

DCS

Compact II

DIGITAL COMMUNICATION SYSTEM

GENERAL DESCRIPTION





SAMSUNG ELECTRONICS CO. LTD.

Publication Information

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PART 1. SYSTEM OVERVIEW

1.1 INTRODUCTION

DCS Compact II, 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 Compact II employs the very latest DSP technology (Digital Signal Processors).

DCS Compact II 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 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 utilize 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 all systems. Any differences between the systems are indicated under separate headings 'DCS Compact II' 'DCS COMPACT' and 'DCS'.
2. It is not possible to expand from DCS Compact II to a DCS system nor to expand from DCS Compact to DCS Compact II.
3. In general, DCS Compact II can accommodate DCS Compact interface cards but to be assured you should have contact to the local suppliers or distributors.

1.2 SIZE AND CONFIGURATION

The DCS Compact II system consists of the basic Key Service Unit, an Expansion cabinet and Interface cards and Digital keysets. The Key Service Unit begins with eight (8) keyset ports expandable to 18 analogue C.O. line ports, or 24 lines if 4 BRI cards are used, or 32 stations. In addition, up to 8 keyset daughter boards may be added to the system along with the optional 2 SLI card.

The Expansion cabinet has three Universal slots and one DCS slot for PRI or VM service, which provides the maximum configuration of 66 ports with analogue trunk lines or 88 ports with Digital trunk lines.

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.

The system also has an optional Miscellaneous card which provides Music on Hold facilities, two serial I/O ports and other useful facilities.

The following charts (Figures 1-1 and 1-2) describe configurations using the basic Key Service Unit (KSU), an Expansion cabinet and expansion cards. However, by using the DCS's unique keyset daughter boards (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 8 KDBs in the system. Using this method allows the DCS Compact II to expand to a maximum of 64 stations. Adding the optional 2 SLI card to the KSU provides a further two SLI ports. The combination of the basic 008 KSU plus three expansion cards in the KSU plus three expansion cards and one DCS card in the Expansion cabinet plus 8 KDBs plus a 2 SLI card provides a maximum configuration of 88 ports plus Miscellaneous card.

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 Key Service Unit and the additional three expansion cards and a DCS card like as PRI can be installed in the Expansion cabinet.
4. Only 8 KDBs can be installed in the keysets connected to the 008 Basic KSU.
5. If a PRI card is installed in the DCS card slot, the last expansion slot of the Expansion cabinet should remain blank.

Figure 1-1 DCS Compact II Configuration Matrix Table
(with Analogue Trunks)

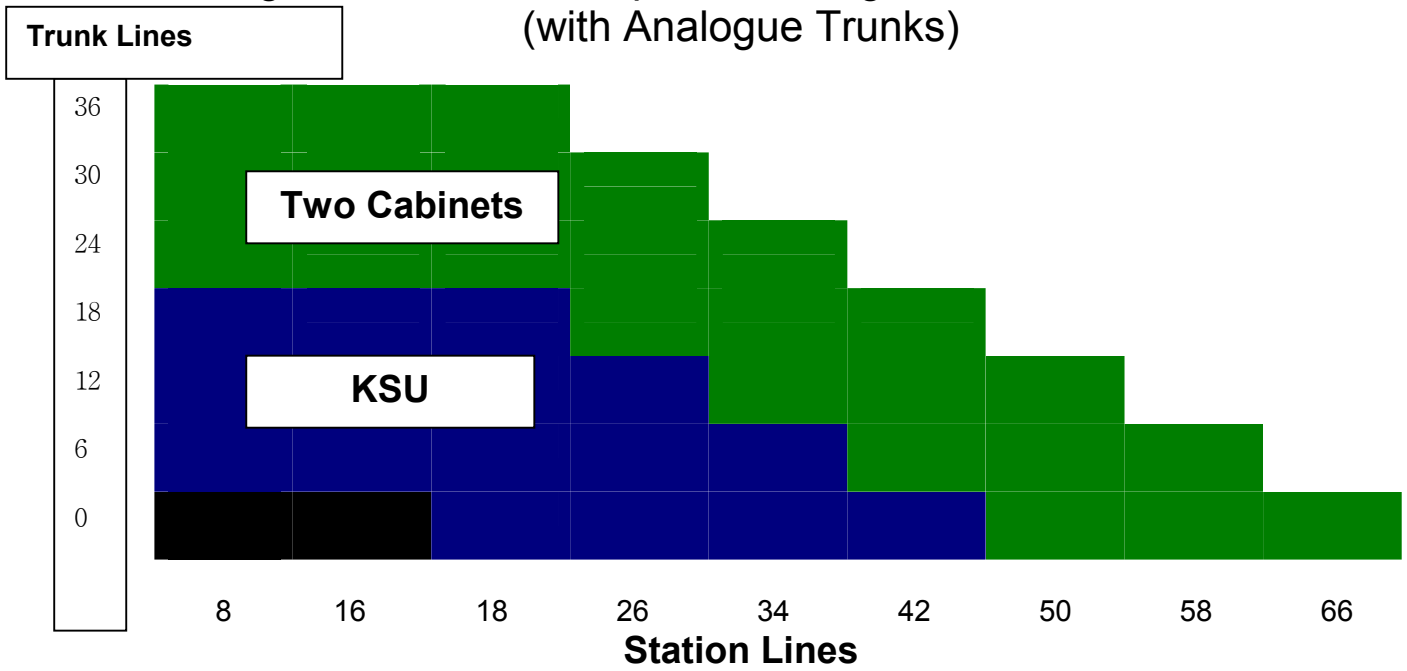


Figure 1-2 DCS Compact II Configuration Matrix Table
(with Digital Trunks)

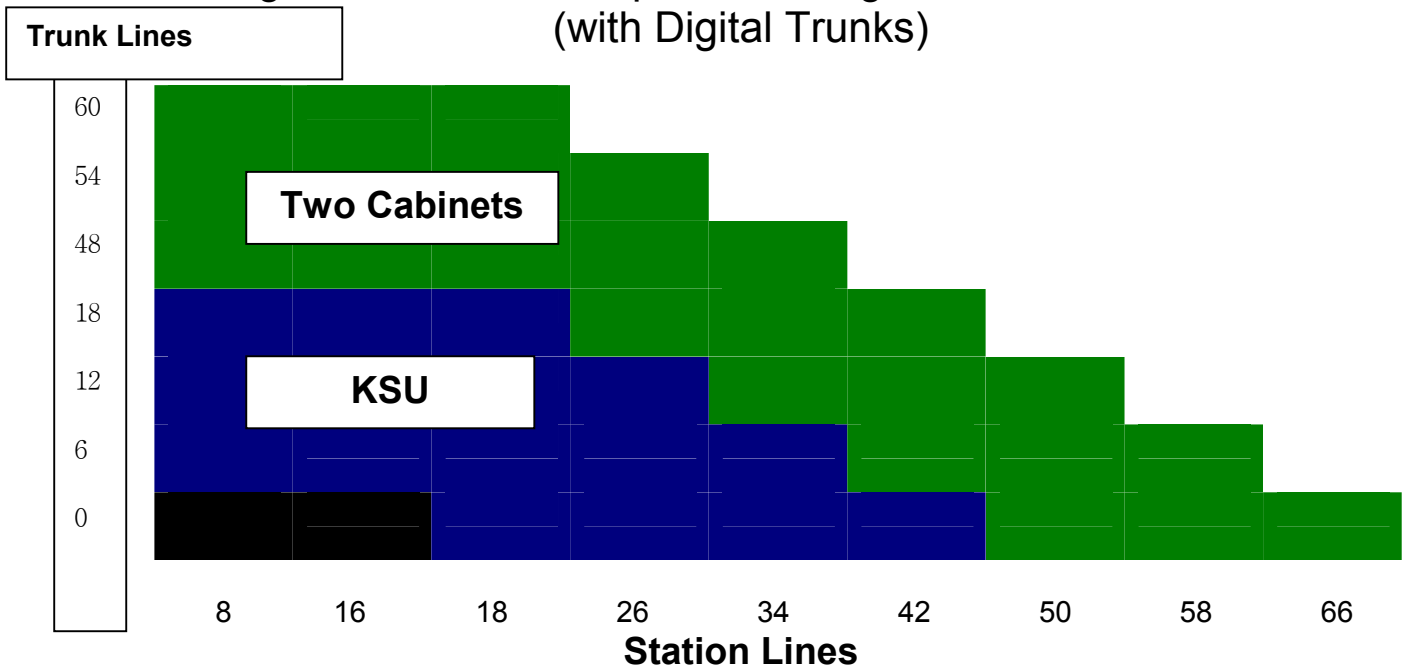
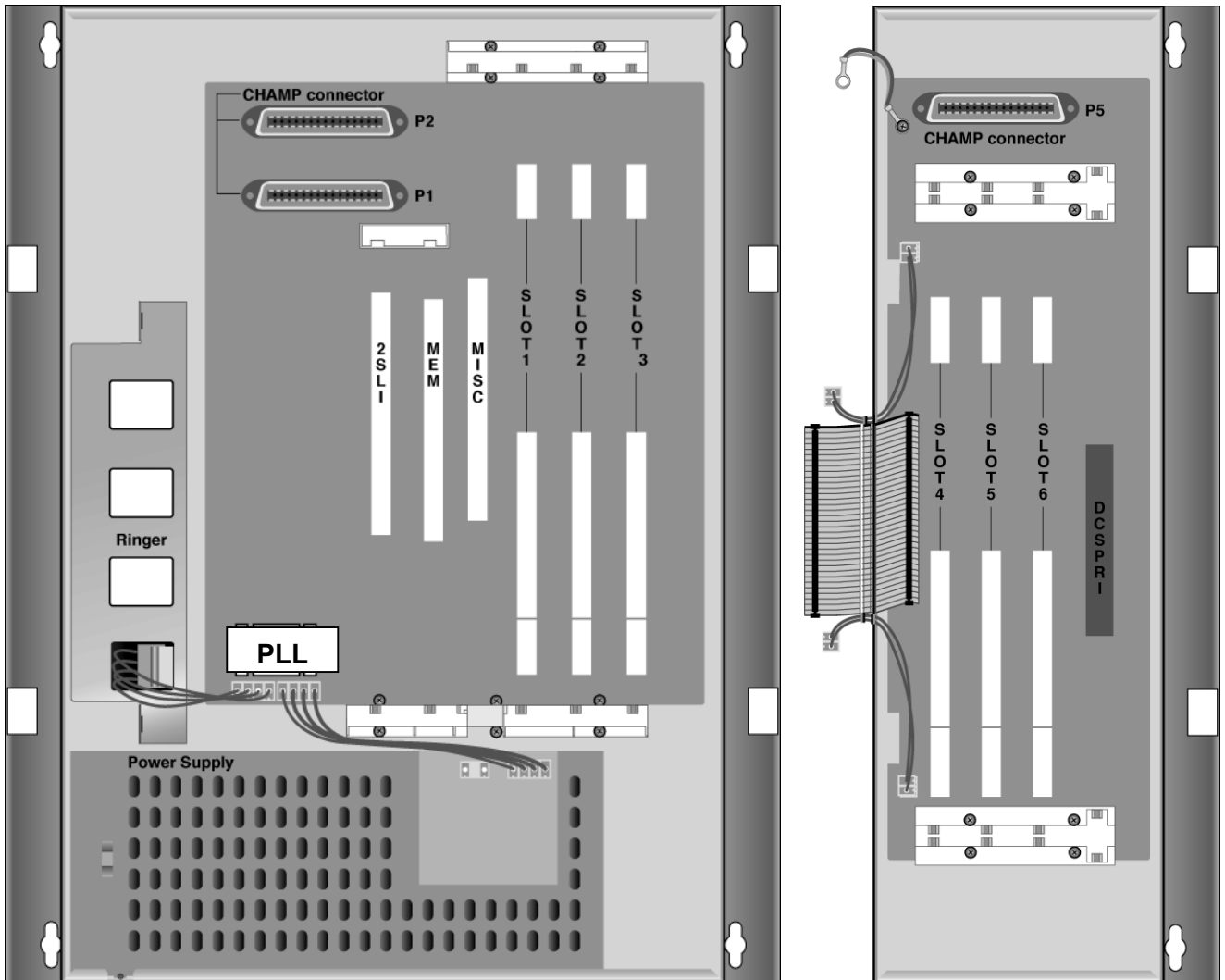


Figure 1-3 DCS Compact II System Configuration



DCS Compact II Configuration Notes

1. Only one 2 SLI card can be installed in the KSU.
2. Only one MISC card can be installed in the KSU.
3. Only three expansion cards can be installed in the KSU and the additional can be added in the Expansion cabinet when expanded.
4. Only 8 KDBs can be installed in the keysets connected to the Basic KSU.
5. ISDN cards (BRI and PRI) require a PLL card installed in the KSU.
6. A PRI card installed in the DCS card slot of the Expansion cabinet requires the last expansion slot (the third one) remains blank.
7. A maximum of 40 keysets can be installed.

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 utilize 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.

An additional four DSPs are added when a MISC card is installed. This means that the system contains a total of 8 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 Compact II uses distributed processing. The primary processor of the system is a 16-bit Motorola[®] MC68000 operating at a clock speed of 16 MHz. Secondary processing is in the some special cards like as BRI and also done in the keysets. The digital keyset uses a Hitachi H8 processor for data communication within the DCS Compact II.

1.5 PROGRAMMING

DCS Compact II is self-configuring. This means that when the power is switched ON, the system 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 customizes 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 Compact II also allows the use of a proprietary computer program called PCMMC. This permits a technician to program the system using a personal computer. PCMMC 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 can access a DCS Compact II 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 II - HARDWARE DESCRIPTIONS

2.1 KEY SERVICE UNIT (KP70D-M1/)

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

- A power supply
- Processing and switching
- Eight 2B+D digital keyset interfaces
- A removable MEM card, containing 2 Mbyte Program memory, 512 Kbyte Data memory with a back-up super capacitor, real time clock, a monitor LED and a RAM clear switch
- One Internal Music source or an External Music interface for Music-on-Hold and Background Music
- One External Page interfaces
- One general-purpose Dry contact
- Three universal expansion slots, a MEM card slot, a 2 SLI card slot and a MISC card slot
- 2 Champ connectors for external connections and other connectors for the Expansion cabinet and the Ring Generator Unit

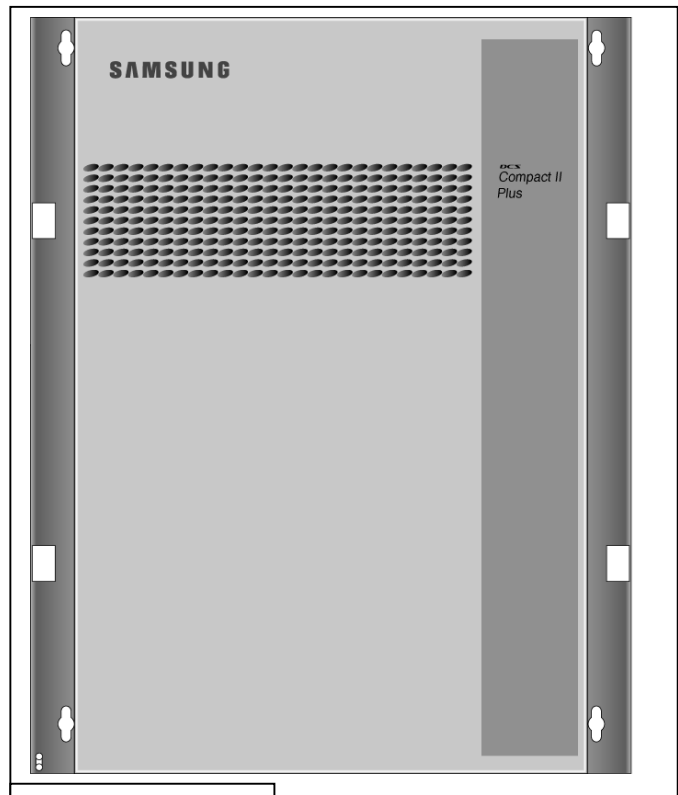


Figure 2-1

Ring Generator Unit **RGU1 (KP70D-BRG1/) or RGU2 (KP70D-BRG2/)**

Two kinds of sinusoidal-waveform Ring Generator Units are available. KP70D-BRG1 drives 3W ring signals while the other provides 20W ring signals. The larger unit is required when a large number of single line telephones are operating behind the system.

MISC card **MISC 1 (KP70D-BMI1/) or MISC 2 (KP70D-BMI2/)**

One dedicated slot in the Basic KSU is for an MISC card and two kinds of MISC cards are available. The MISC 1 card contains one additional External Music Interface for MOH or BGM, one additional External Page Interface, one Alarm Sensor Detection circuitry, three General-purpose Dry contact relays, two RS232C Serial interfaces with connectors for PCMMC and SMDR and MODEM card interface. The MISC 2 card is similar to the MISC 1 card but is also equipped with a built-in 4-ch AA function.

It is strongly recommended that this card be used in situations requiring heavy single line telephone use.

MODEM card (KP70D-BMO/)

One built-in MODEM card can be installed in a MISC card.

PLL card (KP70D-BPL/)

Any ISDN card, that is a BRI or a PRI, requires the PLL card which can be installed in a dedicated place on the KSU motherboard.

2.2 EXPANSION Cabinet (KP70D-M2/)

One metal Expansion cabinet can be attached to the Key Service Unit for expansion. It consists of three Universal expansion slots and one DCS card slot for PRI or VM. The Expansion cabinet connects to the KSU via a 64-pin flat cable, two 2-wire power connections and a F-GND connection. It contains a 50-pin champ connector for external connections. Please note that a DCS card has its own connector and the plastic case should be removed before installed.

2.3 INTERFACE CARDS

2 SLI card (KP24D-B2S/)

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. Please note that this is a DCS Compact card.

3 TRK card (KP70D-B3T/)

The 3 TRK card provides three loop start C.O. interfaces with optional Caller ID relays. The first two C.O. interfaces are equipped with PFT relays. Each interface contains an interface for MPD or PRS which is optional. The MPD or PRS hybrid chips of the DCS system can be used.

6 TRK card (KP70D-B6T/)

The 6 TRK card provides six loop start C.O. interfaces. The first two C.O. interfaces are equipped with PFT relays. Each interface contains an interface for MPD or PRS which is optional. The MPD or PRS hybrid chips of the DCS system can be used.

4 BRI card (KP70D-B4B/)

The 4 BRI card contains four Basic Rate access ports, i.e. eight ISDN channels. Protocol is compatible for Euro-ISDN BRI. For So application, power feeding to ports is selectable by programming.

2 BRI card (KP70D-B2B/)

The 2 BRI card contains two Basic Rate access ports, i.e. four ISDN channels. Protocol is compatible for Euro-ISDN BRI. For So application, power feeding to ports is selectable by programming.

PRI card (KP70D-BP/)

The PRI card contains one Primary Rate access ports, i.e. thirty ISDN channels. Protocol is compatible for Euro-ISDN PRI. It is the DCS PRI card without the plastic case.

8 DLI card (KP70D-B8D/)

The 8 DLI card provides eight DLI ports.

8 SLI card (KP70D-B8S/)

The 8 SLI card provides eight SLI ports for industry-standard single line telephones and the ability to provide a loop disconnect signal. Please note that this card does not provide Long Line protection.

6 MWSLI card (KP70D-B6S2/) Available from July, 1998

The 6 MWSLI card provides six SLI ports for industry-standard single line telephones and the ability to provide a loop disconnect signal and a message waiting signal. Please note that this card does not provide Long Line protection.

KDb-DLI, KDb-SLI card

The KDb-DLI board or KDb-SLI board, if installed in a digital keyset connecting to the Basic KSU, provides a second DLI or SLI port.

DCS Compact cards

Most DCS Compact cards are compatible with the DCS Compact II system. Please contact your local supplier or service agent for details.

DCS cards

Among the DCS cards, a PRI card a VM card can be installed in the DCS card slot of the Expansion cabinet. Please be note that the VM card is under development and will be available soon.

2.4 SPECIFICATIONS

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

ELECTRICAL SPECIFICATIONS	
AC INPUT	220 VAC \pm 20%, 48-63 Hz or Free Input Voltage for some countries.
POWER CONSUMPTION (MAX)	100 WATTS MAX
DC OUTPUT	FUSE RATING 2.0 AMP +5 VOLTS 2.5 AMPS MAX -5 VOLTS 0.5 AMPS MAX (on the Motherboard) -55 VOLTS 1.2 AMPS MAX -54 VOLTS 0.4 AMPS MAX

DIMENSIONS AND WEIGHTS				
	HEIGHT	WIDTH	DEPTH	WEIGHT
	(mm)	(mm)	(mm)	(kg)
SINGLE CABINET	464	365	148	7.5
TWO CABINETS	464	467	148	12.5
DIGITAL KEYSSET (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.

The details of system tones may vary according to the specifications of each country.

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

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)*							
NO. OF STATIONS	UPS CAPACITY IN VOLT AMPS (VA)						
	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. STATION EQUIPMENT

3.1 LCD 24B Model Keypad (Figure 4-1)

- Built-in speakerphone
- 24 programmable soft keys (16 with tri-colored 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 keypad
- Desk-mounted or wall-mounted
- Available in charcoal

3.2 STD 24B Model Keypad (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 keypad
- Desk-mounted or wall-mounted
- Available in charcoal

3.3 LCD 12B Model Keypad (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 keypad
- Desk-mounted or wall-mounted
- Available in charcoal

3.4 STD 12B Model Keypad (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 keypad
- Desk-mounted or wall-mounted
- Available in charcoal

3.5 Enhanced 6B Model Keypad (Figure 4-5)

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

3.6 48 Button Add-on Module (AOM) (Figure 4-6)

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

3.7 Door Phone Interface Module (DPIM) 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

PART 4. FEATURES

4.1 SYSTEM FEATURES

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

4.2 SYSTEM FEATURE DESCRIPTIONS

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. Keypad 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 dialing 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 200 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 dialing the All Page code. Keypads may be restricted from making or receiving pages in system programming. A maximum of 40 keypads 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

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

FORCED

When a station is programmed for forced authorization the user must always enter this code before dialing is allowed. The dialed authorization code is verified from a system list of 100 entries.

VOLUNTARY

Any station user can always enter an authorization code before they begin dialing. The dialed authorization code is verified from a system list of 100 entries.

AUTO ATTENDANT

The integrated digital automated attendant option provides six ports per AA card and four ports per MISC 2 card for simultaneous answering and call processing. 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 dialing options, allow you to build call routing branches as needed. Callers are routed through the branches by dialing extension numbers or single digits.

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

AUTOMATIC HOLD

While a keypad 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.

BRANCH GROUPS

Each station can assign its branch group. There are 20 branch groups in DCS Compact II. When incoming or intercom call is ringing on station, any another stations that included the same branch group can answer by lifting the handset or pressing the speaker button.

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/NO MORE 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

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 dialing a code plus that station's extension number/incoming trunk number or by pressing the feature button and then dialing the extension number/incoming trunk number.

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 customized in memory to allow or deny access to features and to define a station's dialing 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 a 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 save the CLIP numbers 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 (100)

The system has a system-wide abandon call list that stores CLIP information for the last 100 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 (200)

The system provides a translation table for 200 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.

COMPUTER TELEPHONY INTEGRATION (CTI)

Computer Telephony Integration (CTI) allows integration between the DCS Compact II and a personal computer system (PC) or a local area network (LAN). Caller ID service is required on TAPI and TSAPI inbound call applications that use the CLIP information to display computer

records in conjunction with the presentation of the call to the station on the DCS Compact II system. TAPI and TSAPI are described below.

TAPI

Jointly developed by Intel and Microsoft, TAPI (Telephony Applications Programming Interface) delivers telephony features to the Windows desktop. TAPI is an open application interface (OAI) protocol that supports First Party Call Control. A DCS Compact II Computer Telephony Module (CTM) is required to connect any keyset to a personal computer running Windows 3.1 or Windows 95. The number of CTMs that can be installed on a system is only limited to the number of keyphones. The features and functionality of the DCS Compact II keyset are not changed.

TSAPI

Telephony Services Application Programming Interface (TSAPI) was developed by Novell and AT&T and is the method of integrating the DCS Compact II system to a computer. TSAPI is a LAN based solution allowing computers to communicate directly to the telephone system over the network system. This establishes a logical connection rather than a physical connection between telephone and computer. It eliminates the cost and administrative overhead of connecting every PC to a desktop phone. It emphasizes third-party call control. (Example: calls can be tracked as they are transferred, making it more suited to large office applications). TSAPI can emulate first-party type call control for the DCS Compact II system, rather than from the telephone as TAPI does. For example, to make a call the DCS Compact II rather than the telephone would dial the phone number, and the call would be then transferred to the telephone. Novell Telephony Services 2.1 or higher specifies the data communications link between the Novell Netware file server running the Netware Telephony Services.nlm and the Samsung DCS Compact II. The physical connection from the Novell Telephony server to the DCS Compact II is an EIA-232 connection via a Samsung Serial Interface Module (SIM).

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.

CONFIRM OUTGOING CALL

On outgoing call, DCS Compact II can provide confirm tone or disconnect the call by force after pre-programmed time.

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 Compact II 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. 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 DIALING INWARD (DDI)

The system can use local telephone company – provided DDI service via an ISDN 30 circuit. When programmed, anyone dialing 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.

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.

E&M TIE LINES

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 conferred 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 dialing class to the tieline.

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 LOCAL DISTRIBUTOR 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 - provided external music source. 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. Multiple relays may be assigned to each zone.

FLASH KEY OPERATION

While a user is on an outside line, pressing the FLASH 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.

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 dialing out as well as allow or deny answering for each outside line.

ISDN SERVICE

For DCS Compact II, there are two kinds of BRI cards and PRI card.

BRI

One BRI card contains two Basic Rate access ports, the other contains four Basic Rate access ports.

PRI

Each card contains one Primary Rate access ports, i.e. thirty ISDN channels. Protocol is compatible for Euro-ISDN PRI.

LEAST COST ROUTING

Least Cost Routing (LCR) is the ability to automatically select the appropriate central office route for the outside number dialed by any station. LCR can become quite complicated to understand and program but does allow highly complex dialing decisions. The 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 dialing

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 accesses are controlled by different security passcodes. Programming from a PC requires the PCMMC program.

LONG LINE EXTENSIONS

A single line (tip and ring) extension from 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 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 dialing and group listening is 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 system provides separate ringing locations for all trunks in both the day and the night modes.

AUTOMATIC

Automatic night service allows 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 needs 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.

HOLIDAY

There are 60 holiday tables. If it is holiday, DCS Compact II operates on night mode.

OPERATOR GROUP

Any number of stations can contain 30 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 announcement to/from any zone or combination of zones.

POWER FAILURE TRANSFER

Each 3TRK and 6TRK cards are 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 dialing 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 customized to best fit the end user's application.

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-colored 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 intercom ring cadence.

SPEED DIAL NUMBERS

The system has a library of 600 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 24 digits.

SPEED DIAL BY DIRECTORY

The 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 group may contain a maximum of 30 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 dialing "9" but can change the operator group by day and night. Each station group has its own recall timer for calls transferred to that group.

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 customized 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.

SYSTEM MESSAGE DETAILED RECORDS (SMDR) (CALL LOGGING)

The systems provide, via miscellaneous card, 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 dialed (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.

The SMDR format contains many options that allow it to be customized 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 authorization codes.

TOLL RESTRICTION (CALL BARRING)

There are 200 allow and 200 deny entries of 11 digits each. Each of these entries can apply to dialing 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 dialing 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 dialing class and a night dialing 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 authorization code feature.

tone OR PULSE DIALLING

Outside lines can be programmed for either tone or pulse dialing 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 dialing a code or pressing a button. There are 11 trunk groups available. Access codes are 0 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.

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 system uses DTMF tones (inband signaling) 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. Keypad 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 authorization code feature. Both methods change the class of service corresponding to the station passcode or authorization code that is dialed. After the call is completed, this station returns to its programmed class of service.

4.3 STATION FEATURES

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

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

4.4 STATION FEATURE DESCRIPTIONS

ADD-ON MODULE

The system 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 dialing 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 dialing 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 customized with extenders to allow pickup from a specific station or pickup group. The system 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 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 dialing keys for fast accurate dialing.

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 personalize 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 dialing 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 customized 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 dialing 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 dialed 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 dialed number on a C.O. line is saved and may be redialed by pressing the redial key or dialing the LNR access code.
- **SAVE NUMBER** - Any number dialed 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, STD 12B and STD 6B 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 system can provide a station user the ability to place calls by speaking one of the names stored in his/her personal speed dialing bins. Non-display and single line stations can access this feature by dialing a feature code.

NOTE: Requires Voice Dialer 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 utilized as a wall-mount bracket.

4.5 DISPLAY FEATURES

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

4.6 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] 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 save the CLIP numbers 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 chooses 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 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 (100)

The system has a system-wide abandon call list that stores CLIP information for the last 100 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 dialed, 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.