive direct outside line ringing. SLTs may be programmed to receive incoming CO Ringing on more than one CO line. However, an SLT can answer only ONE call at a time. If a SLT is busy when a CO call rings in, camp-on tone will be given to that SLT station.

210.9 DIRECTED CALL PICK UP

Tone ringing intercom calls, Initial Ringing CO calls and transferred outside line calls to specific stations can be picked up by single line telephones. For this type of pickup, the stations do not have to be in the same pickup group.

210.10 DO NOT DISTURB

Each telephone user can be allowed to place their phone in Do No Disturb. The user will receive error tone if they are not allowed this feature. They will also receive a confidence tone when lifting the handset to remind them they are in Do Not Disturb. The attendant can override a station in DND.

210.11 GROUP CALL PICK UP

Tone ringing intercom calls, transferred outside line calls, and initially ringing calls can be picked up by single line telephones by dialing a special pickup code. The telephones must be in the same pickup group.

210.12 INTERCOM CALLING

Single line telephones can make and receive intercom calls.

210.13 MESSAGE WAITING/CALL BACK

Single Line Telephones calling a station that is busy, idle, or in Do Not Disturb can leave a message waiting indication to signal the station to call back.

Table 210-1 SLT Alphabetical Feature Index

FEATURE	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
Account Code	S	N	Printer
Automatic Line Access	S	N	N
Call Forward	S	N	N
Camp-On	S	N	N
Conference	S	N	N
Conference with Personal Park	S	N	N
Direct Outside Line Access	S	N	N
Direct Outside Line Ringing	S	N	N
Directed Call Pick-up	S	N	N
Do Not Disturb (DND)	S	N	N
Intercom Calling	S	N	N
Message Waiting/Call Back	S	N	N
Night Service	S	N	N
Off-Hook Preference	S	N	N
Personal Park	S	N	N
Queuing	S	N	N
Station Speed Dial	S	N	N
Transfer	S	N	N

S = Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required

210.14 NIGHT SERVICE

When outside lines are marked UNA and the system is placed into night service, a single line telephone can answer incoming calls on lines it does not normally have access to by dialing [#3]. When External Night Ringing is enabled in database programming, ringing is outputted on the external page ports.

210.15 OFF-HOOK PREFERENCE

SLTs may have their station programmed to access a particular CO Line such as a private line or a line from a Group of CO lines upon going off-hook. This is useful in Centrex or PBX applications when station users have dedicated lines. Outside line dial tone is received just by going off-hook, without the need to dial access codes.

210.16 PERSONAL PARK

Single line telephones can be connected to two calls (Intercom or CO lines) at the same time and "flip/flop" between the two calls. This can be performed with originated or received calls. This feature is also used with SLT multi-line conference feature.

210.17 QUEUING

Single line telephones can be placed in a queue awaiting the first available outside line in a group to become available.

210.18 STATION SPEED DIAL

Each SLT user may program up to 20 individual speed dial numbers. Each speed dial number can be up to 24 digits in length.

210.19 SYSTEM SPEED DIAL

Each SLT user can be allowed access to system speed dial numbers on a programmable basis. The last forty system speed numbers override toll restriction.

210.20 TRANSFER

Outside lines may be transferred by or to single line telephones. These transfers can be either announced or unannounced.

SECTION 220

ATTENDANT FEATURE DESCRIPTION

The Attendant and Attendant(s) with DSS/DLS features of the Starplus Digital (SPD) Key Telephone System are listed and described below in alphabetical order. An abbreviated feature index is provided in Table 220-1.

220.1 ATTENDANT DISABLE OUTGOING ACCESS

The first attendant can disable CO lines, preventing outgoing access to those lines. This is useful for removing a faulty line from service, or for reserving CO lines for important use. All stations that can normally make calls on the lines are affected, but incoming calls are not affected. A CO line may be disabled while it is being used; when the trunk becomes idle, further outgoing access will be prevented.

220.2 ATTENDANT OVERFLOW

System programming allows the attendant station to be programmed so that if the attendant is busy or not there, the call will be automatically forwarded to another predetermined station, VM Group, Hunt Group or UCD group after a programmed period of time. (Refer to Call Forward, Station and Preset)

220.3 ATTENDANT OVERRIDE

Attendant stations may override a busy station or ring a station in DND. While busy, pressing the override key provides override tone and a five second delay before voice cut-through to the called party occurs, automatically placing any outside line call on Hold. The Attendant Override function may be programmed on to a flex button and can be enabled or disabled in programming.

220.4 ATTENDANT POSITION

The system identifies a maximum of three programmable stations as attendants for line recalls and

attendant features. The first programmed attendant can enter system date and time information as well as System Speed numbers from this position without entering the programming mode. The Starplus Digital (SPD) Key Telephone System is placed in Night Service by any programmed attendant pressing the NIGHT (DND) button or dialing the NIGHT code.

220.5 ATTENDANT RECALL

A held CO call left unattended by a station will recall the attendant(s) after a programmable period of time has elapsed. A recalling CO line flashes at a distinctive rate that identifies the originating station of the unanswered call.

220.6 AUTOMATIC NIGHT MODE

In addition to the attendants capability to place the system into and out of night mode manually, by pressing the Night key, an automatic night mode schedule has been added to the system. The automatic schedule is set in data base programming on a week day basis, including Saturday and Sunday. The Attendant can override the automatic schedule by pressing the NIGHT (DND) button.

220.7 INCOMING CO LINE OFF-NET FORWARD

Allows the first attendant to forward incoming CO calls to an Off-Net location. The attendant must have a direct appearance of the CO line to be forwarded. Forwarding can be established on a per CO line group basis, or all CO lines may be simultaneously forwarded to an off-net location.

220.8 TIME AND DATE PROGRAMMING

This feature allows the first programmed attendant to set the time and date without entering the programming mode.

Table 220-1 Attendant(s) Alphabetical Feature Index

FEATURE	AVAILABLE	INTERNAL EQUIPMENT REQUIRED	EXTERNAL EQUIPMENT REQUIRED
Attendant Disable Outgoing Access	S	N	N
Attendant Overflow	S	N	N
Attendant Override	S	N	N
Attendant Position	S	N	N
Attendant Recall	S	N	N
Automatic Night Mode	S	N	N
Incoming CO Lines Off-Net (via speed dial)	S	N	N
Time and Date Programming	S	N	N
ATTENDANT W/DSS/DLS FEATURES:			
Attendant Search	S	N	N
Busy Lamp Field Indicators	S	N	N
Direct Station Calling	S	N	N
Mapping Options	S	N	N
Release	S	N	N

S = Standard Feature; O=Optional: Requires additional hardware; N=No additional hardware required

ATTENDANT W/DSS/DLS FEATURES

220.9 ATTENDANT SEARCH

Allows a user to make a series of intercom calls without hanging up the handset. An intercom connection is switched to another station whenever a DSS key is pressed. Pressing the next DSS key terminates the previous intercom call.

220.10 BUSY LAMP FIELD INDICATORS

Each station key on the DSS console has a corresponding indicator which shows whether the station is idle or busy. The indicator is lit when the station is busy and unlit if the station is idle. A station in DND mode is shown by a flashing indicator.

220.11 DIRECT STATION CALLING

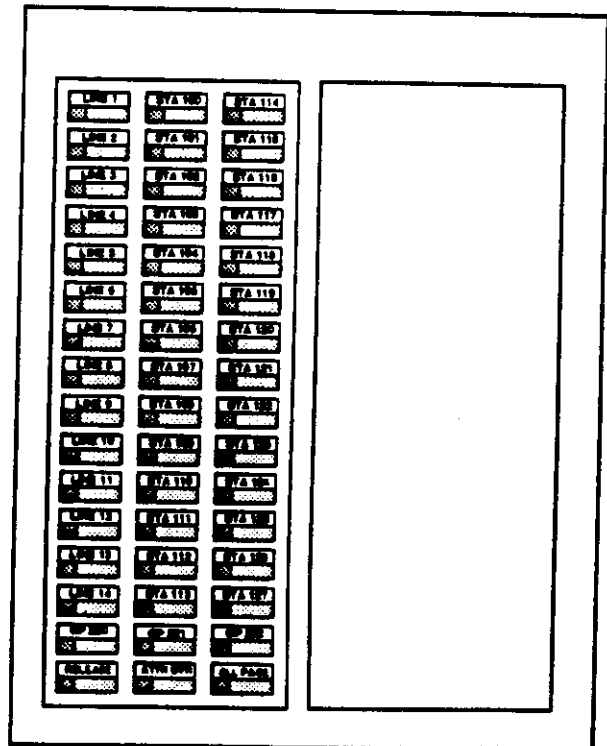
Enables the user to make an intercom voice call to any Digital Terminal in the system. Permits you to automatically put an outside caller on hold and simultaneously make an intercom call to an internal station. Also allows you to transfer an intercom call or outside call that is on hold to another station.

220.12 MAPPING OPTIONS

Each Attendant may have up to three (3) DSS/DLS terminals programmed to work with one attendant station. Each DSS terminal can be programmed in one of three ways:

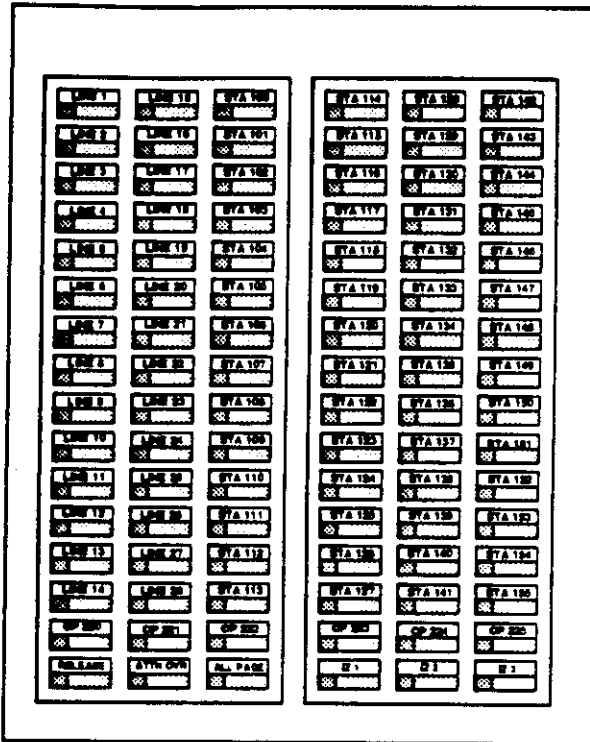
- MAP 1. CO lines 1-14 and Stations 100-127 appear in sequential order with the bottom 6

buttons programmed as the following features:
Call Park Zones, Page Zones, Attendant Override, and Release.



DSS/DLS Console Map 1

- MAP 2. CO lines 1-28 and station 100-113 appear in sequential order with 6 button programmed as features on the button.
- MAP 3. Stations 114-157 appear in sequential order with the bottom 6 buttons programmed as features. Provides the receiving station with DSS buttons when used in conjunction with DSS Map 2 for a full 28x56 CO/Station mapping.



DSS/DLS Console Maps 2 & 3

CO Line ringing on Map 1,2 is determined by CO Line Ringing Assignments.

220.13 RELEASE KEY

Allows the user to disconnect calls while off-hook, speeding up call handling time (MAP 1,3 only).

SECTION 300

STATION FEATURE OPERATION

300.1 INTRODUCTION

The Starplus Digital (SPD) Key Telephone System has a wide variety of features and flexible programming, allowing each telephone user to program his/her telephone to meet his/her own individual needs.

This section of the manual contains the operating instructions for key telephone and Single Line users and includes an illustration of the key telephone used in the Starplus Digital (SPD) Key Telephone System and description of the keys on the telephones and their functions. It is designed to provide step-by-step instructions for operating the Digital Terminals and Single Line telephones in the system. Visual and audible cues which accompany the various steps in the operation of the features are also include

Literature similar to these operating instructions has been prepared for use by the customer in the form of Station, SLT, and Attendant User's Guides.

300.2 KEY TELEPHONE STATION FEATURES

Each Starplus Digital (SPD) Key Telephone System provides the following keys, indicators and features:

HANDSET AND SPEAKER are located at the left side of the front panel. A handset is provided to allow confidential conversation when desired. Lifting the handset from its cradle (going off-hook) disengages the station's built-in speaker.

The speaker is located directly below the center portion of the handset. The station may be operated with the handset on-hook. When this occurs, audio is transmitted to the station user through the station's speaker.

HOLD button enables you to place an outside caller on hold.

TRANSFER (TRANS) button is used to transfer an outside call from one station to another.

FLASH button is used to terminate an outside call and restore dial tone without having to hang up the handset. It is also used to transfer calls behind a PBX or Centrex within those systems.

SPEED button provides you with access to speed dialing, save number redial and last number redial. This button is also used to access speed dial and flex button programming.

MUTE button allows you to switch the built-in microphone on or off when using the speakerphone, or the handset microphone when using the handset. A flex button must be assigned to use this feature.

ON/OFF button enables you to make a telephone call without lifting the handset. It turns the telephone on and off when using the speakerphone.

FLEXIBLE BUTTONS are used to access idle outside lines, provide DSS/BLF for internal stations, access speed dial number and activate features. These buttons are programmed by the individual station user. The default flex feature buttons are described below:

CAMP-ON (flex) button enables you to alert a busy party that an outside line is on hold and waiting for them. A flex button must be assigned to use this feature.

LINE QUEUE (flex) button allows you to queue onto an outside line when all lines in a group are busy. Your station is placed in queue awaiting a line in the same group to become available. A flex button must be assigned to use this feature.

CALL BACK (flex) button allows you to initiate an automatic call back request to another busy station. As soon as that station becomes idle, the station that left the call back request is signalled. A flex button must be assigned to use this feature.

PICK UP (flex) button allows you to pickup a tone ringing intercom call, transferred, incoming, or recalling outside line call to a specific unattended station either by group or directed call pick-up.

MESSAGE WAIT (MSG WAIT) (flex) button allows you to initiate a message waiting indication at stations that are busy, unattended, or in Do Not Disturb. Message Waiting Callback request left at your station will indicated by a flashing Msg Wait LED.

CALL FWD (flex) button allows you to forward your calls to another station.

DO NOT DISTURB (DND) (flex) button allows the user to place his/her telephone into a Do Not Disturb mode to eliminate incoming outside line ringing, intercom calls, transfers and paging announcements. The station in DND can use the telephone to make normal outgoing calls. On Attendant stations, this button becomes the system Night Mode button. A flex button must be assigned to use this feature.

CONFERENCE (CONF) (flex) button is used to establish and build conference calls.

OUTSIDE CALLS are announced by a tone signal repeated every 3.2 seconds. The corresponding outside line indicator will flash slowly.

INTERCOM CALLS can be tone ringing or voice announce. If it is voice announced, the receiving station will receive 2 bursts of tone prior to the announcement. If it is a tone ringing call, the receiving station will hear a tone ring every 2.4 seconds.

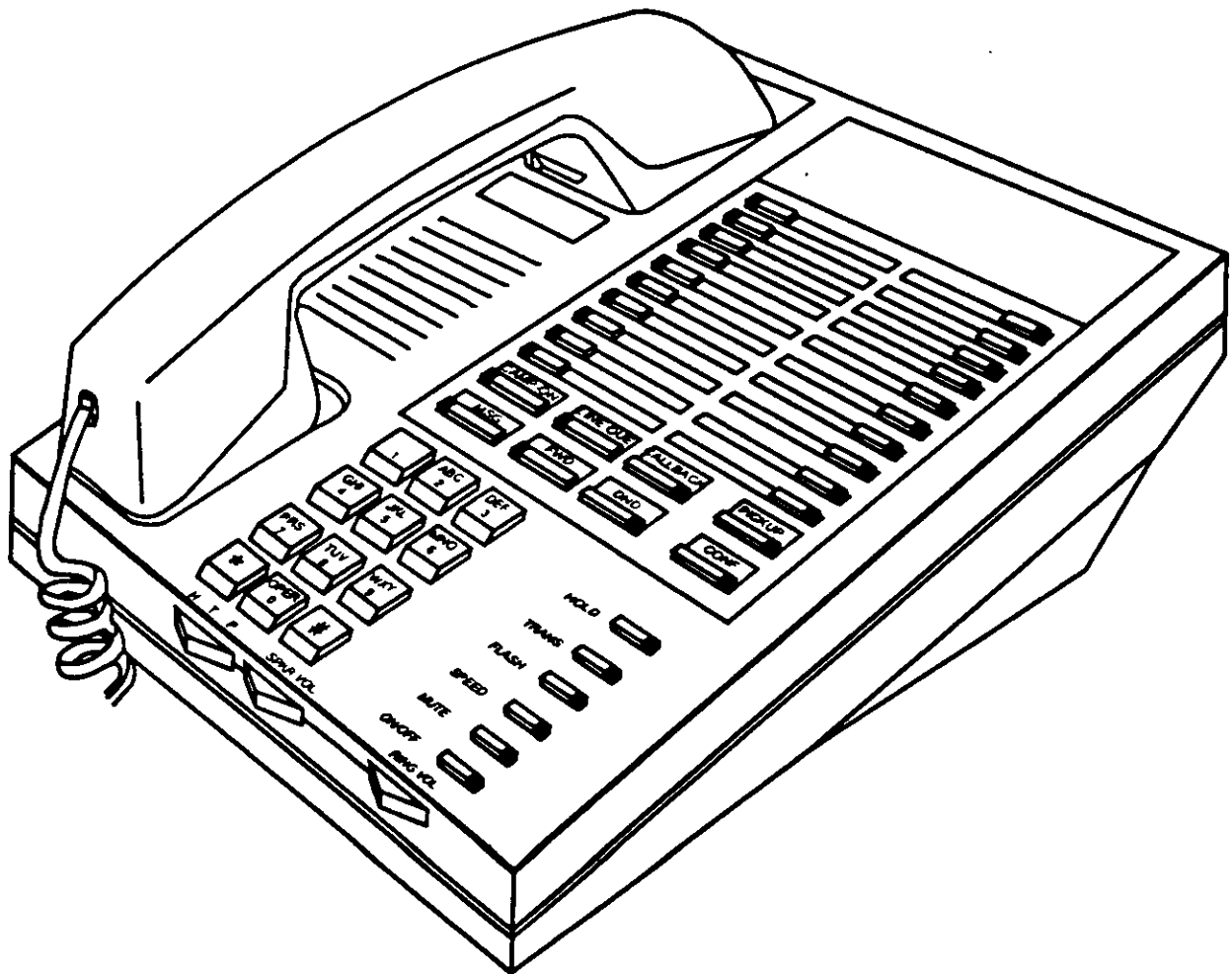


Figure 300-1 34 Button Digital Display Terminal

Table 300-1 Starplus Digital Terminal Numbering Plan

100-127	Station Intercom Numbers (SPD 1428)	72	Internal Page Zone 2
100-155	Station Intercom Numbers (SPD 2856)	73	Internal Page Zone 3
199	Modem via DISA access	74	Internal Page Zone 4
22 [C]	Call Park Location 0-7 (system)	75	Internal All Call Page
228	Personal Park	76 [0]	External All Call Page (All Zones)
33 [H]	Hunt Group Pilot Numbers 0-7	76 [P]	External Page Zones 1-7
44 [V]	Voice Mail Group Pilot Numbers 0-7	77	Meet-Me-Page Answer
420 [XXX]	Voice Mail enable MSG Wait	81	CO Line Group 1 (If LCR is enabled)
421 [XXX]	Voice Mail cancel MSG Wait	82	CO Line Group 2
55 [U]	UCD Group Pilot Numbers 0-7	83	CO Line Group 3
566	UCD Available/Unavailable	84	CO Line Group 4
567 55 [U]	UCD Calls in Queue Display	85	CO Line Group 5
6# [XXX]	Tone Mode Ring Option	86	CO Line Group 6
601	Attendant Override	87	CO Line Group 7
602	Disable Outgoing CO Line Access	88	All CO line Groups (CO Line Off-Net Forward)
603	CO Line Off-Net Forward	9	LCR or CO Line Group 1 (If LCR is disabled)
604	Night Service	0	Attendant
620	Camp-On	#0	Group Call Pick Up (Key & SLT)
621	Line Queue	#1	Directed Call Pick-up (SLT)
622	Call Back	#22 [C]	Call Park Pickup (Key and SLT)
623	Message Wait	#3	Universal Night Answer
624	Conference	[SPD] YY	Speed Dial Access (00-19 Station) (20-99 System)
625	Executive Override	[SPD] *	Save Number Redial
626	LCR Queue Cancel	[SPD] #	Last Number Redial
627	Account Code Enter	** [3226]	Data Base Admin Manager (default [DBAM])
631	Do Not Disturb		
632	Background Music		
633 [ZZ]	Personalized Messages		
633 [00]	Clear Personalized Messages		
634	Headset Mode		
635	ICLID Display - (unanswered calls)		
[FWD]	All Call Forward		
[FWD]+[7]	No Answer - Call Forward		
[FWD]+[8]	Busy - Call Forward		
[FWD]+[9]	Busy/No Answer - Call Forward		
[FWD]+[*]	Off-Net - Call Forward		
690	Name in Display Programming		
691 [BB]	Off-hook Preference Programming		
692	Time & Date Programming (1st programmed Attendant)		
70	All Call Page (Internal & External)		
71	Internal Page Zone 1		

XXX = Intercom Station Numbers

YY = Speed Dial Bin numbers

ZZ = Personalized Messages

BB = Button Number

U = UCD Group Number 0-7

C = Call Park Location 0-7

H = Hunt Group Number 0-7

V = Voice Mail Group Number 0-7

P = External Page Zone Number 1-7

NOTE: Items shown in BOLD may be programmed onto FLEX Buttons.

300.3 ANSWERING AN OUTSIDE CALL

- a. Lift handset.
- b. Press slow flashing outside line button, or Loop button. (If your telephone is programmed with Preferred Line Answer, you may answer an outside line by lifting the handset.)

300.4 PLACING AN OUTSIDE CALL ON HOLD

- a. If your system is programmed for Exclusive Hold Preference, press HOLD button once for Exclusive Hold and twice for System Hold.
- b. If your system is programmed for System Hold Preference, press HOLD button once for System Hold and twice for Exclusive Hold.

300.5 ANSWERING A RECALL

When an outside line has remained on hold for an extended period of time, you will be reminded with a recalling ring. (If Preferred Line Answer is enable, skip Step A.)

- a. Press outside line, Loop or Pool button flashing at very fast rate.
- b. Lift handset to converse.

300.6 ACCOUNT CODES

When connected to an outside line call:

- a. Press pre-programmed* ACCOUNT CODE button.
- b. Dial account code up to 12 digits. (The other party will not hear the digits being dialed).
- c. If account code is less than 12 digits, an [*] must be entered to return to the call.
- d. If account codes are forced the account code must be entered prior to dialing the outside number.

*Refer to Flexible Button programming

300.7 DISABLE OUTGOING CO LINE ACCESS

The First Attendant station can disable CO lines, preventing outgoing CO calls.

- a. Lift handset or press ON/OFF button.
- b. Dial [602]. Confirmation tone is heard
- c. Depress the line button(s) of the CO Line(s) to be disable Confirmation tone is heard and the CO Line Button LED is flashing.

To re-activate the CO Line(s), repeat the steps followed to disable it.

300.8 PLACING AN OUTSIDE CALL (Automatic Line Selection)

- a. Press outside line or Pool button. ON/OFF button LED will light and dial tone will be heard.
- b. Dial desired party.
- c. When called party answers, lift handset to converse or use speakerphone.

Station user may also dial the individual trunk group access code to access an outside line.

300.9 BACKGROUND MUSIC (Optional)

- a. Dial [632] on the dial pad, or press the pre-programmed* flexible button. (music is heard)
- b. Dial [632], or press the pre-programmed* flexible button again, and music is discontinued.
- c. When you pick up the handset or press the ON/OFF button, music is discontinued automatically.

*Refer to Flexible Button programming

300.10 AUTOMATIC SELECTION

Pressing an outside line button, Loop or Pool button; a Speed button; a Station button; or dialing a number in the Starplus Digital (SPD) Key Telephone System Numbering Plan will automatically activate the speakerphone and light the ON/OFF button, if your keyset is programmed as a speakerphone.

300.11 CALL BACK

If you dial a telephone that is busy or in DND and want to activate Call Back:

- a. Press the pre-programmed* CALL BACK button.
- b. Hang up.
- c. When busy station hangs up, you will be signaled.
- d. Answer call; station you called will then be signaled. (If your station is busy when signaled, an automatic MSG will be left at your phone.)

Only one Call Back request can be left at a station; the second request will be converted to a message wait call back request.

*A flex button must be programmed for this feature to operate. Refer to Flexible Button programming

300.12 CALL FORWARD: STATION**A. Call Forward - All Calls**

If you have been given the ability to forward your calls:

1. Lift handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.
3. Press station key or dial intercom number where calls are to be forwarded, including UCD, Voice Mail, and Hunt group pilot numbers.
4. Replace the handset or press the ON/OFF button.

Line Queue, Call back requests, message wait requests, and pre-selected messages are canceled when a station activates call forward. Call back requests are not allowed at a station where a call is forwarded. CO Line calls can be transferred by the receiving station back to the original forwarded station. A station in the call forward mode may still make outgoing calls.

To Remove Call Forwarding:

1. Lift handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.
3. Hang up.

*Refer to Flexible Button programming

B. Call Forward - No Answer

If you have been given the ability to forward your calls:

1. Lift the handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.
3. Dial the Call Forward No Answer code [7] on the dial pad.
4. Dial the 3-digit extension number where calls are to be forwarded. Confirmation tone will be heard.

To cancel Call Forwarding:

1. Lift the handset or press the ON/OFF button.
2. Press the pre-programmed* FWD button.

*Refer to Flexible Button programming

C. Call Forward - Busy

If you have been given the ability to forward your calls:

1. Lift the handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.
3. Dial the Call Forward Busy code [8] on the dial pad.

4. Dial the 3-digit extension number where calls are to be forwarded. Confirmation tone will be heard.

To cancel Call Forwarding:

1. Lift the handset or press the ON/OFF button.
2. Press the pre-programmed* FWD button.

*Refer to Flexible Button programming

D. Call Forward - Busy/No Answer

If you have been given the ability to forward your calls:

1. Lift the handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.
3. Dial the Call Forward Busy/No Answer code [9] on the dial pad.
4. Dial the 3-digit extension number where calls are to be forwarded. Confirmation tone will be heard.

To cancel Call Forwarding:

1. Lift the handset or press the ON/OFF button.
2. Press the pre-programmed* FWD button.

*Refer to Flexible Button programming

E. Call Forward - Off-Net (via speed dial)

In a speed dial bin, store the number of the off-net location where calls are to be forwarded. Follow instructions provided for storing station or system speed dial numbers.

Allows stations to forward intercom and transferred CO calls to an off-net location.

1. Lift handset or press ON/OFF button.
 2. Press the pre-programmed* FWD button.
 3. Dial [*]. Then dial the speed bin number that contains the number where calls are to be forwarded,
- OR
4. Press the pre-programmed button for the speed bin.
 5. Confirmation tone is heard. FWD button LED is flashing.

Line Queue, Call back requests, message wait requests, and pre-selected messages are canceled when a station activates call forward. Call back requests are not allowed at a station where a call is forwarded. CO Line calls can be transferred by the receiving station back to the original forwarded station. A station in the call forward mode may still make outgoing calls.

Canceling Off-Net Forwarding

1. Lift handset or press ON/OFF button.
2. Press the pre-programmed* FWD button. CALL FWD button LED is extinguished.

*Refer to Flexible Button programming

F. Call Forward - UCD Groups

If you have been given the ability to forward your calls:

1. Lift the handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.
3. Dial the desired code:

[7] = no answer calls

[8] = busy calls

[9] = busy and no answer calls.

NOTE: Skip the preceding step for immediate forwarding.

4. Dial the 3-digit UCD group pilot number (550-557) for the group (1-8) where calls are to be forwarded. Confirmation tone will be heard.

*Refer to Flexible Button programming

To cancel Call Forwarding:

1. Lift the handset or press the ON/OFF button.
2. Press the pre-programmed* FWD button.

*Refer to Flexible Button programming

G. Call Forward - Voice Mail Groups

Intercom and Transferred CO callers may be routed directly to your mail box by forwarding your phone to a voice mail group. Callers will then be greeted by your personal voice mail greeting if available.

If you have been given the ability to forward your calls:

1. Lift the handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.
3. Dial the desired code:

[7] = no answer calls

[8] = busy calls

[9] = busy and no answer calls.

NOTE: Skip the preceding step for immediate forwarding.

4. Dial the 3-digit Voice Mail group pilot number (440-447) for the group (1-8) where calls are to be forwarded. Confirmation tone will be heard.

To cancel Call Forwarding:

1. Lift the handset or press the ON/OFF button.
2. Press the pre-programmed* FWD button.

*Refer to Flexible Button programming

H. Call Forward - Hunt Groups

If you have been given the ability to forward your calls:

1. Lift the handset or press ON/OFF button.
2. Press the pre-programmed* FWD button.

3. Dial the desired code:

[7] = no answer calls

[8] = busy calls

[9] = busy and no answer calls.

NOTE: Skip the preceding step for immediate forwarding.

4. Dial the 3-digit Hunt group pilot number (330-337) for the group (1-8) where calls are to be forwarded. Confirmation tone will be heard.

To cancel Call Forwarding:

1. Lift the handset or press the ON/OFF button.
2. Press the pre-programmed* FWD button.

*Refer to Flexible Button programming

300.13 CALL FORWARD: PRESET

If a CO Line forwarded by Preset Call Forward encounters a manually forwarded station (Call Forward - Station), or a station in DND, then the incoming CO Line will bypass that station and forward to the next in the chain. If that station is the last in the chain, then the call will not forward any further and will continue to ring at the previous station until answered or terminate.

300.14 CALL FORWARD: CO LINES**A. Incoming CO Lines Off-Net (via speed dial)**

Allows the first attendant station to forward incoming CO calls to an off-net location.

In a speed dial bin, store the number of the off-net location where calls are to be forwarded. Follow instructions provided for storing station or system speed dial numbers.

- a. Dial [603] on the dial pad.
- b. Dial the CO group access code for the CO Line group to be forwarded or press an individual CO Line button.

81=CO Group 1

82=CO Group 2

83=CO Group 3

84=CO Group 4

85=CO Group 5

86=CO Group 6

87=CO Group 7

88=All CO Line

- c. Dial the speed bin number that contains the number where calls are to be forwarded or

press the programmed button for the speed bin. Confirmation tone is heard.

Canceling Off-Net Forwarding

- a. Dial [603] on the dial pad.
- b. Dial the CO group access code or press an individual CO Line button.
- c. Dial [#]. Confirmation tone is heard.

300.15 CALLING STATION TONE MODE OPTION

Allows a calling station to override a called stations H or P intercom switch settings.

When placing a call to a station and Tone ringing is desired:

- a. Dial [6#] on the dial pad.
- b. Dial the 3-digit station extension or press DSS button of desired station. (call tone rings station).

300.16 CALL PARK

To place an outside call on hold and consult with, page, or call an internal party and/or transfer the outside call.

While connected to an outside line:

- a. Press TRANS button. The caller is put on Exclusive hold.
- b. Dial parking location (220 to 227). Hear confirmation tone.
- c. If you hear busy tone, press TRANS and dial another parking location.

Retrieving a Parked Call

- a. Lift handset or press ON/OFF button.
- b. Press the pound [#] button.
- c. Dial parking location (220 to 227) where the call was parked.

300.17 CALL PICK-UP: GROUP

When intercom tone ringing, transferred outside line ringing, recall ringing or initially ringing call is heard at an unattended telephone:

- a. Lift the handset
OR
Press the ON/OFF button.
- b. Dial [#0] on the dial pad or press the pre-programmed* PICK UP button to be connected to the calling party.

NOTE: You must be in the same pick up group as the ringing telephone to pick up the call.

*Refer to Flexible Button programming

300.18 CALL TRANSFER

Outside lines can be transferred from one phone to another within the system. The transfer can be either screened (announced) or unscreened to either an idle or busy station, or UCD or Hunt Group.

Screened Transfer

- a. While connected to an outside line, press station button where call is to be transferred (if programmed on your telephone), or press TRANS button and dial station number (100 to 155).
- b. The called extension signals according to the intercom signal switch position.
- c. When that extension answers, announce the transfer.
- d. Hang up to complete transfer.

Unscreened Transfer

When the called extension begins to signal, hang up to transfer the call (Recall timer starts).

Transfer Search

- a. When attempting to locate a party, press a station key to signal a station or press the TRANS button and dial station desired.
- b. If the party is not located, press another station key to continue the search, or press the TRAN button and dial the station number.
- c. If the party is not located, press the TRANS button again and dial another station number to continue the search.
- d. When the called party answers, hang up to complete the transfer.

Answering a Screened Transfer

- a. Your intercom will be signaling according to the intercom signal switch position.
- b. Answer the intercom and receive the transfer notice.
- c. Press the outside line button or loop button flashing on hold.

300.19 TRANSFERRING CO CALLS TO A STATION FORWARDED TO VM

While connected to a CO line:

- a. Press the TRANS button and dial the extension number of the station forwarded to voice mail.
- b. The transferring station hangs up. The CO call will be directed to the mailbox of the forwarded station.

NOTE: If the transferring station attempts to supervise the transfer or just waits until the voice mail system answers, then it becomes necessary to re-access the CO line and re-transfer them and go on-hook before the voice mail system answers. This will ensure that the CO party will hear the personal

greeting of the mailbox user and any applicable instructions.

300.20 CAMP-ON

If you call a station that is busy and wish to alert them to your call:

- a. Press the pre-programmed* CAMP ON button.
- b. Called station will receive two bursts of ringing.
- c. Wait for their response
- d. When called party answers, consult with them or hang up to transfer the call.

If a station is in DND, only the attendant can Camp On using the attendant override feature.

*A flex button must be programmed for this feature to operate. Refer to Flexible Button programming Answering a Camp On

If you are on a connected call, hear two bursts of muted ringing, and your CAMP ON button is flashing, you have a call waiting for you.

To answer:

- a. Press the CAMP ON button.
- b. Any outside line you are connected to will be placed on hold. You may converse with the station placing the call.
- c. Press flashing outside line button, if a call is being transferred.

If you do not have a pre-programmed* Camp-On button either:

- a. Go on-hook with present call. Camp-On will ring through, or
- b. Place present call on hold. Then go on-hook. Camp-On will ring through.

*Refer to Flexible Button programming

300.21 CO LINE ACCESS

To access outside line:

- a. Press idle CO line button, Pool button, or dial CO line group access code or LCR access code.
- b. Dial number desired for outside call.
- c. Lift handset to converse or use speakerphone.

300.22 QUEUING

A station can queue only one line at a time. If you see that a particular outside line is busy and you wish to be placed on a list waiting for that line to become available:

To Place a Queue

- a. Press desired busy outside line button or pool button. (Busy tone is heard)

- b. Press pre-programmed* LINE QUEUE button.
- c. Hang up.

To Answer a Queue

If you hear ringing and an outside line of the line group (or a Loop or Group Key), you queued onto is rapidly flashing:

- a. Lift handset.
- b. Press flashing outside line button to answer.

If your station has been programmed for Preferred Line Answer, you will have the line automatically upon lifting the handset.

*A flex button must be programmed for this feature to operate. Refer to Flexible Button programming

300.23 CONFERENCE COMBINATIONS

Only stations that have conference enabled will be able to institute a conference.

- Add-on Conference: Four internal and one external or five party internal
- Multi-Line Conference: One internal and two external.

Establishing a Conference

A maximum of five parties can be included in a conference. The internal party must lift the handset.

- a. Lift handset.
- b. Select intercom station or dial desired outside party.
- c. When called party answers, press the pre-programmed* CONF button.
- d. Add next conference party by selecting another outside line or intercom station.
- e. When party answers, press the pre-programmed* CONF button twice.
- f. All parties are connected.

Exiting a Conference (Controller only)

There are three methods of exiting a conference:

1. Press the ON/OFF button to ON, press the MUTE button, and replace the handset (to monitor a conference).

Use the following method only if multi-line conference is in progress:

2. Press HOLD button to place outside parties on hold. Hold timer starts. If one of the two parties is internal, that party will be dropped.
3. Press the pre-programmed* CONF and hang up or press the ON/OFF button to leave the other conference parties still connected in an unsupervised conference. CONF button will flash and timer will start. There will be a warning tone before the other parties are dropped.

Re-entering a Conference

When the controller re-enters the conference, the disconnect timer is reset.

- a. Lift handset to re-enter a monitored conference.
- b. To re-enter a conference placed on hold, repeat steps for establishing a conference.
- c. To re-enter an unsupervised conference, lift handset and press flashing pre-programmed* CONF button. The CONF button lights steady and confirmation tone will be heard.

Terminating a Conference

To terminate a conference the conference initiator who is actively in the conference replaces handset or push ON/OFF button to OFF. To terminate an unsupervised conference, press the flashing pre-programmed* CONF button while on hook, all parties will be dropped.

*Refer to Flexible Button programming

300.24 DIRECTED CALL PICK-UP

When incoming, transferred, or recalling outside line ringing, intercom ringing, or Camp On ringing is heard at an unattended telephone:

- a. Dial the station number of the known ringing telephone.
- b. Receive ringback tone, or call announce tone.
- c. Press the pre-programmed* PICK UP button to answer the call.

User must have access to the specific outside line or a Loop key to do a directed call pickup.

* A flex button must be programmed for this feature to operate. Refer to Flexible Button programming

300.25 DIRECT INWARD SYSTEM ACCESS (DISA)

- a. Call the phone number the system administrator specified as the DISA line.
- b. The system answers and returns intercom dial tone.
- c. Enter the DISA access code also specified by the system administrator, if applicable.
- d. Dial tone is returned.

To place an outgoing call:

- a. Dial a group access code: 9, 81 - 87.
- b. CO Dial tone is returned.
- c. Dial the desired telephone number.

NOTE: LCR cannot be accessed from DISA. If LCR is enabled, DISA users may dial 81 to access lines in trunk group 1.

NOTE: The conference timer (Refer to Sec. 610.1) will monitor a DISA "trunk-to-trunk" call and release the lines one (1) minute after the time expires.

To reach an internal station:

- a. Dial the 3-digit station number. Ringback tone will be heard.
- b. Converse when party answers.

NOTE: If the station dialed is unattended, busy or in DND, intercom dial tone will be returned. (after the Preset Call Forward Timer expires) Refer to Sec. 610.1.

300.26 DO NOT DISTURB

Activating Do Not Disturb:

- a. If you have been given the ability to place your phone in Do Not Disturb, press the pre-programmed* DND button.
- b. DND button lights steady.

The DND button can be pressed while the phone is ringing to stop the ringing. (Refer to One-Time Do Not Disturb below.)

Removing Do Not Disturb

- a. Press the pre-programmed* DND button.
- b. The button LED extinguishes and DND is canceled. A flex button must be programmed for this feature to operate.

*Refer to Flexible Button programming

A. One-Time Do Not Disturb

Allows you to prevent calls from ringing at your station while you're on a call. The One-Time DND condition will automatically cancel when you end your call.

- a. Press the pre-programmed* DND button while you're off-hook and connected to a CO line or intercom call. The DND button LED lights and off-hook tones at your station are canceled.

To cancel:

- a. Replace handset. The DND button LED extinguishes and DND is canceled.

*A flex button must be programmed for this feature to operate. Refer to Flexible Button programming

300.27 EXCLUSIVE HOLD

When a line is placed on Exclusive Hold, no other station in the system can retrieve this call. Exclusive Hold may be programmed to be activated on the first or second depression of the Hold button. CO Lines while in a transfer hold are always placed in an Exclusive Hold condition.

300.28 EXECUTIVE OVERRIDE

Allows stations designated as "Executive" the ability to override and "barge in" on other keysets engaged in conversation.

If you call a busy station:

- a. Press the pre-programmed* EXECUTIVE OVERRIDE button. Executive station will be bridged onto the CO line conversation in progress at the called station. Optional warning tone is heard and presented to all parties prior to cut-thru.
- b. Replace handset at Executive station to terminate the override.

*Refer to Flexible Button Programming

NOTE: If the busy party is connected via intercom to another party, the intercom connection will be dropped when the override occurs.

CAUTION: USE OF THIS FEATURE WHEN THE EXECUTIVE OVERRIDE WARNING TONE IS DISABLED MAY BE INTERPRETED AS A VIOLATION OF FEDERAL OR STATE LAWS, AND AN INVASION OF PRIVACY. CONSULT COUNSEL WITH RESPECT TO APPLICABLE LAWS BEFORE INTRUDING ON CALLS USING THIS FEATURE.

NOTE: A decrease in volume may occur on the CO line after the barge-in occurs.

300.29 EXECUTIVE/SECRETARY TRANSFER

If you are designated the Executive station and your phone is busy or in DND, all calls will be routed to the Secretary station.

If you are the designated Secretary station, you can signal the Executive that is busy or in DND by using the Camp On feature.

300.30 FLASH

When connected to an outside line:

- a. Press FLASH button to disconnect outside line and re-seize outside line dial tone.

300.31 FLASH ON INTERCOM

When connected to a page zone or another internal party, press FLASH button to disconnect page or intercom call: Intercom dial tone will be heard.

300.32 FLEXIBLE BUTTON ASSIGNMENT

If you have buttons on your telephone which have NOT been assigned as CO lines, Pooled group, or

Table 300-2 Flex Button Programming Codes

100-155	Station Intercom Numbers	640	All Call Forward
22 [C]	Call Park Location 1-7 (system)	70	All Call Page (Internal & External)
228	Personal Park	71	Internal Page Zone 1
33 [H]	Hunt Group Pilot Numbers 0-7	72	Internal Page Zone 2
44 [V]	Voice Mail Group Pilot Numbers 0-7	73	Internal Page Zone 3
55 [U]	UCD Group Pilot Numbers 0-7	74	Internal Page Zone 4
566	UCD Available/Unavailable	75	Internal All Call Page
567	UCD Calls in Queue Display	76 [0]	External All Call Page(All Ext Zones)
601	Attendant Override	76 [P]	External Page 1-7
602	Disable Outgoing CO Line Access	77	Meet-Me-Page Answer
603	CO Line Off-Net Forward	#0	Group Call Pick Up
620	Camp-On	#3	Universal Night Answer (UNA)
621	Line Queue	[SPD] YY	Speed Dial Access (00-19 Station) (20-99 System)
622	Call Back	[SPD] *	Save Number Redial
623	Message Wait	[SPD] #	Last Number Redial
624	Conference		
625	Executive Override		
627	Account Code Enter		
631	Do Not Disturb		
632	Background Music		
633 [ZZ]	Personalized Messages		
633 00	Clear Personalized Messages		
634	Headset Mode		

*YY = Speed Dial Bin numbers,
ZZ = Personalized Messages,
U = UCD Group Number 0-7,
C = Call Park Location 0-7
H = Hunt Group Number 0-7,
V = Voice Mail Group Number 0-7
P = External Page Zone Number 1-7*

Loop buttons, you may program them to suit your own individual needs. There are five possible functions you may assign to these buttons:

DSS/BLF: This button, when pressed, will automatically signal the assigned intercom station. DSS/BLF buttons are programmed by the station user.

- **FEATURES:** This button can be programmed so that when pressed it will activate a particular feature, thus eliminating the need for dialing the feature code. Some features require a flex button to be programmed for that feature to be accessible to the station user. Where this is the case it is so designated in this Feature Operation Section and user guide. Feature buttons are programmed by the station user. Refer to Table 300-2 for a complete listing of code/features that may be programmed onto a flexible button.
- **SPEED DIAL:** This button can be programmed to automatically access a speed number location for one-step operation. PBX and Centrex codes can be programmed into a speed dial bin and accessed by one button depression.
- **POOLED GROUP ACCESS:** A group of outside lines can be placed under one button. When this button is pressed, the system will select an available line from this group for the user to place a call on. Pool buttons are assigned in data base administration.
- **LOOP:** This button will act as the direct appearing button for outside lines that do not appear on the user's individual telephone. Any phone that doesn't have all lines appear on it must have a loop key. There is NO limit to the number of LOOP buttons a station may have. Loop buttons are assigned in data base administration.

To program flexible buttons:

- a. Press SPEED button twice.
- b. Press the assigned button to be programmed (it must be programmed in data base as a multi-function button).
- c. Dial desired code (Refer to Button Programming Codes).

To erase a flexible button:

- a. Press SPEED button twice.
- b. Press the button to be erase
- c. Press FLASH button.
- d. Replace handset or press ON/OFF button.

300.33 HEADSET MODE

If you wish to use a headset and have been given the ability to do so in programming.

To activate Headset Mode:

- a. Dial [634] on the dial pad or press pre-programmed* HEADSET MODE button.
- b. LED will light steady.

While Headset mode is active, the ON/OFF button will activate the headset and disable speakerphone and intercom call announce operation at your station.

To de-activate Headset Mode:

- a. Dial [634] on the dial pad or press the pre-programmed* HEADSET MODE button.
- b. LED will extinguish.

*Refer to Flexible Button programming

300.34 INTERCOM CALLING

Placing an Intercom Call

- a. Press station key of party to be called (if programmed at your phone); or dial station number (100 to 155).

NOTE: Dialing a number in the numbering plan activates the telephone automatically.

- b. You will hear ringing if called station is in the "T" answering mode; or two bursts of tone if called station is in the "H" or "P" position.
- c. Lift handset or use speakerphone, after the two tone bursts stop.
- d. Hang up to end call.

Answering an Intercom Call

With your intercom signal switch in the T (center) mode, you will hear repeated bursts of intercom tone ringing and the HOLD button will slow flash.

- a. Lift handset or press ON/OFF button to answer, or move the intercom signal switch to the "H" mode to reply.
- b. Hang up to end call.

In the "P" mode, you will hear two bursts of tone and one-way announcement. The HOLD button will slow flash and the calling party cannot hear conversations in progress.

- a. Lift handset or press ON/OFF button to answer, or move the intercom signal switch to the "H" mode to reply.

In the "H" mode, you will hear two bursts of tone and an announcement. Reply handsfree or lift handset for privacy.

300.35 INTERCOM TRANSFER

Intercom transfer without DSS buttons:

- a. Receive or make an intercom call.
- b. Press the TRANS button. Intercom dial tone is heard.
- c. Dial the station where the call is to be transferred.
- d. When 2nd station answers, you are in a supervised transfer mode (1st station is staged for transfer).
- e. Hang up (station 1 and 2 are connected).

Intercom transfer using DSS buttons:

- a. Receive or make an intercom call using a DSS button.
- b. Press the TRANS button. Intercom dial tone is heard.
- c. Press DSS button where call is to be transferred.
- d. Hang up (station 1 and 2 are connected).

300.36 LAST NUMBER REDIAL

- a. Press SPEED button.
- b. Press pound [#] key.
- c. The last number dialed over an outside line will be automatically re-dialed.
 - The system will automatically select the original line used to place the call and redial the number.
 - If that line is busy, the system will automatically select another line from the same group and redial the number.
 - If no lines are available in the same group, station will receive busy tone and can queue for a line.
 - If the station user preselects a line before activating LNR, the preselection will override the line which was used originally.

300.37 LEAST COST ROUTING

To place an outside call when LCR has been enabled in the system:

- a. Dial [9] on the dial pad.
- b. Dial the desired 7 digit telephone number (ie: 1+ area code+7-digit number).
- c. Wait for answer. Lift handset or use speakerphone to converse.

If all lines available to you are busy, remain off-hook for four (4) seconds to automatically be queued onto LCR for an available line.

LCR Que Callback

If an LCR Queue Callback has been activated:

- a. When telephone is signalled, answer the call.
- b. Desired telephone number will automatically be re-dialed.

NOTE: Only one LCR Queue Call Back request may be initiated by a station. When a second request is made, the first request will be canceled.

300.38 LCR QUE CANCEL

- a. Dial the LCR Queue Cancel code, [626].
- b. Replace handset or press ON/OFF button.

300.39 MEET ME PAGE

To request another party to meet you on a page:

- a. Dial the desired two-or three-digit paging code or press pre-programmed* PAGING button.
- b. Request that party meet you on the page.
- c. Do not hang up; wait for the requested party to answer. As soon as the paged party answers and is connected to you, the page circuit is released.

Answering a Meet Me Page

- a. Go to the nearest Telephone and dial [77] or press the pre-programmed* MEET ME PAGE ANSWER button.
- b. You will be connected to the party that paged you.

*Refer to Flexible Button programming

300.40 MESSAGE WAITING

Leaving a Message Waiting Indication

Up to five messages can be left at any Station. If you dial a station that is busy, unattended, or in DND, you can leave a message waiting indication.

- a. Press the pre-programmed* MSG button.
- b. Called party's MSG button will slow flash.
- c. Hang up.

Answering a Message Waiting Indication

If your MSG WAIT button is flashing at a slow rate, you have a message waiting for you. The first message left will be the first one called.

- a. Press flashing pre-programmed* MSG button.
- b. Station that left message will be signaled with tone ringing.
- c. If called station does not answer, press MSG button once to leave message.

*Refer to Flexible Button programming

300.41 MUTE KEY

The MUTE button provides privacy during speakerphone or handset operation by disabling the microphone.

- a. Press the MUTE button while off-hook on speakerphone or handset to activate.
- b. Press the MUTE button again to deactivate.

The mute feature automatically deactivates upon call termination.

300.42 OFF-HOOK PREFERENCE

If your phone has been programmed for Off-Hook Preference, you will access an outside line, or a feature by going off-hook or pressing the ON/OFF button.

While Off-Hook Preference is enabled, you may access internal intercom dial tone by:

- a. Pressing your pre-programmed* ICM button. LED lights steady
OR
- b. Dial your own 3-digit intercom number. (Do not lift handset or press ON/OFF button before dialing intercom number.)
- c. Intercom dial tone will be heard.

You may now dial an internal station or Feature Access code.

*Refer to Flexible Button programming

300.43 PAGING

If you have been given the ability to make page announcements:

- a. Lift handset.
- b. Dial the two-or three-digit paging code, or press pre-programmed* PAGE button.
 - 70 All Call - Internal & External
 - 71 Internal Zone 1
 - 72 Internal Zone 2
 - 73 Internal Zone 3
 - 74 Internal Zone 4
 - 75 Internal All Call
 - 76 [0] External All Call (All Ext Zones)
 - 76 [Z] External Zone (Z=1-7)
- c. Speak in normal tone of voice to deliver message.

Stations off-hook or in DND will not hear the page announcement.

NOTE: When making a zone page or All Call page and the zone is busy, the page initiator will receive ringback tone until the zone becomes available. You will then hear a warning tone and can make the page announcement.

300.44 PBX/CENTREX TRANSFER

While connected to an outside line (PBX/Centrex):

- a. Press FLASH button. Receive transfer dial tone.
- b. Dial PBX/Centrex station number.
- c. Hang up to complete transfer.

300.45 PERSONALIZED MESSAGES

Each station can select a pre-assigned message to be displayed on the LCD of any Key Telephone calling that station.

There are ten possible messages which can be left.

- a. Dial [633] on the dial pad or press a programmed flex button.
- b. Dial the two-digit code for the message which will appear.
 - 00 clears messages
 - 01 VACATION
 - 02 RETURN MORNING
 - 03 RETURN AFTERNOON
 - 04 RETURN TOMORROW
 - 05 RETURN NEXT WEEK
 - 06 BUSINESS TRIP
 - 07 MEETING
 - 08 HOME
 - 09 ON BREAK
 - 10 LUNCH

NOTE: This feature is not available to the attendant(s).

300.46 PERSONALIZED MESSAGE CODE ON A FLEX KEY

You can program the code 633 onto a flexible key to speed access of pre-selected messages.

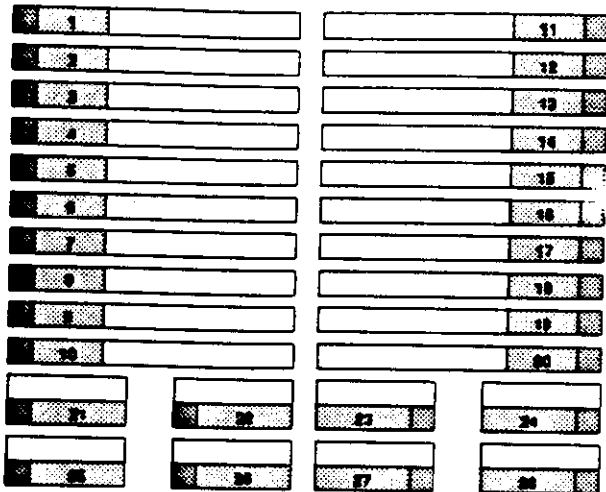
- a. Press SPEED button twice.
- b. Press the desired flex button. LED flashes.
- c. Dial [633] + [#] or dial [00] thru [10]. Confirmation tone is heard.

User can now press that flex button and dial the two-digit message number 00-10 to activate or deactivate a personalized message. Confirmation tone will be heard.

300.47 PRIME FLEX BUTTON PROGRAMMING

If your phone is programmed for off-hook preference and have been given the ability to enable or change the prime flex button.

- a. Dial [691] on the dial pad
- b. Then dial two-digit button number. (Refer to following chart.



To disable Off-Hook Preference:

- a. Dial [691] on the dial pad.
- b. Dial [00] on the dial pad.

300.48 PROGRAMMING YOUR NAME INTO THE LCD DISPLAY

Every extension (key and SLT) has the capability to program the users name so that people using display telephones will see the name instead of the station number.

- a. Dial [690] on the dial pad.
- b. Enter your name (up to 7 letters) using the pattern shown below.

A=21	N=62	1=1#	*=01
B=22	O=63	2=2#	,=02
C=23	P=71	3=3#	?=03
D=31	Q=74	4=4#	/=04
E=32	R=72	5=5#	!='1
F=33	S=73	6=6#	\$='2
G=41	T=81	7=7#	&='4
H=42	U=82	8=8#	*='#
I=43	V=83	9=9#	(=#1
J=51	W=91	0=0#)=#2
K=52	X=92	Space=11	+=#3
L=53	Y=93	:='12	==#4
M=61	Z=94	-'13	#=##
		'='14	

- c. Press SPEED button to complete the programming process.

To erase your name:

- a. Dial [690] on the dial pad.
- b. Press SPEED button.

300.49 PULSE TO TONE SWITCHOVER

The signaling on an outside line can be changed from dial pulse to tone (DTMF) manually while dialing out.

To perform the change-over

- a. Dial an [*] on the dial pad.
- b. Remaining digit(s) will be sent using DTMF.

The Pulse to Tone Switchover command may also be included into a speed dial bin. Refer to speed dial programming.

300.50 SAVE NUMBER REDIAL

If you wish to save the last number you dialed for use later:

- a. After placing an outside call, keep handset off-hook.
- b. Press SPEED button twice.

To Dial a number that was saved using the steps above:

- a. Press SPEED button.
- b. Dial the asterisk [*] key.
 - System will automatically select the original line used to place the call and redial the number.
 - If that line is busy, the system will automatically select another line from the same group and redial the number.
 - If no lines are available in the same group, station will receive busy tone and can queue for a line.
 - If the station user preselects a line before activating SNR, the preselection will override the line which was used originally.

300.51 PROGRAMMING PBX/CENTREX CODES ONTO A FLEX BUTTON

For easy one-button access to Centrex or PBX features, perform the following steps:

- a. Program the Centrex or PBX code into a station or system speed dial bin, including hook-flash (flash key), [*], and [#] commands. (Refer to station or system speed dial programming)
 - b. Program that speed bin onto a flexible* button.
- *Refer to Flexible Button programming

300.52 SPEAKERPHONE

- a. Press ON/OFF button to "ON". Intercom dial tone will be heard.
- b. Press station key of desired party, or press available outside line button and dial number. Speakerphone is activated.
- c. Press ON/OFF button to "OFF" to end call.

NOTE: For further references in this section where "lift handset" is specified, you may also use the method of pressing the "ON/OFF" button, if the telephone is programmed to be a true two-way speakerphone.

300.53 STATION SPEED DIAL

If no outside line has been specified in programming, one will be chosen automatically or you can choose one now.

- a. Press SPEED button and dial bin location, or press pre-programmed* speed bin button. Station Speed numbers are 00 to 19.
- b. When called party answers, pick up handset or use speakerphone.

*Refer to Flexible Button programming

300.54 STORING SPEED NUMBERS

Station Speed numbers can be entered by keyset users. System Speed numbers must be entered by the first programmed attendant. If no attendant is specified, enter at Station 100.

- a. Press SPEED once, then press a desired outside line key or pool key or select an outside line automatically by pressing the SPEED button a second time.
- b. Dial the speed bin location. 00 to 19 for Station Speed numbers; 20 to 99 for System Speed numbers.
- c. Dial telephone number. (including special codes described below)
 - TRANS - Pressing the TRANS button during number entry initiates a Pulse-To-Tone switchover.
 - HOLD - Pressing the HOLD button during number entry inserts a Pause.
 - FLASH - Pressing the FLASH key inserts a Flash into the speed number.
 - TRANS - Pressing the TRANS button as the first entry in the speed bin inserts a no-display character causing the numbers stored in the bin not to appear on the Digital Terminals display when the bin is accessed.
- d. Press the SPEED button.
- e. Hang up.

To program several speed numbers in a row, press the SPEED button twice to conclude programming a number and then just enter the next speed number bin to be programmed. If the station has no line appearance for the line programmed into the speed bin, that line will come up under the Loop button or Pool button when accessed.

300.55 SYSTEM SPEED DIAL

If no outside line has been specified in programming, one will be chosen automatically or you can choose one now.

- a. Press the SPEED button and dial bin location, or press pre-programmed* speed bin button. System Speed numbers are 20 to 99.
- b. When called party answers, pick up handset or use speakerphone.

*Refer to Flexible Button programming

300.56 UNIFORM CALL DISTRIBUTION (UCD)**A. Number of Calls In Queue Display**

From an idle display key telephone:

1. Dial [567] on the dial pad
OR
Press pre-programmed* flex button. (ON/OFF button LED lights steady)
2. Dial the 3-digit UCD group number (550-557).
3. Your display will tell you how many calls are in queue for that group.
4. Dynamic update of display occurs as queue condition changes.
5. Hang up the handset or press the ON/OFF button to terminate mode.

NOTE: This feature cannot be used with a call in progress and the station will be considered busy for incoming calls during this operation.

*Refer to Flexible Button programming

B. Available/Unavailable Mode

If you are a UCD agent, you may place your station in the Available mode to receive UCD type of calls or you may place you station in the Unavailable mode to block UCD type calls from ringing your station.

To go Available:

1. Dial [566] on the dial pad
OR
Press the pre-programmed* Available/Unavailable button.
2. You may now receive calls.

To go Unavailable:

1. Dial [566] on the dial pad
OR
Press the pre-programmed* Available/Unavailable button.
2. You are now blocked from receiving UCD calls.

*Refer to Flexible Button programming

C. No-Answer Timer

After a UCD call rings into an agent, the No-Answer timer takes effect. If the agent does not answer the call before this timer expires, then that agent is set to "UCD Unavailable" and the call is routed back to the UCD group for another available agent or queue.

In order to continue receiving UCD calls, the agent then needs to press their UCD Available button.

300.57 UNIVERSAL NIGHT ANSWER (UNA)

If you hear outside line ringing at another station and wish to answer it, dial [#3] on the dial pad. The connected outside line can be transferred or disconnected. Each telephone utilizing Universal Night Answer must have a loop button appearance if the ringing outside line does not appear at their phone.

300.58 VOICE MAIL OPERATION (VM)Forward Callers to your Mail box

Intercom and Transferred CO callers may be routed directly to your mail box by forwarding your phone to a voice mail group. Callers will then be greeted by your personal voice mail greeting if available (Refer to Call Forward - Voice Mail Operation)

Retrieving Voice Messages

If your Message Waiting key or programmed Voice Mail group key is flashing, you may have a voice message waiting for you. To enter the voice mail system to check for mail:

- a. Dial the Voice Mail group number or press the pre-programmed* voice mail group key or flashing Message Wait key.
- b. You will immediately be prompted to enter your password for your mail box.

Receiving a Voice Mail Message Wait

To receive a message waiting indication that a voice message has been taken for you, the Voice Mail system must be programmed to provide such an indication.

After the voice mail system receives a voice message for a station user:

- a. The voice mail must go off-hook and dial the voice mail message wait code [420].
- b. Then dial the 3-digit extension number of the station user who received a voice message.

Turning the Message Waiting Lamp Off

When a station user retrieves the voice messages from the voice mail system, the voice mail system must:

- a. Be programmed to go off-hook and dial the message cancel code [421].
- b. Then dial the 3-digit extension number of the station user who retrieved the voice message.

*Refer to Flexible Button programming

A. VM Tone Mode Calling Option

Allows the Voice Mail system to override a called stations H or P intercom switch settings.

When placing a call to a station and Tone ringing is desired (the Voice Mail system MUST be programmed to:

- a. Dial [6#].
- b. Then dial 3-digit station extension (call tone rings station).

300.59 VOLUME CONTROLS

There are two volume control slide switches on the front of the Key Telephone. Sliding the switch to the left decreases the volume. The left slide switch is for voice, background music, and speakerphone volume. The right slide switch is for tone ringing volume.

SECTION 310

SLT FEATURE OPERATION

310.1 INTRODUCTION

This section of the manual contains the operating instructions for Single Line users. It is designed to provide step-by-step instructions for operating the Single Line telephones in the system.

Literature similar to these operating instructions has been prepared for use by the customer in the form of a Single Line Telephone User's Guide.

310.2 ACCOUNT CODE

SLT stations can enter an account code to identify the call or calling station.

Entering Account Code before a call:

- a. Lift the handset.
- b. Dial [627].
- c. Dial the account code. If the account code contains fewer than 12 digits, dial [*] to return to intercom dial tone. Dial tone is heard.
- d. Dial [9] or CO Access code and the desired number.

Entering Account Code during a call:

- a. Depress the hookswitch momentarily. Your call will be placed on hold while you enter your account code.
- b. Dial [627].
- c. Dial the account code. If the account code contains fewer than 12 digits, dial [*] to return automatically to the call.

310.3 CALL BACK

You call a busy station and receive busy:

- a. Briefly depress and release the hookswitch.
- b. Dial [622].
- c. Replace handset.

Only one Call Back request can be left at a station; the second request will convert to Message Waiting Request.

310.4 CALL FORWARDING

To call forward calls to another station:

- a. Lift handset.
- b. Dial [640].
- c. Skip step c for immediate forwarding, otherwise dial the appropriate code:
 - [7] = Call Forward No Answer
 - [8] = Call Forward Busy
 - [9] = Call Forward Busy/No Answer
 - [*] = Call Forward Off-Net (via speed dial)
- d. Dial the 3-digit extension number or speed bin number where calls are to be forwarded. Confirmation tone will be heard.
- e. Replace handset.

To Remove Call Forwarding:

- a. Lift handset.
- b. Dial [640] or [662]. Confirmation tone will be heard.
- c. Replace the handset.

310.5 CALLING STATION TONE MODE OPTION

Allows a calling station to override a called key station's H or P intercom switch setting.

When placing a call to a key station and Tone ringing is desired:

- a. Dial [6#].
- b. Dial 3-digit station extension (call tone rings station).

310.6 CAMP-ON

After receiving intercom busy tone:

- a. Briefly depress and release the hookswitch.
- b. Dial [620]. When the called party answers, consult with them.

While on a CO line you receive a Camp-on warning tone through handset:

- a. Choose desired call (hang up on present call and take the new one, or ignore the Camp-on signal). (also see Personal Park)

Table 310-1 Starplus Digital SLT Numbering Plan

100-127	Station Intercom Numbers (SPD 1428)	663	Message Wait return
100-155	Station Intercom Numbers (SPD 2856)	664	SLT Conference W/ Personal Park
22 [C]	Call Park Location 0-7 (system)	666 [YY]	SLT Speed Dial Access
228	Personal Park	690	Name in Display Programming
33 [H]	Hunt Group Pilot Numbers 0-7	70	All Call Page (Internal & External)
44 [V]	Voice Mail Group Pilot Numbers 0-7	71	Internal Page Zone 1
55 [U]	UCD Group Pilot Numbers 0-7	72	Internal Page Zone 2
566	UCD Available/Unavailable	73	Internal Page Zone 3
6# [XXX]	Tone Mode Ring Option	74	Internal Page Zone 4
620	Camp-On	75	Internal All Call Page
621	Line Queue	76 [0]	External All Call Page (All Zones)
622	Call Back	76 [P]	External Page Zones 1-7
623	Message Wait	77	Meet-Me-Page Answer
624	Conference	9	LCR or CO Line Group 1 (if LCR is disabled)
625	Executive Override	0	Attendant
626	LCR Queue Cancel	#0	Group Call Pick Up (Key & SLT)
627	Account Code Enter	#1	Directed Call Pick-up (SLT)
631	Do Not Disturb	#22 [C]	Call Park Pickup (Key and SLT)
633 [ZZ]	Personalized Messages	#3	Universal Night Answer
633 [00]	Clear Personalized Messages		
640	All Call Forward		
640 [7]	No Answer - Call Forward		
640 [8]	Busy - Call Forward		
640 [9]	Busy/No Answer - Call Forward		
640 [*]	Off-Net - Call Forward		
660	SLT Flash Command to CO Line		
661 [YY]	SLT Station Speed Dial Programming		
662	SLT Clear - Call Forward, DND, Personal Messages		
		XXX = Intercom Station Numbers	
		YY = Speed Dial Bin numbers	
		ZZ = Personalized Messages	
		U = UCD Group Number 0-7	
		C = Call Park Location 0-7	
		H = Hunt Group Number 0-7	
		V = Voice Mail Group Number 0-7	
		P = External Page Zone Number 1-7	

310.7 CALL PARK (System)

To place an outside call on hold and consult with, page, or call an internal party and/or transfer the outside call.

While connected to an outside line:

- Depress and release the hookswitch. The caller is put on Exclusive hold.
- Dial parking location (220 to 227). Hear confirmation tone.
- If you hear busy tone, depress and release the hookswitch and dial another parking location.

Retrieving a Parked Call

- Lift handset.
- Dial pound [#].

- Dial parking location (220 to 227) where the call was parked.

310.8 CALL TRANSFER:

Making an Unscreened Transfer

- Briefly depress and release the hookswitch.
- Dial desired intercom number.
- Hang up to complete the transfer.

Making a Screened Transfer:

- Briefly depress and release the hookswitch.
- Dial desired telephone number.
- Announce the call.
- Hang up to complete the transfer.

310.9 CLEAR CALL FORWARD, DND, PERSONALIZED MESSAGES

SLTs can activate and cancel call forward by dialing [640] and DND by dialing [631] and enable and cancel personalized messages by dialing [633xx].

A convenient code [662] has been incorporated to cancel either Call forwarding, DND, or Personalized Messages when the SLT user has forgotten which code has been programmed on the phone

To cancel Call Forward, DND, Personalized Messages:

- a. Lift handset. Notification tone will be heard.
- b. Dial [662]. Confirmation tone will be heard.
- c. Replace the handset.

310.10 CO LINE QUEUING

- a. Dial outside line access code. Receive busy tone.
- b. Briefly depress and release the hookswitch.
- c. Dial [621]. Confirmation tone is heard.

310.11 CONFERENCE

You may set up a conference of 1 external and 1 other internal station.

- a. Lift handset.
- b. Make outside call.
- c. Briefly depress and release the hookswitch to put the call on hold.
- d. Dial number of internal station you wish to add.
- e. When that station answers, briefly depress and release the hookswitch again and all 3 parties will be connected.

310.12 CONFERENCE WITH PERSONAL PARK

While connected to an outside line:

- a. Depress the hookswitch momentarily. Intercom dial tone is heard.
- b. Dial [228]. (1st call is placed in personal park).
- c. Dial desired number for 2nd call.
- d. Depress the hookswitch momentarily. Intercom dial tone is heard.
- e. Dial [664]. All three parties are conferenced.
- f. Hang up to terminate conference.

310.13 DIRECT OUTSIDE LINE ACCESS

- a. Lift handset.
- b. Dial access code (9, 81 - 87).
- c. Dial desired telephone number.

310.14 DIRECTED CALL PICK-UP

Upon hearing an unattended telephone ring:

- a. Lift handset.
- b. Dial [#1].
- c. Dial station number of ringing telephone. You will be connected to intercom, incoming, recalling or transferred outside line.

310.15 DO NOT DISTURB

Activating Do Not Disturb:

- a. Lift handset.
- b. Dial [631].
- c. Replace handset.

To cancel Do Not Disturb:

- a. Lift handset.
- b. Dial [631] or [662].
- c. Replace handset.

310.16 PBX/CENTREX TRANSFER (Flash Command to CO Line)

To initiate a PBX or Centrex Transfer command from an SLT.

While connected to a PBX or Centrex line:

- a. Briefly depress and release the hookswitch. Intercom dial tone will be heard.
- b. Dial [660]. A Flash command will be presented to the PBX or Centrex line.
- c. PBX or Centrex studder tone will be heard. Dial number of desired extension.
- d. Replace handset to complete transfer.

310.17 GROUP CALL PICK-UP

Upon hearing an unattended telephone ringing:

- a. Lift the handset.
- b. Dial [#0]. You will be connected to intercom or transferred or recalling outside line call.

NOTE: You must be in the same pickup group.

310.18 PLACING CALLS ON EXCLUSIVE HOLD

While connected to an outside line:

- a. Briefly press and release the hookswitch. (Call is placed on Exclusive Hold).

To retrieve the call:

- a. Press and release the hookswitch again.

310.19 INTERCOM CALLING

- a. Lift handset.
- b. Dial 3-digit intercom number (100-127 SPD 1428 or 100-155 SPD 2856).

310.20 LCR QUEUING (Automatic)

If all lines available to you are busy, remain off-hook for four (4) seconds to automatically be queued onto LCR for an available line.

310.21 LCR QUE CALL BACK

If an LCR Queue Call Back has been activated:

- a. When telephone is signalled, answer the call.
- b. Desired telephone number will automatically be re-dialed.
- c. Wait for answer. Lift handset to converse

NOTE: Only one LCR Queue Call Back request may be initiated by a station. When a second request is made, the first request will be canceled.

310.22 LCR CANCEL

- a. Lift handset.
- b. Dial the LCR Queue Cancel code, [626].
- c. Replace handset or press ON/OFF button.

310.23 MESSAGE WAITING

Leaving a Message Waiting Indication

- a. Lift handset.
- b. Dial intercom station. Receive no answer, or DND tone.
- c. Briefly depress and release the hookswitch.
- d. Dial [623].
- e. Replace handset.

Answering a Message Waiting Indication.

Your message waiting lamp is flashing:

- a. Lift handset.
- b. Dial [663]. Station that left the message will ring.

Only SLTs equipped with message waiting lamp will have access to this feature. OPX stations do not have message wait capability.

310.24 OFF-HOOK PREFERENCE

If your phone has been programmed for Off-Hook Preference, you will hear outside line dial tone when lifting the handset.

When this operation is enabled, you may not have access to all features contained in this User Guide. However, consult your Centrex or PBX User's Guide for additional features you may have.

310.25 PERSONALIZED MESSAGES

Each station can select a pre-assigned message to be displayed on the LCD of any Key Telephone calling that station. To select one of the ten available messages:

- a. Dial [633] on the dial pad.
- b. Dial the two-digit code for the message which will appear.
 - 00 clears messages
 - 01 VACATION
 - 02 RETURN MORNING
 - 03 RETURN AFTERNOON
 - 04 RETURN TOMORROW
 - 05 RETURN NEXT WEEK
 - 06 BUSINESS TRIP
 - 07 MEETING
 - 08 HOME
 - 09 ON BREAK
 - 10 LUNCH

NOTE: This feature is not available to the attendant(s).

- c. Hang up. (Activating DND or Call Forwarding cancels selected message.)

310.26 PAGING

- a. Lift handset.
- b. Dial the two-digit paging code. Wait for page warning tone
 - 70 All Call - Internal & External
 - 71 Internal Zone 1
 - 72 Internal Zone 2
 - 73 Internal Zone 3
 - 74 Internal Zone 4
 - 75 Internal All Call
 - 76 [0] External All Call (All Ext Zones)
 - 76 [Z] External Zone Z=1-7
- c. Speak in normal tone of voice to deliver message.

Stations off-hook or in DND will not hear the page announcement.

NOTE: When making a zone page or All Call page and the zone is busy, the page initiator will receive ringback tone until the zone becomes available. You will then hear a warning tone and can make the page announcement.

- d. Deliver page in normal tone of voice.
- e. Replace handset to terminate page.

310.27 PERSONAL PARK (Flip-Flop)

While connected to first call:

- a. Depress the hookswitch momentarily. Intercom dial tone is heard.
- b. Dial [228]. (call is placed in personal park).
- c. Dial desired number for 2nd call.
- d. Depress the hookswitch momentarily. Intercom dial tone is heard.
- e. Dial [228]. (1st call is returned and 2nd call is placed in personal park).

The user can alternately connect to the other call by doing a hook flash and dialing [228] as many times as necessary.

310.28 PROGRAMMING YOUR NAME INTO THE LCD DISPLAY

Every SLT extension has the capability to program the users name so that people using display telephones will see the name instead of the station number.

- a. Lift handset.
- b. Dial [690].
- c. Enter your name (up to 7 letters) using the pattern shown below.

A=21	N=62	1=1#	*=01
B=22	O=63	2=2#	,=02
C=23	P=71	3=3#	?=03
D=31	Q=74	4=4#	/=04
E=32	R=72	5=5#	!='1
F=33	S=73	6=6#	\$='2
G=41	T=81	7=7#	&='4
H=42	U=82	8=8#	'='#
I=43	V=83	9=9#	(=#1
J=51	W=91	0=0#)=#2
K=52	X=92	Space=11	+=#3
L=53	Y=93	: =12	==#4
M=61	Z=94	- =13	#=##
		' =14	

- d. Press the hookswitch to complete the programming process.

310.29 STATION SPEED DIAL

- a. Lift handset.
- b. Dial [666].
- c. Dial desired station speed bin number (00-19).

310.30 STORING STATION SPEED NUMBERS

- a. Lift handset.
- b. Dial [661].
- c. Dial desired station speed bin number (00-19).
- d. Dial telephone number you wish to store.
- e. Briefly depress and release the hookswitch. (Confirmation tone is heard.)

Line Group 1 will be programmed along with SLT speed numbers and thus Line Group 1 will be used when activating station speed dial from an SLT.

310.31 SYSTEM SPEED DIAL

- a. Lift handset.
- b. Dial [666].
- c. Dial desired system speed bin number (20-99).

310.32 UNIVERSAL NIGHT ANSWER (UNA)

Upon hearing an incoming signal:

- a. Lift handset.
- b. Dial the UNA access code [#3]. You will be connected to ringing outside line.

310.33 UCD AVAILABLE/UNAVAILABLE

If you are a UCD Agent, you may place your station in the Available mode to receive UCD type of calls or you may place your station in the Unavailable mode to block UCD type of calls from ringing at your station.

To go Available:

- a. Dial [566] on the dial pad. You may now receive calls.

To go Unavailable:

- a. Dial [566] on the dial pad. You are now blocked from receiving UCD calls.

SECTION 320

ATTENDANT FEATURE OPERATION

320.1 INTRODUCTION

The Starplus Digital (SPD) Key Telephone System has a wide variety of features and flexible programming, allowing each telephone user to program his/her telephone to meet his/her own individual needs.

This section of the manual contains the operating instructions for Attendant Key Telephone users and includes an illustration of the key telephone used in the Starplus Digital (SPD) Key Telephone System and description of the keys on the telephones and their functions. It is designed to provide step-by-step instructions for operating the Attendant(s) Digital Terminal(s) in the system. Visual and audible cues which accompany the various steps in the operation of the features are also include

Literature similar to these operating instructions has been prepared for use by the customer in the form of an Attendant User's Guide.

320.2 ATTENDANT KEY TELEPHONE STATION FEATURES

Each Starplus Digital (SPD) Key Telephone System provides the following keys, indicators and features:

HANDSET AND SPEAKER are located at the left side of the front panel. A handset is provided to allow confidential conversation when desire Lifting the handset from its cradle (going off-hook) disengages the station's built-in speaker.

The speaker is located directly below the center portion of the handset. The station may be operated with the handset on-hook. When this occurs, audio is transmitted to the station user through the station's speaker.

HOLD button enables you to place an outside caller on hold.

TRANSFER (TRANS) button is used to transfer an outside call from one station to another.

FLASH button is used to terminate an outside call and restore dial tone without having to hang up the handset. It is also used to transfer calls behind a PBX or Centrex within those systems.

SPEED button provides you with access to speed dialing, save number redial and last number redial. This button is also used to access speed dial and flex button programming.

MUTE button allows you to switch the built-in microphone on or off when using the speakerphone, or the

handset microphone when using the handset. A flex button must be assigned to use this feature.

ON/OFF button enables you to make a telephone call without lifting the handset. It turns the telephone on and off when using the speakerphone.

FLEXIBLE BUTTONS are used to access idle outside lines, provide DSS/BLF for internal stations, access speed dial number and activate features. These buttons are programmed by the individual station user. The default flex feature buttons are described below:

CAMP-ON (flex) button enables you to alert a busy party that an outside line is on hold and waiting for them. A flex button must be assigned to use this feature.

LINE QUEUE (flex) button allows you to queue onto an outside line when all lines in a group are busy. Your station is placed in queue awaiting a line in the same group to become available. A flex button must be assigned to use this feature.

CALL BACK (flex) button allows you to initiate an automatic call back request to another busy station. As soon as that station becomes idle, the station that left the call back request is signalled. A flex button must be assigned to use this feature.

PICK UP (flex) button allows you to pickup a tone ringing intercom call, transferred, incoming, or recalling outside line call to a specific unattended station either by group or directed call pick-up.

MESSAGE WAIT (MSG WAIT) (flex) button allows you to initiate a message waiting indication at stations that are busy, unattended, or in Do Not Disturb. Message Waiting Callback request left at your station will indicated by a flashing Msg Wait LED.

CALL FWD (flex) button allows you to forward your calls to another station.

DO NOT DISTURB (NIGHT SERVICE) (flex) button allows the Attendant(s) to place the system into Night Service mode. A flex button must be assigned to use this feature.

CONFERENCE (CONF) (flex) button is used to establish and build conference calls.

OUTSIDE CALLS are announced by a tone signal repeated every 3.2 seconds. The corresponding outside line indicator will flash slowly.

INTERCOM CALLS can be tone ringing or voice announce. If it is voice announced, the receiving station will receive 2 bursts of tone prior to the announcement. If it is a tone ringing call, the receiving station will hear a tone ring every 2.4 seconds.

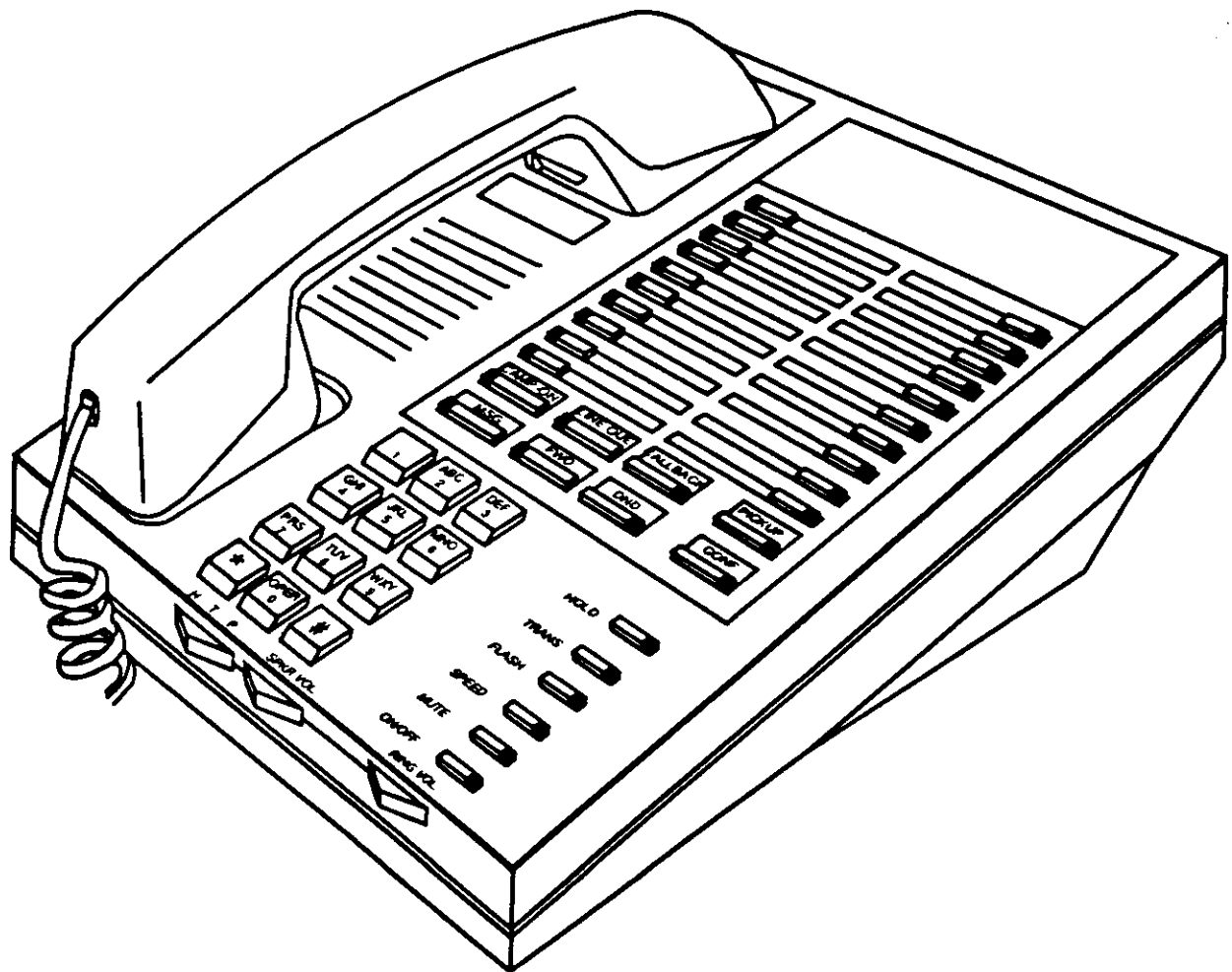


Figure 320-1 34 Button Attendant Digital Terminal

Table 320-1 Starplus Digital Attendant Numbering Plan

100-127	Station Intercom Numbers (SPD 1428)	73	Internal Page Zone 3
100-155	Station Intercom Numbers (SPD 2856)	74	Internal Page Zone 4
22 [C]	Call Park Location 0-7 (system)	75	Internal All Call Page
228	Personal Park	76 [0]	External All Call Page (All Zones)
33 [H]	Hunt Group Pilot Numbers 0-7	76 [P]	External Page Zones 1-7
44 [V]	Voice Mail Group Pilot Numbers 0-7	77	Meet-Me-Page Answer
55 [U]	UCD Group Pilot Numbers 0-7	81	CO Line Group 1 (if LCR is enabled)
566	UCD Available/Unavailable	82	CO Line Group 2
567 55 [U]	UCD Calls In Queue Display	83	CO Line Group 3
6# [XXX]	Tone Mode Ring Option	84	CO Line Group 4
601	Attendant Override	85	CO Line Group 5
602	Disable Outgoing CO Line Access	86	CO Line Group 6
603	CO Line Off-Net Forward	87	CO Line Group 7
604	Night Service	88 [YY]	All CO line Groups (CO Line Off-Net Forward)
620	Camp-On	9	LCR or CO Line Group 1 (if LCR is disabled)
621	Line Queue	0	Attendant
622	Call Back	#0	Group Call Pick Up (Key & SLT)
623	Message Wait	#1	Directed Call Pick-up (SLT)
624	Conference	#22 [C]	Call Park Pickup (Key and SLT)
625	Executive Override	#3	Universal Night Answer
626	LCR Queue Cancel	[SPD] YY	Speed Dial Access (00-19 Station) (20-99 System)
627	Account Code Enter	[SPD] *	Save Number Redial
631	Do Not Disturb	[SPD] #	Last Number Redial
632	Background Music		
633 [ZZ]	Personalized Messages		
633 [00]	Clear Personalized Messages		
634	Headset Mode		
FWD	All Call Forward		
[FWD]+[7]	No Answer - Call Forward		
[FWD]+[8]	Busy - Call Forward		
[FWD]+[9]	Busy/No Answer - Call Forward		
[FWD]+[*]	Off-Net - Call Forward		
690	Name in Display Programming		
691 [BB]	Off-hook Preference Programming		
692	Time & Date Programming (1st programmed Attendant)		
70	All Call Page (Internal & External)		
71	Internal Page Zone 1		
72	Internal Page Zone 2		

XXX = Intercom Station Numbers

YY = Speed Dial Bin numbers

ZZ = Personalized Messages

BB = Button Number

U = UCD Group Number 0-7

C = Call Park Location 0-7

H = Hunt Group Number 0-7

V = Voice Mail Group Number 0-7

P = External Page Zone Number 1-7

NOTE: Items shown in BOLD may be programmed onto FLEX Buttons.

320.3 ANSWERING AN OUTSIDE CALL

- a. Lift handset.
- b. Press slow flashing outside line button. (If your telephone is programmed with Preferred Line Answer, you may answer an outside line by lifting the handset.)

320.4 PLACING OUTSIDE LINE ON HOLD

- a. If your system is programmed for Exclusive Hold Preference, press HOLD button once for Exclusive Hold and twice for System Hold.
- b. If your system is programmed for System Hold Preference, press HOLD button once for System Hold and twice for Exclusive Hold.

320.5 ANSWERING A RECALLING OUTSIDE LINE

When an outside line has remained on hold for an extended period of time, you will be reminded with a recalling ring.

- a. Press outside line button flashing at very fast rate.
- b. Lift handset to converse.

320.6 ATTENDANT DISABLE OUTGOING ACCESS

The attendant station can disable CO lines, preventing outgoing CO calls.

- a. Lift handset or press ON/OFF button.
- b. Dial [602]. Confirmation tone is heard.
- c. Depress the line button(s) of the CO Line(s) to be disabled. Confirmation tone is heard and the CO Line Button(s) LED is flashing.
- d. To re-activate the CO Line(s), repeat the steps followed to disable it.

320.7 ATTENDANT OVERRIDE

If Attendant Override is allowed, Attendant(s) stations may override or call stations that are either busy or in Do Not Disturb.

If the Attendant calls a station that is busy on a CO call and wishes to alert them of a waiting call:

- a. Press the pre-programmed* ATTN OVERRIDE button. Three short tone bursts will be presented to the called party.
- b. After five (5) seconds, the station's CO line will automatically be placed on hold and the Attendant will be cut-thru.

If the Attendant calls a station that is in Do Not Disturb mode and wishes to alert them of a call:

- a. Press the pre-programmed* ATTN OVERRIDE button. The station will be signalled with a Camp-on tone.

*Refer to flexible button programming

320.8 ATTENDANT RECALL

When an outside line has remained on hold for an extended period of time, you will be reminded with a recalling ring.

- a. Press outside line button flashing at a very fast rate.
- b. Lift handset to converse.

320.9 EXECUTIVE OVERRIDE

Allows stations designated as "Executive" the ability to override and "bargue in" on other keysets engaged in conversation.

If you call a busy station:

- a. Press pre-programmed* EXECUTIVE OVERRIDE button. Executive station will be bridged onto the CO conversation in progress at the called station. Optional warning tone is heard and presented to all parties prior to cut-thru.
- b. Replace handset at Executive station to terminate the override.

*Refer to Flexible Button Programming

NOTE: If the busy party is connected via intercom to another party, the intercom connection will be dropped when the override occurs.

CAUTION: USE OF THIS FEATURE WHEN THE EXECUTIVE OVERRIDE WARNING TONE IS DISABLED MAY BE INTERPRETED AS A VIOLATION OF FEDERAL OR STATE LAWS, AND AN INVASION OF PRIVACY. CONSULT COUNSEL WITH RESPECT TO APPLICABLE LAWS BEFORE INTRUDING ON CALLS USING THIS FEATURE.

NOTE: A decrease in volume may occur on the CO line after the barge-in occurs.

320.10 INTERCOM CALLING

Placing an Intercom Call

- a. Press station key of party to be called (if programmed at your phone); or dial station number (100 to 155).
- b. You will hear ringing if called station is in the "T" answering mode; or two bursts of tone if called station is in the "H" or "P" position.
- c. Lift handset or use speaker-phone, when tone bursts stop.
- d. Hang up to end call.

Answering an Intercom Call

With your intercom signal switch in the T mode, you will hear repeated bursts of intercom tone ringing and the HOLD button will slow flash.

- a. Lift handset or press ON/OFF button to answer.
- b. Hang up to end call.

In the P mode, you will hear two bursts of tone and one-way announcement. The HOLD button will slow flash and the calling party cannot hear conversations in progress.

In the H mode, you will hear two bursts of tone and an announcement. Reply handsfree or lift handset for privacy.

320.11 INCOMING CO LINES OFF-NET (via speed dial)

Allows the first attendant station to forward incoming CO calls to an off-net location.

In a speed dial bin, store the number of the off-net location where calls are to be forwarded. Follow instructions provided for storing station or system speed dial numbers.

- a. Dial [603] on the dial pad or press pre-programmed* CO Off-Net Forward button.
- b. Dial the CO group access code of the group to be forwarded or press the CO Line button for an individual CO Line for Off-Net forward.

81=CO Group 1
82=CO Group 2
83=CO Group 3
84=CO Group 4
85=CO Group 5
86=CO Group 6
87=CO Group 7
88=All CO Lines

- c. Dial the speed bin number that contains the number where calls are to be forwarded or press the pre-programmed* button for the speed bin. Confirmation tone is heard.

*Refer to flexible button programming

Canceling Off-Net Forwarding

- a. Dial [603] on the dial pad or press pre-programmed* CO Off-Net Forward button.
- b. Dial the CO group access code or press the CO Line button.
- c. Dial [#]. Confirmation tone is heard.

320.12 NIGHT SERVICE

- a. Any designated attendant can place the system into Night Service by pressing the pre-programmed Night Service button (DND) or by dialing [604].
- b. Pressing the pre-programmed Night Service button again removes the system from Night Service.

320.13 SETTING SYSTEM TIME AND DATE

Must be set by the first programmed attendant.

- a. Dial [692] on the dial pad. Confirmation tone is heard.
- b. Enter date and time as follows:
YYMMDDHHMM
YY = year 00-99
MM = month 01-12
DD = day 01-31
HH = hour 00-23
MM=minute 00-59

When the correct number of digits are entered, confirmation tone will be heard and the display will update.

320.14 STORING SYSTEM SPEED NUMBERS

System Speed numbers must be entered by the first programmed attendant. If no attendant is specified, enter at Station 100.

- a. Press SPEED once, then press a desired outside line key or select an outside line automatically by pressing the SPEED button a second time.
- b. Dial the System speed bin location (20 to 99).
- c. Dial telephone number.
- d. Press the SPEED button.
- e. Hang up.
 - Pressing the TRANS button during number entry initiates a Pulse-To-Tone switchover. Pressing the HOLD button during number entry inserts a Pause. Pressing the FLASH key inserts a Flash into the speed number.
 - Pressing the TRANS button as the first entry in the speed bin inserts a no-display character causing the numbers stored in the bin not to appear on the Digital Terminals display when the bin is accessed.

Speed Bin numbers 60-99 are NOT monitored by Toll Restriction.

ATTENDANT with DSS/DLS FEATURES

The attendant console may be programmed in one of five different ways. Therefore, you may not have all of the features listed below on your console. Refer to Sec. 200.146 for a description of each map.

320.15 ATTENDANT TRANSFER SEARCH

When attempting to locate a party:

- a. Press a station button to signal that station. If the party is not located, press another station button to continue the search.

320.16 PLACING AN OUTSIDE CALL (Automatic Line Selection)

- a. Press outside line button. ON/OFF button LED will light and dial tone will be heard.
- b. Dial desired party.
- c. When called party answers, lift handset to converse or use speakerphone

320.17 CALL PARK

While connected to an outside line:

- a. Press programmed CALL PARK button. The caller is put on Exclusive hold.
- b. At this time, you can page or call another internal station.
- c. When the party you called responds, announce the call park location and replace handset.

320.18 DO NOT DISTURB INDICATION

The associated station button will flash at a medium rate to indicate that station is in Do Not Disturb.

320.19 RETRIEVING A PARKED CALL

- a. Lift handset or press ON/OFF button.
- b. Dial [#].
- c. Dial the parking location (220 to 227) where the call was parked.

320.20 CALL TRANSFER

Outside lines can be transferred from one phone to another within the system. The transfer can be either screened (announced) or unscreened to either an idle or busy station.

Screened Transfer

- a. While connected to an outside line, press station button where call is to be transferred (if programmed on your telephone), or press TRANS button and dial station number (100 to 155).

- b. The called extension signals according to the intercom signal switch position.
- c. When that extension answers, announce the transfer.
- d. Hang up to complete transfer.

Unscreened Transfer

When the called extension begins to signal, hang up to transfer the call (Recall timer starts).

Transfer Search

- a. When attempting to locate a party, press a station key to signal a station.
- b. If the party is not located, press another station key to continue the search, or press the TRAN button and dial the station number.
- c. If the party is not located, press the TRANS button twice and dial another station number to continue the search.
- d. When the called party answers, hang up to complete the transfer.

320.21 CAMP-ON

While connected to an outside line:

- a. Press desired station button.
- b. When busy tone is heard, press CAMP-ON button.
- c. Replace handset, access another CO Line or press RELEASE button (if you have one).

320.22 FLEXIBLE BUTTON PROGRAMMING

- a. Press SPEED button twice.
- b. Press FLEX button to be programmed (it must be programmed in data base as a flexible button).
- c. Dial desired code (Refer to Table 300-2 Flex Button Programming Codes).

320.23 MEET ME PAGE

To request another party meet you on a page:

- a. Dial the desired two-digit paging code or press pre-programmed* button.
- b. Request that party meet you on the page.
- c. Do not hang up; wait for the requested party to answer.

Answering a Meet Me Page

- d. Go to the nearest Telephone and dial [77].
- e. You will be connected to the party that paged you.

*Refer to flexible button programming

320.24 PAGING**A. External Paging**

1. Dial the two-or three-digit External paging code.
Wait for page warning tone.
 - 76 [0] External All Call (Zones 1-7)
 - 76 [1] External Zone 1
 - 76 [2] External Zone 2
 - 76 [3] External Zone 3
 - 76 [4] External Zone 4
 - 76 [5] External Zone 5
 - 76 [6] External Zone 6
 - 76 [7] External Zone 7

2. Speak in normal tone of voice to deliver message.

Stations off-hook or in DND will not hear the page announcement.

NOTE: When making a zone page or All Call page and the zone is busy, the page initiator will receive ringback tone until the zone becomes available. You will then hear a warning tone and can make the page announcement.

3. Deliver page in normal tone of voice.
4. Replace handset to terminate page announcement.

B. Internal Paging

Stations off-hook or in DND will not receive the page announcement.

1. Press programmed PAGE button or dial one of the following codes:
 - 70 All Call - Internal & External
 - 71 Internal Zone 1
 - 72 Internal Zone 2
 - 73 Internal Zone 3
 - 74 Internal Zone 4
 - 75 Internal All Call

2. Speak in normal tone of voice to deliver message.
3. Replace handset to terminate page announcement.

C. All Call Paging (Internal/External)

1. Dial [70] or press the pre-programmed* PAGE button.
2. Speak in normal tone of voice to deliver message.
3. Replace handset to terminate page announcement.

*Refer to flexible button programming

320.25 RELEASE BUTTON

All DSS/DLS maps contain a Release button that may be pressed to disconnect or terminate an intercom call, transfer sequence, page announcement or CO call.

330.1 LCD DISPLAYS

The display is arranged into an upper and lower field. The upper field displays the current activity of the telephone. The lower field is divided into two sections. The left section of the lower field displays the date, speed bin number, connected intercom

station or outside line number. The right section of the lower field displays the current time or elapsed time on an outside call. The following Table shows what will appear on the LCD displays based on the function performed.

Table 330-1 Liquid Crystal Displays (LCD)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Idle Station	<div style="border: 1px solid black; padding: 5px; text-align: center;"> STATION XXX MM/DD/YY HH:MM am </div>	
Manually Dialing Outgoing Calls	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 18005551212 LINE XX HH:MM :SS </div>	
Recalling Line from Hold	<div style="border: 1px solid black; padding: 5px; text-align: center;"> LINE XX RECALLING MM/DD/YY HH:MM am </div>	
Recalling Line from Another Station	<div style="border: 1px solid black; padding: 5px; text-align: center;"> RECALL FROM STA XXX LINE XX HH:MM:SS </div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 5px;"> RECALL FROM ..(name).. LINE XX HH:MM:SS </div>	
Connected to an Incoming CO Line		<div style="border: 1px solid black; padding: 5px; text-align: center;"> STATION XXX LINE XX 00:00:10 </div>
Intercom Call	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CALL TO STA XXX MM/DD/YY HH:MM am </div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 5px;"> CALL TO ..(name).. MM/DD/YY HH:MM am </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CALL FROM STA XXX MM/DD/YY HH:MM am </div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-top: 5px;"> CALL FROM ..(name).. MM/DD/YY HH:MM am </div>

Table 330-1 LCD Displays (Cont'd)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Camp-on	<p>CALL TO STA XXX MM/DD/YY HH:MM am</p>	<p>CAMP-ON BY STA XXX MM/DD/YY HH:MM am</p>
	<p>CALL TO ..(name).. MM/DD/YY HH:MM am</p>	<p>CAMP-ON BY ..(name).. MM/DD/YY HH:MM am</p>
Conference	<p>CONFERENCE MM/DD/YY HH:MM am</p>	<p>CONFERENCE MM/DD/YY HH:MM am</p>
Internal Page	<p>INTERNAL PAGE ZONE X HH:MM am</p>	<p>PAGE FROM STA XXX MM/DD/YY HH:MM am</p>
		<p>PAGE FROM ..(name).. MM/DD/YY HH:MM am</p>
External Page	<p>EXTERNAL PAGE ZONE X HH:MM am</p>	
All Call Page	<p>ALL CALL PAGE MM/DD/YY HH:MM am</p>	<p>PAGE FROM STA XXX MM/DD/YY HH:MM am</p>
Meet Me Page	<p>ALL CALL PAGE MM/DD/YY HH:MM am</p>	<p>PAGE FROM XXX MM/DD/YY HH:MM am</p>
	<p>CALL FROM XXX MM/DD/YY HH:MM am</p>	<p>CALL TO XXX MM/DD/YY HH:MM am</p>

Table 330-1 LCD Displays (Cont'd)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
<p>Station Call Forward (Originating Station) (Name in Display)</p>	<p>FORWARDED TO STA XXX MM/DD/YY HH:MM am</p> <p>FORWARDED TO ..(name).. MM/DD/YY HH:MM am</p>	
<p>Station No-Answer Call Forward (Originating Station)</p>	<p>NO ANS FWD TO STA XXX MM/DD/YY HH:MM am</p> <p>NO ANS FWD TO ..(name).. MM/DD/YY HH:MM am</p>	
<p>Station Busy/No-Answer Call Forward (Originating Station)</p>	<p>BSY/NA FWD TO STA XXX MM/DD/YY HH:MM am</p> <p>BSY/NA FWD TO ..(name).. MM/DD/YY HH:MM am</p>	
<p>Station Busy Call Forward (Originating Station)</p>	<p>BUSY FWD TO STA XXX MM/DD/YY HH:MM am</p> <p>BUSY FWD TO ..(name).. MM/DD/YY HH:MM am</p>	
<p>Forwarded Call (Name in Display)</p>	<p>FORWARDED TO STA XXX VIA STA XXX HH:MM am</p> <p>FORWARDED TO ..(name).. VIA STA XXX HH:MM am</p>	<p>CALL FROM STA XXX VIA STA XXX HH:MM am</p> <p>CALL FROM ..(name).. VIA STA XXX HH:MM am</p>

Table 330-1 LCD Displays (Cont'd)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Forwarded Intercom Call	<p>FORWARDED TO STA XXX VIA STA XXX HH:MM am</p>	<p>CALL FROM STA XXX VIA STA XXX HH:MM am</p>
Station Forwarding to a Voice Mail Group (Station Idle)	<p>FORWARDED TO VOICE MAIL MM/DD/YY HH:MM am</p>	
Station Forwarding to a UCD Group (Station Idle)	<p>FORWARDED TO UCD 55X MM/DD/YY HH:MM am</p>	
Preset Forward		<p>FORWARD RING LINE XX HH:MM am</p>
Station calling a Station Forwarded to a Voice Mail Group	<p>FORWARDED TO VOICE MAIL VIA STA XXX HH:MM am</p>	<p>FORWARDED TO VOICE MAIL MM/DD/YY HH:MM am</p>
Call Pickup	<p>CALL TO STA XXX PICKED UP BY STA XXX HH:MM am</p>	<p>CALL TO STA XXX FROM STA XXX HH:MM am</p> <p>TRANSFER FROM STA XXX LINE XX HH:MM am</p>
Exclusive Hold	<p>LINE HOLDING LINE XX HH:MM am</p>	

Table 330-1 LCD Displays (Cont'd)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Do Not Disturb	<div data-bbox="602 375 1000 484" style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> DO NOT DISTURB STA XXX MM/DD/YY HH:MM am </div> <div data-bbox="602 513 1000 623" style="border: 1px solid black; padding: 5px;"> DO NOT DISTURB ..(name).. MM/DD/YY HH:MM am </div>	<div data-bbox="1068 451 1474 561" style="border: 1px solid black; padding: 5px;"> STATION IN DO NOT DISTURB MM/DD/YY HH:MM am </div>
Call Back	<div data-bbox="597 685 995 795" style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> CALL BACK FROM STA XXX MM/DD/YY HH:MM am </div> <div data-bbox="597 824 995 934" style="border: 1px solid black; padding: 5px;"> CALL BACK FROM ..(name).. MM/DD/YY HH:MM am </div>	<div data-bbox="1068 685 1474 795" style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> CALL FROM STA XXX MM/DD/YY HH:MM am </div> <div data-bbox="1068 824 1474 934" style="border: 1px solid black; padding: 5px;"> CALL FROM ..(name).. MM/DD/YY HH:MM am </div>
Outside Line Transfer		<div data-bbox="1062 996 1468 1106" style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> TRANSFER FROM STA XXX LINE XX HH:MM am </div> <div data-bbox="1062 1135 1468 1245" style="border: 1px solid black; padding: 5px;"> TRANSFER FROM ..(name).. LINE XX HH:MM am </div>
Message Waiting		<div data-bbox="1057 1307 1463 1417" style="border: 1px solid black; padding: 5px;"> MSG: XXX XXX XXX XXX MM/DD/YY HH:MM am </div>
Reply to a Message Waiting	<div data-bbox="581 1473 987 1583" style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> CALL TO STA XXX MM/DD/YY HH:MM am </div> <div data-bbox="581 1612 987 1721" style="border: 1px solid black; padding: 5px;"> CALL TO ..(name).. MM/DD/YY HH:MM am </div>	<div data-bbox="1052 1541 1458 1651" style="border: 1px solid black; padding: 5px;"> CALL BACK FROM STA XXX MM/DD/YY HH:MM am </div>

Table 330-1 LCD Displays (Cont'd)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Programmed Flash Command (F)	<div style="border: 1px solid black; padding: 5px; text-align: center;"> F*12 </div>	
Programmed Pause Command (P)	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 950777P1234567 SPEED XX HH:MM am </div>	
Programmed Pulse-To-Tone Switchover (S)	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 950777S1234567 SPEED XX HH:MM am </div>	
CO Line Queuing	<div style="border: 1px solid black; padding: 5px; text-align: center;"> PLACED IN QUEUE FOR LINE XX HH:MM am </div>	
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> QUEUE CALL BACK LINE XX HH:MM am </div>	
Hunt Groups	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CALL TO STA XXX VIA HUNT HH:MM am </div>	
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CALL TO .(name).. VIA HUNT HH:MM am </div>	
UCD Groups	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CALL TO STA XXX VIA UCD HH:MM am </div>	
	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CALL TO .(name).. VIA UCD HH:MM am </div>	

Table 330-1 LCD Displays (Cont'd)

FUNCTION	CALLING STATION'S DISPLAY	CALLED STATION'S DISPLAY
Ringing CO Lines		<div style="border: 1px solid black; padding: 5px; text-align: center;"> LINE RINGING LINE XX HH:MM am </div>
Display Security Feature	<div style="border: 1px solid black; padding: 5px; text-align: center;"> DISPLAY SECURITY LINE XX HH:MM:SS </div>	
Station Forwarding Off-Net	<div style="border: 1px solid black; padding: 5px; text-align: center;"> FORWARDED TO SPEED XX MM/DD/YY HH:MM am </div>	
Calling a Station Forwarded Off-Net (before and after call is answered)	<div style="border: 1px solid black; padding: 5px; text-align: center;"> FORWARDED OFF NET LINE XX CALLED 102 2331234 LINE XX HH:MM:SS </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> FORWARDED TO SPEED XX MM/DD/YY HH:MM am </div>
Calls in Queue (Agents and Overflow Stations)	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 01 CALLS IN QUEUE MM/DD/YY HH:MM am </div>	
Calls in Queue (using Dial Code)	<div style="border: 1px solid black; padding: 5px; text-align: center;"> UCD 55X 02 CALLS IN QUEUE MM/DD/YY HH:MM am </div>	
Unavailable Mode (Agent Station)	<div style="border: 1px solid black; padding: 5px; text-align: center;"> UNAVAILABLE UCD * XXX * MM/DD/YY HH:MM am </div>	
Station calling a Voice Mail Group Pilot Number	<div style="border: 1px solid black; padding: 5px; text-align: center;"> CALL TO VOICE MAIL MM/DD/YY HH:MM am </div>	

SECTION 400

GENERAL DESCRIPTION

400.1 SYSTEM TECHNOLOGY

The Starplus Family of Digital Key Telephone systems is comprised of two fully digital hybrid key telephone systems, the SPD 1428 and SPD 2856. These systems are designed to meet the telecommunications needs of a small to medium sized business offices. Both systems incorporate state of the art digital technology for command processing and voice switching utilizing a Pulse Coded Modulation/Time Division Multiplexing (PCM/TDM) voice control module. The family of Starplus Digital systems are also engineered to allow migration of the family of Starplus digital terminals and terminal accessories throughout the entire product line. In addition standard 2500-type telephone devices are supported by use of Single line interface PCB's and or SLA (OPX) adapters.

The SPD 1428 is the smallest member of the Starplus Digital family and fully configured supports a maximum of 14 CO/PBX/Centrex lines and 28 digital station devices. The SPD 1428 is a "flatpack", or single mother board system with plug on modules expanding the system via expansion and expander modules configured with either two (2) CO/PBX/Centrex lines by four (4) stations or four (4) CO/PBX/Centrex lines by eight (8) stations. A complete system capacity allows for use of up to 112 time slots for Stations, CO Lines, DTMF Receivers, or Data switching Modules. This extends non-blocking access to all system resources.

The SPD 1428 Basic KSU comes fully configured with power supply, Common control processor, PCM/TDM Voice switching matrix and interface circuits for four (4) CO/PBX/Centrex lines and interface circuits for eight (8) Digital terminal stations. The basic system is also equipped with one (1) RS-232C I/O port, one (1) DTMF receiver, a connector for one (1) Music On Hold channel that also provides for Background Music, and an on-board modem (300 baud) that provides access to the system for data base programming or remote maintenance and or diagnostics. Modules to provide additional I/O ports, and an optional 1200 baud modem module can also be added to the system.

The SPD 2856 system is the middle system in a family of Digital Hybrid Key Telephone systems and supports a maximum configuration of 28 CO/PBX/Centrex lines and 56 digital station devices. The SPD 2856 is a typical KSU system with plug in PCB's. The system capacity is expanded by installing four (4) circuit CO/PBX/Centrex lines by eight (8)

circuit station expansion PCB's. The complete system capacity allows for use of up to 112 time slots for Stations, CO Lines, DTMF Receivers, or Data switching Modules. This extends virtual non-blocking access to all system resources.

A basic SPD 2856 KSU ships complete with an on-board power supply. The CPB which is the only common equipment required for operation provides the microprocessor for command processing and Voice PCM/TDM switching. The CPB is also equipped with one (1) modular RS-232C I/O port, a connector for one (1) Music On Hold channel that also provides for Background Music, and an on-board modem (300 baud) that provides access to the system for data base programming or remote maintenance and or diagnostics. Modules to provide additional I/O ports, and an optional 1200 baud modem module can also be added to the CPB.

Both systems are installed using industry standard blocks, jacks and skinny wire cabling. This combined with the ability to program the system using a key terminal (digital display terminal) reduces installation cost and maintenance requirements.

All CO interfaces are equipped with transformer barriers, for system classification as an FCC fully protected system. Each CO circuit supports rotary (out-pulse) dialing and loop supervision (disconnect detection) under software control. The DTMF tone signals and system supervisory tones can be generated in each keyset or on the main PCB. Both Starplus Digital systems use a proprietary tone plan for providing internal progress tones with the exception of OPX stations which are provided with a "precise" tone plan.

The Starplus family of digital terminals include a display and non-display 34 button stations. Optional station terminals include a Digital DSS/DLS Console, and a Single Line adapter (Off-Premise Extension (OPX) adapter) which are all upward and downward compatible to the entire Starplus digital product line.

The system architecture allows system programming changes to be made without interrupting state event software control of normal communications. Call processing continues while the customer data base is updated. All programming changes to the customer data base programming are made either from a digital terminal (digital display terminal) connected to Port 01 or from a data terminal or PC connected to either a I/O port or remotely via the on-board modem.

The Starplus product line is tailored to meet immediate and long term customer needs. Most commonly used features are activated by direct button selection. However, many functions may be alternately accessed by dialing specific codes or as another option by assigning these dial codes to a FLEX button on a digital terminal. This permits flexible use of the Starplus Digital systems.

Future software enhancements and upgrades are easily retrofitted and installed in the system. This will in most cases provide backward compatibility with existing Starplus Digital hardware further reducing the cost to upgrade or add features to an installed system.

400.2 SPD 1428 COMMON EQUIPMENT

A. Basic Key Service Unit with Power Supply (BKSU)

The SPD 1428 Basic Key Service Unit (KSU) is housed in a wall mountable cabinet the contains the Key Service board (KSB), Power Supply and pre-wired connectors for stations and CO Line interface. The SPD 1428 Digital Key Telephone System is a microprocessor (68000) controlled, solid state electronic switch which distributes communications using Pulse Coded Modulation/Time Division Multiplexing (PCM/TDM) technology. All control, switching and interface circuitry is condensed onto a single printed circuit board (PCB), the main key service board, located inside the key service unit (KSU).

The basic system comes fully configured for four (4) CO/PBX/Centrex lines and eight (8) Stations. The basic KSU also contains one (1) RS-232C I/O port, one (1) DTMF Receiver, one (1) connector for Background Music and Music on Hold, an on-board 300 baud modem port, and one external page port. The basic KSU also contains two connectors for adding a 2x4 CO/Station Expander module (J9 and J10), an optional I/O module that adds one additional RS-232C port and one RS-422 port, and an optional 1200 baud modem module can be added to increase the speed of transmission of the on-board modem port. A reset (halt) switch and a BGM volume control are also mounted on the PCB. In addition two connectors are provided for adding an Expansion KSU which will allow the system to expand to a total of 14 CO/PBX/Centrex lines and 28 digital station ports. Refer to Figure 400-1 for a PCB layout and location of connectors.

Power Supply:

The power supply, installed in the KSU at the time of manufacture, has an input voltage of 117 VAC $\pm 10\%$. The power supply provides power, a filtered/unregulated ± 12 VDC, to the main key service

board. A slo-blow 1.5 amp fuse on the AC side of the transformer provides the necessary fire and overload protection. Power is regulated and distributed to stations / circuitry in the system on the main key service board. The power supply and cabinet meet all safety requirements to comply with UL 1459 Second Edition and CSA 0.3 standards.

CPU and Memory:

The SPD 1428 system is controlled by a 16-bit (68000) main micro-processor which controls all system functions including the PCM/TDM voice switching under the direction of ROM and RAM software coding. The main key service board is responsible for all control functions, execution of all logic operations and control of system modules including control over the circuitry necessary for voice switching and conference connections. The main key service board is also responsible for all system tones, system timing, and station status control. In addition the main key service board provides software and hardware support of the following:

- Real Time clock.
- Watch dog timer and recovery.
- PCB status as to presence/absence of modules for automatic software configuration setup.
- State/event software design.
- Backup of customer database RAM memory via a "supper Cap" (supper capacitor).

System software is provided in EPROM memory and is installed on the main key service board. The system contains (512) kilobytes of EPROM storage and is equipped with 128K of "battery"-backed static RAM. Provisions have been made on the card to address up to (2) megabytes of EPROM memory and up to (2) megabytes of static RAM.

CO Line/Station Interfaces:

The BKSU contains the necessary circuitry to connect four (4) CO/Centrex/PBX loop start lines and eight (8) Digital Key Telephones to the system. This card also contains one additional voice (transmit) path for external paging.

The main key station board contains four (4) Central Office, Centrex or PBX loop start, line interfaces. The protection circuitry to allow the system to be classified as a fully protected system are located on the card for each CO circuit. The CO circuits are equipped with current sensing circuitry that identifies distant end disconnect (loop supervision). Each CO line interface design also provides proper fusing or protection to comply with the requirements of UL 1459 Second Edition and CSA 0.3 standards. CO

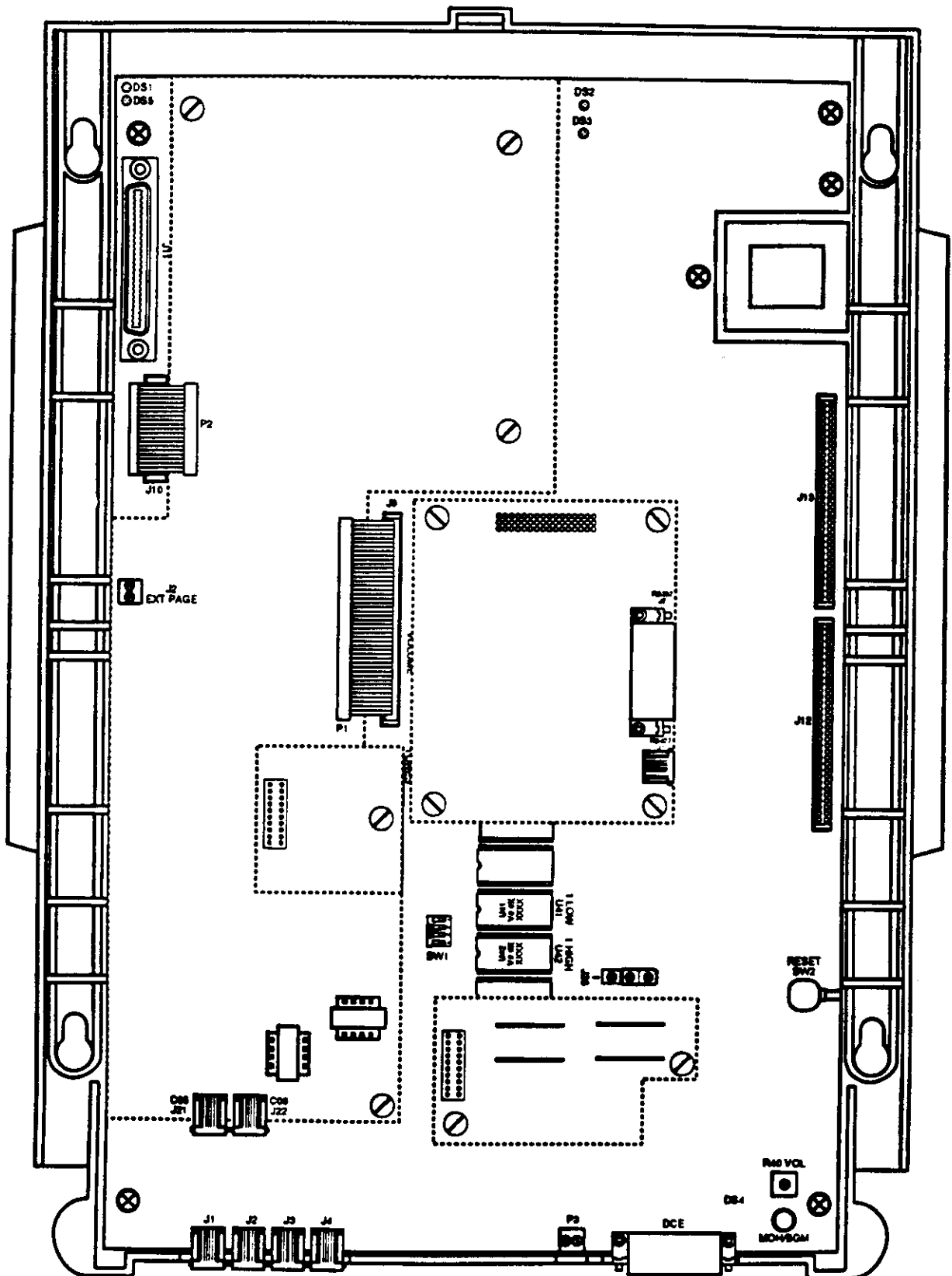


Figure 400-1 Starplus Basic KSU & Main Key Service Board

lines are connected to the system via RJ-11 modular jacks mounted on the bottom of the main key service board.

The main key station board also provides the interface for eight (8) Digital Key Telephones using two (2) 64 kilobyte channel arrangements. Stations connect to the board via the MDF through a 50 pin connector located inside the KSU. Each station connection requires four (4) wires to connect to the board.

A Digital DSS/DLS Console, and Single Line Telephone Adapter (OPX) or other specifically designed adapter with a digital interface can be assigned to any one of the interface circuits. The Key Station interface circuits are protected from mis-wiring and over-current.

The main key service also contains an on-board modem that is capable of transmitting data at a rate of 300 baud. The modem supports and is compatible with the Hayes command protocol. The Bell System (Western Electric) standards 103 and 212A for modem design is incorporated into the design of this modem. The modem operates on-line in both Full and Half duplex modes. An optional 1200 baud module may be added to the main key service unit to allow transmission at the rate of 1200 baud.

B. SPD 1428 Expansion KSU with Power Supply (EKSU)

The SPD 1428 Expansion KSU is a unit which comes equipped with a power supply and circuitry providing four (4) additional loop start CO/PBX/Centrex line ports and eight (8) digital station ports to the Basic KSU. The Expansion KSU is a wall mountable cabinet that mounts directly to the right of the Basic KSU and connects via two (2) ribbon type cables provided with the unit. All processing and control functions as well as voice connections and switching are controlled by circuitry on the Basic KSU and transmitted to the Expansion KSU through the ribbon cables.

The Expansion key service board allows connection of one optional application module (i.e. DTMF Receiver) to the system and connector(s) for installing an additional SPD 1428 2x4 Expander Module or the SPD 1428 4x8 Expander Module. Refer to Figure

400-2 for the Expansion Key Service board (PCB) layout and location of connectors.

Power Supply

The power supply, installed in the Expansion KSU at the time of manufacture, has an input voltage of 117 VAC $\pm 10\%$. The power supply provides power, a filtered / unregulated ± 12 VDC, to the Expansion key service board. A slow-blow 1.5 amp fuse on the AC side of the transformer provides the necessary fire and overload protection. Power is regulated and distributed to stations / circuitry in the system on the Expansion key service board. The power supply and cabinet meet all safety requirements to comply with UL 1459 Second Edition and CSA 0.3 standards.

CO Line/Station Interfaces

The EKSU contains the necessary circuitry to connect an additional four (4) CO/Centrex/PBX loop start lines and eight (8) Digital Key Telephones to the system. This card also contains one additional voice (transmit) path for external paging.

The Expansion key station board contains four (4) Central Office, Centrex or PBX loop start, line interfaces. The protection circuitry to allow the system to be classified as a fully protected system are located on the card for each CO circuit. The CO circuits are equipped with current sensing circuitry that identifies distant end disconnect (loop supervision). Each CO line interface design also provides proper fusing or protection to comply with the requirements of UL 1459 Second Edition and CSA 0.3 standards. CO lines are connected to the system via RJ-11 modular jacks mounted on the bottom of the Expansion key service board.

The Expansion key station board also provides the interface for eight (8) Digital Key Telephones using two (2) 64 kilobyte channel arrangements. Stations connect to the board via the MDF through a 50 pin connector located inside the KSU. Each station connection requires four (4) wires to connect to the board.

A Digital DSS/DLS Console, and a Single Line Telephone Adapter (OPX) or other specifically designed adapter with a digital interface can be assigned to any one of the interface circuits. The Key Station interface circuits are protected from mis-wiring and over-current.

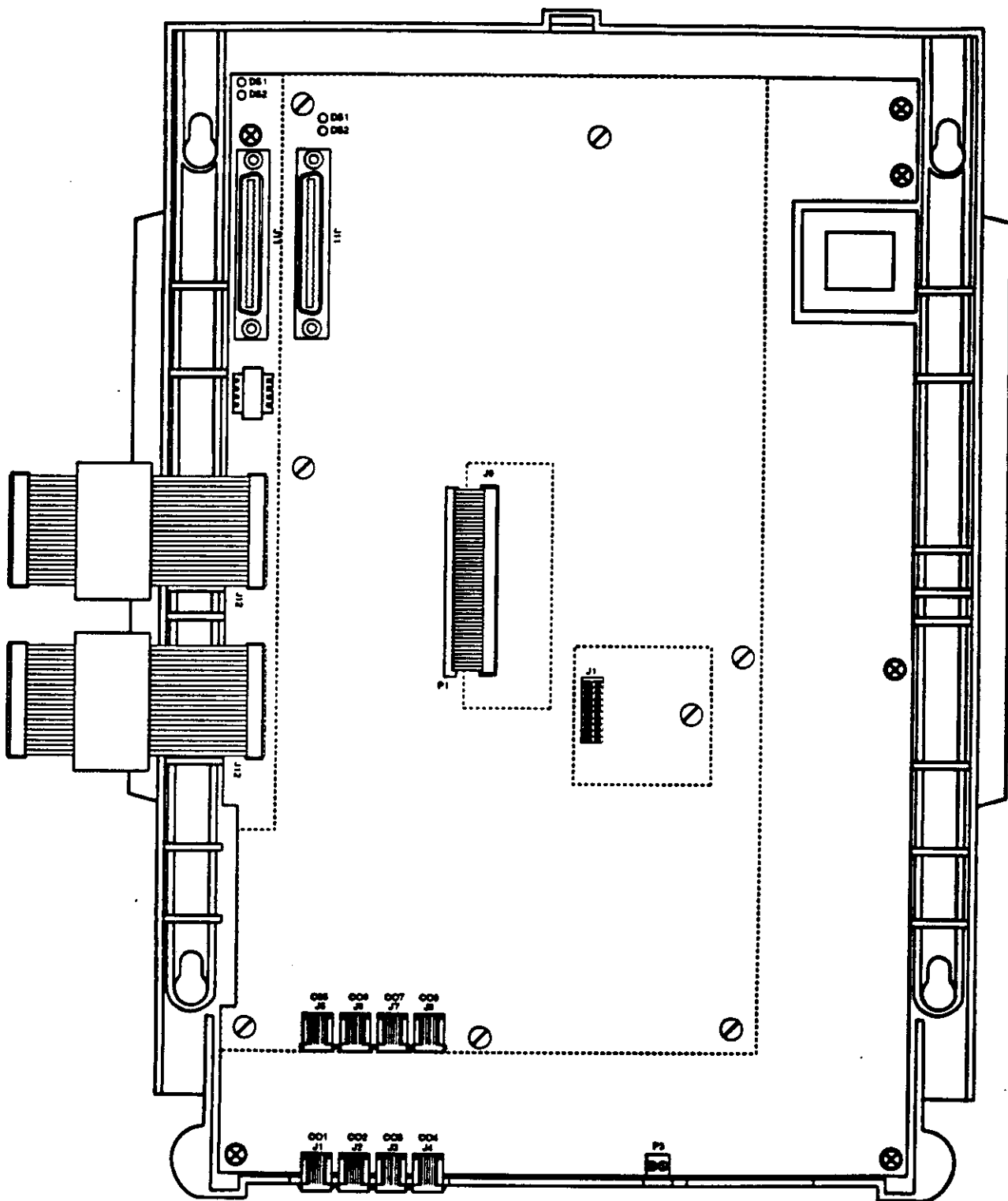


Figure 400-2 Starplus Expansion KSU (EKSU)

C. 2x4 CO/Station Expander Module

The SPD 1428 2x4 CO/STA Expander Module is a Two (2) CO by four (4) Key Station Interface module that plugs onto the main key service board of the basic KSU or the Expansion Key Service board of the Expansion KSU with the use of two ribbon cables. This module is a combination board that contains the necessary circuitry to connect two (2) CO/Centrex/PBX loop start lines and four (4) Digital Key Telephones to the system. This card also contains one additional voice (transmit) path for external paging, and a connector for adding one application module (i.e. DTMF Receiver) to the system.

NOTE: When the 2x4 Expander module is installed in the Expansion KSU two CO ports and four Station ports become unusable. This DOES NOT however reduce the total system capacity of 14 CO lines and 28 Stations.

CO Line/Station Interfaces

The 2x4 CO/STA Expander Module provides the interface for two (2) Central Office, Centrex or PBX loop start, lines. The protection circuitry necessary to allow the system to be classified as a fully protected system are located on the card for each CO

circuit. The CO circuits are equipped with current sensing circuitry that identifies distant end disconnect (loop supervision). The module design also provides proper fusing or protection to comply with the requirements of UL 1459 Second Edition and CSA 0.3 standards. CO lines are connected to the system via RJ-11 modular connectors mounted on the bottom edge of the board.

The 2x4 CO/STA Expander module also provides the interface for four (4) Digital Key Telephones using two (2) 64 kilobyte channel arrangements. Stations connect to the board via the MDF through a 50 pin connector located on the main key service board inside the basic KSU or a similar connector on the expansion key service board when installed in the EKSU. Each station connection requires four (4) wires to connect to the board.

A Digital DSS/DLS Console, and a Single Line Telephone Adapter (OPX), or other specifically designed adapter with a digital interface can be assigned to any one of the interface circuits. The Key Station interface circuits are protected from mis-wiring and over-current.

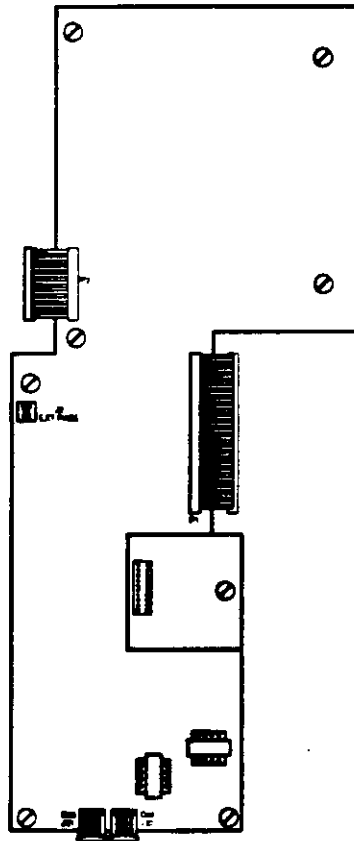


Figure 400-3 2x4 Expander Module

D. 4x8 CO/Station Expander Module

The SPD 1428 4x8 CO/STA Expander Module is a four (4) CO by eight (8) Key Station Interface module that may plug onto the Expansion key service board of the Expansion KSU only. This module is a combination board that contains the necessary circuitry to connect four (4) CO/Centrex/PBX loop start lines and eight (8) Digital Key Telephones to the system. This card also contains one additional voice (transmit) path for external paging, and a connector for adding one application module (i.e. DTMF Receiver) to the system.

CO Line/Station Interfaces

The 4x8 CO/STA Expander Module provides the interface for four (4) Central Office, Centrex or PBX loop start, lines. The protection circuitry necessary to allow the system to be classified as a fully protected system are located on the card for each CO circuit. The CO circuits are equipped with current sensing circuitry that identifies distant end disconnect (loop supervision). The module design also provides proper fusing or protection to comply with the requirements of UL 1459 Second Edition and CSA 0.3 standards. CO lines are connected to the

system via RJ11 modular connectors mounted on the bottom edge of the board.

The 4x8 CO/STA Expander module also provides the interface for eight (8) Digital Key Telephones using two (2) 64 kilobyte channel arrangements. Stations connect to the board via the MDF through a 50 pin connector located on the board. Each station connection requires four (4) wires to connect to the board.

A Digital DSS/DLS Console, and a Single Line Telephone Adapter (OPX) or other specifically designed adapter with a digital interface can be assigned to any one of the interface circuits. The Key Station interface circuits are protected from mis-wiring and over-current.

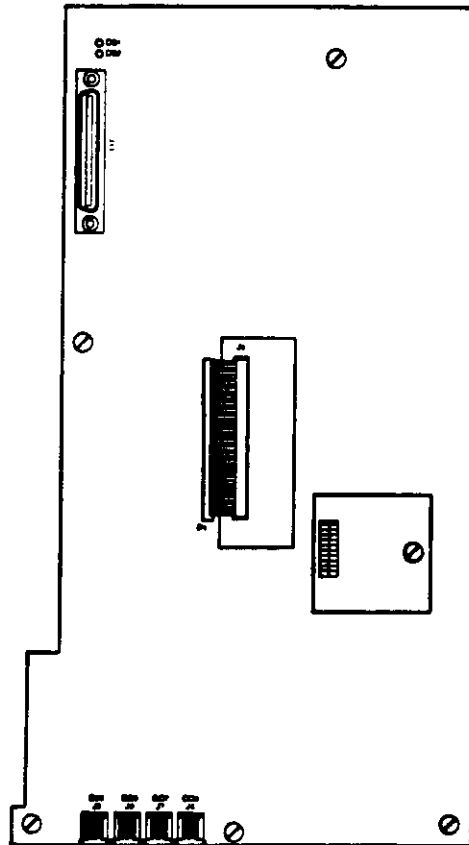


Figure 400-4 4x8 Expander Module

400.3 SPD 2856 SYSTEM COMPONENTS

The following components are necessary to operate the SPD 2856 Digital Key Telephone System: (Refer to Appendix B for a complete Starplus Digital (SPD) Key Telephone System component list with Part #'s)

- Equipment Cabinet w/Power Supply (KSU)
- Central Processing Board (CPB)
- 4x8 CO/Digital Interface Board (CKB)
- 4x8 CO/SLT Interface Board (CSB) (Future)

A. Equipment Cabinet With Power Supply (KSU)

The SPD 2856 system main cabinet contains the power supply and mother board to support a fully configured system of 28 CO Lines and 56 Stations. The mother board has eight (8) card slots. Card Slot J8 (the right most card slot) is used for the Central Processor Board (CPB) PCB. Card slots J1 through J7 each support a four (4) CO line by eight (8) station PCB's. Cable exits through the bottom of the KSU through a cable exit raceway near the back of the KSU. Refer to Figure 400-5 for printed circuit board layout and location of connectors.

Power Supply

The power supply is installed in the KSU at the time of manufacture and ships with the KSU. The power supply input voltage is 117 VAC $\pm 10\%$. The power supply provides power distribution of filtered / unregulated 12 VDC and a regulated -5 VDC to the backplane bus. An ON/OFF switch is located on the front of the power supply along with a slo-blow 5 amp fuse on the AC side of the transformer. The power supply provides an input for a 48 VDC source for future use. Power is regulated and distributed to stations / circuitry in the system on each PCB. Three fuses located inside the power supply protect the system from over-current situations. The power supply and cabinet meet all safety requirements to comply with UL 1459 Second Edition and CSA 0.3 standards.

B. Central Processor Board (CPB)

This plug-in card is the only common equipment card required to make the system operational and controls all system activity. The CPB contains the main micro-processor a 16-bit (68000) and a real time clock which controls all system functions including the PCM/TDM voice switching under direction of ROM and RAM software coding. The CPB is responsible for all control functions, execution of all logic operations and control of system modules including control over circuitry necessary for voice switching and conference connections. The CPB is also responsible for all system tones, system timing, and station status control. In addition the CPB also

provides software and hardware support to ensure the following:

- Watch dog timer and recovery.
- PCB status as to presence/absence of cards for automatic software configuration setup.
- Interpret an ID code from each PCB so that card type can be determined automatically.
- State/event software design.
- Battery backup of customer database RAM memory.

The CPB contains the circuitry and connection (RCA type) for background music/music on hold, and the standard 300 Baud Modem. An optional 1200 Baud Modem can be installed on the CPB to allow the on-board modem to transmit at a 1200 baud rate. In addition there is one RS-232 (modular connector) input/output port on the CPB and a connector to support the use of an optional I/O expansion module. The I/O expansion module adds (1) RS-232 I/O port and (1) RS-422 I/O port to the system for a system total of three (3) I/O ports. A reset (halt) push button switch and a BGM/MOH volume control pot is located on the front of the PCB. Refer to Figure 400-6 for the location of the Central Processing Board connectors.

System software is provided in EPROM memory and is installed on the CPB. The CPB contains (512) kilobytes of EPROM storage and is equipped with 256K of battery-backed static RAM. Provisions have been made on the card to address up to (4) megabytes of EPROM memory and up to (2) megabytes of static RAM.

Modem Interface

The CPB contains an on-board modem that is capable of transmitting data at a rate of 300 baud. The modem supports and is compatible with the Hayes command protocol. The Bell System (Western Electric) standards 103 and 212A for modem design is incorporated into the design of this modem. The modem operates on-line in both Full and Half duplex modes. An optional 1200 baud module may be added to the CPB to allow transmission at the rate of 1200 baud.

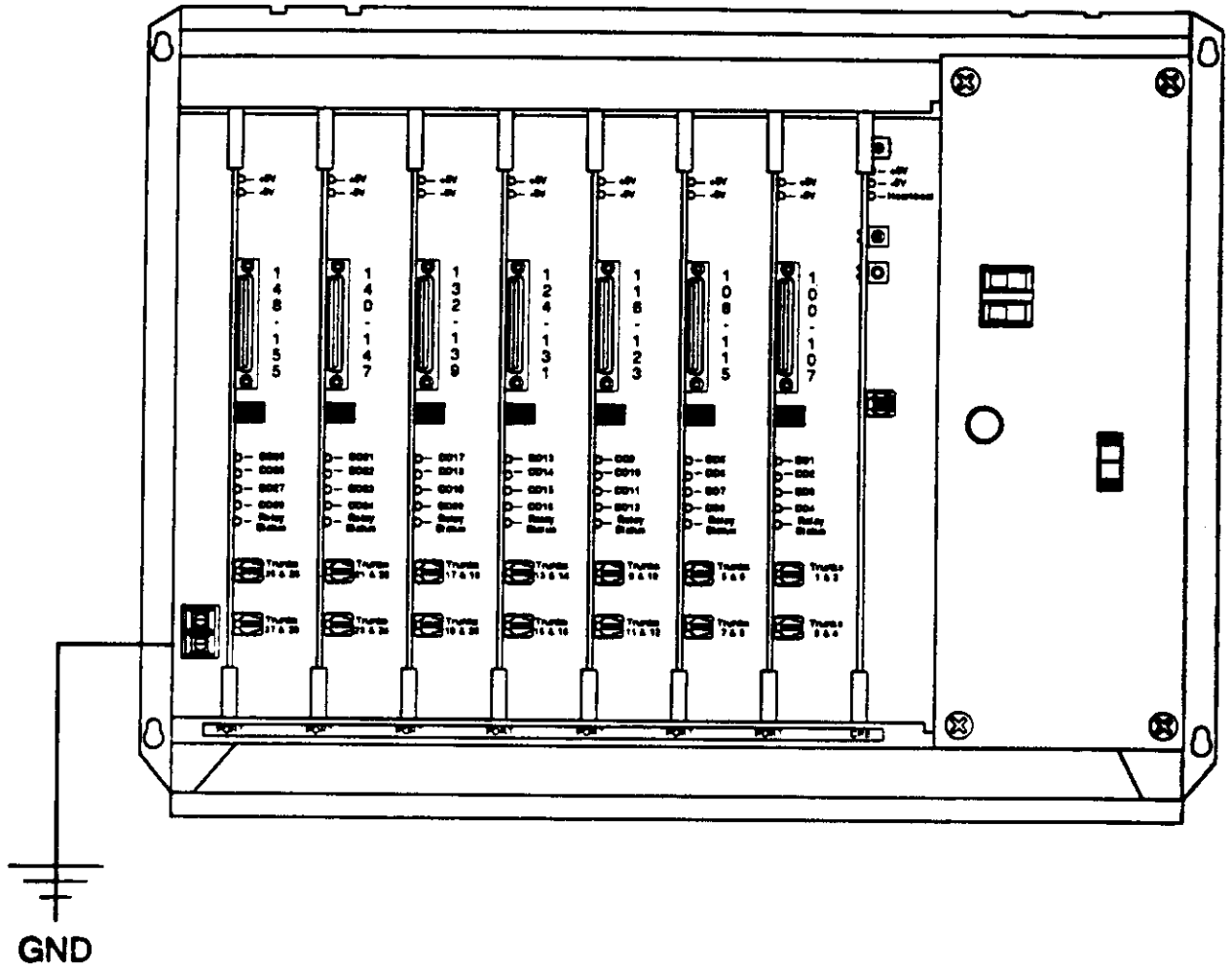


Figure 400-5 Starplus SPD 2856 Equipment Cabinet (KSU)

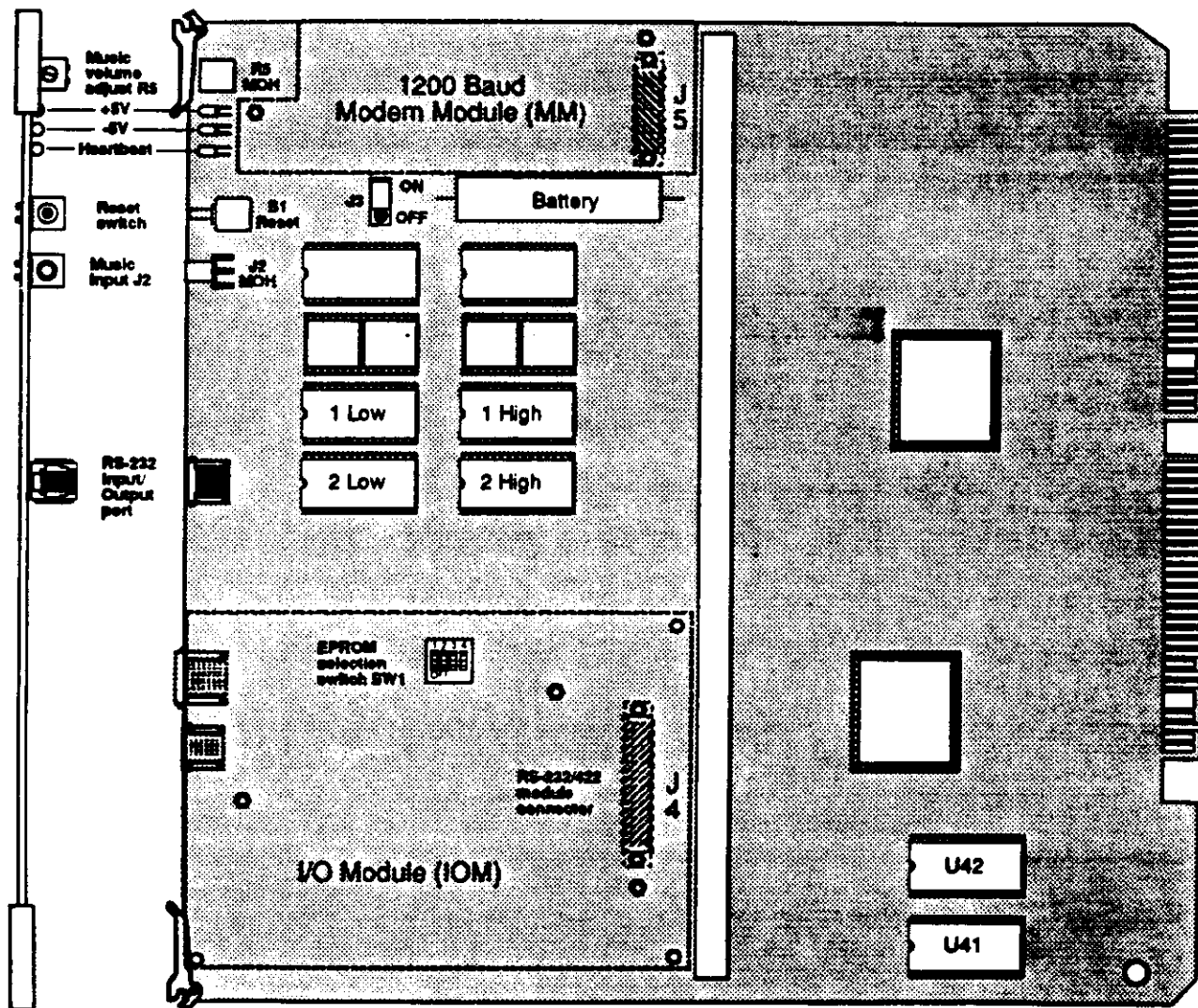


Figure 400-6 Central Processing Board (CPB)

C. 4 x 8 CO/Station Key Interface Board (CKB)

The CKB is a four (4) CO by eight (8) Key Station Interface board. The CKB board is a combination card that contains the necessary circuitry to connect four (4) CO/Centrex/PBX loop start lines and eight (8) Digital Key Telephones to the system. This card also contains one additional voice (transmit) path for external paging, a multi purpose relay and a connector for adding one application module to the system. Refer to Figure 400-7 for location of connectors.

CO Line/Station Interfaces

The CKB provides the interface for four (4) Central Office, Centrex or PBX loop start, lines. The protection circuitry necessary to allow the system to be classified as a fully protected system are located on the card for each CO circuit. The CO circuits are equipped with current sensing circuitry that identifies distant end disconnect (loop supervision). The CKB design also provides proper fusing or protection to comply with the requirements of UL 1459 Second Edition and CSA 0.3 standards.

The CKB also provides the interface for eight (8) Digital Key Telephones using two (2) 64 kilobyte channel arrangements. Stations connect to the board via the MDF through a 50 pin connector located on the front edge of the board. Each station connection requires four (4) wires to connect to the board.

A Digital DSS/DLS Console, and a Single Line Telephone Adapter (OPX), or other specifically designed adapter with a digital interface can be assigned to any one of the interface circuits. The Key Station interface circuits are protected from mis-wiring and over-current.

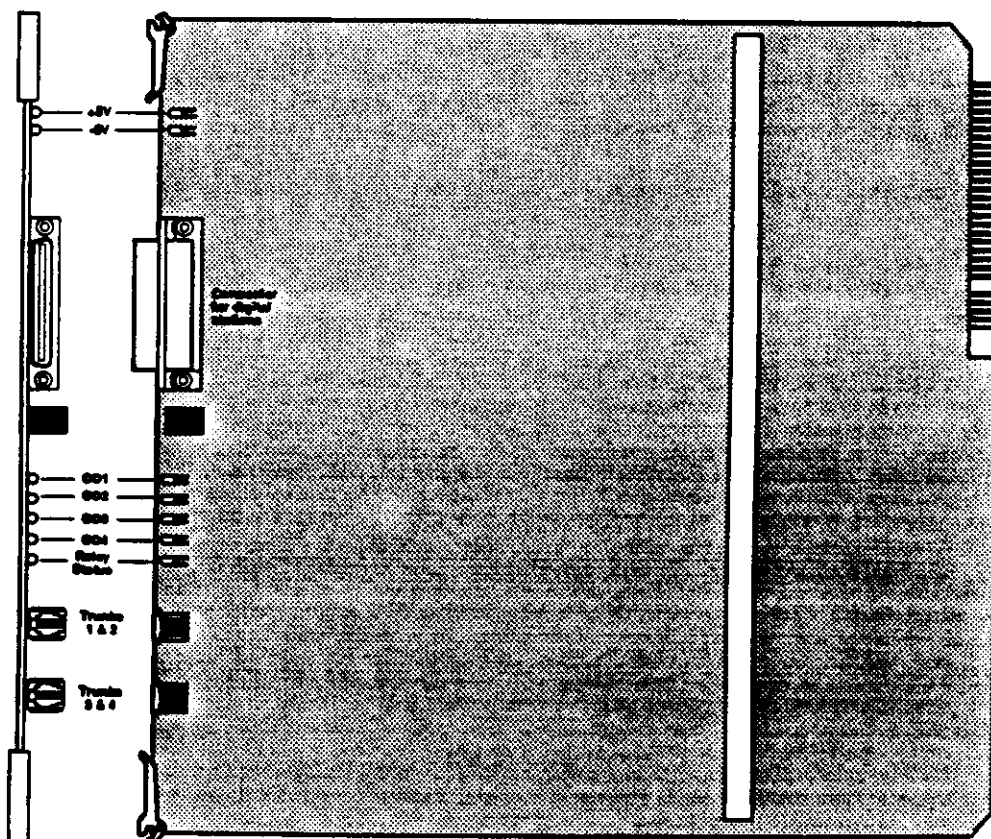


Figure 400-7 4x8 CO/Station Interface Board (CKB)

D. 4x8 CO/SLT Interface Board (CSB) (Future)

The CSB is a four (4) CO Line by eight (8) Single Line Station Interface board. The CSB board is a combination card that contains the necessary circuitry to connect four (4) CO/Centrex/PBX loop start lines and eight (8) Standard Single Line Telephone (2500 type) to the system. This card also contains one additional voice (transmit) path for external paging, a multi purpose relay and a connector for adding one application module to the system. The CSB requires a 48 Vdc Power Supply/Ring Generator, and at least one DTMF Receiver module (RM) must be installed in the system. Refer to Figure 400-8 for location of connectors.

Edition and CSA 0.3 standards. The CSB does not support data devices for data switching.

The CSB provides the control and interface for eight (8) standard Single line telephones (2500 type). Eight 24 volt DC single line circuits are provided on the PCB. These single line telephones can be equipped with a standard Message Waiting Lamp (90V T & R) that operate on the "tip" and "ring" leads. Additionally each circuit may be individually "strapped" or "optioned" to provide a loop interrupt to the connected SLT or device. The card will support single line Telephones up to 1500 feet from the KSU.

CO Line/Station Interfaces

The CSB provides the interface for four (4) Central Office, Centrex or PBX loop start, lines. The protection circuitry necessary to allow the system to be classified as a fully protected system are located on the card for each CO circuit. The CO circuits are equipped with current sensing circuitry that identifies distant end disconnect (loop supervision). The CSB design also provides proper fusing or protection to comply with the requirements of UL 1459 Second

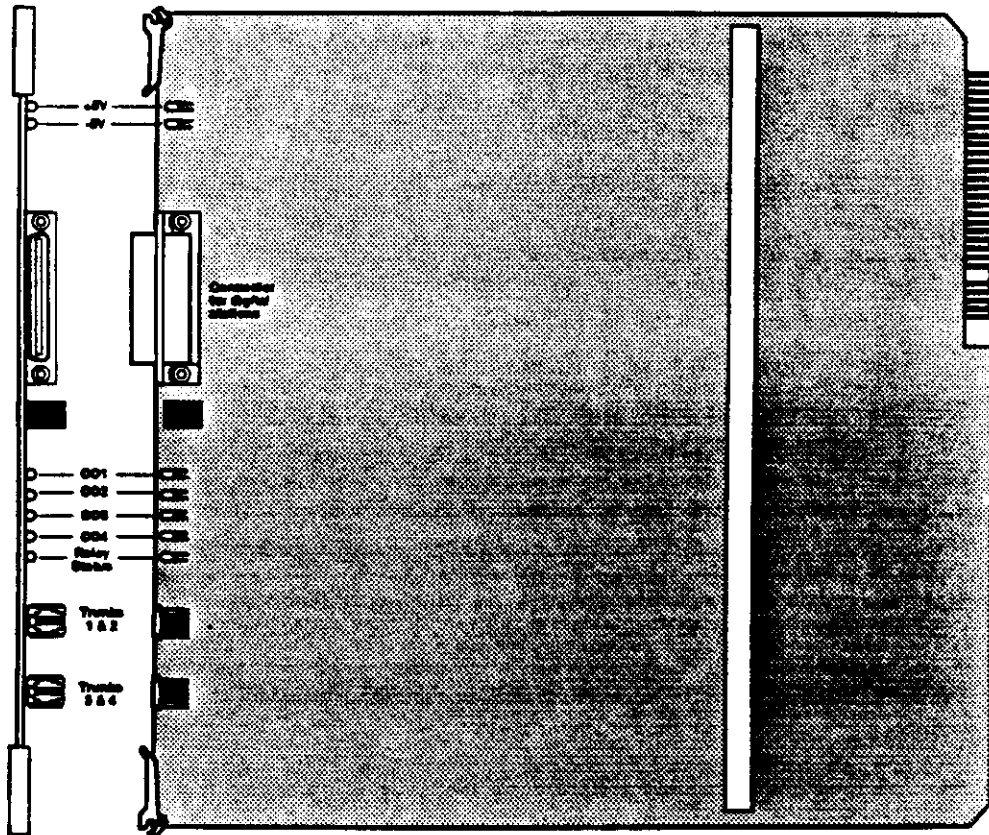
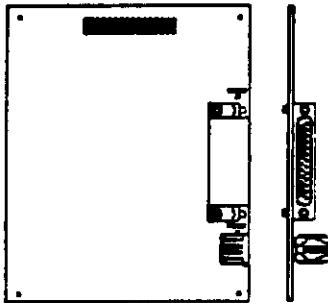


Figure 400-8 4x8 CO/SLT Interface Board (CSB)

400.4 APPLICATION MODULES

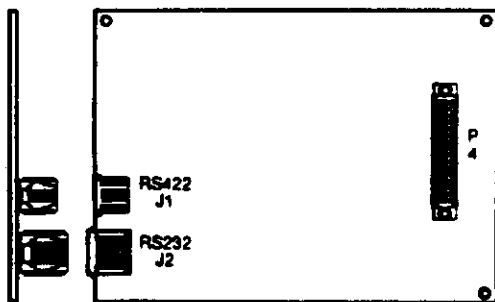
A. SPD 1428 Expansion I/O Module (IOM)

The SPD 1428 contains one RS-232C, I/O port (Female, DB-25 type connector) located on the main key service board (J5). This optional I/O module may be added to the main key service board (on connector J15) adding one additional RS-232C port (female, DB-25 type connector) and one RS-422 port (6 pin modular jack connector). Each I/O port on this module is capable of transmitting and receiving data at 300, 1200, 2400, 4800 and 9600 baud rates.



B. SPD 2856 Expansion I/O Module (IOM)

This module provides one (1) RS-232 I/O port (8 pin modular jack) and one (1) RS-422 I/O port (6 pin modular jack). This module is installed on the SPD 2856 CPB PCB and adds the two I/O ports to the one (1) RS-232 I/O port already on the CPB for a total of three (3) I/O ports allowed in the system. Each port is independently programmed for its use and the rate of speed in which it transmits and receives data (baud rate). The options are 300, 1200, 2400, 4800, and 9600 baud rates all at 8 data bits, 1 stop bit, with No parity.

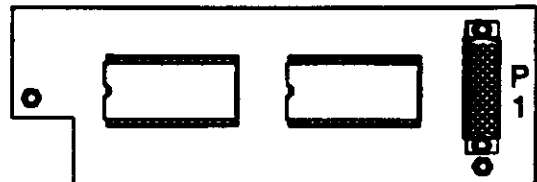


C. 1200 Baud Modem Module (MM)

This optional 1200 baud modem can be installed on either the SPD 1428 or the SPD 2856 to add the capability of communicating with the system from a remote site or location at the rate of 1200 baud. Both systems provide as standard an on-board modem capable of transmitting data at 300 baud. With this module installed, transmission baud rate of 1200 baud is selected.

Connection to the modem is accomplished by simply calling into the system and connecting to the modem. This can be done by; ringing directly to the modem, by going through DISA, or after being answered by a station user and transferred to the modem port. Connection to the modem port is under software control.

The 1200 baud modem module maintains the compatibility with the Hayes command protocol and uses the Bell System (Western Electric) standards 103 and 212A for modem design. The modem operates on-line in both Full and Half duplex modes.



D. DTMF Receiver Module (RM)

This module is used to provide DTMF receivers in the system to support single line telephone and DISA applications. Currently this module can be added to the SPD 1428 Expansion KSU, SPD 1428 2x4 and 4x8 Expander modules and to any SPD 2856 combination CO / Station Board. Each module contains 1 DTMF receiver for a maximum of four (4) in the SPD 1428* and seven (7) modules that can be installed in the SPD 2856 system.

*NOTE: The SPD 1428 Basic KSU was designed with one (1) DTMF Receiver incorporated onto the main key service board.

The DTMF Receiver module plugs onto a 20 pin connector on the following PCB's (one module may be installed on each PCB);

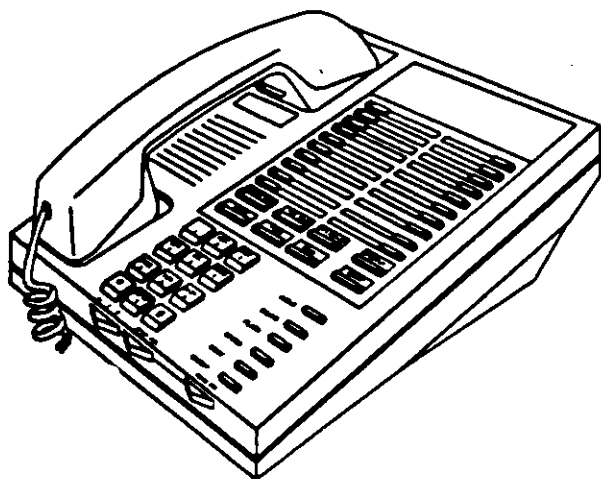
- SPD 1428 Expansion KSU, (expansion key service unit)
- SPD 1428 2x4 Expander Module
- SPD 1428 4x8 Expander Module
- SPD 2856 4x8 CO/Station Interface board (CKB)
- SPD 2856 4x8 CO/SLT Interface board (CSB)
- Additional PCB's as designed.

400.5 SPD 1428 & SPD 2856 TERMINALS

A. 34 Button Digital Terminal (Enhanced)

The 34 button Digital Terminal is a new line of Digital electronic telephone terminals. The line consists of an Enhanced (non-display) and an Executive (with display). This new line of telephones will be designed to operate with the new line of Starplus digital key and PBX systems. The 34 button Digital Terminal is connected to the KSU via a four wire (two twisted pair) connections from an appropriate electronic terminal interface board.

The terminal communicates to the KSU through two (2) 64K digital channel arrangements. One channel is used as the primary voice channel, a second is used for terminal to KSU command transmission. Power is also provided to the terminal via the four (4) wire connection.

**Buttons and LED's:**

The 34 button Digital terminal key board PCB provides long life "super bright" Light Emitting Diodes (LED's) and button assemblies that protrude through the top housing. The buttons are small rectangle in shape with a clear end for proper LED visibility and diffusion. The 34 button Digital Terminal has 34 buttons all containing LED's plus a 12 key dial pad.

The 34 button Digital Terminal scans the key board for dial pad and button debounces and depressions for command transmission to the KSU. The keyset has the following buttons defined as follows:

Display and Non-Display

- 12 Dial Key Pad*
- 28 Flexible Buttons
- 1 ON/OFF button (fixed)
- 1 MUTE button (fixed)
- 1 SPEED button (fixed)
- 1 FLASH button (fixed)
- 1 TRANSfer button (fixed)

- 1 HOLD button (fixed)

* All buttons except the 12 Dial key pad have an LED associated with it. Refer to Figure 400-9 for default button mapping.

Speakerphone:

Each 34 button Digital Terminal is equipped with a unit that enables the telephone to be used handsfree in two-way conversations. The user activates the speakerphone by pressing the ON/OFF button (LED lights steady). To terminate a speakerphone call the ON/OFF button is toggled OFF (LED extinguished). The MUTE feature is used in conjunction with the speakerphone option. To mute the speakerphone microphone the MUTE button is pressed (LED lights steady), to reactivate the microphone the MUTE button is pushed again (LED extinguished).

Several programmable options control the speakerphone operation. Each digital terminal can be programmed for full speakerphone operation, or monitor/On-Hook dialing capabilities with no full speaker phone operation.

When Automatic pre-selection is enabled at the station when any button is pressed (i.e. CO, DSS, Page etc...) the station and speakerphone is automatically activated.

Volume Controls:

Separate "slide" switches are provided on the front of the Starplus Digital Terminal to adjust the volume of the voice and tones presented to the terminal speaker.

- The "SPKR VOL" will control all voice signals sent to the speaker i.e. Speaker Phone conversations, BGM, and Page announcements.
- The "RING VOL" will control all tone signals presented to the speaker i.e. Ringing, splash tones, Camp-On etc... Muted ringing will also be controlled by the "RING VOL" slide switch. The Muted ringing volume will be proportionately quieter than normal ringing based on the current switch setting.

H-T-P Switch:

A three (3) position slide switch is located on the front of the Digital Display Terminal that controls the method of receiving intercom calls.

- The "H" position allows intercom call announce with hands free reply.
- The "T" position provides Tone only intercom ringing.
- The "P" position allows Call Announce intercom calls only.

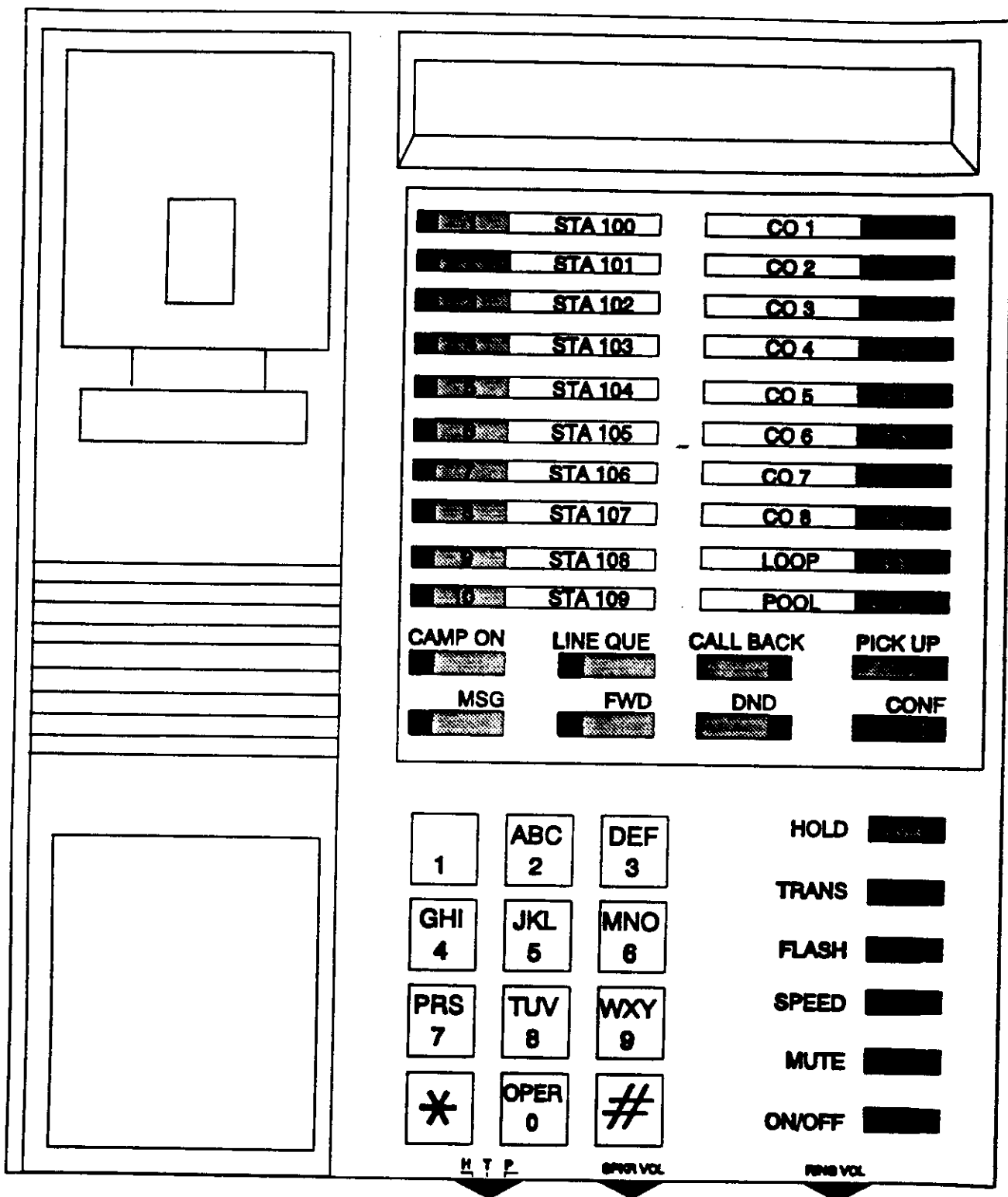


Figure 400-9 Digital 34 Button Terminal

This switch allows users to set and control the method in which they receive their intercom calls. However a dial code that users can dial before placing an intercom call can override a called stations switch setting of H or P to force the station to Tone ring.

Directory Tray:

Each 34 button Digital Terminal is equipped with a slide out Directory Tray accessed in the front of the Terminal.

Wall Mounting:

The 34 button Digital Terminal was designed with a reversible base that will allow the Terminal to be wall mounted on industry standard 630 type wall jacks. A convenient 4 inch line cord is also provided as a standard item with each phone (the line cord is placed inside the reversible wall mount base).

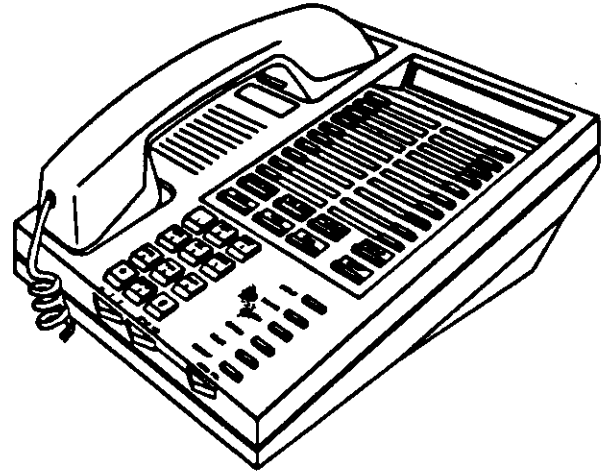
Handset/line Cords:

The 34 button Digital Terminal uses a color coordinated K-Style handset with a matching 12 foot handset cord. A 9 foot four (4) conductor base line cord is included with every Terminal.

The 34 button Digital Terminal uses an electret type transmitter. Compatible headsets can be plugged into the Terminals headset jack for headset operation.

B. 34 Button Digital Display Terminal (Executive)

The 34 button Digital Display Terminal is similar to the 34 Button non-Display model and all the information listed above applies to the display terminal with the addition of a 48 character interactive LCD display. The display provides information such as station extensions calling, Line ringing information, camp-on information, Message waiting information and so on.



LCD Display:

The 34 button Digital Display Terminal has a 48 character Liquid Crystal Display. The LCD Display is a 24 character by two (2) line display divided into 3 (3) fields:

- Field 1 =Current Status (top line, 24 characters)
- Field 2 =Date (Left half of bottom line, 12 characters)
- Field 3 =Time of day (Right half of bottom line, 12 characters)

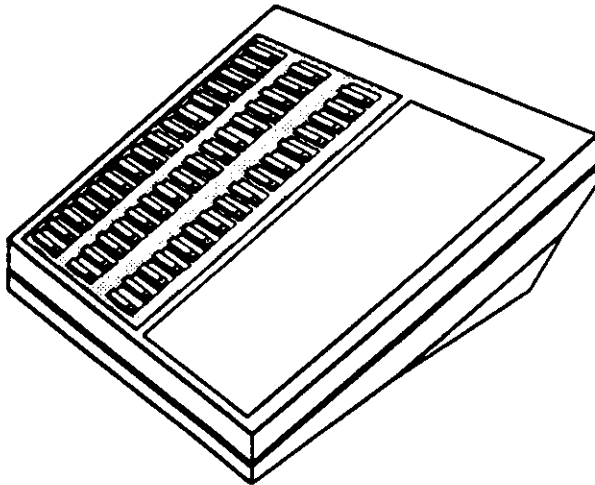
These fields are separately maintained by the KSU processing to show current and pending station activity. Each field is recreated upon any display change except additional digits which are added to the end of the existing display.

C. Digital DSS/DLS Console

The Digital Direct Station Selector /Direct Line Selector (DSS/DLS) Consoles can be installed in place of any digital terminal circuit. The DSS/DLS Digital Console was designed in a housing similar in looks to the 34 button digital terminal.

The Direct Station Selector/Direct Line Selector (DSS/DLS) Console to be used with the family of Starplus digital systems is modular in nature. A basic unit provides 48 buttons (3 columns of sixteen (16) buttons) on the left half of the top housing while the right half will have a removable cover (blank). Once this cover is removed, a second forty-eight (48) button modular DSS/DLS unit may be installed for a total capacity of ninety-six (96) buttons in one housing. Each of the 48 button units requires a separate four-conductor line cord each connected to a digital terminal station port.

The DSS/DLS Console unit can access Stations, Direct Appearing CO Lines, or Features that may be assigned to any of the Flexible buttons. A DSS/DLS unit may be assigned to one of the different MAP configurations available. Any one of the three (3) MAP configurations may be assigned to a DSS/DLS and any number of maps may be assigned to one station. However, "duplicate" MAP's or appearances of Stations and/or CO lines between the MAP's are not allowed.

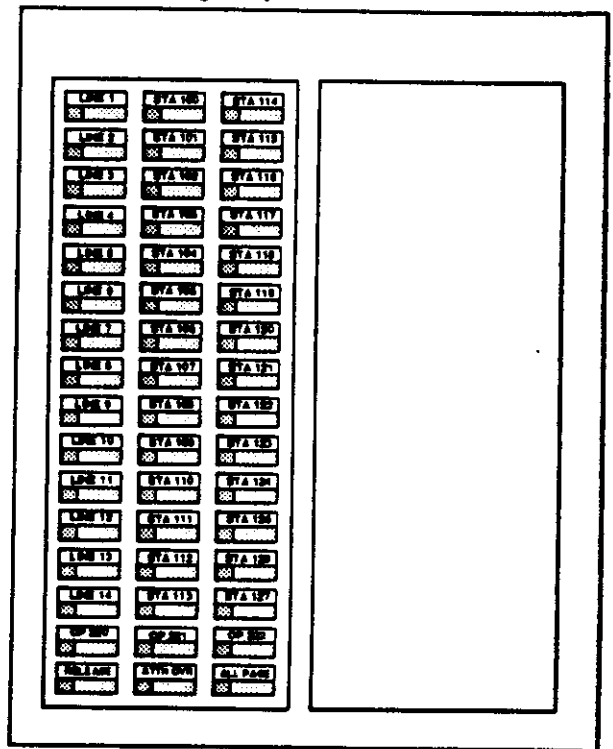


DSS/DLS Console Button Mapping:

The Buttons on the DSS/DLS console can be mapped with either a combination of fixed and flexible or completely flexible buttons where the station user may change the button programming to suit their needs.

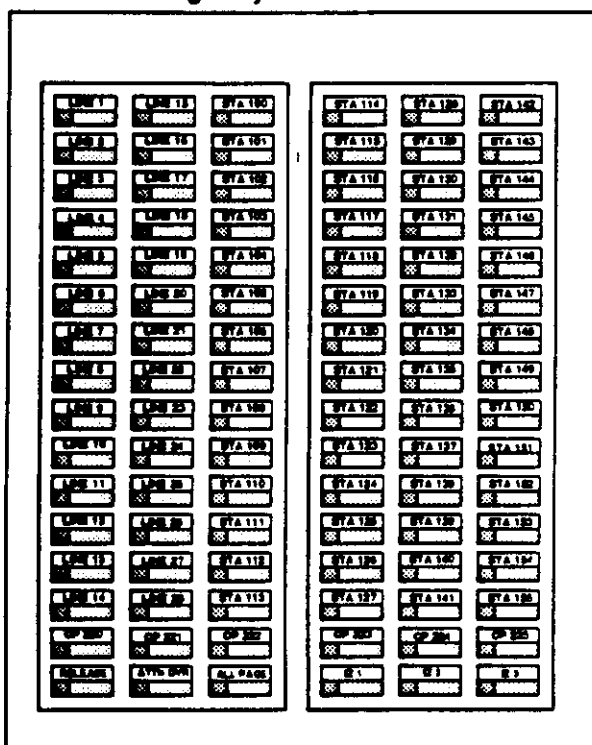
There are three (3) pre-defined MAP's for the DSS/DLS Console with default Button Programming. Each MAP is defined as follows:

- MAP #1 has by default the first 14 CO Lines and the first 28 Station's (Sta's 100-127), the first three Call Park locations, Release, Attendant Override, and an All Call Page button mapped to the buttons. All buttons except the 14 CO line buttons are flexible and can be changed by the station user.



DSS/DLS Console Map 1

- MAP #2 has by default all 28 CO lines the first 14 Stations (Sta's 100-113), the first three Call Park locations, Release, Attendant Override, and an All Call Page button mapped to the buttons. All buttons except the 28 CO line buttons are flexible and can be changed by the station user.
- MAP #3 by default is intended to be used with MAP # 2 on an SPD 2856, in that it has the remaining stations (Sta's 114-155) to provide a full CO Line by Station mapping. Additionally, Call Park locations 223-225 along with Internal Page Ports 1, 2, and 3 appear. All of the buttons on MAP #3 are flexible and can be changed by the user.



DSS/DLS Console Maps 2 & 3

Wall Mounting:

The DSS/DLS Console was designed with a reversible base that will allow the Terminal to be wall mounted on industry standard 630 type wall jacks. A convenient 4 inch line cord is also provided as a standard item with each DSS/DLS Console (the line cord is placed inside the reversible wall mount base).

Expansion Module:

The DSS/DLS console allows one DSS/DLS expansion module to be installed into the right half of the basic unit. The expansion unit provides an addi-

tional 48 buttons with LED's for a total of 96 buttons and LED's in one base housing.

The Expansion Modules may also be assigned as any one of the three (3) pre-defined MAPs.

400.6 SLT ADAPTER / OFF-PREMISE EXTENSION MODULE

This external module provides the interface for one long loop (OPX) single line telephone (2500 type) extension. This module requires a separately provided -48 VDC power supply to provide the necessary current for long loop applications and to support ring generation. This module is wired to and interfaces with a digital terminal (key station) port from either the SPD 1428 or SPD 2856 systems. The OPX card meets the requirements of the FCC for connection to the telephone (Telco) network. Telephones connected to the OPX must be DTMF only (2500 type).

This module also provides for one Power Fail circuit in the event of an AC power failure.

400.7 RELAY / SENSOR INTERFACE MODULE

The Relay Sensor Interface Module connects to either the SPD 1428 or SPD 2856 systems using one digital station port and provides three relay activated contacts and three sensing circuits. The relays provide for applications such as Loud Bell Control contacts, CO Line control contacts, RAN Start contacts, Page Relays, Power Fail contact and additional applications as software will permit. The sensing circuits provide for such applications as RAN Stop (end of message) and other applications as developed and allowed by software.

An external power source is required to drive equipment connected to the relay contacts. The contacts are rated at 24Vdc max at 1 amp.

400.8 POWER FAILURE TRANSFER UNIT (PFTU)

This unit provides the relay transfer circuits for up to 12 CO lines in the event of a power or processor failure. The unit is housed in its own enclosure and mounts external to the KSU. Activation of the PFT relays is controlled by a multi-use relay on any one of the CO / Station Interface boards that is programmed for PFT. A customer provided 12 volt DC power supply is required to operate the unit. There is a manual switch that activates the PFTU for testing purposes.

With loss of power to the system or a failure of system processing, the PFTU will automatically connect up to twelve CO lines to prewired 500/2500 type telephones. When power is restored, the PFTU will automatically restore the CO trunks and stations to

normal operation. These SLT stations do not have to be used for intercom, but can be if so desired.

400.9 SYSTEM SPECIFICATIONS AND CAPACITY

The SPD 1428 Basic KSU is housed in a wall-mountable cabinet that contains the system power supply and the motherboard for stations and CO lines. This Basic KSU supports a loaded capacity of 6 CO lines and 12 stations. DSS/DLS's can be installed in place of any Digital Key terminal. Standard single line telephones (2500 type) can be installed by using Single Line Telephone Adapters (OPX) boxes.

The SPD 2856 Basic KSU is housed in a wall-mountable cabinet that contains the system power supply and the backplane for station and CO line boards. This Basic KSU supports a loaded capacity of 28 CO lines and 56 stations. DSS/DLS's can be installed in place of any Digital Key terminal. Standard single line telephones (2500 type) can be installed by exchanging Digital key terminal interface boards. Eight single line telephones can replace eight Digital Display Terminals for each board exchanged. An ON/OFF switch is located on the front of the power supply.

The system capacities are listed in Table 400-1. Electrical specifications, environmental specifications, and Loop limits are listed in Tables 400-2, 400-3 and 400-4. Dialing specifications are listed in Table 400-5. FCC Registrations Numbers for SPD 1428 and SPD 2856 are listed in Tables 400-6 and 400-7. Dimensions and weight are listed in Table 400-8. Miscellaneous Specifications are listed in Table 400-9. Key telephone, Single Line Telephone and OPX Audible Indications are listed in Tables 400-10, 400-11 and 400-12. Key Telephone Visual Indications are listed in Tables 400-13, 400-14, and 400-15.

Table 400-1 - SPD 1428 and SPD 2856 System Capacities

Time Slots:	112 PCM/TDM time slots
Ports: (SPD 1428) CO/PBX/Centrex Lines Digital Terminal Stations Off-Premise Extensions (SLT's)	14 (max) loop start (2 or 4 per CO/Station board) 28 (max) Digital Terminals (4 or 8 per CO/Station board) 27 (max) OPX/SLT Stations (1 per OPX adapter)
Ports: (SPD 2856) CO/PBX/Centrex Lines Digital Terminal Stations Standard Single Line Telephones Off-Premise Extensions	28 (max) loop start (4 per CO/Station board) 56 (max) Digital Terminals (8 per CO/Station board) 56 (max) Standard (2500 type) SLT's (8 per CO/SLT Expander board) (Future) 55 (max) OPX Stations (1 per OPX adapter)
Paging: (SPD 1428) Internal Paging External Paging (one way paging)	4 (max) Internal Page Zones (software controlled) 4 (max) One per CO/Station board
Paging: (SPD 2856) Internal Paging External Paging (one way paging)	4 (max) Internal Page Zones (software controlled) 7 (max) One per CO/Station board
DTMF Receivers: (SPD 1428) DTMF Receivers: (SPD 2856) DTMF Sender: (SPД 1428 & SPD 2856)	4 (max) per system (1 provided standard in BKSU, 1 each provided on additional DTMF module) 7 (max) per system (1 each provided on DTMF module) 1 per system (time shared)
I/O Ports:	3 (max) per system (1 RS232C included on BKSU/CPB), 2 on optional I/O module (1-RS232C and 1-RS422)
Contacts (multi-purpose) (SPD 2856) Contacts/Sensors (Relay Sensor Module) (SPD 1428 & SPD 2856)	7 (max) per system (1 included on each CO/Station board) (additional relays may be used with the relay sensor module) 4 Relay / Sensor Modules per system. Each Relay/Sensor Module has 3 relays and 3 sensing circuits.
Conference: Circuits Parties per "bridge"	4 Conference "bridges" per system 5 parties per "bridge"
DISA Circuits:	3 CO Lines may be programmed simultaneously.
Attendants:	Up to 3 stations can be designated as attendant(s).
SPD 1428 Digital DSS/DLS Consoles: SPD 2856 Digital DSS/DLS Consoles:	21 (max) Up to 3 DSS/DLS units can be programmed to function with each station. (Each DSS/DLS unit reduced station capacity by 1) 42 (max) Up to 3 DSS/DLS units can be programmed to function with each station. (Each DSS/DLS unit reduced station capacity by 1)
Hunt Groups: Groups: Members: Types:	Software supports up to 8 groups. Software supports up to 8 stations in each group. Station or Pilot Hunting

Table 400-1 - System Capacities (Cont'd)

<p>UCD Groups: Groups: Members: RAN Announcements: Calls in Queue:</p>	<p>Software supports 8 groups. Software supports up to 8 stations in each group. Two (2) RAN announcements per UCD Group. All CO Lines (14 or 28) may be in queue for a UCD Group.</p>
<p>Voice Mail Groups: Groups: Members: (ports) Integration Method: VM Message Wait: VM Disconnect Signal:</p>	<p>Software supports 8 Groups. Software supports up to 8 stations in each group. In-Band Signaling. (DTMF) Yes ([420] to turn on, [421] to turn off) Programmable 12 digit (DTMF) string. If no digits are programmed, 15 seconds of silence followed by busy tone.</p>

Table 400-2 - Electrical Specifications

AC Input to Power Supply Power Consumption (SPD 1428 and SPD 2856)	117V ac \pm 10%, 60 Hz single phase 120v AC @1.5A max 180 watts (maximum)
Power Supply Fuse - AC input (SPD 1428 and SPD 2856)	1.5A 125V AC
Longitudinal Balance:	Better than 60 db from 200 Hz to 1,000 Hz Better than 40 db from 1,000 Hz to 4,000 Hz
Idle Channel Noise:	Less than 15 dbmc for all connections
Cross Talk Attenuation:	Greater than 75 dbm Station to CO and Station to Station
Single Frequency Distortion: (1,000 Hz)	Station to CO Line and Station to Station: Better than 2.0% or 34 db Output level -30 dbm to 0 dbm
Ringing Sensitivity:	16 Hz to 30 Hz at 40 VRMS minimum 30 Hz to 67 Hz at 50 VRMS minimum
Ringer Equivalence Number: (REN)	1.9
CO Line Signaling - DTMF:	Frequency pair at -5 dbm +1.0 dbm Frequency tolerance, better than \pm 1.5%
Music Source (input)	2 mW max. at 0 dBm 600 ohms input impedance
Contact Rating Multi Purpose Relay	1.0A, 24V dc
External Page Port Output Impedance Output Power w/o compression	600 ohms @ 0 dBm 1 mW Maximum
UL File Number:	E109461

Table 400-3 - Environmental Specifications

Operating Temperature	40° to 104° F
Recommended Operating Temperature	70° to 78° F
Storage Temperature	-40° to 140° F
Relative Humidity	5% to 90% non-condensing
Heat Dissipation (BTU's) (SPD 1428 and SPD 2856)	615 BTU's Maximum

Table 400-4 - Loop Limits

Electronic Telephone: (including Single Line Telephone, and DSS/DLS)	1000 feet of 26 AWG Cable 1000 feet of 24 AWG Cable 1000 feet of 22 AWG Cable
Off-Premise Extensions (OPX) (Adapter to SLT)	1400 Ohms maximum loop, not including telephone.

Table 400-5- Dialing Specifications

DTMF Dialing	
Frequency Deviation	±1%
Rise Time	3 msec.
Duration of DTMF Signal	75 msec. minimum
Interdigit Time	75 msec. minimum
PULSE Dialing	
Pulse Dialing Rate	10 or 20 pps.
Pulse Break/Make Duration	60/40 or 66/33
CO Type	Loop Start, 600 ohm, current sensing

Table 400-6 - FCC Registration Numbers for SPD 1428

For Systems configured as a key system (button appearance) use:	DLPHKG-65152-KF-E
For Systems configured as a hybrid system (dial access codes) use:	DLPHKG-65153-MF-E

Table 400-7 - FCC Registration Numbers for SPD 2856

For Systems configured as a key system (button appearance) use:	DLPHG-65102-KF-E
For Systems configured as a hybrid system (dial access codes) use:	DLPHG-65101-MF-E

Table 400-12 - OPX Telephone Audible Signals

TYPE OF SIGNAL	FREQUENCY	SIGNAL DURATION
OPX Signals:		
Incoming CO Line	20 Hz, 50-90V AC	2.0s on/4.0s off
Intercom Ringing	20 Hz, 50-90V AC	2.0s on/4s off
Transferred CO Line	20 Hz, 50-90V AC	2.0s on/4.0s off
CO Line Recall	20 Hz, 50-90V AC	2.0s on/4.0s off
CO Queue Call Back	20 Hz, 50-90V AC	2.0s on/4.0s off
OPX Confidence Tones:*		
Intercom Ringback	440+480	1 s on/3s off
Busy Tone	480+620	0.5s on/0.5s off; repeated
Error Tone	480+620	0.25s on/0.25s off, repeated
Intercom Dial Tone	350+440	Continuous
DND Tone	480+620	0.2s on/0.2s off, repeat 3x's, pause, 0.5s; repeated
Paging Time-out	420	0.5s on/0.5s off
Call FWD Warning Tone	420	0.2s on/0.2s off (six times)
Camp-on Tone	420	0.2s burst (1 time)
Conference Warning Tone	420	1 sec burst (1 time)
Confirmation Tone	420	1.4 sec burst (1 time)
DND Warning Tone	420	0.2s on/0.2s off (6 bursts)
*Precise Tone Plan		

Table 400-13 - DSS/BLF Button Visual Indicators

TYPE OF SIGNAL	INDICATOR FLASH RATES
Off-Hook/Busy (All Stations)	Steady
Incoming Intercom Ring (Destination)	120 ipm flutter
Call Announce (Destination)	steady
Message Waiting Call Back (Destination)	120 ipm flutter
Do Not Disturb (All Stations)	480 ipm triple wink
Automatic Call Back (Destination)	120 ipm flash
UCD Available/Unavailable	60 imp flash

Table 400-14 - CO Line Button Visual Indicators

TYPE OF SIGNAL	INDICATOR FLASH RATES
Incoming CO Ring	30 ipm flash
Transferred CO Ring	120 ipm flash
Recall	480 ipm flutter
Queued Line	480 ipm flutter
Exclusive Hold	120 ipm flash
System Hold	60 ipm double wink
I-Hold (only when hold preference is system)	60 ipm wink
In Use	Steady

Table 400-15 - Function Button Visual Indicators

TYPE OF SIGNAL	INDICATOR FLASH RATES
Call Forward (active)	30 ipm flash
Message Waiting (active)	15 ipm flash
Camp-on (active)	120 ipm flash
Call Back (active-initiator)	120 ipm flash
CO Line Queue (active)	480 flutter
Do Not Disturb (DND active)	60 ipm flash
Mute (microphone off, handset xmit off)	Steady
ON/OFF (speakerphone on/on-hook dialing)	Steady
Conference (active)	Steady
Speed (momentarily ON until bin address dialed)	Steady
Personalized Messages	15 ipm flash
Intercom Call (Hold Button)	15 ipm flash
Loop	Same as CO Line buttons
Pool	Same as CO Line buttons
Transfer	Steady until transfer complete



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