DCS

DIGITAL COMMUNICATION SYSTEM

GENERAL DESCRIPTION

SAMSUNG ELECTRONICS CO. LTD.

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FIGURES

PART 1. SYSTEM OVERVIEW

1.1 INTRODUCTION

DCS, Digital Communication System, is a digital telephone system designed for small to medium-sized businesses. It can operate with the functionality of a square key system, PABX or a combination of both (hybrid). DCS employs the very latest DSP technology (Digital Signal Processors).

There are two systems in the DCS range:

1. DCS COMPACT, which is expandable from 12 to 54 ports
2. DCS, which has a maximum of 204 ports

DCS offers a variety of interface cards that allow connection to the public telephone network or private networks. These are generally referred to as trunk cards. Two types of telephones can be connected to the systems. Proprietary digital phones called "Keysets" connect to digital line interface cards (DLI). Standard telephone sets generally called "single line sets" connect to single line interface cards (SLI). In addition, DLI station ports are used to connect peripheral devices such as door phones, serial interface devices and add-on modules. Miscellaneous circuits are provided to allow such optional features as external paging, music on hold, background music, common audible devices, alarms and emergency power failure telephones.

All DCS keysets utilise a single PCB with surface-mounted components assuring the highest product quality and long life. Samsung's customary large, easy-to-read displays and LEDs in the button design make them much easier to use. In many instances, sophisticated features are made simple through the use of friendly display prompts or push-on/push-off feature keys.

NOTES:
1. 'DCS' is the general term used in the text to refer to both systems. Any differences between the systems are indicated under separate headings 'DCS COMPACT' and 'DCS'.
2. It is not possible to expand from DCS COMPACT to a DCS system.
3. DCS COMPACT interface cards are not compatible with those of DCS.

1.2 DCS COMPACT - SIZE AND CONFIGURATION

The DCS COMPACT is an expandable digital hybrid key telephone system that begins with four C.O. line ports and eight keyset ports. It expands to 16 analogue C.O. line ports, or 20 lines if ISDN 2 is used, and 26 stations. In addition, up to 20 keyset daughterboards may be added to the system along with the optional 2 SLI card to provide the maximum configuration of 54 ports.

Two types of telephones can be connected to the system: proprietary digital stations called "keysets" that connect to DLI (Digital Line Interface) ports and standard telephone sets, generally called "single line telephones", that connect to SLI (Single Line Interface) ports.

COMPACT also has an optional Miscellaneous card which provides Music on Hold facilities and two serial I/O ports.

The following charts (Figures 1-1 and 1-2) describe configurations using the basic Key Service Unit (KSU) and expansion cards. However, by using the DCS COMPACT's unique keyset daughterboards (KDbs), which are installed in the base of a digital keyset, the capacity of the system can be increased by one station per KDb. Installing a KDb-DLI adds another digital port while a KDb-SLI adds a single line port. Mix and match these two types of KDb to get up to a total of 20 KDbs in the system. Using this method allows the DCS COMPACT to expand to a maximum of 40 stations. Adding the optional 2 SLI card to the KSU provides a further two SLI ports. The combination of the basic 4 x 8 KSU plus three expansion cards plus 20 KDbs plus a 2 SLI card provides a maximum configuration of 54 ports plus Miscellaneous card.

DCS Compact Configuration Matrix Table (with Analogue Trunks)

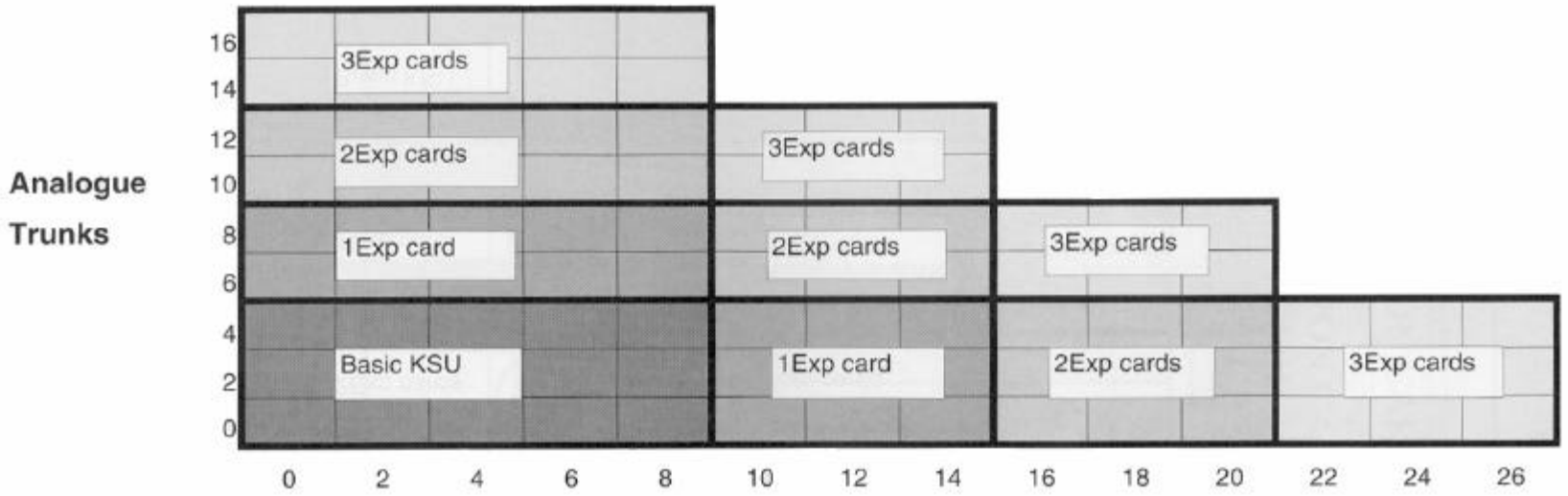
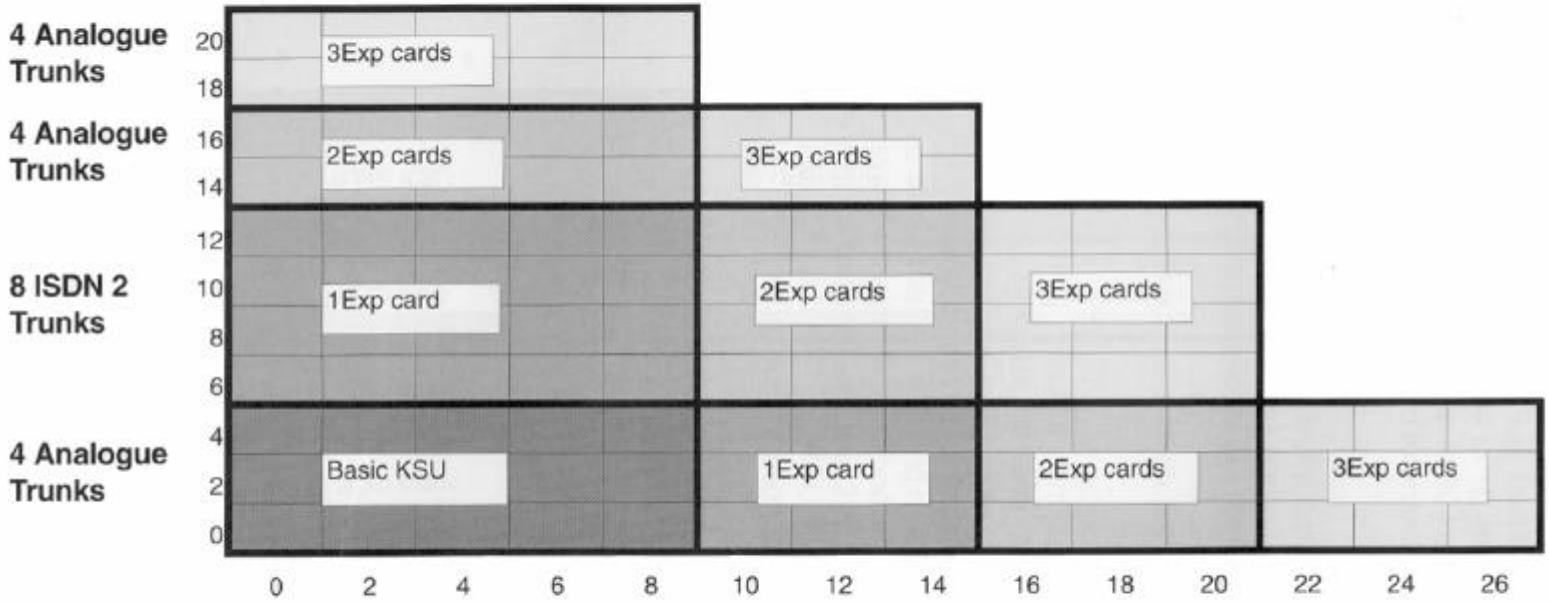


FIGURE 1-1

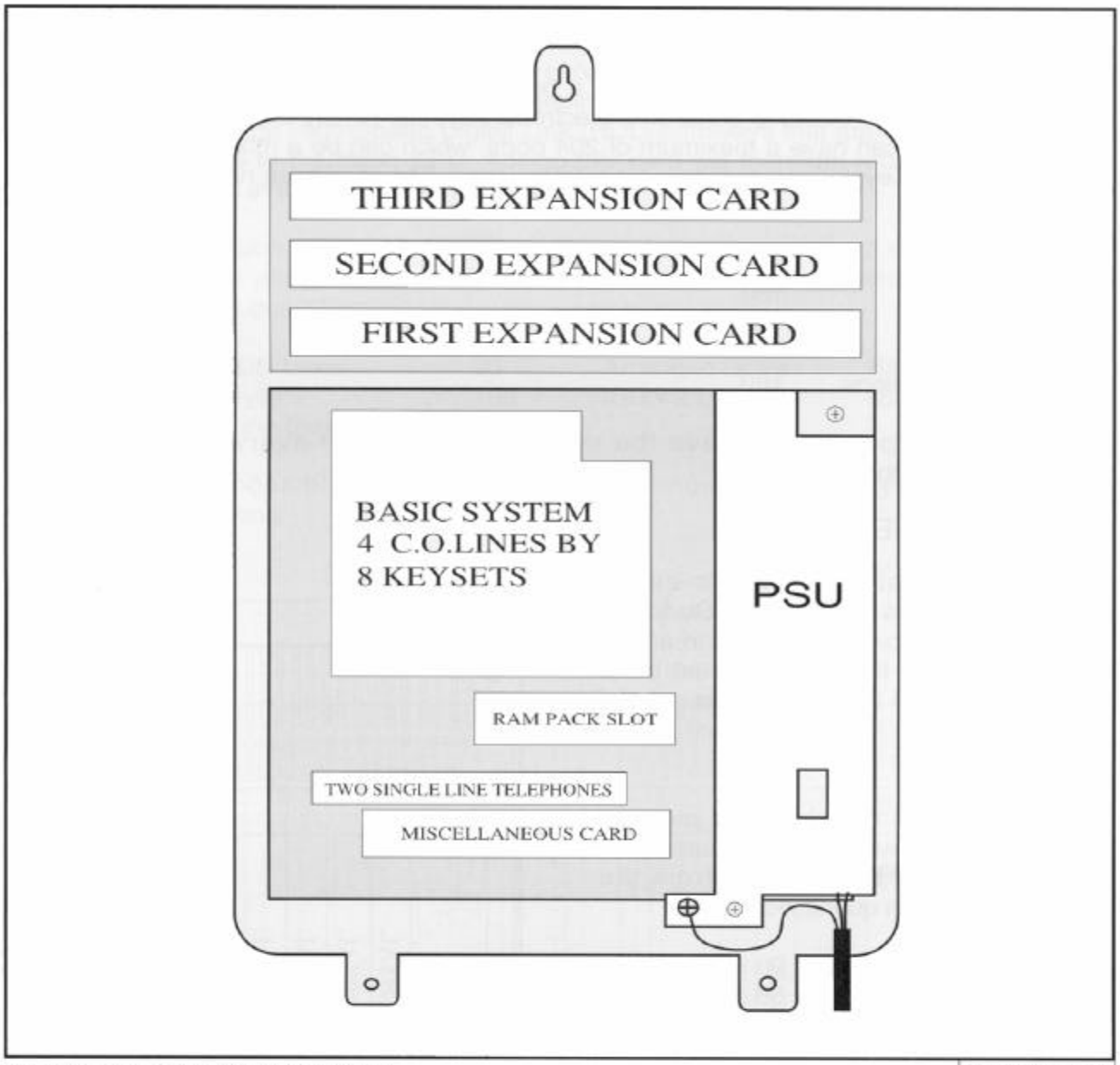
DCS Compact Configuration Matrix Table (with ISDN 2 Trunks)



Keyphone or SLT Extensions

Notes: The first 4 trunks of a Compact system must be Analogue.
The ISDN 2 card supports 8 channels

FIGURE 1-2



SYSTEM CONFIGURATION FIGURE 1-3

DCS COMPACT CONFIGURATION NOTES

1. Only one 2 SLI card can be installed in the system.
2. Only one Miscellaneous card can be installed in the system.
3. Only three expansion cards can be installed in the system.
4. Only 20 KDbs can be installed in the system.

1.3 DCS - SIZE AND CONFIGURATION

DCS is a fully modular system comprising of a basic Key Service Unit (KSU), two additional Expansion Cabinets, interface cards and electronic keysets. A fully expanded system using Euro-ISDN cards can have a maximum of 204 ports, which can be a mixture of ISDN Lines, Analogue Lines, Keystations or Single Line Telephones, The maximum number of each item allowed is:

Euro-ISDN Lines	90
Analogue Lines	160
DCS Keysets	160
ISDN 2 Lines	48
Single Line Extensions	160

(NOTE: It is not possible to have the maximum number of every item in a single configuration.)

SINGLE CABINET SYSTEM

A single cabinet system has seven universal card slots (Figure 1-4). Station or trunk (line) cards can be installed in any of these slots. Euro-ISDN cards must be in slots 1, 3 or 5 and the even-numbered slot to the right of the ISDN card must be left empty.

This card requires two slots as it provides 30 lines. This allows for a maximum of 98 ports which can be selected from the following maximum quantities:

Euro-ISDN Lines	90
Analogue Lines	56
DCS Keysets	56
ISDN 2 Lines	48
Single Line Extensions	56

(NOTE: It is not possible to have the maximum number of all items in a single configuration.)

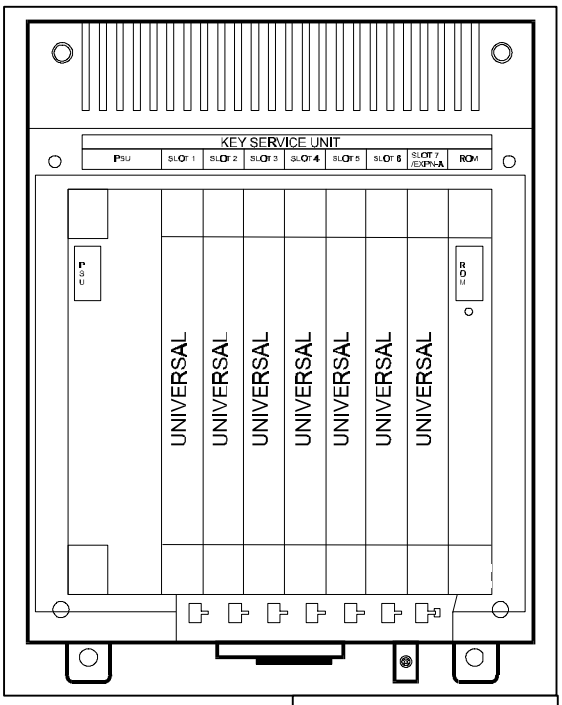


FIGURE 1-4

TWO CABINET SYSTEM

When it is required that the basic system be expanded to provide a capacity greater than that described above, slot seven of the KSU is required to install the Expansion A (EXPN-A) card. This card provides the High-Speed Digital Link (HDL) pathways that are used to connect the expansion cabinets to the basic KSU. Adding this card will therefore reduce the number of universal card slots in the basic KSU to six.

Adding one expansion cabinet makes this a two cabinet system with 13 universal card slots (Figure 1-5). This allows for a maximum of 146 ports which can be selected from the following maximum quantities:

Euro-ISDN Lines	90	Analogue Lines	104
DCS Keysets	104	ISDN 2 Lines	48
Single Line Extensions	104		

(NOTE: It is not possible to have the maximum number of all items in a single configuration.)

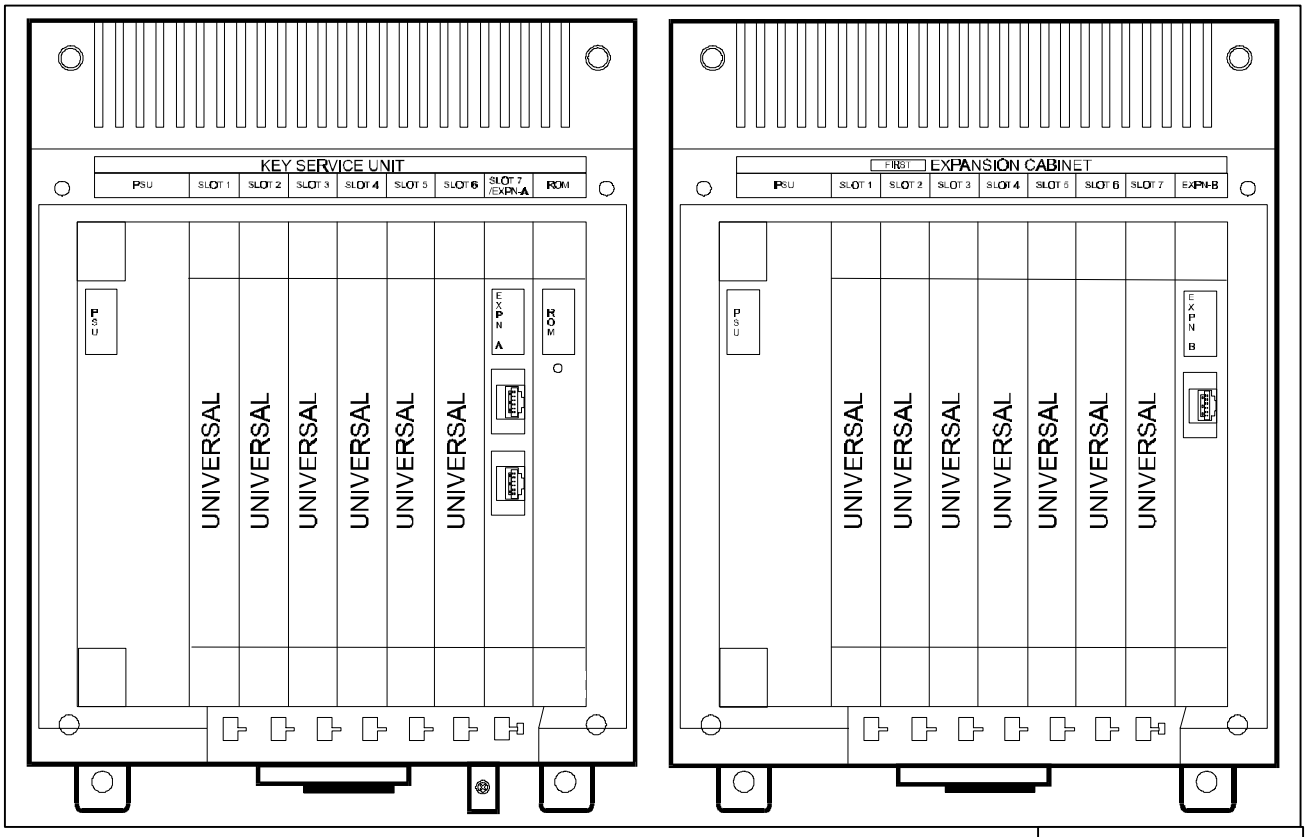


FIGURE 1-5

THREE CABINET SYSTEM

In a fully expanded three cabinet system, there are 20 universal card slots (Figure 1-6).. This allows for a maximum of 204 ports which can be selected from the following maximum quantities:

Euro-ISDN Lines	90
Analogue Lines	160
DCS Keysets	160
ISDN 2 Lines	48
Single Line Extensions	160

(NOTE: It is not possible to have the maximum number of all items in a single configuration.)

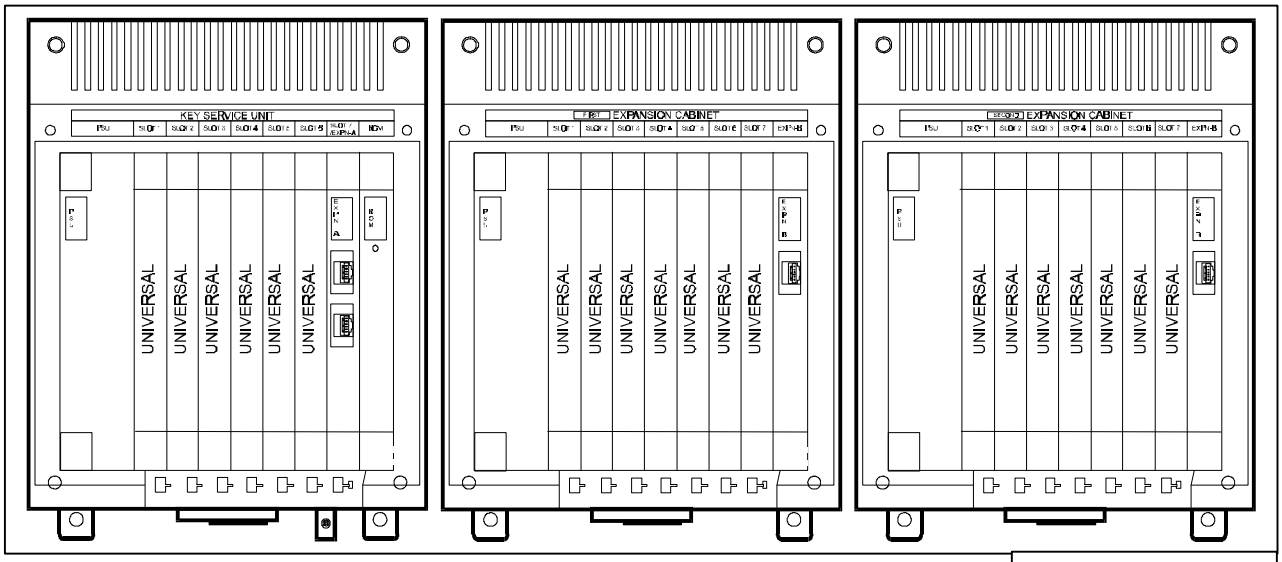

KEY SERVICE UNIT
EXPANSION CABINET
EXPANSION CABINET
UNIVERSAL

FIGURE 1-3

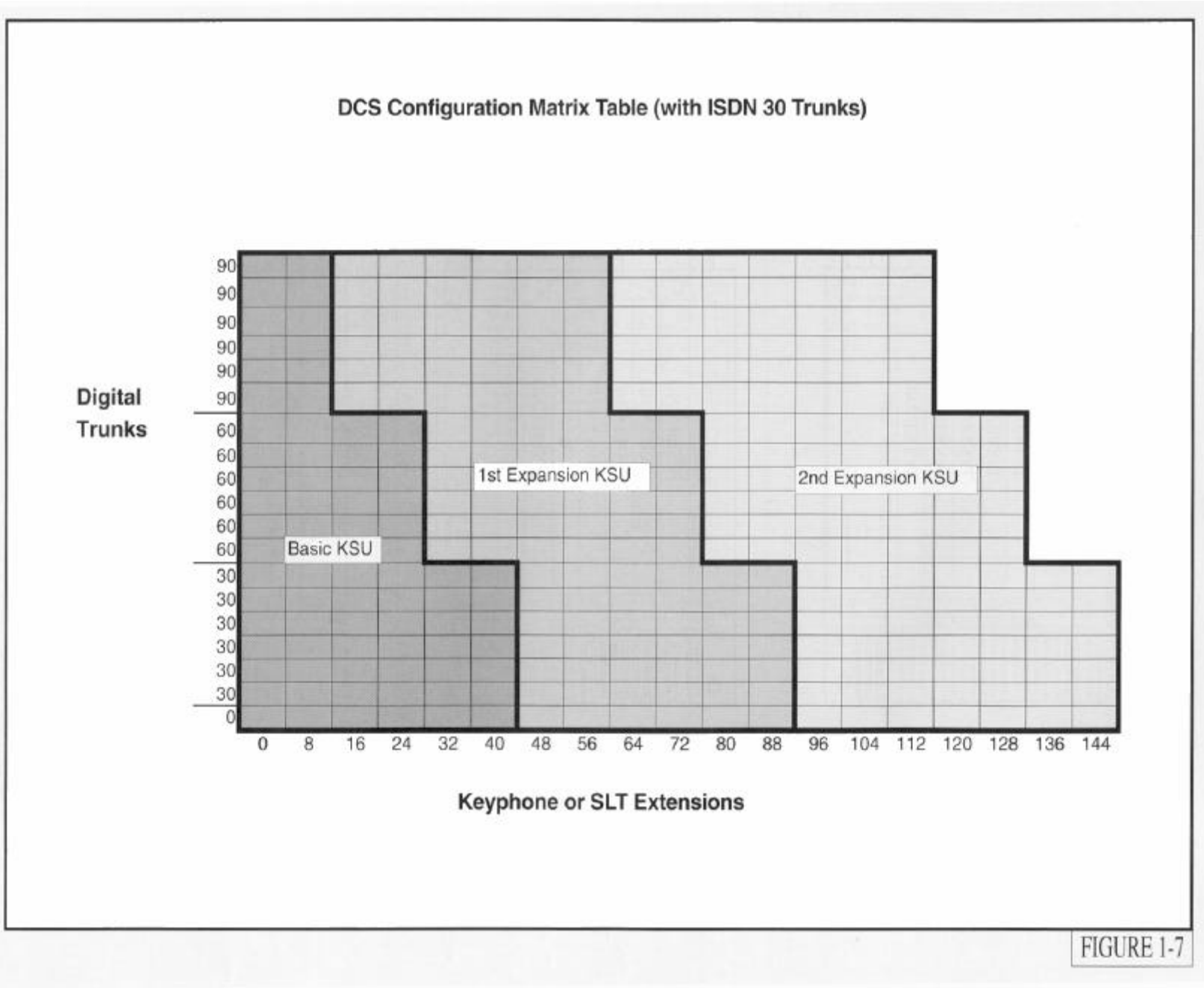

DCS Configuration Matrix Table (with ISDN 30 Trunks)
Digital Trunks
90
90
90
90
90
90
60
60
60
60
60
60
60
30
30
30
30
30
30
0
Basic KSU
1st Expansion KSU
2nd Expansion KSU
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144
Keyphone or SLT Extensions

FIGURE 1-7

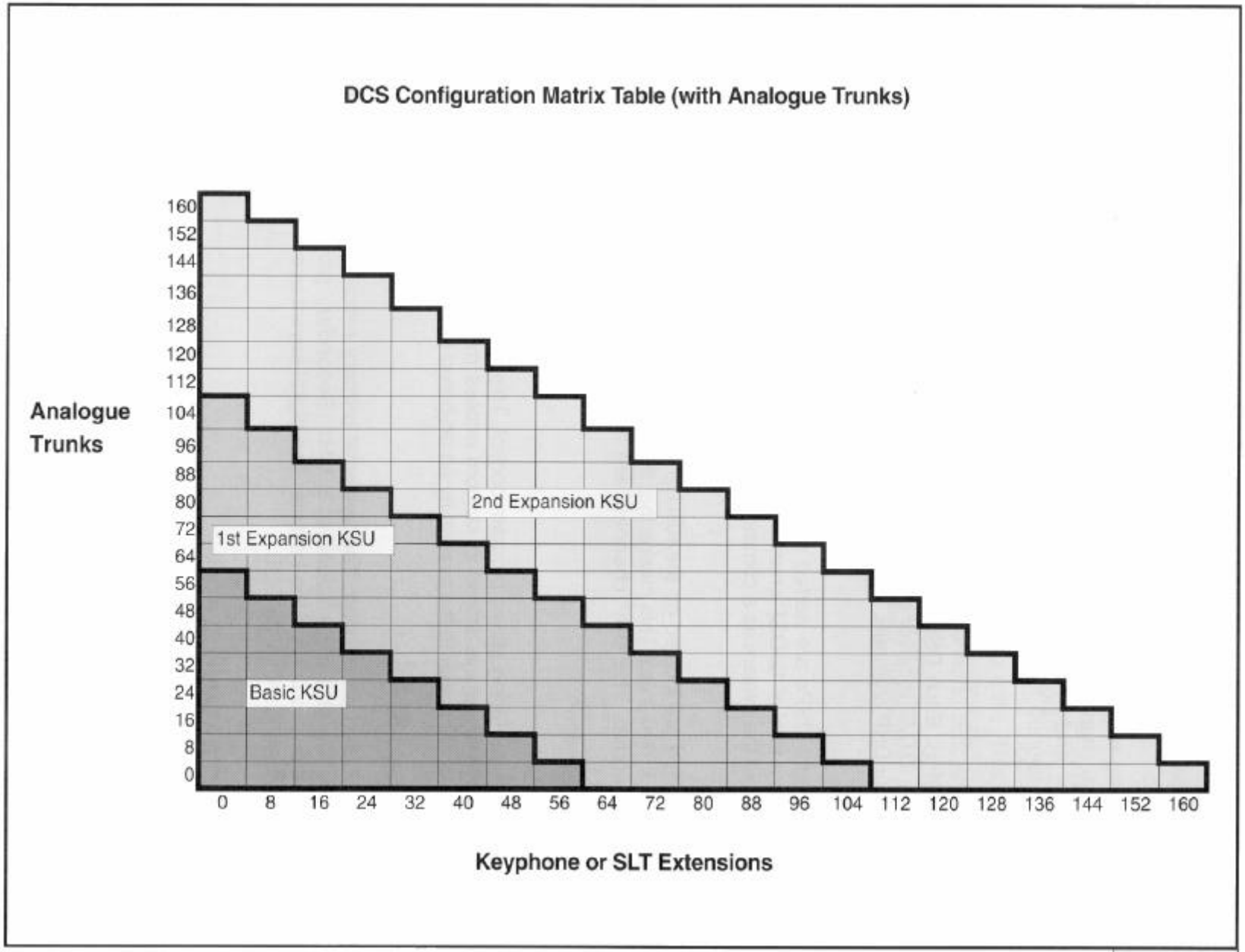

DCS Configuration Matrix Table (with Analogue Trunks)
Analogue Trunks
160
152
144
136
128
120
112
104
96
88
80
72
64
56
48
40
32
24
16
8
0
2nd Expansion KSU
1st Expansion KSU
Basic KSU
0 8 16 24 32 40 48 56 64 72 80 88 96 104 112 120 128 136 144 152 160
Keyphone or SLT Extensions

FIGURE 1-8

1.4 TECHNOLOGY

SWITCHING

System switching is accomplished by means of a custom IC "engine" that provides 256 switchable digital channels. The engine is controlled by its own 16-bit Motorola® MC 68000 microprocessor and switching control program. Each of the 256 digital channels is automatically assigned to carry voice or data as required by system operation in a PCM format.

In addition to the 256 channels mentioned above, the systems also utilise Digital Signal Processors (DSPs). Each DSP may be configured by the switching control program as a DTMF sender, a DTMF receiver or as a C.O. tone detector on a per-call basis. Each engine chip contains four DSP channels.

DCS COMPACT
An additional eight DSPs are added when a MISC card is installed. This means that the system contains a total of 12 DSP channels when fully expanded. The DSP channels are fully shared throughout the system as a common resource.

DCS
Single-engine chips are located on the KSU and EKSU motherboards with a pair of engines located on the EXPN-A card. This means that the system contains a total of 20 DSP channels when fully expanded. The DSP channels are fully shared throughout the system as a common resource.

MEMORY

The systems operate using stored program control. This program is stored in EPROM chips. All specific customer data is stored in random access memory (RAM) which is protected against the loss of AC power to the system by an on-board battery backup system.

MICROPROCESSORS

DCS uses distributed processing. The primary processor of the system is a 16-bit Motorola® MC68000 operating at a clock speed of 8 MHz. Secondary processing is on the DCS motherboard and is also done in the keysets. The digital keyset uses a Hitachi H8 processor for data communication within the DCS.

1.5 PROGRAMMING

DCS is self-configuring. This means that when the power is switched ON, the DCS reads the types and locations of all installed cards and telephones and assigns default data to them. This data provides for system operation within seconds after power is switched ON. All trunks and stations are assigned according to the default numbering plan. This numbering plan is flexible and may be changed to suit customer requirements. The installing technician customises this default data to meet the end user's requirements.

The systems can be programmed from any LCD display keyset without interrupting system operation. There are three levels of programming: technician, customer and station. The technician level has access to all programs and can allow the customer access to system programs as needed. Technician and customer access are controlled by different security passcodes and access procedures.

DCS also allows the use of a proprietary computer program called PCMMC (on DCS) or CPCMMC (on DCS COMPACT). This permits a technician to program the system using a personal computer. PCMMC or CPCMMC can be used on-site to modify the customer database or to download (save) the entire customer database to a file. This file can then be saved as a backup and be uploaded when required to restore the database.

Through the use of modems, PCMMC or CPCMMC can access a DCS system remotely (off-site) to make database changes or perform uploads or downloads of the customer database as if the technician were on-site.

PART 2. DCS COMPACT - HARDWARE DESCRIPTIONS

2.1 KEY SERVICE UNIT

The DCS COMPACT Key Service Unit (KSU, Figure 2-1) is a single plastic cabinet containing the following:

- A power supply
- Processing, switching and the system operating program
- Four loop start C.O. interfaces with a replaceable 4 C.O. protection card (4COP)
- Eight 2B+D digital keyset interfaces
- Power failure circuits for the first two C.O. lines

FIGURE 2-1

The followings are available on an optional Miscellaneous card:

- One Music on Hold (MOH)/Background Music (BGM) input
- One page output
- One auxiliary relay

2.2 EXPANSION KIT

The optional expansion kit consists of a backplane PCB with connectors for three expansion cards and a plastic rack to support the cards. The kit is installed inside the basic KSU and connects to the KSU motherboard via a 50-pin ribbon cable and two pairs of ground wires.

2.3 RAM PACKS

In order to operate, the KSU must be equipped with a RAM pack to hold the customer database. The RAM PACK contains the customer database held in battery- protected memory, and the Real-Time Clock circuit.

2.4 INTERFACE CARDS

A. The 2 SLI card is installed in a dedicated slot on the KSU motherboard. The card provides two single line telephone interfaces equipped with Long Line protection and the ability to provide a loop disconnect signal.

B. The 4 TRK card provides four loop start C.O. interfaces.

C. The 6 DLI card provides six 2B+D DLI ports.

D. The 6 SLI card provides six SLI ports for industry-standard single line telephones and the ability to provide a loop disconnect signal.

NOTE: This card does not provide Long Line protection.

E. The MISC 1 card provides a second MOH/BGM input, four page zone control relays, two serial I/O ports and eight DSP circuits. It is recommended that this card be used in situations requiring heavy single line telephone use.

F. The KDb-DLI board, if installed in a digital keyset, provides a second DLI port for the connection of a digital station device.

G. The KDb-SLI board, if installed in a digital keyset, provides an SLI port for the connection of a standard telephone device.

NOTE: The SLI port on a KDb-SLI cannot provide disconnect signal or Long Line protection.

H. The AC15 card contains three 4-wire tielines. Signalling frequency is 2280 Hz.

I. The ISDN 2 card contains four Basic Rate access ports, i.e. eight ISDN channels. Protocol is compatible for Euro-ISDN BRI.

2.5 SPECIFICATIONS

The following tables provide technical data for the DCS COMPACT hybrid/key telephone system.

ELECTRICAL SPECIFICATIONS	
AC INPUT	120 (88-132) VAC (48-63 Hz)
POWER CONSUMPTION (MAX)	87 WATTS MAX
DC OUTPUT	FUSE RATING 3 AMP
	+5 VOLTS 2.0 AMPS MAX
	-5 VOLTS 0.5 AMPS MAX
	-56 VOLTS 0.9 AMPS MAX
	-54 VOLTS 0.45 AMPS MAX

DIMENSIONS AND WEIGHTS				
	HEIGHT (mm)	**WIDTH (mm)**	**DEPTH (mm)**	**WEIGHT (kg)**
COMPACT BASIC SYSTEM: SINGLE CABINET	621	362	127	7.2
EXPANDED SYSTEM	621	362	127	10
DIGITAL KEYSET (ALL MODELS)	108	216	229	1.2
ADD-ON MODULE	108	108	229	0.5
DOOR PHONE	127	99	32	0.2

ENVIRONMENTAL LIMITS	
OPERATING TEMPERATURE	1 - 40 °C
STORAGE TEMPERATURE	-10.5 - 70 °C

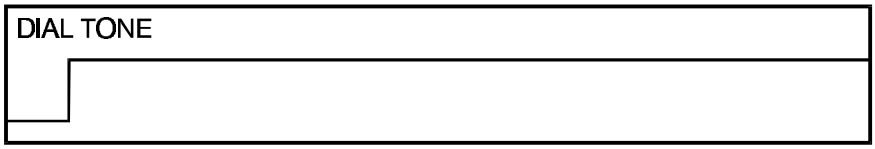
CABLE REQUIREMENTS				
EQUIPMENT	CABLE	AWG	MAX FEET	MAX METERS
DIGITAL KEYSETS	1 PR. TWISTED	24	1300	400
ADD-ON MODULES	1 PR. TWISTED	24	1300	400
SINGLE-LINE STATION	1 PR. TWISTED	24	3000	1 KM
DOOR PHONE	2 PR. TWISTED	24	330*	100

*This is the maximum length of the cable between the door phone and the DPIM. The DPIM can be installed up to 274 cable metres from the KSU.

SYSTEM TONES		
TONE	**FREQUENCIES**	**CADENCE**
DIAL TONE	350 + 440 Hz	CONTINUOUS
RING BACK TONE	440 + 480 Hz	1 sec on + 3 sec off
BUSY TONE	480 + 620 Hz	0.5 sec on + 0.5 sec off
DND/NO MORE CALLS	480 + 620 Hz	0.25 sec on + 0.25 sec off
ERROR TONE	480 + 620 Hz	0.25 sec of each tone
CONFIRMATION TONE	350 + 440 Hz	Three bursts of tone 0.1 sec on + 0.1 sec off
TRANSFER/CONF	350 + 440 Hz	0.1 sec on + 0.1 sec off

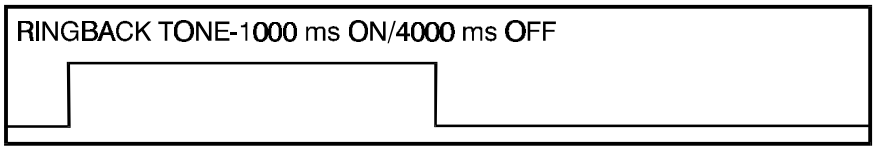
SYSTEM TONES

Intercom Dial Tone-A steady tone that indicates you can begin dialing.



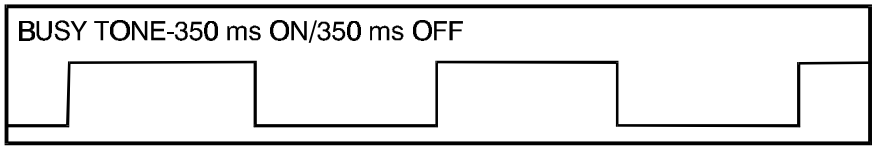
CONTINUOUS

Ringback Tone-Indicates the station you dialed is ringing.



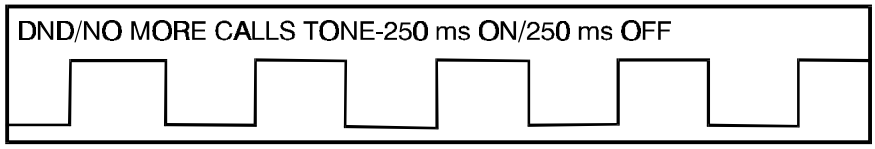
CONTINUOUS

Busy Tone-Indicates the station you dialed is busy.



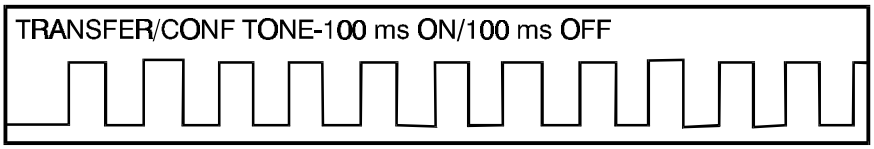
CONTINUOUS

DND/No More Calls Tone-Fast busy tone indicates the station you dialed is in the Do Not Disturb mode or cannot receive any more calls.



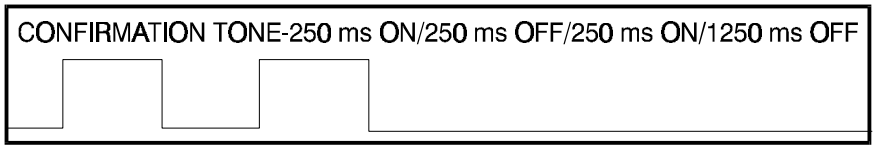
FOR TEN SECONDS

Transfer/Conference Tone-Indicates your call is being held and you can dial another party.



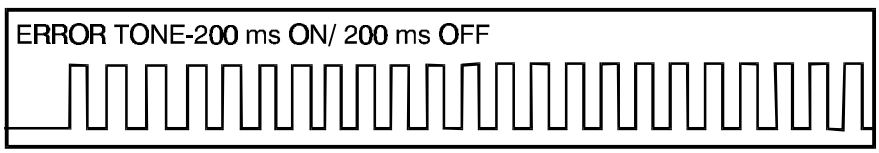
CONTINUOUS

Confirmation Tone-Very short beeps followed by dial tone indicate you have correctly set or canceled a system feature.



FOR TWO SECOND

Error Tone-A distinctive two level beeping tone indicates you have done something incorrectly. Try again.



FOR TWO SECONDS

KEYSET LED INDICATIONS (except Basic 6B keyset)			
CONDITION	**LED COLOUR**	**LED ON**	**LED OFF**
LINE IDLE	OFF	-	OFF
LINE IN USE	RED/GREEN	STEADY	-
RECALL	AMBER	500 ms	500 ms
CALL ON HOLD	RED/GREEN	500 ms	500 ms
RINGING C.O. CALL	RED/GREEN	100 ms	100 ms
RINGING INTERNAL CALL	GREEN	100 ms	100 ms
DND INDICATION	RED	100 ms ON/100 ms OFF for 500 ms	500 ms

RESERVE POWER DURATION ESTIMATES (minutes)*							
	UPS CAPACITY IN VOLT AMPS (VA)						
NO. OF STATIONS	250	400	450	600	900	1250	2000
4	65	160	200	245	360	490	930
8	45	110	135	160	240	320	625
12	40	90	115	140	200	280	535
16	30	75	90	110	160	220	415
24	25	50	70	85	120	175	380
32	20	45	60	75	100	150	330

*These are approximate values based on an idle system. The greater the C.O. line activity on the system, the lower these readings will become. In addition, specific UPS devices, due to their internal construction, can have greater or lesser values.

PART 3. DCS - HARDWARE DESCRIPTIONS

3.1 KEY SERVICE UNIT

The DCS key service unit (KSU) is a single plastic cabinet containing the following (Figure 3-1):

- Power supply
- Processing, switching and customer memory for all ports
- Seven universal card slots
- Four digital signal processors (DSPs)
- Wall-mount kit

FIGURE 3-1

3.2 EXPANSION CABINETS

The expansion cabinets are plastic cabinets that mount next to the KSU and contain the following (Figure 3-2):

- Maximum two per system
- Its own power supply identical to the KSU's
- Seven universal card slots
- Four DSPs
- Power extension cable to connect commercial AC power to the expansion cabinet
- Expansion interface B card (EXPN-B)
- High-Speed Data Link Cable (HDLC)
- Wall-mount kit

FIGURE 3-2

3.3 COMMON CONTROL CARDS

All cards in a DCS system are encased within a static dissipative ABS plastic shell for added protection during handling. Examples are shown in Figures 3-3 and 3-4.

ROM CARDS
A DCS system must have a ROM card as it contains the system software. The ROM card contains the following:

- System operating program
- Two data rate adapters for simultaneous use of both SMDR and PCMMC features
- LED status indicator

EXPANSION CARDS
To expand the DCS to more than a single cabinet system, expansion cards are required. These cards provide the high-speed digital link pathways that enables the KSU to communicate with the expansion cabinets. Currently there are two types available.

EXPN-A
This card is installed in slot 7 of the KSU and reduces the available universal card slots to six. It is only needed if the system is to be expanded.
The Expansion A card contains the following:

- HDLC connections for two expansion cabinets
- Additional eight DSPs

- LED status indicator

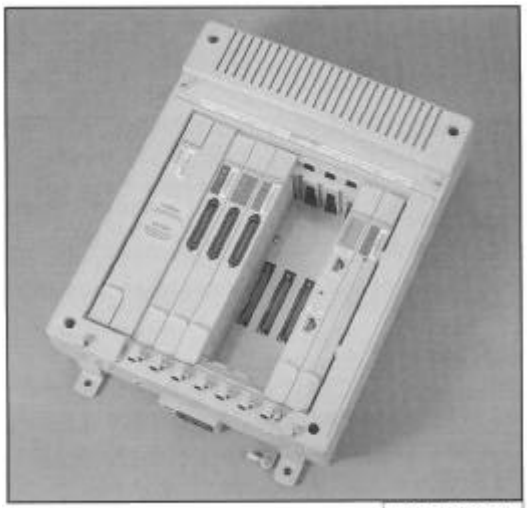


FIGURE 3-3

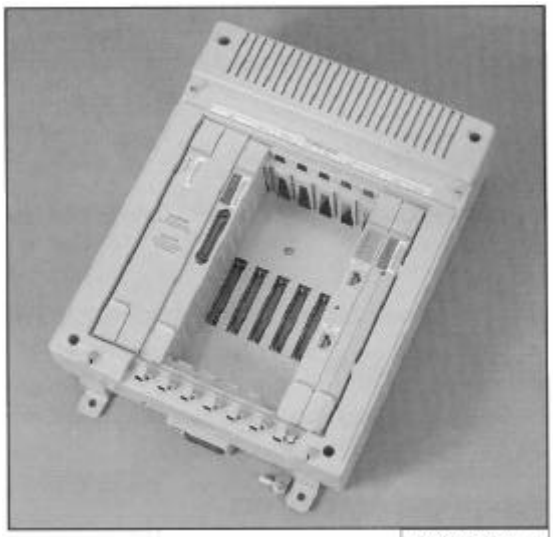


FIGURE 3-4

EXPN-B
This card has its own dedicated card slot in the expansion cabinets and does not reduce the number of available universal card slots.
The Expansion B card contains the following:
- HDLC connection for that expansion cabinet
- LED status indicator

3.4 INTERFACE CARDS

These cards provide the interface connections for telephone lines and stations to the KSU and expansion cabinets These cards fit into the universal card slots to configure the system as required.

MISCELLANEOUS CARD (TRK-A)
This card is a combination loop start line card and miscellaneous interface card that contains the following circuits:
- Two loop start C.O. lines with C.O. disconnect detection
- One power failure transfer relay per C.O. line connected to the card
- One music input for Background Music (BGM)/Music On Hold (MOH)
- One page output for connection to an amplifier
- Two page zone control relays
- One common bell relay
- One keyset ring output for connection to an amplifier
- One alarm detection sensor
- One internal MOH source

NOTE: The alarm sensor will operate only when the TRK-A card is installed in the KSU. This service is not available when the TRK-A card is installed in an expansion cabinet.

TRK-B
This card contains four loop start C.O. lines with C.O. disconnect detection.

NOTE: Each type of TRK card supports only PBX TBR (Time Break Recall) function.

AC15
This card contains three 4-wire tielines. Signalling frequency is 2280 Hz.

ISDN 2 (BASIC RATE INTERFACE (BRI))
This card contains four Basic Rate access ports, i.e. eight ISDN channels. Protocol is compatible for Euro-ISDN BRI.

EURO-ISDN (PRIMARY RATE INTERFACE (PRI))
This card contains one Primary Rate access port. Channel capacity is 30B+D. Protocol is compatible for Euro-ISDN PRI.
Multiple PRI access is available in the Basic KSU only.

NOTE: This card requires two card slots and must be installed in the KSU in either slot 1, 3 or 5. The card is shipped with 3-metre RJ45 cable for connection to the ISDN network.

DLI
This card is an 8-circuit digital station interface card that provides 2B+D service when installed in the KSU or 1B+D service when installed in an expansion cabinet.

SLI
This card is a 4-circuit analogue station interface for industry-standard, single line telephones or other analogue peripheral devices (voice mail, etc.). Each circuit is equipped with a DTMF receiver and provides the over-voltage protection required for connection to a long line extension (max. cable length 1.5 km).

8SLI
This card contains eight analogue interface circuits for standard line telephones and a ringer. Each port is indoor use only.

KDb-DLI
This is a small daughterboard installed in any DCS keyset. The KDb-DLI provides one additional DLI circuit for the connection of any digital station device such as a keyset, AOM, SIM or DPIM. This KDb-DLI will only operate when the keyset is connected to a DLI card installed in the KSU so it can use the second B channel.

KDb-SLI
This is a daughterboard installed in any DCS keyset. The KDb-SLI provides one additional SLI circuit for the connection of any standard telephone device. This KDb-SLI will only operate when the keyset is connected to a DLI card installed in the first cabinet so it can use the second B channel.

NOTE: The circuitry on a KDb-SLI does not provide a disconnect signal and does not have the over-voltage protection necessary for long line operation. Each type of SLI supports the TBR/Tone function of Single Line Telephone only.
TBR time should be set as: min. is 30ms and max. is 160ms.

AUTO ATTENDANT
This optional card can be used for either the Automated Attendant, Universal Call Distribution (UCD) - also known as ACD - or a combination of both. For more information about Automated Attendant and UCD/ACD, see section 4.1 System Features.

VOICE DIALER
The optional Voice Dialler card controls the circuitry needed to support voice recognition dialling. The circuit package can support two channels of seven users with 20 personal speed dial numbers, or one channel of five users with 40 personal speed dial numbers. This feature is available to all keyset and single line telephone users.

3.5 SPECIFICATIONS

The following tables provide technical data for the DCS hybrid/key telephone system.

ELECTRICAL SPECIFICATIONS	
AC INPUT	AC 110V (85~135V AC), AC 220V (180~270V AC)
FREQUENCY	48~63 Hz
POWER CONSUMPTION (MAX)	120 WATTS MAX PER CABINET FUSE RATING 3 AMP
DC OUTPUT	+5 VOLTS 5.0 AMPS MAX
	-5 VOLTS 0.5 AMPS MAX
	-48 VOLTS 1.4 AMPS NORMAL
	-56 VOLTS 0.45 AMPS MAX

DIMENSIONS AND WEIGHTS				
	HEIGHT (mm)	**WIDTH (mm)**	**DEPTH (mm)**	**WEIGHT (kg)**
DCS BASIC SYSTEM: SINGLE CABINET	533	406	178	9
EXPANDED SYSTEM: TWO CABINETS	533	965	178	18
EXPANDED SYSTEM: THREE CABINETS	533	1524	178	27
DIGITAL KEYSET (ALL MODELS)	108	216	229	1.2
ADD-ON MODULE	108	108	229	0.5
DOOR PHONE	127	98	32	0.2

ENVIRONMENTAL LIMITS	
OPERATING TEMPERATURE	0 - 40 °C
STORAGE TEMPERATURE	-25 - 70 °C

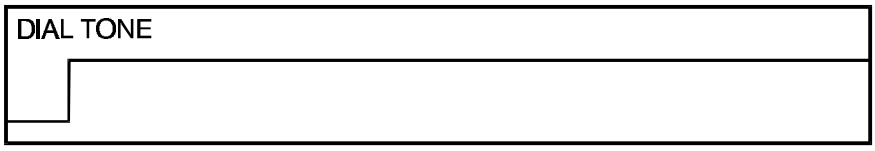
CABLE REQUIREMENTS				
EQUIPMENT	CABLE	AWG	MAX FEET	MAX METERS
DIGITAL KEYSETS	1 PR. TWISTED	24	1300	400
ADD-ON MODULES	1 PR. TWISTED	24	1300	400
SINGLE-LINE STATION	1 PR. TWISTED	24	3000	1 kM
DOOR PHONE	2 PR. TWISTED	24	330*	100
SIM	1 PR TWISTED	24	1300	400

*This is the maximum distance a door phone can be from the DPIM. The DPIM can be up to 274 cable metres from the KSU. Total distance not to exceed 375 metres.

SYSTEM TONES		
TONE	**FREQUENCIES**	**CADENCE**
DIAL TONE	350 + 440 Hz	CONTINUOUS
RING BACK TONE	300 Hz	0.4 sec on + 3 sec off
BUSY TONE	400 Hz	0.375 sec on + 0.375 sec off
DND/NO MORE CALLS	400 Hz	0.25 sec on + 0.25 sec off
ERROR TONE	400 Hz	CONTINUOUS
INTRUSION TONE	1400 Hz	0.1 sec on + 0.1 sec off
TRANSFER/CONF	400 Hz	0.1 sec on + 0.1 sec off
CAMP-ON TONE	400 Hz	0.5s on/3.5s off

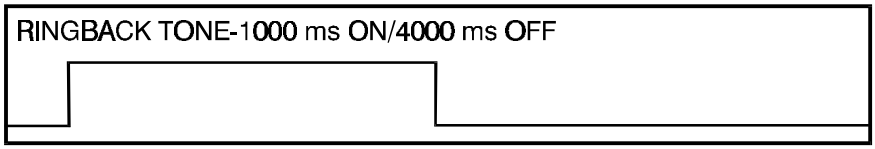
SYSTEM TONES

Intercom Dial Tone-A steady tone that indicates you can begin dialing.



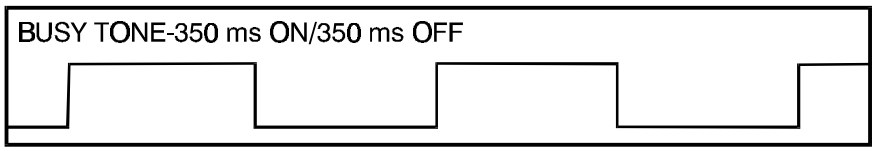
CONTINUOUS

Ringback Tone-Indicates the station you dialed is ringing.



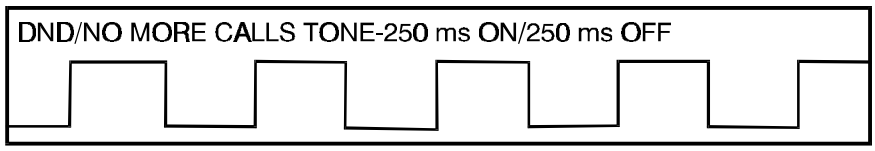
CONTINUOUS

Busy Tone-Indicates the station you dialed is busy.



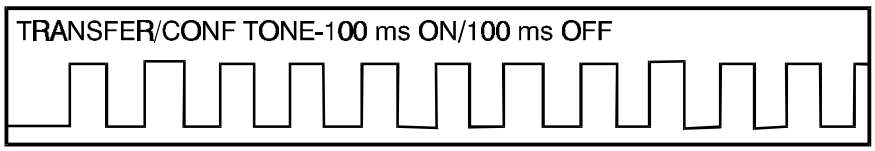
CONTINUOUS

DND/No More Calls Tone-Fast busy tone indicates the station you dialed is in the Do Not Disturb mode or cannot receive any more calls.



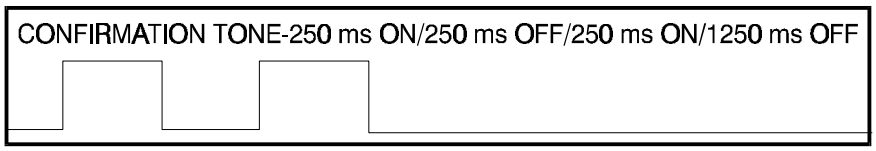
FOR TEN SECONDS

Transfer/Conference Tone-Indicates your call is being held and you can dial another party.



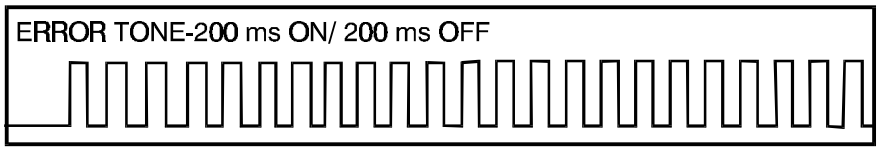
CONTINUOUS

Confirmation Tone-Very short beeps followed by dial tone indicate you have correctly set or canceled a system feature.



FOR TWO SECOND

Error Tone-A distinctive two level beeping tone indicates you have done something incorrectly. Try again.



FOR TWO SECONDS

KEYSET LED INDICATIONS (except Basic 6B keyset)			
CONDITION	**LED COLOUR**	**LED ON**	**LED OFF**
LINE IDLE	OFF	-	OFF
LINE IN USE	RED/GREEN	STEADY	-
RECALL	AMBER	500 ms	500 ms
CALL ON HOLD	RED/GREEN	500 ms	500 ms
RINGING C.O. CALL	GREEN	100 ms	100 ms
RINGING INTERNAL CALL	GREEN	100 ms	100 ms
DND INDICATION	RED	100 ms ON/100 ms OFF for 500 ms	500ms
OPERATOR CALLS	RED	100 ms	100 ms

RESERVE POWER DURATION ESTIMATES (minutes)*							
	UPS CAPACITY IN VOLT AMPS (VA)						
NO. OF CABINETS	250	400	450	600	900	1250	2000
1	12	26	38	49	77	107	258
2	N/A	8	15	18	36	57	119
3	N/A	N/A	N/A	7	20	33	55

*These are approximate values. Specific UPS devices, due to their internal construction, can have greater or lesser values.

PART 4. STATION EQUIPMENT

4.1 LCD 24B Model Keyset (Figure 4-1)

- Built-in speakerphone
- 24 programmable soft keys (16 with tri-coloured LEDs)
- Four fixed-function keys
- 32-character display (2 x 16) with three associated soft keys and a scroll key
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones per keyset
- Desk-mounted or wall-mounted
- Available in almond or charcoal

Figure 4-1

4.2 STD 24B Model Keyset (Figure 4-2)

- Built-in speakerphone
- 24 programmable soft keys (16 with tri-coloured LEDs)
- Four fixed-function keys
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones per keyset
- Desk-mounted or wall-mounted
- Available in almond or charcoal

4.3 LCD 12B Model Keyset (Figure 4-3)

- Built-in speakerphone
- 12 programmable soft keys (6 with tri-coloured LEDs)
- Four fixed-function keys
- 32-character display (2 x 16) with three associated soft keys and a scroll key
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones per keyset
- Desk-mounted or wall-mounted
- Available in almond or charcoal

Figure 4-2

Figure 4-3

4.4 STD 12B Model Keyset (Figure 4-4)

- Built-in speakerphone
- 12 programmable soft keys (6 with tri-coloured LEDs)
- Four fixed function keys
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones per keyset
- Desk-mounted or wall-mounted
- Available in almond or charcoal

Figure 4-4

Figure 4-5

4.5 Basic/Enhanced 6B Model Keyset (Figure 4-5)

- On-hook dialling
- 6 programmable keys
- Four fixed function keys
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones per keyset
- Desk-mounted or wall-mounted
- Available in almond or charcoal

NOTE: The keyset flash rate for the Basic phone is fixed and is the same for all applications (50 ms ON / 50 ms OFF).

4.6 48 Button Add-on Module (AOM) (Figure 4-6)

- 48 programmable keys
- Available in almond or charcoal
- One or two can be assigned to any DCS keyset to provide additional programmable keys (Figure 4-7)

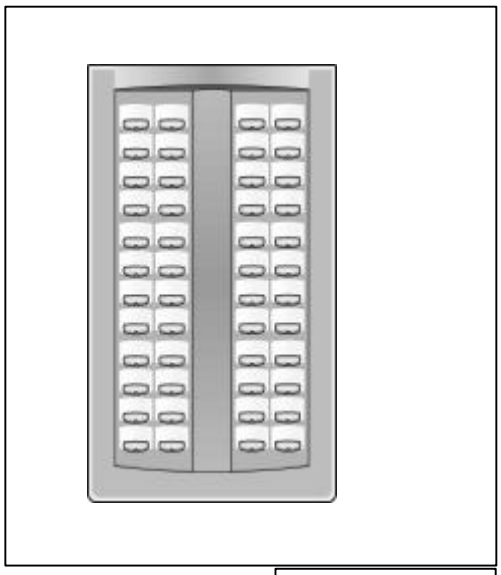


Figure 4-6

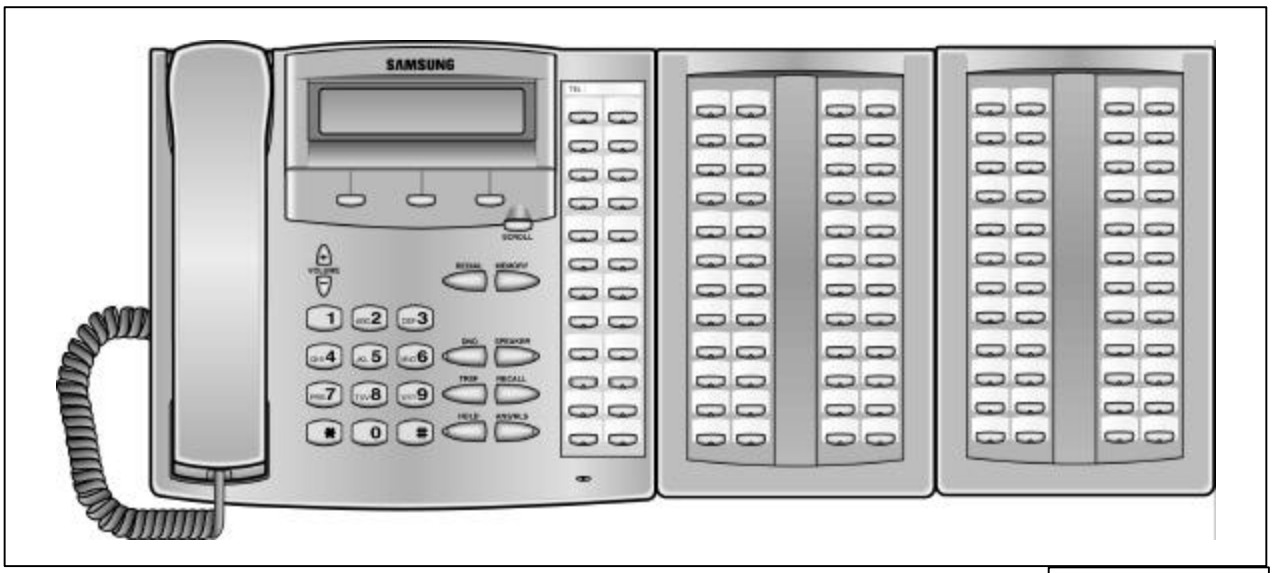


Figure 4-7

4.7 Door Phone Interface Module (DPIM)(Figure 4-8) and Door Phone

- The DPIM adapts any DLI circuit for use with the door phone unit
- Commonly used to request entry through locked doors (interior or exterior) or as a room monitoring box
- Door phone is wall-mounted
- Door phone is weather-proof

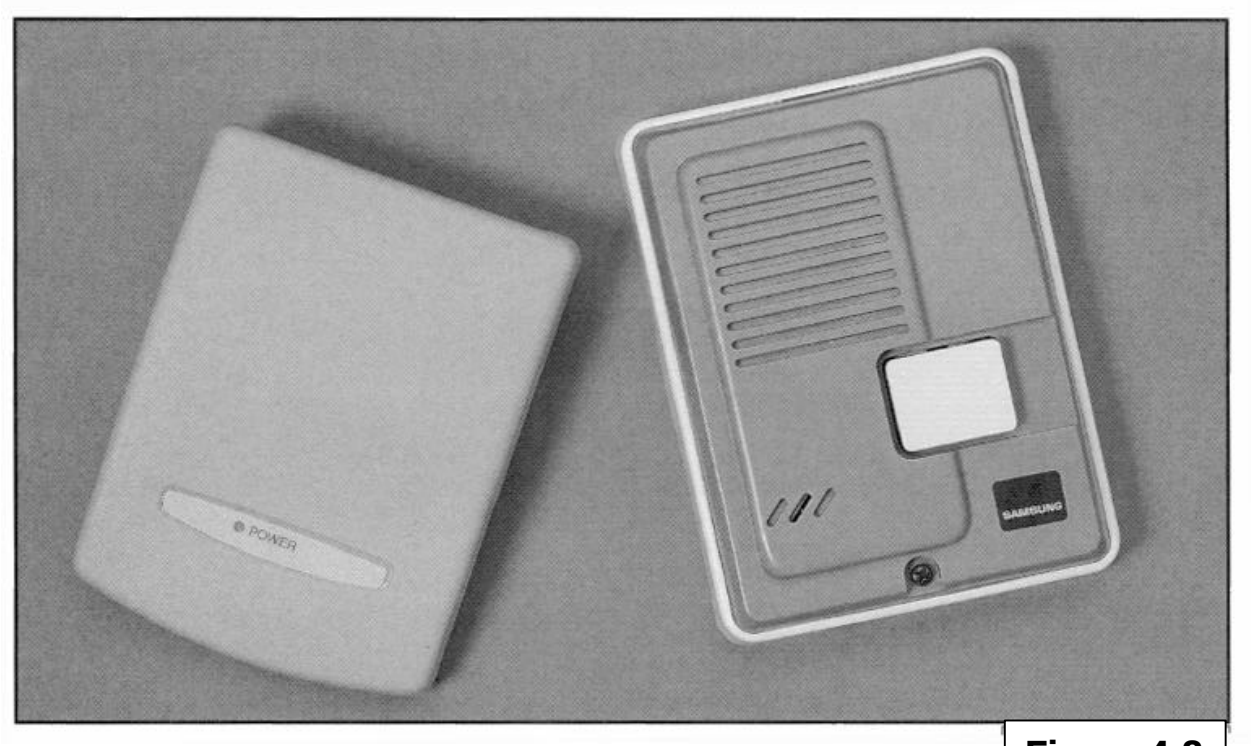


Figure 4-8

4.8 Serial Interface Module (SIM) (Figure 4-9)

- Provides an RS232 connection required for SMDR and PC programming features
- Connects to any DLI circuit

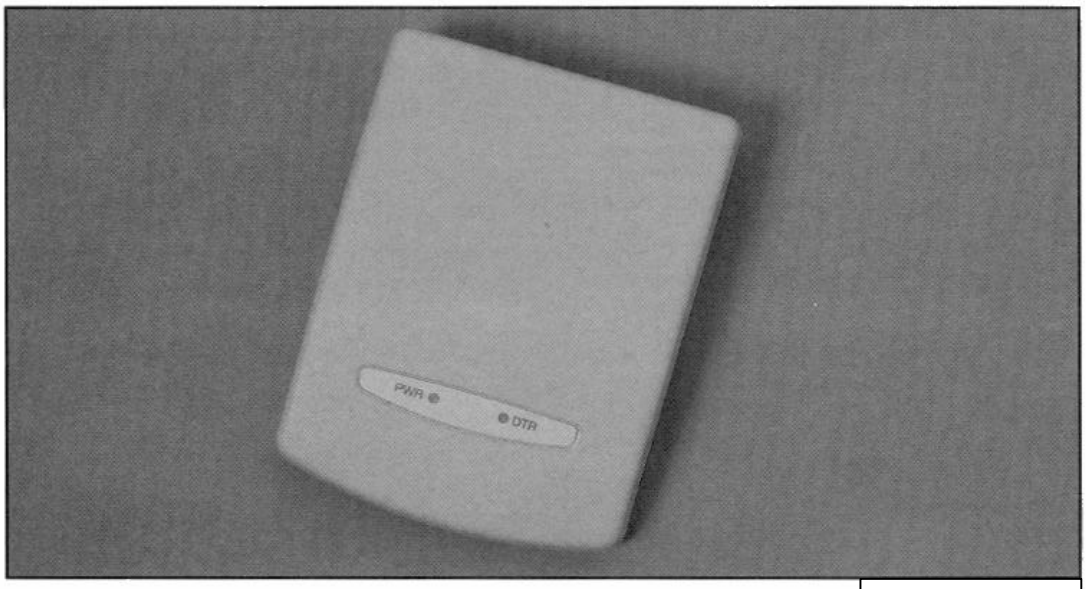


Figure 4-9

PART 5. FEATURES

5.1 SYSTEM FEATURES

AC15 Tielines
Account Code Entry
    Forced
    Voluntary
All Call Voice Page
Attention Tone
Authorisation Codes
    Forced
    Voluntary
Auto Attendant*
Automatic Hold
Background Music
Call Forwarding
    All Calls
    Busy
    No Answer
    Busy/No Answer
    Follow Me
    External
    To Voice Mail
Call Hold (Exclusive)
Call Hold (System)
Call Park And Page (12 Zones)
Call Pickup
    Directed
    Groups (20)
Call Waiting/Camp On
Chain Dialling
Class Of Service
CLIP
    Name/Number Display
    Next Call
    Save CLIP Number
    Store CLIP Number
    Inquire Park/Hold
    CLIP Review List
    Investigate
    Abandon Call List (50)
    CLIP on SMDR
    Number To Name Translation (250)
Common Bell Control
Conference
    Add On (5 Party)
    Unsupervised
Data Security
Database Printout
Direct Dialling Inward (DDI)
Direct In Lines
Direct Inward System Access (DISA)
Direct Trunk Selection
Directory Names
DISA Security
Distinctive Ringing
Door Lock Release (Programmable)
Door Phones
Door Phone Night Ring
Executive Barge-In (Override)
    With Warning Tone
    Without Warning Tone
Executive/Secretary Pooling
External Music Interfaces
External Page Interfaces
Flexible Numbering
Flexible Ringing
    Day Ring Assignments
    Night Ring Assignments
Hot Line
In Group/Out Of Group
Incoming Call Distribution
Incoming/Outgoing Service
Individual Line Control
Least Cost Routing
Live System Programming
    From Any Display Keyset
    With A Personal Computer
Long Line Extensions
Meet Me Page And Answer
Memory Protection
Message Waiting Indications
Microphone On/Off Per Station
Music On Hold-Flexible
Night Service
    Automatic
    Manual
Operator Group
Overflow
    Operator
    Station Group
Paging
    Internal Zones (4)
    External Zones (4)
    All Internal
    All External
    Page All
Power Failure Transfer
Prime Line Selection
Private Lines
Programmable Line Privacy
Programmable Timers
Recall Key Operation
Recalls
Remote Programming-PC
Ring Over Page
Single Line Connections
Speed Dial Numbers
    DCS (1500 Max)
    COMPACT (500 Max)
Speed Dial By Directory
Station Hunt Groups (30)
    Distributed
    Sequential
    Unconditional
Station Message Detail Recording (SMDR) (Call Logging)
System Alarms
System Directory
Tenant Service (2)
Toll Restriction (Call Barring)
    By Day Or Night
    By Line Or Station
    Eight Dialling Classes
Toll Restriction (Call Barring) Override
Tone Or Pulse Dialling
Transfer
    Screened/Unscreened
    With Camp-On
Trunk Groups (11)
Uniform Call Distribution (UCD/ACD)
    Maximum of Ten Groups
    Call Statistics
    Agent Statistics
    Generic UCD/ACD Statistics
    Group Supervisors
Universal Answer
Voice Mail Integration
Walking Class Of Service
ISDN service
DECT service
TAPI
TSAPI
About TSAPI
DCS TSAPI Driver

5.2 SYSTEM FEATURE DESCRIPTIONS

AC15 TIELINES
Your office can be connected to another office with a tieline. Use it to make calls to stations in the other system. If programming allows, you can access lines in the other system to make outside calls. Tieline calls can be put on hold, transferred and conferenced in the same way as other outside calls. Users accessing the tieline from the other system can get a line in your system and make outgoing calls. These calls can be controlled by assigning a dialling class to the tieline.

ACCOUNT CODE ENTRY
Station users may enter an account code (maximum 12 digits) before hanging up from a call. This account code will appear in the last column of the SMDR printout for that call record. Keyset users may enter this code using an account (ACCT) key without interrupting a conversation. Single line set users must temporarily interrupt the call by hook-flashing and dialling the feature access code. Account codes can be up to 12 digits long.

FORCED
When forced, account codes are always verified from a system list of 500 entries. Account codes are always printed on the SMDR report. They can contain digits 0-9.

VOLUNTARY
Users may elect to enter an account code for any call. Digits can include 0-9, star (*) and #.

ALL CALL VOICE PAGE
Users can page all the internal and all the external paging zones at the same time by dialling the All Page code. Keysets may be restricted from making or receiving pages in system programming. A maximum of 80 keysets can be programmed to receive page announcements.

ATTENTION TONE
To get your attention, a brief tone precedes all page announcements or intercom voice calls. There are separate programmable duration timers for page and voice announce tones.

AUTHORIZATION CODES
Authorisation codes are used to give permission to make a call. These four digit authorisation codes can be either forced or voluntary. When used, authorisation codes will automatically change the dialling station's class of service to the level assigned to the authorisation code. Authorisation codes may or may not be programmed to print on SMDR.

FORCED
When a station is programmed for forced authorisation the user must always enter this code before dialling is allowed. The dialled authorisation code is verified from a system list of 250 entries.

VOLUNTARY
Any station user can always enter an authorisation code before they begin dialling. The dialled authorisation code is verified from a system list of 250 entries.

AUTO ATTENDANT
The integrated digital automated attendant feature provides eight ports per card for simultaneous answering and call processing. A maximum of five cards per system totalling 40 ports can be installed to handle high traffic applications. Sixteen professionally recorded prompts inform callers of the progress of their calls. Some examples are: "I am sorry. There is no answer," "That station is busy" and "Invalid number. Please try again". Two minutes of battery-backed random access memory (RAM) provide up to 48 customer recordings for announcements or greetings. Twelve individual greeting boxes, each with its own dialling options, allow you to build call routing

branches as needed. Callers are routed through the branches by dialling extension numbers or single digits.

NOTE: Requires optional hardware and/or software. Ask your dealer for details.

AUTOMATIC HOLD
While a keyset user is engaged in an outside (C.O.) call, pressing another trunk key, route key or CALL button automatically places the call on hold when this feature is enabled. Pressing TRSF, CONFERENCE, PAGE or a DSS key always automatically places a C.O. call on hold. Intercom calls can be automatically held only by pressing TRSF or CONFERENCE. Each keyset user can enable or disable Automatic Hold.

BACKGROUND MUSIC
Keyset users may choose to hear music through their keyset speakers when optional external sources are installed. Each user may adjust this level by the use of a volume control program at the selected keyset.

CALL FORWARDING
This feature allows the user to redirect (forward) incoming calls. The calls can be redirected to the attendant, a hunt group, voice mail, external number, or another station user. If the destination station is in Do Not Disturb (DND) mode, the calling party will receive DND/REORDER tone. Calls cannot be forwarded to a door phone.

ALL CALLS
This type of forwarding is not affected by the condition of the station. All calls are immediately redirected to the designated destination. If desired, the destination station may redirect the call back to the forwarded station by using the transfer feature. The forwarded station user can continue to originate calls as usual. If no key is programmed as Forward All, the TRSF key lights steady when a forwarded all condition is set.

BUSY
This feature forwards all calls only when the station set is busy. The station user can originate calls as usual.

NO ANSWER
This feature forwards calls that are not answered within a preprogrammed time. The user can originate calls as usual and receive calls if present. The timer is programmable on a per-station basis to allow for differences in individual work habits.

BUSY/NO ANSWER
This feature allows the station user to use both types of forwarding simultaneously, provided the destinations have already been entered in the usual manner.

FOLLOW ME
This feature allows the station user to forward all calls from another station to the user's station or change the forward destination to the user's current location.

EXTERNAL
This feature forwards C.O. calls to an external number via a central office trunk if allowed by class of service. These C.O. calls forward only after the programmable external call forward delay timer expires.

TO VOICE MAIL
Each station may be programmed to allow or deny the ability to forward intercom calls to voice mail. When denied, valuable message time in the voice mail system can be saved.

CALL HOLD (EXCLUSIVE)
Outside calls can be placed on exclusive hold at any keyset by pressing the HOLD key twice during a call. Calls placed on exclusive hold can only be retrieved at the keyset that placed the call on hold. Intercom calls are always placed on exclusive hold.

CALL HOLD (SYSTEM)
Outside calls can be placed on system hold at any station. Users may dial the access code or press the HOLD button. Calls on system hold may be retrieved at any station.

CALL PARK AND PAGE (12 ZONES)
Each C.O. line has its own park zone. This simple method eliminates confusion and ensures that a park zone is always available. Pressing the PAGE key parks the call automatically. There are no extra buttons to press and there is no lost time looking for a free zone.

CALL PICKUP

DIRECTED
With directed call pickup, users can answer calls ringing at any station by dialling a code plus that station's extension number or by pressing the feature button and then dialling the extension.

GROUPS (20)
In addition, calls can be picked up from a station group in a similar manner. The group pickup feature allows users to answer any call ringing within any pickup group. There are 20 pickup groups available. A station cannot be in more than one pickup group. To use this feature, station users either dial the access code or press the assigned feature button followed by the pickup group number .

CALL WAITING/CAMP-ON
Busy stations are notified that a call is waiting (camped-on) when they receive a tone. The tone will be repeated at a programmable interval. Keysets receive an off-hook ring signal through the speaker and single line stations receive a tone in the handset. The volume of the camp-on tone can be set by the station user. Camped-on calls will follow Forward No Answer if a Forward No Answer destination has been set.

CHAIN DIALLING
Station users may manually dial additional digits following a speed dial call or chain together as many speed dial numbers as are required.

CLASS OF SERVICE
The system allows a maximum of 30 station classes of service. Each class of service can be customised in memory to allow or deny access to features and to define a station's dialling class. Each station can be assigned different classes of service for day and night operation.

CLIP (CALLING LINE IDENTIFICATION PRESENTATION)
The CLIP feature is dependent on having an LCD keyset to show the name or number in the top line of the display.

NAME/NUMBER DISPLAY
Each LCD keyset user can decide if he/she wants to see the CLIP name or CLIP number in the display. Regardless of which one is selected to be seen first, the N/N key is pressed to view the other pieces of CLIP information.

NEXT CALL
In the event that you have a call waiting or a camped-on call at your keyset, you can press the NEXT key to display the CLIP information associated with this next call in queue at your

station. Either the CLIP name or CLIP number will show in the display depending on your N/N selection.

SAVE CLIP NUMBER
At any time during an incoming call that provides CLIP information, you may press the SAVE key. This saves the CLIP number in the Save Number feature. Pressing the SAVE number redial key will dial the CLIP number.

STORE CLIP NUMBER
At any time during an incoming call that provides CLIP information, you may press the STORE key. This saves the CLIP number as a speed dial number in your personal speed dial list.

INQUIRE PARK/HOLD
Having been informed that an incoming call is on hold or has been parked, you may view the CLIP information before you retrieve the call. This will influence how you choose to handle the call.

CLIP REVIEW LIST
This feature allows display keyset users to review CLIP information of calls sent to their stations. This list can be from 10 to 50 calls in a first-in, first-out basis. The list includes calls that you answered and calls that rang your station but that you did not answer. When reviewing this list, you can press one button to dial the person back.

INVESTIGATE
This feature allows selected stations with a special class of service to investigate any call in progress. If CLIP information is available for an incoming call, you will know to whom this station is speaking. On outgoing calls, you can see who was called. After investigating, you may barge-in on the conversation, disconnect the call or hang-up.

ABANDON CALL LIST (50)
The system has a system-wide abandon call list that stores CLIP information for the last 50 calls that rang but were not answered. The list is accessed using the operator's passcode. While reviewing this list, you are provided with options to CLEAR the entry or DIAL the number. You can use the NND key to toggle between the CLIP name, CLIP number and the date and time the call came in.

CLIP ON SMDR
The Calling Line Identity of the calling party for each call, and the calling party name from the Translation table (if one has been entered by the user), will be printed on the SMDR record of each call.

NUMBER TO NAME TRANSLATION (250)
The system provides a translation table for 250 entries. When the CLIP number is received, the table is searched. When a match is found, the system will display the corresponding name. This allows users in areas that do not support deluxe CLIP to provide names for regular callers.

COMMON BELL CONTROL
Each Miscellaneous card provides a dry contact pair to control a customer-provided common bell or common audible device. These contacts must be programmed as members of a station group and may provide steady or interrupted closure.

CONFERENCE
The system allows five simultaneous conferences.

ADD-ON (5 PARTY)
Any combination of up to five parties (stations or outside lines) can be joined together in an add-on conference. Parties may be eliminated or added after a conference has been established.

UNSUPERVISED
A station user may set up a conference with two or more outside lines and then exit the conference leaving the outside lines connected in an unsupervised (trunk to trunk) conference.

DATA SECURITY
Single line extensions used with modems and facsimile machines can be programmed so that they will not receive any system-generated tones that would disrupt data transmissions. In addition, these devices will receive DCS C.O. ringing pattern instead of intercom ring pattern. Devices connected to an SLI card will receive a disconnect signal upon termination.

DATABASE PRINTOUT
A copy of the customer database can be obtained using PCMMC or CPCMMC. This information can be directed to a printer or the PC screen and may be done either on-site or remotely. A complete database or specific data blocks may be obtained.

DIRECT DIALLING INWARD (DDI)
DCS can use local telephone company - if DDI service is provided via an ISDN 30 circuit. When programmed, anyone dialling a user's personal number will ring directly to that user's office. DDI calls to a busy station have the option to return busy signal to the C.O. or return ringback to the C.O. When ringback is selected, the called station receives off-hook ring. Multiple DDI numbers can ring the same extension or station group, and display keysets show a DDI directory name when ringing if a name has been programmed. DDI calls that are directed to ring a voice mail machine can be identified by a special digit (see Voice Mail Integration).

DIRECT IN LINES
Outside lines may be programmed to bypass the operator(s) and ring directly at any station or group of stations.

DIRECT INWARD SYSTEM ACCESS (DISA)
Users can call in on specific DISA lines at any time, input a security code and receive system dial tone. Users can now place internal calls or, if permitted, calls using C.O. lines and can also access paging resources and set/reset his/her external forward database. The caller must have a tone dial phone and must know his/her DISA security code. DISA lines can be used as both-way lines or incoming only and may be active in day mode, night mode or both. The C.O. lines used for DISA must have disconnect supervision.

DIRECT TRUNK SELECTION
Each station can be allowed access to or denied access from a trunk or trunk group by access code when LCR is activated. When restricted, the station user must use a trunk key or a route key.

DIRECTORY NAMES
Each station, station group and C.O. line may be assigned a directory name (maximum 11 characters). In addition, each personal speed dial number, system speed dial number and entry in the DDI translation table may be assigned a name (maximum 11 characters). These names are displayed during calls with these ports and, in the case of station and speed dial names, can be used to originate calls. See the Dial by Name feature (in Station Features).

DISA SECURITY

Telephone fraud and long-distance theft continue to increase; therefore, we have introduced a DISA security system. If an incorrect DISA passcode is entered repeatedly (as is the case with “hackers”), the DISA system can be automatically disabled temporarily. Both the number of incorrect passcode attempts and the time that DISA is disabled are programmable. In addition, all failed attempts to access DISA will print on SMDR (if provided) with a "DE" DISA error flag.

DISTINCTIVE RINGING
Users will know the type of call received by the type of ring heard. Outside calls have a single ring repeated while internal calls have a double ring repeated.

DOOR LOCK RELEASE (PROGRAMMABLE)
After answering a call from the door phone, users can dial a code to activate a contact closure. This can be used to operate a customer-provided electric door lock release mechanism. The contact closure timer is programmable from 100 to 2500 ms.

DOOR PHONES
The door phone interface module (DPIM) provides for connection of a door phone to a DLI port. Pressing the button on the door phone produces a distinctive ring (three short rings repeated) at the assigned station or station group. If not answered within a programmable time, the system will release the door phone and stop the ringing. Stations may call the door phone directly and monitor the surrounding areas.

DOOR PHONE NIGHT RING
The ring destination of door phone calls may be different at night than during the day. For example, large factories may want these calls directed to a security desk after hours.

EXECUTIVE BARGE-IN (OVERRIDE)
The feature allows specially programmed stations with a barge-in key to override the automatic privacy of another station. Programming allows barge-in with or without a warning tone. Stations may also be programmed as "secure" so that they cannot be barged-in on.

WITH WARNING TONE
When the barge-in with tone option is set, the barging-in keyset has its microphone on and the barged-in on station receives an override display. A double burst of warning tone sounds and repeats for every 10 seconds. This feature does not work from single line sets.

WITHOUT WARNING TONE
When the barge-in without tone option is set, the barging-in keyset has its microphone muted and the barged-in on station does not receive an override display. This feature does not work from single line sets.

WARNING: BARGE-IN WITHOUT TONE MAY VIOLATE THE LAW CONCERNING THE RIGHT TO PRIVACY. NEITHER SAMSUNG ELECTRONICS CO. LTD NOR SECURICOR TELECOMS LTD IS IN ANY WAY RESPONSIBLE FOR THE POSSIBLE MISUSE OF THIS FEATURE.

EXECUTIVE/SECRETARY POOLING
Each keyset may be defined as a BOSS or a SECRETARY in system programming. Each BOSS can have up to four SECRETARIES and each SECRETARY can have up to four BOSSES. These arrangements are known as executive/secretary pools. There can be multiple pools in a system. When a BOSS is in DND, all calls to the BOSS ring the first SECRETARY assigned to that BOSS; if that SECRETARY is busy, the call hunt to the next available SECRETARY assigned to that BOSS. If the SECRETARY must communicate with the BOSS while he/she is in DND, pressing the corresponding BOSS button on the SECRETARY's keyset results in an Auto Answer intercom call being made to the BOSS (provided the BOSS should be free). A station

can only be the BOSS of one SECRETARY pool. In addition, a station cannot be in more than one pool.

EXTERNAL MUSIC INTERFACES
Each Miscellaneous card provides an interface for connecting a customer - if external music source is provided. These sources can be used for background music, station music on hold or trunk music on hold.

EXTERNAL PAGE INTERFACES
Each Miscellaneous card provides one external page output and two zone control relays. Resources from multiple Miscellaneous cards can be combined to provide up to four external zones per tenant. Multiple relays may be assigned to each zone.

FLEXIBLE NUMBERING
System programming allows stations to have two, three or four digit extension numbers beginning with the digit 2 or 3. Default extension numbers begin with 201. Station hunt group access codes can be two or three digits beginning with the digit 5. These can be changed but will affect other feature access codes. All user guides are written using the default numbering plan.

FLEXIBLE RINGING
Each C.O. line can be programmed to ring at any station or station group. Each line can be assigned a day ring destination and a night ring destination.

HOT LINE
Stations can be programmed to call a pre-defined station or station group whenever that station goes off-hook. A hot line delay timer of 1-250 seconds can be programmed to allow sufficient time to make a different call.

IN GROUP/OUT OF GROUP
Individuals assigned to a station hunt group may temporarily remove their telephones from the group by pressing the In/Out of Group button provided that there should be someone still in the group. Stations out of a group will not receive calls to that group but will continue to receive calls to their individual extension numbers. When desired, the user may put him/herself back into the group by pressing the button again. Users who do not have this button may dial the access code and the group desired. A station user is allowed to be in several groups if a key and the extender of that group are assigned for each group on the user's phone.

INCOMING CALL DISTRIBUTION
Incoming calls can be assigned to ring a distributed station hunt group. This allows all members of the group to share the call load.

INCOMING/OUTGOING SERVICE
Outside lines are available for incoming or outgoing service. Programming allows any outside line to be used for incoming calls only, outgoing calls only or both-way service.

INDIVIDUAL LINE CONTROL
Each station in the system can be individually programmed to allow or deny dialling out as well as allow or deny answering for each outside line.

LEAST COST ROUTING
Least Cost Routing (LCR) is the ability to automatically select the appropriate central office route for the outside number dialled by any station. LCR can become quite complicated to understand and program but does allow highly complex dialling decisions. The DCS LCR package includes the following features:

- Option to use or not use LCR
- Programmable LCR access code
- Digit analysis table: 500 entries each with 10 digits
- Routing by time of day and day of week
- Routing according to individual station class
- Modify digits table: 100 entries
- Flexible trunk group advance timer
- Option to use or not use trunk group advance warning tones
- Backspace key when dialling

LIVE SYSTEM PROGRAMMING

The system can be programmed from any display keyset or personal computer (PC) without interrupting normal system operation. There are three levels of programming: technician, customer and station. The technician level has access to all programs and can allow the customer access to system programs as needed. Technician and customer access are controlled by different security passcodes. Programming from a PC requires the PCMMC (DCS) or CPCMMC (DCS COMPACT) program.

LONG LINE EXTENSIONS

A single line (tip and ring) extension from an SLI card may be connected to telephone company-provided long line circuits to remote locations.

MEET ME PAGE AND ANSWER

After a user makes a Meet Me Page, the user may remain off-hook to allow the paged party to meet the user for a private conversation.

MEMORY PROTECTION

In the event that power is lost to the system, all customer data contained in memory is retained for approximately seven days. In addition, the PCMMC or CPCMMC computer program may be used to produce a backup copy of the customer data.

MESSAGE WAITING INDICATIONS

When calling a station and receiving a busy signal or the no answer condition, the caller can leave an indication that a message is waiting. The message button will flash red at the messaged keyset. A single line phone will receive a distinctive message waiting dial tone. Five message waiting indications can be left at any station.

MICROPHONE ON/OFF PER STATION

The microphone can be disabled at any keyset. When a microphone is disabled, the keyset cannot use the speakerphone, although on-hook dialling and group listening are still possible.

MUSIC ON HOLD-FLEXIBLE

When multiple Miscellaneous cards are installed in the system with external sources connected, each C.O. line may be programmed to receive one of the external sources, internally-generated tones, chime music, or no music when it is placed on hold. If there are no Miscellaneous cards installed, each line may receive either a system-generated tone or no music. The system-generated tone is a beep for every 10 seconds. The Miscellaneous card provides an internally chimed music source playing 'For Elise'.

NIGHT SERVICE

The DCS provides separate ringing locations for all trunks in both the day and the night modes.

AUTOMATIC

Automatic night service allows each tenant to automatically go in and out of night service according to the system clock. There are separate time options available for each day of the week. This feature can be overridden by a manual night service key and passcode.

MANUAL

The operator presses the NIGHT key and then dials a passcode to change day mode to night mode operation.

OPERATOR GROUP

Any number of stations can contain 32 stations to answer incoming calls. Calls to this group can be set for distributed, sequential or unconditional ringing. Operators can use the In/Out of Group feature to meet flexible operator requirements.

OVERFLOW

OPERATOR

When calls ringing an operator group go unanswered, they can overflow to another destination after a programmed period of time. The operator group has its own timer. The overflow destination can be a station or station group.

STATION GROUP

When calls ringing a station group go unanswered, they can overflow to another destination after a programmed period of time. Each station group has its own timer. The overflow destination can be a station or station group.

PAGING

System software allows for the use of four internal and four external paging zones. Stations can page any individual zone, all internal zones, all external zones or all zones simultaneously. Using system programming, each station may be allowed or denied the ability to make and/or receive page announcements to/from any zone or combination of zones.

POWER FAILURE TRANSFER

Each Miscellaneous card is equipped with two power fail relays. If power fails, these relays can be used to reroute the first two C.O. lines on the card to single line telephones. When power is restored to the system, the lines and stations return to normal operation and calls in progress will be disconnected.

PRIME LINE SELECTION

Any station can be programmed to select a specific line, line group, telephone number, station or station group.

PRIVATE LINES

For private line use, stations can be prevented from dialling and/or answering any line.

PROGRAMMABLE LINE PRIVACY

Each outside line can be programmed to ignore the automatic line privacy. This allows up to four other parties to join your conversation by simply pressing the line button.

PROGRAMMABLE TIMERS

There are over 50 programmable system timers to allow each installation to be customised to best fit the end user's application.

RECALL KEY OPERATION

While a user is on an outside line, pressing the RECALL key will flash the central office or PBX. This is used for custom calling features on C.O. lines or in conjunction with CENTREX/PBX operation. System programming allows individual flash times for C.O. and PBX lines. When C.O. or PBX flash is not required, setting the timers for two seconds releases the existing call and returns dial tone to make a new call.

RECALLS
Calls put on hold, transferred or camped-on to any station will recall to the originating station if not answered within a programmable period of time. A recall that goes unanswered for the duration of the attendant recall timer will recall to the system operator group. Hold, transfer, camp-on and attendant recalls have individual programmable timers. Calls recalling to buttons with tri-coloured LEDs will flash amber.

REMOTE PROGRAMMING-PC
Remote programming allows the technician to access the system database from a remote location for the purpose of making changes to the customer data. Customer-provided modems and a PC using an optional software package is needed to implement this feature.

RING OVER PAGE
Any outside line can be programmed to ring over a customer-provided paging system. Outside lines, door phones and station groups may ring over page in the day or night mode.

SINGLE LINE CONNECTIONS
Single line ports allow for connection of a variety of single line telephones plus facsimile machines, answering machines, loud bells, computer modems, cordless phones and credit card machines. When connecting customer-provided equipment to these extensions, compatibility should be checked before purchasing to ensure correct operation. Central office ring cadence can be selected for SLT stations. This is helpful when optional devices cannot detect DCS intercom ring cadence.

SPEED DIAL NUMBERS
DCS has a library of 1500 speed dial numbers which may be allocated between the system list and stations as needed. The system list can have a maximum of 500 numbers and each station can have up to 50 numbers. Speed dial numbers are assigned in blocks of 10. Each speed dial number may contain up to 18 digits.
DCS COMPACT has a library of 500 numbers which can be allocated between the system list and stations as needed.

SPEED DIAL BY DIRECTORY
The DCS systems provide the user with the ability to look up a speed dial number and place the call. There are three speed dial selections: personal, system and station. This feature can be used with the soft keys on the display keysets or as a programmable button.

STATION HUNT GROUPS (30)
System programming allows for up to 30 station hunt groups. One of three rings-sequential, distributed and unconditional-is available for each group. Each unconditional group may contain a maximum of 32 stations and each sequential and distributed group may contain a maximum of 48 stations. A station may be assigned to more than one group. The default directory numbers to call these groups are 501-529. Group 500 is reserved for the operator group and is called by dialling "0". Each station group has its own recall timer for calls transferred to that group.

STATION MESSAGE DETAIL RECORDING (SMDR) (CALL LOGGING)
The systems provide, via an optional SIM, records of calls made, received and transferred. Connecting a customer-provided printer or call accounting system will allow collection of these records. Each call record provides the following details: station number, outside line number, start date, start time, duration of call, digits dialled (maximum 18), an account code (if entered) and call cost. (NOTE: Call cost is only available if relevant information is supplied by the network.) The system may print a header followed by 50 call records per page or send continuous records with no header for use with a call accounting machine. (See the sample printout at the end of this chapter.)

The SMDR format contains many options that allow it to be customised for a company's individual needs. Options to print include incoming calls, outgoing calls, in and out of group status, change in DND status and authorisation codes.

SYSTEM ALARMS
When installed in the basic KSU, each Miscellaneous card has an alarm sensor pair. When this pair is short-circuited, the system will ring a preprogrammed destination with a customised display message. The alarm destination can be a station or station group.

A DISA alarm warns the customer if the DISA security system has been triggered by too many incorrect password attempts. The alarm can ring any station or group of stations and show an appropriate display at the assigned stations.

SYSTEM DIRECTORY
Each station, station group and outside line can have an 11-character directory name. This name appears on keyset displays to provide additional information about lines and stations.

TENANT SERVICE (2)
There are several programs that allow the DCS to be installed in tenant applications. These features allow a technician to split the system in two with each tenant having individual control over operator groups, page zones, speed dial numbers, night service (manual or automatic), DISA, and customer-level programming. Each tenant is separate. No intercom calling between tenants is permitted.

TOLL RESTRICTION (CALL BARRING)
There are 500 allow and 500 deny entries of 11 digits each. Each of these entries can apply to dialling classes B, C, D, E, F and G. Expensive, premium rate and operator-assisted calls, as well as specific area and office codes, can be allowed or denied on a per-class basis. Class A stations have no dialling restrictions and Class H stations cannot make outside calls.

Any outside line may be programmed to follow station toll restriction or follow the toll restriction class assigned to it. Each station and trunk can have a day dialling class and a night dialling class.

TOLL RESTRICTION (CALL BARRING) OVERRIDE
Program options allow system speed dial numbers to follow or bypass a station's toll restriction class. In addition, users may make calls from a toll restricted station using either the Walking Class Of Service feature (see below) or the authorisation code feature.

TONE OR PULSE DIALLING
Outside lines can be programmed for either tone or pulse dialling to meet local telephone company requirements.

TRANSFER
System operation permits station users to transfer calls to other stations in the system. Transfers can be screened, unscreened or camped-on to a busy station.

TRUNK GROUPS (11)
Outside lines can be grouped for easy access by dialling a code or pressing a button. There are 11 trunk groups available. Access codes are 9 and 80-89.

UNIFORM CALL DISTRIBUTION (UCD/ACD)
UCD/ACD is used whenever the user expects to have more ringing calls than people to answer them. It prevents callers from receiving busy signals or lengthy delays before answering. Callers

reaching a busy station group are held in queue for an available agent. First and second announcements reassure the caller until an agent becomes free. Up to five separate UCD/ACD groups can be created. Programmable automatic logout removes a station from the group if a call is placed to an unattended station, thus preventing unanswered calls. A wrap-up timer prevents calls to a station for a programmable period of time to allow the agent to finish up work associated with the call.

NOTE: Requires optional hardware and/or software. Ask your dealer for details.

MAXIMUM OF TEN GROUPS

The UCD/ACD group option allows callers in queue at a UCD/ACD group to be diverted temporarily to a customer-provided announcement device and then placed back in the queue. A wrap-up timer allows agents to complete paperwork before receiving the next UCD/ACD call.

CALL STATISTICS

UCD/ACD supervisor positions using a display keyset can monitor the number of calls in queue, the time that the oldest caller has been waiting, the total number of calls received for the current day and the average time a caller waits to be answered.

AGENT STATISTICS

UCD/ACD supervisor positions using a display keyset can monitor the number of agents in a group and how many agents are currently logged in. Each station's status can be reviewed for the number of calls answered and the average call length of the current day.

GENERIC UCD/ACD STATISTICS

The following statistics report can be printed out on a per UCD/ACD group basis either once a day or on request by the supervisor.

STATISTICS

AVERAGE RING TIME.....	0.09
NUMBER OF TIMES ALL AGENTS BUSY.....	0
AVERAGE TIME IN QUEUE.....	0:00
TOTAL CALLS RECEIVED.....	1
LONGEST WAIT TIME.....	0:09

AGENT	CALLS RECEIVED	AVERAGE CALL TIME	RING TIME
202	1	1:37	0:09
203	0	0:00	0:00
204	0	0:00	0:00

GROUP SUPERVISORS

Multiple supervisors can be assigned to each group, or one station can be given supervisor status for multiple groups. The group supervisor (using a display keyset) can add and delete agents, in real time, to/from the group to handle the workload.

UNIVERSAL ANSWER

Station users may dial the Universal Answer code or press the UA key to answer any outside lines programmed to ring the UA device. The UA device can be a station, group of stations, common bell or ring over page.

VOICE MAIL INTEGRATION

The DCS system uses DTMF tones (inband signalling) to communicate with a third-party supplied compatible voice mail system. Stations can call forward to a voice mail system. When answered,

the system sends DTMF tones, routing the caller directly to the called station user's mailbox. Keyset users can press one button to retrieve messages from the voice mail system.

WALKING CLASS OF SERVICE (WCOS)

This feature allows users to make calls or use features from a station that is restricted. The users may either use the WCOS feature code or the authorisation code feature. Both methods change the class of service corresponding to the station passcode or authorisation code that is dialled. After the call is completed, this station returns to its programmed class of service.

5.3 STATION FEATURES

ADD-ON MODULE
APPOINTMENT REMINDER
AUTOMATIC HOLD
AUTOMATIC PRIVACY
BACKGROUND MUSIC
BUSY STATION CALLBACK
BUSY STATION INDICATIONS (BLF)
CALL FORWARDING
CALL PICKUP
DIAL BY NAME
DIRECT STATION SELECTION (DSS)
DO NOT DISTURB (PROGRAMMABLE)
DOOR LOCK RELEASE
EXCLUSIVE HOLD
GROUP LISTENING
HEADSET OPERATION
HEARING AID COMPATIBLE
LINE QUEUING WITH CALLBACK
LINE SKIPPING
LOUD RINGING INTERFACE
MESSAGE WAITING LIGHT/INDICATION
MUTE MICROPHONE/HANDSET
OFF-HOOK RINGING
OFF-HOOK VOICE ANNOUNCE
ONE TIME DO NOT DISTURB
ONE-TOUCH DIALLING KEYS
ON-HOOK DIALLING
PROGRAMMABLE KEYS
PROGRAMMED STATION MESSAGES
PROTECTION FROM BARGE-IN
PULLOUT DIRECTORY TRAY
PULSE TO TONE SWITCH OVER
REDIAL
- AUTO RETRY
- LAST NUMBER
- SAVE NUMBER

RING MODES
- AUTO ANSWER
- RING-EIGHT TONE CHOICES
- VOICE ANNOUNCE

RINGING PREFERENCE
SPEAKERPHONE
STATION LOCK
TRI-COLOURED LIGHTS
VOICE DIALLER*
VOLUME SETTINGS
- HANDSET
- BGM
- RINGING
- PAGING
- SPEAKER
- OFF-HOOK RING

WALL-MOUNTABLE KEYSETS

(* Requires optional Voice Dialler card. Ask your dealer for details.)

5.4 STATION FEATURE DESCRIPTIONS

ADD-ON MODULE
The DCS add-on module (AOM) adds to the capability of any keyset or can be used by itself whenever a handset and dial pad are not desired. The 48 programmable buttons can be used for feature keys, DSS/BLF keys or one-touch speed dial buttons.

APPOINTMENT REMINDER
Keysets with an alarm key can be used like an alarm clock. When programmed for a specific time, the keyset will sound a distinctive ring to remind you of meetings or appointments. Alarms can be set for "today only" or for every day at the same time. Up to three alarms may be set at each keyset. Display keysets can also show a programmed message when the alarm rings.

AUTOMATIC HOLD
Station users can enable or disable automatic hold at their keysets. While a user is engaged on an outside (C.O.) call, pressing another trunk key, route key or CALL button automatically puts the call on hold when this feature is enabled. Pressing TRSF, CONFERENCE, PAGE or a DSS key will always automatically place the call on hold. This type of automatic hold is not a user-selectable option.

AUTOMATIC PRIVACY
All conversations on outside lines and intercom calls are automatically private. The privacy feature can be turned off on a per-line basis.

BACKGROUND MUSIC
When customer-provided music sources are connected, each keyset user may listen to background music. The HOLD button turns background music on or off and the volume is controlled by the volume control keys. The number of music sources is dependent on the number of Miscellaneous cards installed in the system. Chime music is available from the Miscellaneous card.

BUSY STATION CALLBACK
When reaching a busy station, callers may request a callback by pressing one button or dialling a code. The system rings the caller back when that station becomes idle (a system-wide maximum of 100 callbacks are allowed at one time, including busy station and busy trunk).

BUSY STATION INDICATIONS (BLF)
DSS/BLF keys may be assigned to any keyset or add-on module. These buttons will be off when the station is idle, light red when that station is in use and flash distinctively when that station is in DND mode.

CALL FORWARDING
Station users can forward internal and outside calls to other destinations immediately (**Forward All**), when busy (**Forward Busy**) or when not answered within programmable duration (**Forward No Answer**).
These forward destinations can all be different. Once a destination has been programmed, it can be turned on and off with a programmable key. Forward All Calls takes priority over Busy and No Answer conditions.

In addition to the three usual methods of forwarding described above, a fourth option called Follow Me is available. This option allows station users to set a Forward All condition from his/her station to another station while at the remote station. To display the Follow Me condition, the TRSF key lights steady red at the station that is forwarded. The TRSF key also lights if Forward All is set and no key is programmed for Forward All.

Keyset users can also be given an external call forward button to forward their calls to an external phone number. Each outside line may be programmed to either follow or ignore station call forwarding. A per-station option controls whether internal calls forward to voice mail or not. Single line telephones must have the system administrator program this feature for them.

CALL PICKUP
With directed call pickup, a user can answer calls ringing at any station by dialling a code plus that extension number. The group pickup feature allows the user to answer any call ringing within a pickup group. Pickup keys may be customised with extenders to allow pickup from a specific station or pickup group. The DCS has 20 programmable pickup groups.

DIAL BY NAME
Each system and personal speed dial number can have an associated directory name. A speed dial number can be selected by scrolling alphabetically through the directory name list. This on-line “directory” allows the user to look up and dial numbers in seconds.

DIRECT STATION SELECTION (DSS)
Programmable keys can be assigned as DSS keys and associated with extension numbers. Users press these keys to call or transfer calls to the assigned stations.

DO NOT DISTURB (PROGRAMMABLE)
The Do Not Disturb (DND) feature is used to stop all calls to a station. System programming can allow or deny use of the DND feature for each station. Parties calling a station in DND will receive reorder tone. A keyset without a DND button can activate DND via the feature access code. The ANS/RLS key will flash at 112 ipm (rapidly) when DND is set. There is a programmable option to allow a C.O. line to override DND at its ring destination if that destination is a single station.

DOOR LOCK RELEASE
Stations programmed to receive calls from a door phone can dial a code to activate a contact closure for control of a customer-provided electronic door lock.

EXCLUSIVE HOLD
Pressing the HOLD button twice will hold a call exclusively at a station so no other station can pick up that call. Intercom calls are automatically placed on exclusive hold.

GROUP LISTENING
This feature allows users to turn on the speaker while using the handset. This allows a group of people to listen to the distant party over the speaker without the microphone turned on.

HEADSET OPERATION
Every keyset can be programmed to allow for the use of a headset. In the headset mode, the hookswitch is disabled and the ANS/RLS key is used to answer calls. ANS/RLS key lights steady red when the keyset is in headset mode.
Headset operation can also be achieved using a third-party supplied headset adapter.

HEARING AID COMPATIBLE
All DCS keysets are hearing aid compatible.

LINE QUEUING WITH CALLBACK
When the desired outside is busy, the user can press the CALLBACK key or dial the access code to place his/her station in a queue. The user will be called back when the line is available (a maximum of 100 callbacks are allowed system-wide at one time including busy station and busy trunk).

LINE SKIPPING
When the user is talking on an outside line and the automatic hold feature is turned off, he/she may press an idle line key and skip to that line without causing the previous call to go on hold.

LOUD RINGING INTERFACE
Each Miscellaneous card provides a ring output that may be connected to a customer-provided amplifying device. The output can then be assigned to ring with a specific station to provide loud ringing capability.

MESSAGE WAITING LIGHT/INDICATION
When a message indication is left at a keyset, the MESSAGE button will slowly flash red. Single line telephones will receive a distinctive dial tone to notify them that a message is waiting. Message waiting indications can be left for any station or group of stations.

MUTE MICROPHONE/HANDSET
Any keyset user can mute the keyset's handset transmitter by pressing the MUTE key. In addition, keyset users can also mute the keyset microphone while the keyset is in speakerphone mode.

OFF-HOOK RINGING

When a keyset is in use, the system will provide an off-hook ring signal to indicate that another call is waiting. The ring signal is a single ring repeated. The interval is controlled by a system-wide timer. Single line stations will receive a tone burst through the handset receiver instead of a ring.

OFF-HOOK VOICE ANNOUNCE (OHVA)
Keysets may receive a voice announcement while on another call. The calling station must have an OHVA key. When transferring a call to a busy keyset or while listening to busy signal, the station user can press the OHVA key to make an OHVA call to the busy keyset. If the called keyset is in the DND mode, it cannot receive OHVA calls.

ONE TIME DO NOT DISTURB
The Do Not Disturb (One Time) feature is used to stop all calls to a station when the user is on an outside line and does not want to be disturbed for the duration of the call. Upon completion of the call, DND is cancelled and the station is returned to normal service. This feature requires a programmed button.

ONE-TOUCH DIALLING KEYS
Frequently-used speed numbers can be assigned to one-touch dialling keys for fast accurate dialling.

ON-HOOK DIALLING
Any keyset user can originate calls without lifting the handset. When the called party answers, the user may speak into the microphone or lift the handset for more privacy.

PROGRAMMABLE KEYS
LCD 24B and STD 24B keysets have 24 programmable keys; LCD 12B and STD 12B keysets have 12; STD 6B keysets have 6. Each key can be programmed for over 25 different uses to personalise each phone. Examples of keys include individual outside line, individual station, group of lines, group of stations and one-touch speed dial buttons. Using these keys eliminates dialling access codes.

The following feature keys have extenders that make them more specific: SPEED DIAL, SUPERVISOR, PAGE, DSS, DIRECTED PICKUP, GROUP PICKUP, DOOR PHONE, BOSS, PROGRAMMED MESSAGE, IN AND OUT OF GROUP and FORWARD. The extender can be a station, a group or another identifying number.

PROGRAMMED STATION MESSAGES
Any station may select one of 20 messages to be displayed at a calling party's keyset. Ten messages are factory-programmed and the remaining 10 can be customised by the system administrator (16 characters maximum).

NOTE: The calling party must have a display keyset to view these messages.

PROTECTION FROM BARGE-IN
Each station can be programmed as secure or not secure. Secure stations cannot be barged-in on. A station that is not secure cannot be barged-in on when talking to a secure station.

PULLOUT DIRECTORY TRAY
A pullout directory tray is conveniently located beneath all keysets. It is used to record station directory names and speed dial numbers.

PULSE TO TONE SWITCH OVER
When dialling a number on a dial pulse network, a station user can dial # and the DCS system will begin to send DTMF.

REDIAL
There are three types of external redial available to all station users. Each type can redial up to a maximum of 18 digits.

- AUTO RETRY - When an outside number is dialled and a busy signal is received, the auto retry feature can be used to reserve the outside line and automatically redial the number for a programmable number of attempts.
- LAST NUMBER - The most recently dialled number on a C.O. line is saved and may be redialled by pressing the redial key or dialling the LNR access code.
- SAVE NUMBER - Any number dialled on a C.O. line may be saved for redial at a later time.

RING MODES
Each keyset user can select one of three distinct ways to receive intercom calls. The phone can automatically answer on the speakerphone, voice announce through the speaker or receive ringing. When the ring mode is selected, keyset users can choose one of eight distinct ring tones. Forced Auto Answer is invoked by the calling station and is controlled by the calling station's class of service.

RINGING PREFERENCE
Lifting the handset or pressing the ANS/RLS button automatically answers a call ringing at the keyset. Using this method, users are assured of answering the oldest call first. When ringing preference is turned off, the user must press the flashing button to answer. Users may answer ringing lines in any order by pressing the flashing button.

SPEAKERPHONE
LCD 24B, STD 24B, LCD 12B and STD 12B keysets all have a built-in speakerphone. This speakerphone enables calls to be made and received without the use of the handset.

STATION LOCK
With a programmable personal station passcode, any keyset can be locked and unlocked. A locked keyset cannot be used to make or receive calls.

TRI-COLOURED LIGHTS
LCD 24B and STD 24B keysets have 16 keys equipped for tri-coloured LED indications (green, red and amber). LCD 12B and STD 12B models have six of these keys. To avoid confusion, your calls always light green, other calls show red and recalls light amber. Basic 6B keysets are provided with red LEDs only.

VOICE DIALLER
The DCS can provide a station user the ability to place calls by speaking one of the names stored in his/her personal speed dialling bins. Non-display and single line stations can access this feature by dialling a feature code.

NOTE: Requires Voice Dialler card. Ask your dealer for details.

VOLUME SETTINGS
Each keyset may separately adjust the volume of the ringer, speaker, handset receiver, background music, page announcement and off-hook ring tone.

WALL-MOUNTABLE KEYSETS
Every keyset and add-on module comes equipped with a reversible base wedge that can be utilised as a wall-mount bracket.

5.5 DISPLAY FEATURES

ACCOUNT CODE DISPLAY
CALL DURATION TIMER
CALL FOR GROUP IDENTIFICATION
CALL PROCESSING INFORMATION
CLIP INFORMATION
CALLING PARTY NAME
CALLING PARTY NUMBER
CONFERENCE INFORMATION
DATE AND TIME DISPLAY
DIALLED NUMBER
ENHANCED STATION PROGRAMMING
IDENTIFICATION OF RECALLS
IDENTIFICATION OF TRANSFERS
MESSAGE WAITING CALLER NUMBER
OUTSIDE LINE IDENTIFICATION
OVERRIDE IDENTIFICATION
PROGRAMMED MESSAGE DISPLAY
SOFT KEYS
STOPWATCH TIMER
UCD/ACD SUPERVISOR DISPLAYS

5.6 DISPLAY FEATURE DESCRIPTIONS

ACCOUNT CODE DISPLAY
Account codes are conveniently displayed for easy confirmation. If entered incorrectly, users may press the ACCOUNT key again and reenter the account code.

CALL DURATION TIMER
The system can automatically time outside calls and show the duration in minutes and seconds. Station users may manually time calls by pressing the TIMER button.

CALL FOR GROUP IDENTIFICATION
When a call is made to a station group, the display shows [CALL FOR GROUP] and the user's group number. These calls can be answered with a different greeting than calls to the user's extension number.

CALL PROCESSING INFORMATION
During everyday call handling, the keyset display will provide information that is helpful and in some cases invaluable. Displays such as [CALL FROM 203], [TRANSFER TO 202], [701: RINGING], [TRANSFER FM 203], [708 busy], [Camp on to 204], [Recall from 204], [Call for 501], [message from 204] and [FWD ALL to 204] keep users informed of what is happening and where they are. In some conditions, the user is prompted to take action and in other cases the user receives directory information.

CLIP INFORMATION
CLIP information is dependent on the use of LCD keysets. The following list explains the displays that are used with CLIP.

NAME/NUMBER DISPLAY
Each display keyset user can decide if he/she wants to see the CLIP name or CLIP number in the display. Regardless of which one is selected to be seen first, the N/N key is pressed to view the other piece of CLIP information.

NEXT CALL
In the event that there is a call waiting or a camped-on call at your keyset, you can press the NEXT key to display the CLIP information associated with this next call in queue at the station. Either the CLIP name or CLIP number will show in the display depending on your N/N selection.

SAVE CLIP NUMBER

At any time during an incoming call that provides CLIP information, you may press the SAVE key. This saves the CLIP number in the Save Number feature. Pressing the SAVE number redial key will dial the CLIP number.

STORE CLIP NUMBER

At any time during an incoming call that provides CLIP information, you may press the STORE key. This saves the CLIP number as a speed dial number in the personal speed dial list.

INQUIRE PARK/HOLD

When a user is informed that an incoming call is on hold or has been parked, the user may view the CLIP information before he/she retrieves the call. This will influence how the user choose to handle the call.

CLIP REVIEW LIST

This feature allows display keyset users to review CLIP information for calls sent to their stations. This list can be from 10 to 50 calls in a first-in, first-out basis. The list includes calls that were answered and calls that rang the user's station but were not answered. When reviewing this list, the user can press one button to dial the person back.

INVESTIGATE

This feature allows selected stations with a special class of service to investigate any call in progress. If CLIP information is available for an incoming call, the selected stations can know to whom the DCS user is speaking. On outgoing calls, the selected stations can see who was called. After investigating, the selected stations may barge-in on the conversation, disconnect the call or hang-up.

ABANDON CALL LIST (50)

The DCS has a system-wide abandon call list that stores CLIP information for the last 50 calls that rang but were not answered. The list is accessed using the operator's passcode. When reviewing this list, you are provided options to CLEAR the entry or DIAL the number. You can use the NND key to toggle between the CLIP name, CLIP number and the date and time the call came in.

CALLING PARTY NAME

For intercom calls, LCD 24B and LCD 12B keysets show the calling party's name before answering. The names must be stored in the system directory list and can be up to 11 characters long.

CALLING PARTY NUMBER

When an intercom call is received, all display stations show the calling party's extension number before the call is answered.

CONFERENCE INFORMATION

When a conference is set up, each extension and outside line number is displayed at the controlling station when it is added. When a station is added, its display shows [Conf with xxx] - alerting the user that other parties are on the line.

DATE AND TIME DISPLAY

In the idle condition, the current date and time are conveniently displayed. Display keysets can have 12- or 24-hour clock in either ORIENTAL or WESTERN display format with information shown in uppercase or lowercase letters.

DIALLED NUMBER

When an outside call is made, digits are displayed as the user dials them. If the display indicates an incorrect number was dialled, the user can quickly hang up before billing begins.

ENHANCED STATION PROGRAMMING
Personal programming options are easier to select and confirm with the help of the display.

IDENTIFICATION OF RECALLS
Hold recalls and transfer recalls are identified differently from other ringing calls. Hold recalls indicate the recalling line or station number and the associated name. Transfer recalls indicate the recalling line or station and where it is coming from.

IDENTIFICATION OF TRANSFERS
The display identifies who transferred a call to the user.

MESSAGE WAITING CALLER NUMBER
When the message indication is on, pressing the MESSAGE button displays the station number(s) of the person(s) who have messages for the user. Display keyset users can scroll up and down to view message indications.

OUTSIDE LINE IDENTIFICATION
Each line can be identified with an 11-character name. Incoming calls display this name before the call is answered. This feature is helpful when individual lines must be answered with different greetings.

OVERRIDE IDENTIFICATION
If another station barges-in on a user's conversation, the display alerts the user with a [Barge from 2xx] display if the system is set for barge-in with tone.

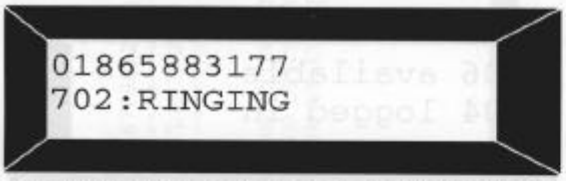
PROGRAMMED MESSAGE DISPLAY
Preprogrammed station messages set by other stations are displayed at the calling station's keyset.

SOFT KEYS
Below the display are three soft keys and a SCROLL button. These keys allow the user to access features in his/her class of service without requiring the keyset to have designated feature keys.

STOPWATCH TIMER
Display keyset users find this feature very convenient to time meetings, calls and other functions. Users simply press once to start the timer and press again to stop the timer.

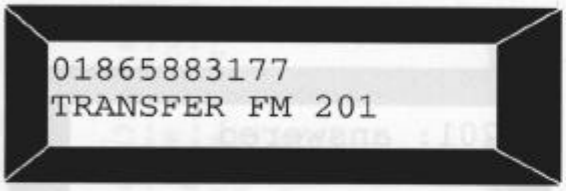
UCD/ACD SUPERVISOR DISPLAYS
With the optional AA card, when UCD/ACD is used, multiple supervisors can view useful statistics about the UCD/ACD group. Statistics are broken down into agent or calls. Agent statistics allow the supervisor to monitor and change the status (in group, out of group and DND) of any agent, or view each agent's total number of calls or average call length. Call statistics allow the supervisor to view how many calls are in queue, the longest wait time, how many calls have been received today and the average time in queue.

SAMPLE CLIP DISPLAYS



This display shows an incoming call from 01865-883177 on line 702 ringing directly at your station.

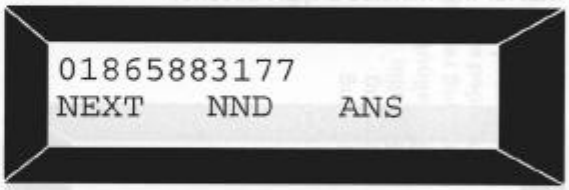
This display shows the information on the abandoned call list. This call came in on May 25 at 9:41 A.M. on line 702. The user can CLEAR the entry, DIAL the caller back or examine further NND information.



This display shows a call from 01865-883177 that has been transferred to you from station 201.

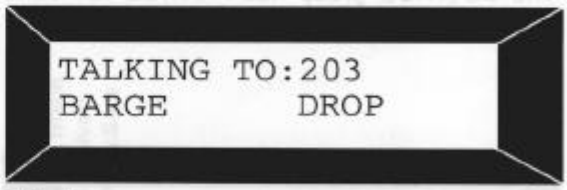
This display shows an entry in a station review list showing the three initial options. The arrow indicates other options available to you by pressing the SCROLL key.

This display shows an investigation of a station that is talking to Samsung Telecom. Investigator can BARGE-in to the conversation, DROP the call from the system or examine further NND information.

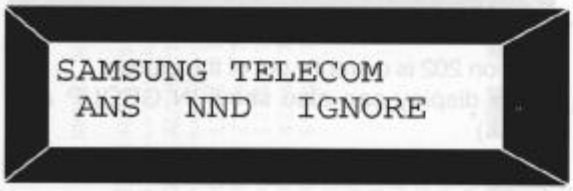


This display is seen while examining calls in queue at your keyset.

This display shows an incoming call from Samsung Telecom ringing at group 500.

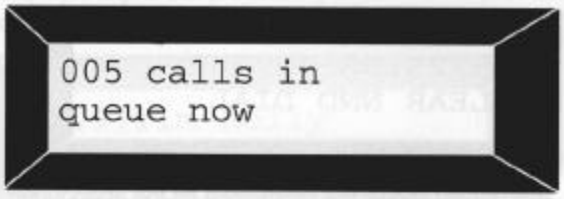


This display can be seen when investigating an intercom call. The investigator can BARGE-in or DROP the connection.

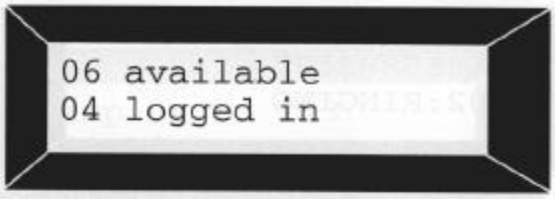


This display is seen while using the INQUIRE feature. It shows the three options available while you are checking on a held or parked call.

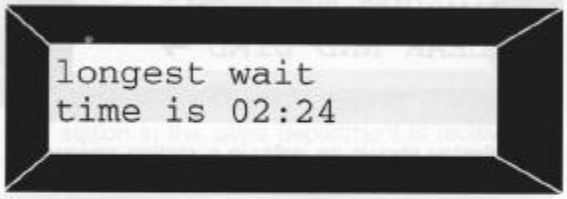
SAMPLE UCD DISPLAYS



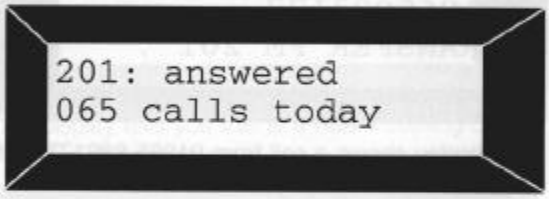
There are five calls currently waiting to be answered by the UCD/ACD group.



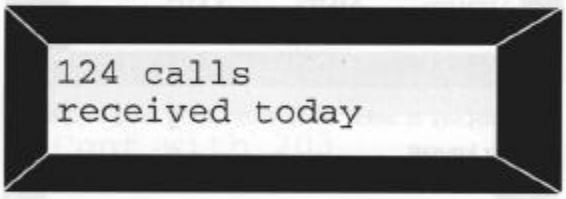
There are six members in the group.
Four of the members are currently logged in.



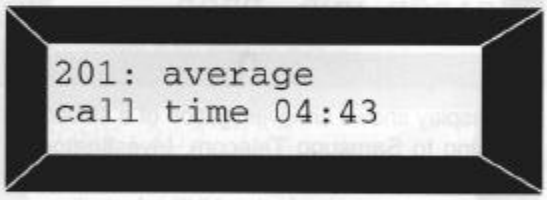
The longest call on hold (waiting to be answered) was for two minutes and 24 seconds.



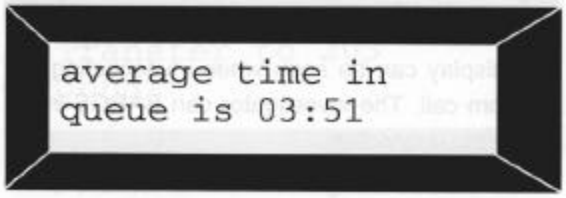
The agent at station 201 has answered 65 calls today.



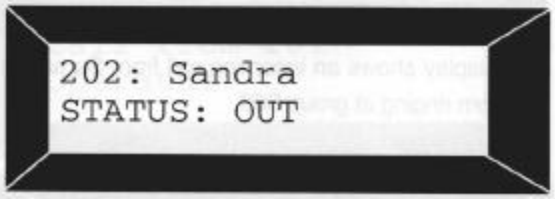
The UCD/ACD group has received 124 calls today.



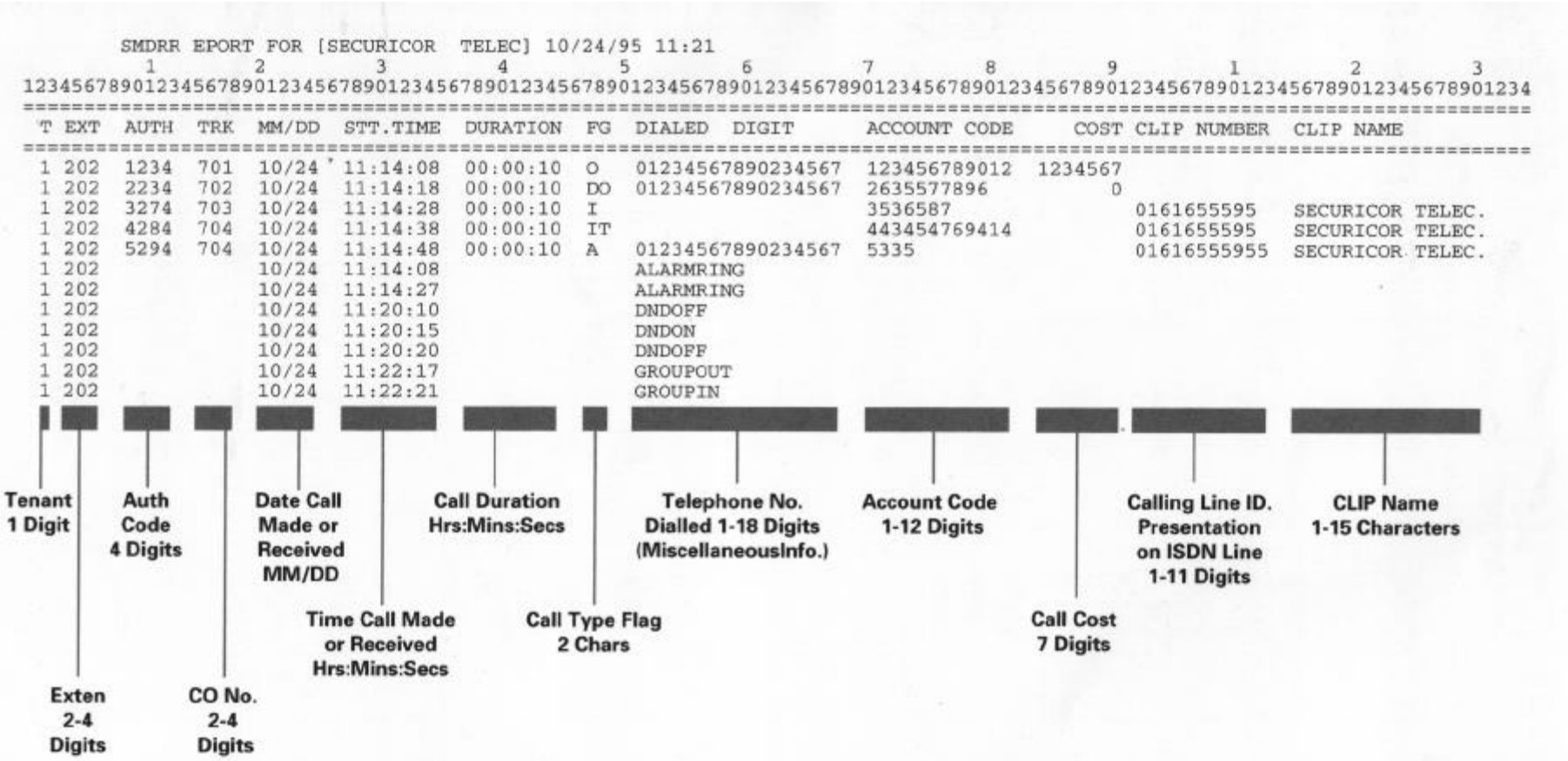
The average call length for station 201 is four minutes and 43 seconds.



The average time on hold (waiting to be answered) is three minutes and 51 seconds.



Station 202 is currently out of the group.
(The display can also show IN GROUP and DND.)



Call Type Flag Definitions

O	Outgoing	DE	DISA call with error
I	Incoming	T	Transfer
DI	DISA callin	IT	Incoming Transfer
DO	DISA callout	FI	Incoming call forwarded to an external number
FO	Outgoing record of forwarded call	OT	Outgoing Transfer
A	Abandoned call	IA	Incoming Answer


SAMSUNG
ELECTRONICS