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DCS 50si

General Description

SAMSUNG

Wait Till You Hear What We See

CONTENTS

DCS 50si

Digital Communications System

General Description

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telecommunications

Publication Information

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DCS 50si GENERAL SYSTEM DIAGRAM

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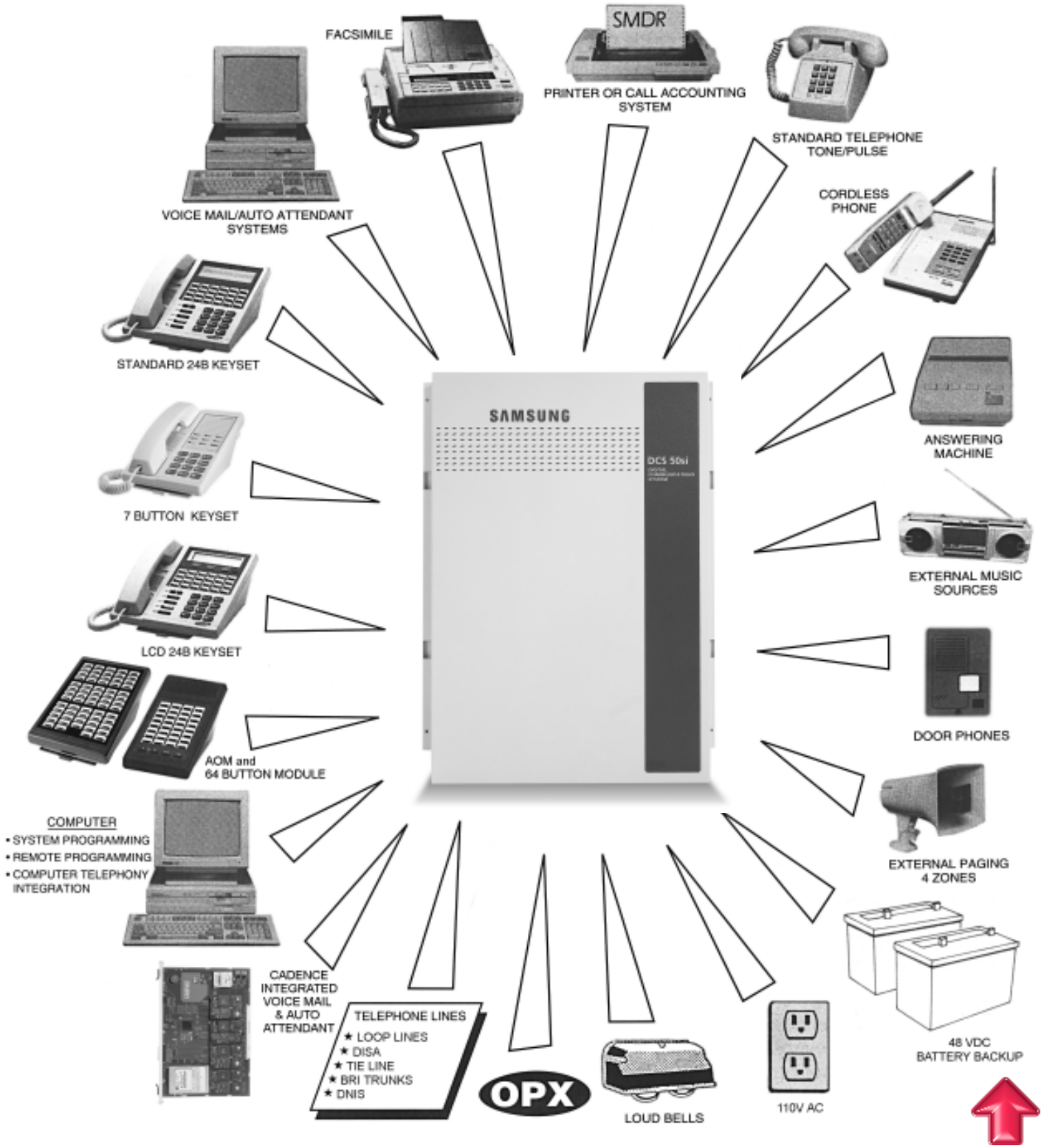

PART 1. SYSTEM OVERVIEW

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1.1 SIZE AND CONFIGURATION

The DCS 50si is a digital ISDN compatible telephone system designed for small businesses. It can operate with the functionality of a square key system, PABX or a combination of both (hybrid). The DCS 50si employes the very latest DSP (Digital Signal Processor) digital technology.

The DCS 50si offers a variety of interface cards that allow connection to the public telephone network or to private networks. These are generally referred to as trunk cards. Two types of telephones can be connected to the system. Proprietary digital phones called “keysets” connect to digital line interface cards (DLI). Standard telephones 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.

Expanding the DCS 50si system is both economical and easy. Begin with the basic Key Service Unit and then add an expansion cabinet as your business grows (See Figure 1–1). The KSU has 8 keyset ports and 3 universal card slots that can be used for stations, trunks or 2x4 combination cards. In addition, the KSU has dedicated slots for a 2SLI card and a miscellaneous function card. The expansion cabinet adds a further 3 universal slots and a dedicated slot for a CADENCE CVM8A card. The systems low density card design allows greater flexibility when configuring a system for the right combination of lines and stations. A removable memory card (SMEM2 card) makes it convenient to upgrade to future feature packages as well as providing quick and easy servicing. The maximum quantities of the various station and trunk types can be seen in the table 1–1.

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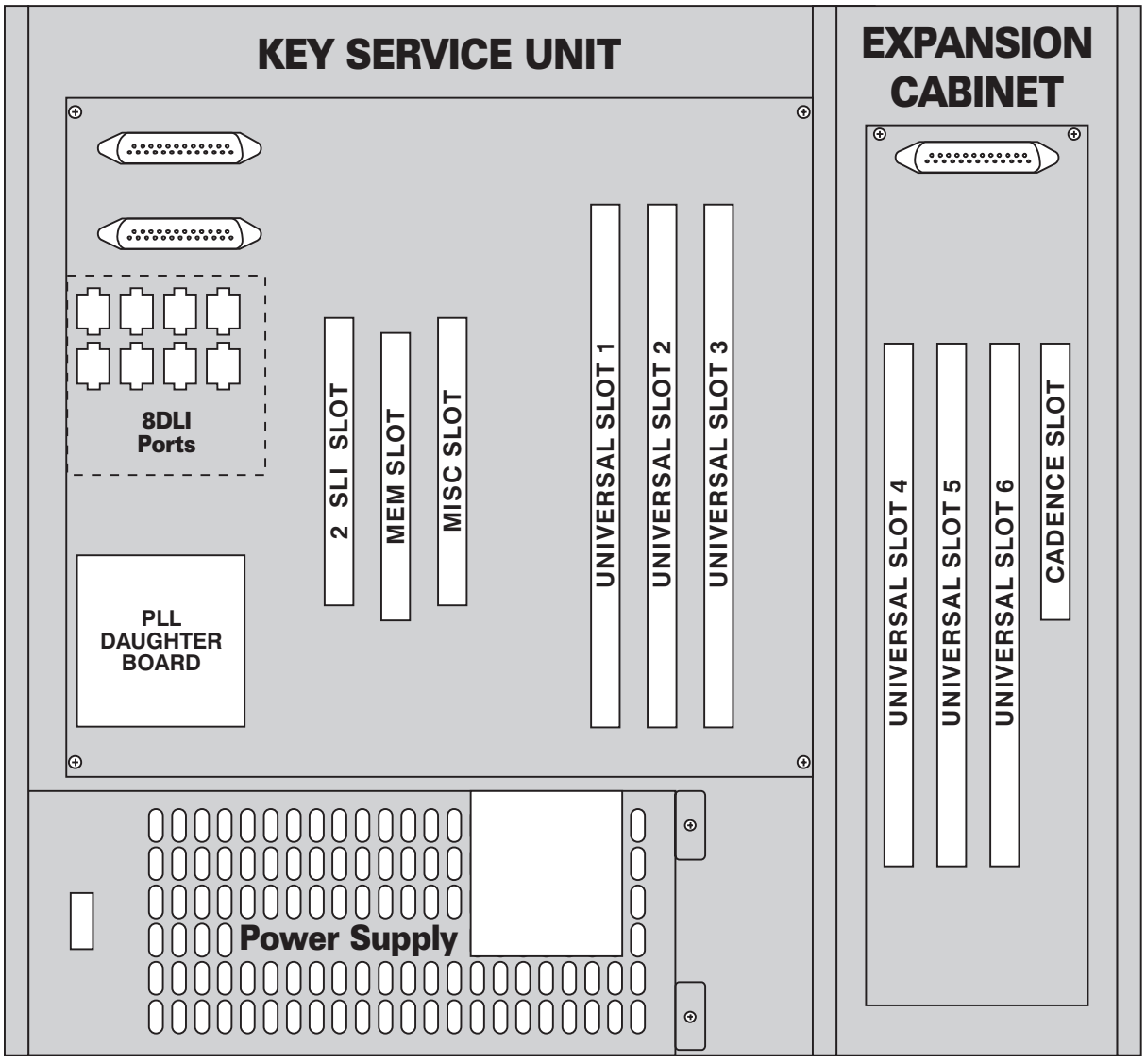

KEY SERVICE UNIT
AND EXPANSION CABINET

FIGURE 1–1

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MAXIMUM DEVICE QUANTITIES		
DEVICE TYPE	WITHOUT CADENCE	WITH CADENCE
STATIONS (SLT'S & DLI DEVICES)	40	32
DLI DEVICES (KEYSETS/AOMS/DPIMS)	40	32
SINGLE LINE TELEPHONES	32	24
LOOP START LINES	18	18
BRI CIRCUITS	24	24
BRI CHANNELS	48	48
E&M TRUNKS	12	12
CADENCE PORTS	0	8

TABLE 1–1

CONFIGURATION NOTES

1. A maximum of 40 stations can be installed on the system.
2. Only one 2 SLI card can be installed in the system.
3. Only one SMISC card can be installed in the system.
4. Up to six expansion cards can be installed in the system.
5. Only one CADENCE card can be installed in the system.
6. Installing CADENCE reduces the maximum number of stations to 32.
7. Only eight KDbs can be installed in the system and they must be installed on keysets connected to the (8) eight 2B+D ports on the KSU motherboard.

1.2 TECHNOLOGY

System switching is accomplished by means of a custom IC “engine” that provides 128 switchable digital channels. Each of the 128 digital channels is automatically assigned to carry voice or data as required by system operation in a PCM format. In addition to the 128 channels mentioned above , the system also utilizes Digital Signal Processors or DSPs. Each DSP may be configured by the switching control program as a DTMF receiver or a C.O. tone detector on a per-call basis. The engine chip contains four DSPs and four more are added when an SMISC card is installed. This means that the system contains a total of eight DSP channels when fully expanded. The DSP channels are fully shared throughout the system as a common resource.

MEMORY

The system operates using stored program control. This program is stored in four EPROM chips (2048 Kbytes of memory). All specific customer data is stored in non-volatile ran-

dom access memory (NV-RAM) located on the removable SMEM2 card. It is protected by a super capacitor providing seven days of memory protection in the event of loss of AC power to the system.

MICROPROCESSORS

The DCS 50si uses distributed processing. The system's primary processor is a 16 bit Motorola® MC68000 operating at a clock speed of 16MHz. The secondary level of processing is done in the keysets.

1.3 PROGRAMMING

The DCS 50si comes with default data. This data provides for operation within seconds after applying power. All trunks and stations are assigned according to the default numbering plan. This numbering plan is flexible and may be changed if so desired. The technician customizes this default data to meet the end user's requirements.

The system can be programmed from any display keyset without interrupting normal system operation. There are three levels of programming: TECHNICAL, 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.

The DCS 50si 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 uploaded when required to restore the database.

Through the use of modems, PCMMC can access a DCS 50si 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. HARDWARE DESCRIPTIONS

CONTENTS

FIGURE 2–1

FIGURE 2–2

2.1 KEY SERVICE UNIT

The DCS 50si (see Figure 2–1) is a metal cabinet containing the following:

- A power supply (120 VAC) with battery backup (48VDC) connection
- Processing, switching and the system operating program
- Eight 2B + D digital keyset interfaces
- One MOH/BGM input source (switch selectable between internal chimes and external input)
- One page output

2.2 EXPANSION CABINET

The optional expansion cabinet (see Figure 2–2) consists of a metal case containing a backplane PCB with connectors for three expansion cards and a fourth connector for a CADENCE (VM8A) card. The expansion cabinet is installed to the right of the basic KSU and connects to the KSU motherboard via a ribbon cable and two pairs of wires.

2.3 SMEM2 CARD

To operate, the KSU must be equipped with an SMEM2 card to hold the system software and customer database (see Figure 2–3). This software is stored in four EPROM chips (2048 Kbytes of memory). All specific customer data is stored in non-volatile random

CONTENTS

access memory (NV-RAM) located on the removable SMEM card. It is protected by a super capacitor providing seven days of memory protection in the event of loss of AC power to the system.

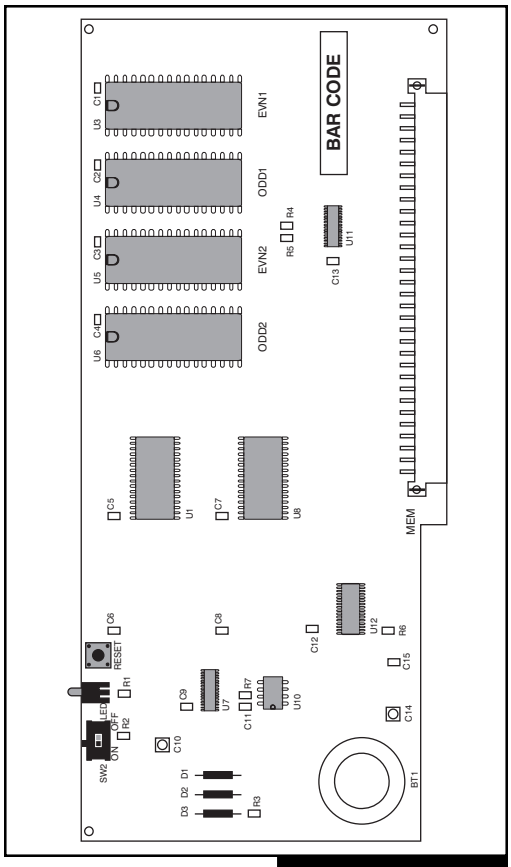

FIGURE 2–3

2.4 INTERFACE CARDS

2 SLI

This card is installed in a dedicated slot on the KSU motherboard. The card provides two single line telephone interfaces equipped with OPX protection and the ability to provide a loop disconnect signal. This is the same card used on the DCS Compact.

2 x 4 DLI

This card provides two Caller ID-compatible loop start C.O. interfaces and four 1B+D DLI ports. KDb's cannot be used with this card. This is the same card used on the DCS Compact.

S8DLI

This card provides eight 1B+D DLI ports and fits in any of the six card slots. KDb's cannot be used with this card.

2 x 4 SLI

This card provides two Caller ID-compatible loop start C.O. interfaces, four SLI ports for industry standard single line telephones and the ability to provide a loop disconnect signal.

NOTE: This card does not provide OPX protection. This is the same card used on the DCS Compact.

S8SLI

This card provides eight SLI ports for industry standard single line telephones and the ability to provide a loop disconnect signal.

NOTE: This card does not provide OPX protection.

S3TRK

This card provides three Caller ID-compatible loop start C.O. interfaces with power failure transfer on the first two ports.

CONTENTS

2 E & M x 4 DLI

This card provides two two wire (TL11M) tie line interfaces and four 1B+D DLI ports. KDb's cannot be used with this card. This is the same card used on the DCS Compact.

S4BRI

This card provides 4 ISDN Basic Rate Interface (BRI) S/T circuits with the ability to support two channels per circuit for a total of 8 channels. A system can have up to six of these cards. These S/T circuits can be configured for station or trunk use. An NT1 is required for connection to a telephone company BRI circuit. The BRI card requires that an SPLL daughter board be installed in the KSU.

SPLL Daughter Board

This daughter board is required to provide clocking for the S4BRI card. If an S4BRI card is to be installed an SPLL daughter board must also be installed.

NOTE: Only one SPLL daughter board is required per system however many S4BRI cards are installed.

SMISC1

This card provides a second MOH/BGM input, three general purpose relays, an alarm sensor, two serial I/O ports, caller ID decoding circuits, and four DSP circuits. It is recommended that this card be used in situations requiring heavy single line telephone use.

SMISC2

This card is similar to the SMISC1 but with the addition of four ports of auto attendant.

KDb-DLI

This board, if installed in a digital keyset connected to one of the eight DLI ports on the motherboard, will provide a second DLI port for the connection of a digital station device.

KDb-SLI

This board, if installed in a digital keyset connected to one of the eight DLI ports on the motherboard, will provide an SLI port for the connection of a standard telephone device.

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

SMODEM Daughter Board

The SMODEM Daughter Board plugs on the SMISC card and provides a 14.4 Kbps modem for remote programming.

CADENCE (CVM8A)

The CADENCE Voice Mail system is a fully integrated Auto Attendant/Voice Mail/Fax System on a single DCS circuit card (see Figure 2–4). This optional card is designated the CVM8A and provides 4 or 8 channels of communication. Only one card is permitted per system and it is installed in a dedicated slot in the expansion cabinet.

CONTENTS

This fully featured self contained system is connected directly to the DCS 50si data bus and communicates with the DCS 50si system processor. This design means that installation time is minimized, operation is streamlined and many features can be implemented that are not normally possible with older conventional stand alone Voice Mail/Auto Attendant systems.

All power to run this self contained system comes from the DCS 50si telephone system power supply. The DCS 50si power supply is rated according to the number of stations it will support. When CADENCE is installed it counts as (8) eight stations of the PSU rating regardless of the number of Voice Processing Modules installed.

FIGURE 2–4

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2.5 STATION EQUIPMENT

LCD 24B Keyset (See Figures 2–5)

- Built-in speakerphone
- 24 programmable 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
- Desk- or wall-mounted
- Available in almond or charcoal

FIGURE 2–5

STD 24B Keyset (See Figures 2–6)

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

FIGURE 2–6

LCD 12B Keyset (see Figures 2–7)

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

FIGURE 2–7

CONTENTS

Basic 12B Model Keyset
(see Figures 2–8)

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

FIGURE 2–8

7 Button Model Keyset (see Figures 2–9)

- 7 programmable keys
- Three fixed function keys
- UP/DOWN buttons for digital control of speaker and ringer volumes
- Eight selectable ring tones
- Desk or wall mounted
- Available in almond or charcoal

FIGURE 2–9

32 Button Add-On Module (AOM)
(see Figures 2–10)

- 32 programmable keys
- Two fixed function keys
- UP/DOWN buttons for digital control of speaker and ringer volumes
- Available in almond or charcoal
- One or two can be assigned to any DCS keyset to provide executive off-hook voice announce and additional programmable keys (see Figure 2–11)
- Can operate as a stand-alone handsfree telephone unit

FIGURE 2–10

CONTENTS

FIGURE 2–11

Door Phone Interface Module (DPIM) and **Door Phone** (see Figures 2–12 and 2–13)

- 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
- Provides contact control to be used with customer-provided electric door lock
- Door phone is wall-mounted
- Door phone is weather resistant

FIGURE 2–12

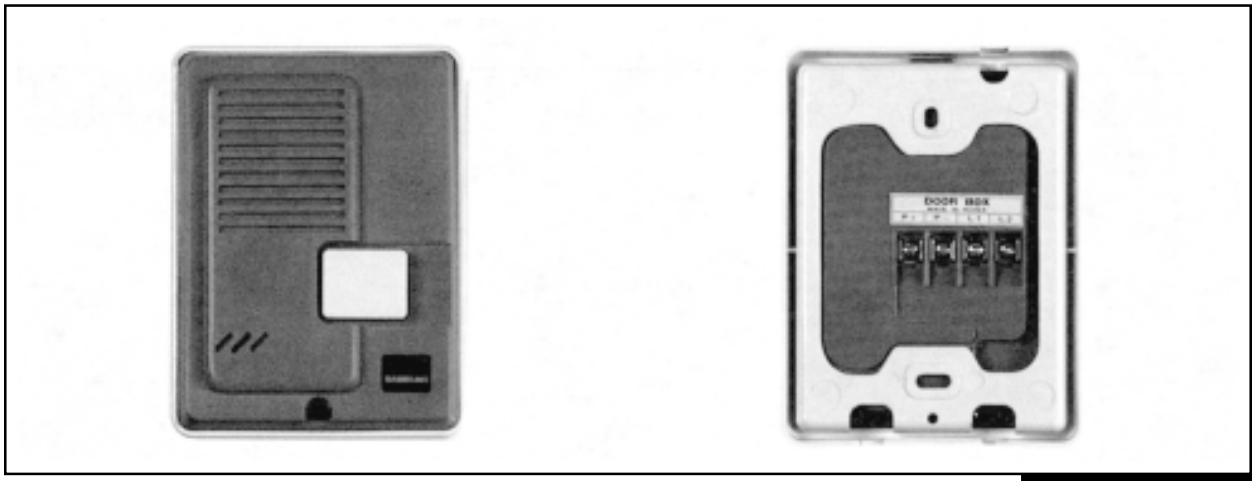

FIGURE 2–13

CONTENTS

Serial Interface Module (SIM) (See Figure 2–14)

- Provides an RS232 connection required for SMDR, PCMMC and TSAPI
- Connects to any DLI circuit

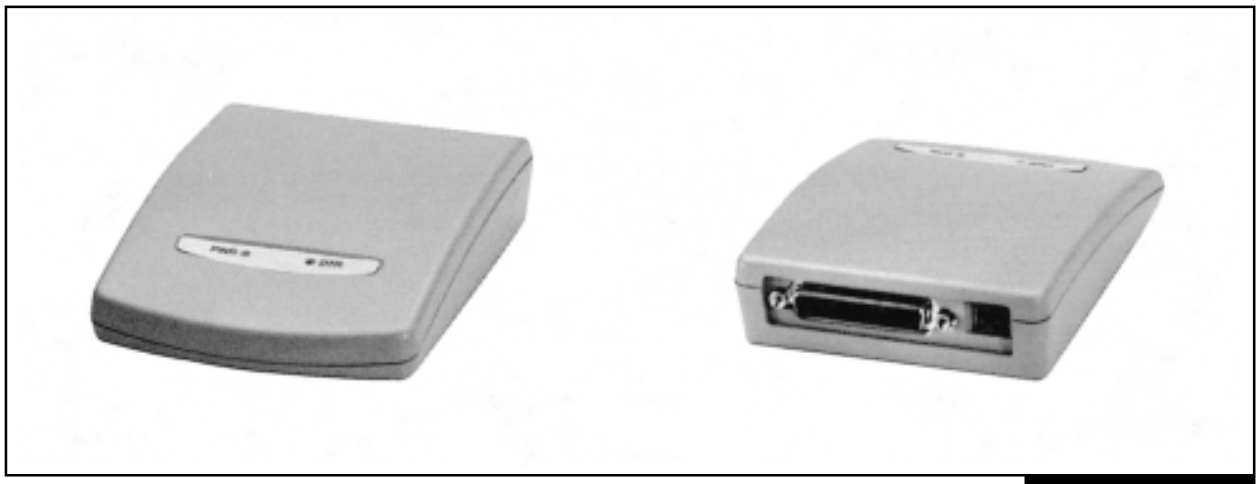

FIGURE 2–14

Computer Telephony Module (CTM) (See Figure 2–15)

- Provides RS232 connection via DB9 for TAPI applications
- Connects with any DLI port

FIGURE 2–15

CONTENTS

64 Button Module (See Figure 2–16)

- 64 programmable keys
- Available in almond and charcoal
- A maximum of 2 can be assigned to any DCS keyset to provide additional programmable keys
- A maximum of 4 per DCS System

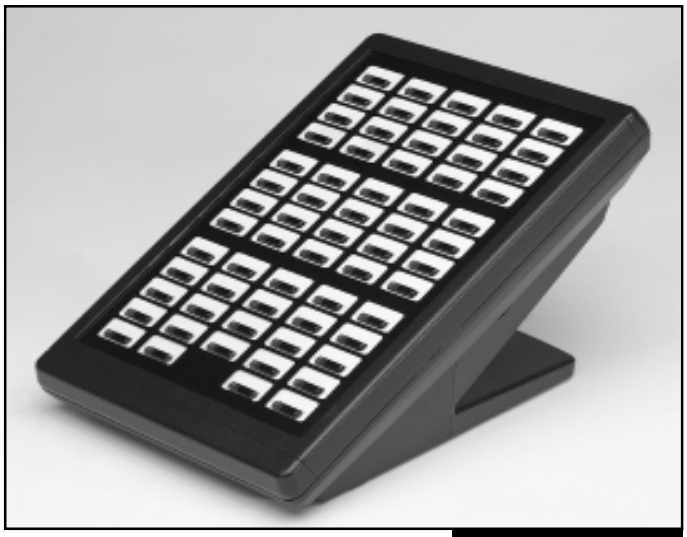

FIGURE 2–16

Single Line Telephone (See Figure 2–17)

- Four fixed function keys: hold, flash, new call, and monitor.
- Data Port: selectable to share station extension or utilize a separate extension
- On hook dialing
- Message Waiting/Ring Indicator
- Desk or wall mounted
- Ring volume control
- Four available ring tones.
- Available in almond and black

FIGURE 2–17

Note: This single line telephone set is FCC approved for direct connection to the public telephone network.
FCC # A3LKOR-24627-TE-T REN 0.9B
UL LISTED 19X9 FILE # ETI 8093

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PART 3. SPECIFICATIONS

The following tables provide technical data for the DCS 50si hybrid/key telephone system.

3.1 ELECTRICAL SPECIFICATIONS

AC INPUT	112 (88–132) VAC (48–63 Hz)
POWER CONSUMPTION (MAX)	97 WATTS MAXIMUM FUSE RATING 5 AMP
BTU RATING (MAX)	5.5 BTU/MINUTE
DC OUTPUT	+5 VOLTS 2.5 AMPS MAX -5 VOLTS 0.5 AMPS MAX -48 VOLTS 1.2 AMPS MAXIMUM
BATTERIES	10–40 AMPS 48 VOLTS MAXIMUM CHARGE CURRENT 0.4 A MAXIMUM DISCHARGE RATE 2.5 A

3.2 DIMENSIONS AND WEIGHTS

	HEIGHT	WIDTH	DEPTH	WEIGHT
DCS 50si BASIC SYSTEM: SINGLE CABINET	18.5"	14.5"	5.75"	20 lb.
EXPANDED SYSTEM	18.5"	20.5"	5.75"	27.5 lb.
DIGITAL KEYSET (ALL MODELS)	4.25"	8.50"	9"	2.563 lb.
7 BUTTON DIGITAL KEYSET	4.25”	6”	9”	2.563 lb.
32 BUTTON ADD-ON MODULE	4.25"	4.25"	9"	1.188 lb.
64 BUTTON MODULE	4.25"	6”	9"	1.25 lb.
DOOR PHONE	5"	3.88"	1.25"	6.8 oz.

CONTENTS

3.3 ENVIRONMENTAL LIMITS

OPERATING TEMPERATURE	32–104 °F/1–40 °C
STORAGE TEMPERATURE	-13–158 °F/-10.5–70 °C
HUMIDITY	10%-90% NON-CONDENSING

3.4 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 900 cable feet from the KSU.

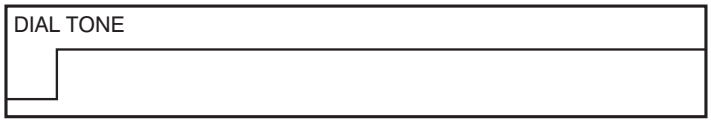
3.5 SYSTEM TONES

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	0.05 sec of tone 1/0.05 sec of tone 2

CONTENTS

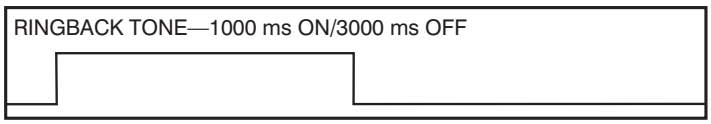
SYSTEM TONES

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



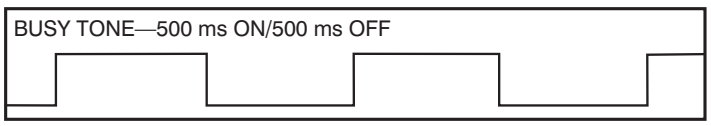
CONTINUOUS

Ringback Tone—Indicates the station you dialed is ringing.



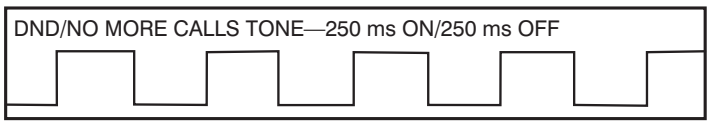
CONTINUOUS

Busy Tone—Indicates the station you dialed is busy.



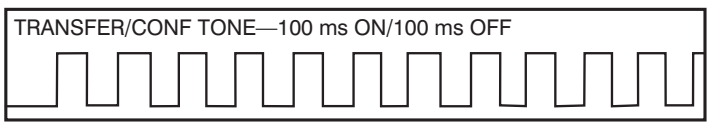
CONTINUOUS

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.



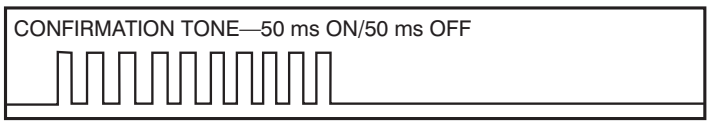
FOR TEN SECONDS

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



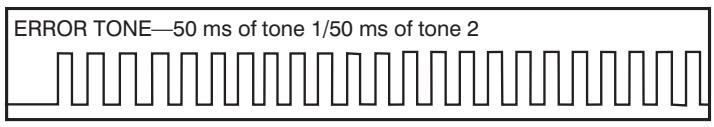
CONTINUOUS

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



FOR ONE SECOND (programmable)

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



FOR THREE SECONDS

CONTENTS

3.6 KEYSET LED INDICATIONS

CONDITION	LED COLOR	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	112 IPM for 500 ms	500 ms

3.7A RESERVE POWER DURATION ESTIMATES (in minutes)*

NO. OF STATIONS	UPS CAPACITY IN VOLT AMPS						
	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
40	15	35	50	60	80	125	275

*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.

CONTENTS

3.7B RESERVE POWER DURATION ESTIMATES

NO. OF STATIONS	WITHOUT CADENCE	WITH CADENCE
8	83 Hours	57 Hours
16	49 Hours	39 Hours
24	35 Hours	29 Hours
32	27 Hours	23 Hours
40	22 Hours	–

The table above gives estimated system hold up times for a 50si system. These times are based on an idle system equipped with a fully charged 40 Amp Hour / 48 Volt battery pack. The hold up times stated above are approximate and will be reduced the busier the system becomes. In addition different battery types and configurations will also affect the hold up times.

CONTENTS

PART 4. FEATURES

SYSTEM FEATURES

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

4.1 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 SMDR printout for that call record. Keyset users may enter this code using an account (ACCT) key without interrupting a conversation. Single line telephone 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, they 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. They can include digits 0–9, star (✱) and #.

ALL CALL VOICE PAGE

Users can page all internal and all external paging zones at the same time by dialing the All Page code. Keysets may be restricted from making or receiving pages in system programming. A maximum of 40 keysets can be programmed to receive page announcements.

ATTENTION TONE

To get your attention, a brief tone precedes all page announcements and 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 be programmed to print or not 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 250 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 250 entries.

CONTENTS

AUTO ATTENDANT

The SMISC2 card for the DCS 50si includes four ports of auto attendant for simultaneous answering and call processing. Sixteen professionally recorded prompts inform callers of the progress of their calls. Several examples are the following: “I’m 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 keyset user is engaged on an outside (C.O.) call, pressing another trunk key, route key or CALL button automatically places the call on hold when Automatic Hold 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.

CALLER IDENTIFICATION

CALLER ID

Caller ID requires that optional software and hardware be installed in the DCS 50si KSU. In addition, Caller ID service must be provided by your local telephone company. The availability of the calling party name or number depends on the type of CID service offered by your local telephone company. The Caller ID feature is dependent on having an LCD keyset to show the name or number in the top line of the display. NOTE: Requires optional hardware and/or software. Ask your dealer for details.

NAME/NUMBER DISPLAY

Each LCD keyset user can decide if he/she wants to see the CID name or CID/ANI 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 CID 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 Caller ID information associated with this next

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call in queue at your station. Either the CID name or CID number will show in the display depending on your N/N selection.

SAVE CID

At any time during an incoming call that provides CID information, you may press the SAVE key. This saves the CID number in the Save Number feature. Pressing the SAVE number redial key will dial the CID number. The system must be using Least Cost Routing (LCR) to dial the saved number.

STORE CID

At any time during an incoming call that provides CID, you may press the STORE key. This saves the CID number as a speed dial number in your personal speed dial list. The system must be using LCR to dial the stored number.

INQUIRE PARK/HOLD

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

CID REVIEW LIST

This feature allows display keyset users to review CID information for calls sent to their stations. This list can be from ten to fifty 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. The system must be using LCR to dial the stored number.

INVESTIGATE

This feature allows selected stations with a special class of service to investigate any call in progress. If CID information is available for an incoming call, you will know to whom this station user 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 CID 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 CID name, CID number and the date and time the call came in. The system must be using LCR to dial numbers from the abandon call list.

CID ON SMDR

The Station Message Detail Records report can be set to include CID name and CID number for incoming calls. This format expands the printout to 113 characters. Use a wide carriage printer or an 80 column printer set for condensed print.

CONTENTS

NUMBER TO NAME TRANSLATION (350)

The system provides a translation table for 350 entries. When the CID number is received, the table is searched. When a match is found, the system will display the corresponding name. This will allow users in areas that do not support deluxe Caller ID to provide names for regular callers.

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), 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 Forward 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.

FORWARD DND

This feature works with the Do Not Disturb feature. This allows calls directed to a station in Do Not Disturb or One Time Do Not Disturb to forward immediately to another destination.

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 user to forward all calls from another station to the user's station or change the forward destination to the user's current location.

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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 HOLD 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 HOLD (REMOTE)

Outside calls can be placed on hold at a remote station. This feature allows calls to be answered at one keyset and placed on hold at another station. This allows time for the user to proceed to that station or allows the party that the call was intended for to have that call placed at their station. The call or trunk button will flash at the remote hold 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 or by pressing the feature button and then dialing 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.

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CALL WAITING/CAMP-ON

Busy stations are notified that a call is waiting (camped-on) when they receive a tone. The tone is 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 follow Forward No Answer if a Forward No Answer destination has been set.

CENTREX/PBX USE

CENTREX and PBX lines can be installed in lieu of central office trunks. CENTREX and PBX feature access codes including the command for hook-flash (FLASH) can be stored under one touch buttons. Toll restriction programming can ignore PBX or CENTREX access codes so that toll calls can be controlled when using these services.

CHAIN DIALING

Keyset 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.

COMMON BELL CONTROL

Each MISC card is equipped with three programmable relays. A relay programmable relays. A relay programmed as a common bell provides a dry contact pair to control a customer-provided 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 six 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.

COMPUTER TELEPHONY INTEGRATION (CTI)

Computer Telephony Integration (CTI) allows integration between the DCS 50si 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 CID information to display computer records in conjunction with the presentation of the call to the station on the DCS 50si 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 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 by the number of keyset ports. The features and functionality of the keysets 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 50si 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 50si, rather than from the telephone as TAPI does. For example, to make a call, the DCS 50si, rather than the telephone would dial the phone number, and the call would then be 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 50si. The physical connection from the Novell Telephony server to the DCS 50si is an EIA-232 connection an I/O port on the SMISC card.

CTI SYSTEM LINK

The DCS 50si has a system wide CTI link. This CTI link is provided from one of the serial I/O ports on the SMISC and can be used with either the DCS TSAPI driver to connect the system to a Novell LAN or the TAPI 2.0 driver to provide a CTI link to a Windows NT server based LAN environment.

CUSTOMER SET RELOCATION

Customer Set Relocation allows the customer to exchange or swap similar stations in the DCS 50si without wiring changes. All individual station assignments such as trunk ring, station group, station COS, station speed dial, button appearances, call forwarding, etc. will follow the Customer Set Relocation program.

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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 receive DCS C.O. ringing pattern instead of intercom ring pattern. Devices connected to an SLI card receive a disconnect signal upon termination.

DATABASE PRINTOUT

A copy of the customer database can be obtained by 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.

DIALED NUMBER IDENTIFICATION SERVICE (DNIS)

When DNIS service is provided on an incoming E&M trunk the DCS 50si can route calls based on the numbers received.

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 DIALING (DID-USE E&M TRUNK)

The DCS 50si can use local telephone company-provided DID service via an E&M trunk. When programmed, anyone dialing a user's personal number rings directly to that user's office. DID 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 DID numbers can ring the same extension or station group and display keysets show a DID directory name when ringing if a name has been programmed. DID calls can be assigned both a day and night ring destination. This allows routing of DID calls that have one destination during the system Day mode to be routed to a different destination during the system Night mode. DID calls that are directed to ring a voice mail machine can be identified by a special digit (see Voice Mail Integration). As it is possible to program E&M trunks to follow the DID translation tables, the system can use both way DID type service.

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. The caller must have a tone dial phone and 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.

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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 DID 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 (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 print on SMDR (if provided) with a “DE” DISA error flag.

DISTINCTIVE RINGING

A user knows 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 100–2500 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 releases the door phone and stops 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 tie line. 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. Tie line calls can be put on hold, transferred and conferenced in the same way as are other outside calls. Users accessing the tie line 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 tie line. Your


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local telephone company may use E&M tie lines to provide DID service. In this case these tie lines can be programmed to follow the DID translation table. See DID. Translated E & M tie line calls have Day and Night routing capabilities.

EXECUTIVE BARGE-IN (OVERRIDE)

The feature allows specially programmed stations with a barge-in key to override the automatic privacy of another station or outside trunk. 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 every ten 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 STATE OR FEDERAL LAWS CONCERNING THE RIGHT TO PRIVACY. SAMSUNG TELECOMMUNICATIONS AMERICA IS IN NO 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 (providing the BOSS is 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

The system provides an interface for connecting a customer-provided external music source and the addition of an SMISC card provides a second interface. These interfaces can be used for background music, station music on hold or trunk music on hold.

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EXTERNAL PAGE INTERFACE

The system KSU provides one external page audio output. The addition of an SMISC card will provide a second audio output and three general purpose relays that may be assigned to control paging zones. Multiple relays may be assigned to a page 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 it 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 providing that there is 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, providing 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.

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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.

INTEGRATED SERVICES DIGITAL NETWORK (ISDN) INTERFACE

The DCS 50si supports ISDN Basic Rate Interface (BRI) in both station and trunk formats. The S4BRI card for the DCS 50si consists of four circuits each of which can support two channels for a total of eight channels per card. The DCS 50si can support a maximum of 6 BRI cards giving a total of twenty-four circuits or 48 channels.

An SPLL daughter board must be installed in the system to provide clocking for the BRI cards.

TRUNK INTERFACE

When configured as a trunk a BRI circuit will support the following protocols:

- National ISDN 2
- AT&T 5ESS Custom
- Nortel DMS 100 Custom

INTEGRATED VOICE MAIL

The DCS 50si has a dedicated slot in the expansion cabinet to contain a CADENCE (VM8A) card. This card can be used with both four ports and eight ports (one or two Voice Processing Modules installed). This will allow such features as Call Record, Answering Machine Emulation and Soft Key mailbox administration. NOTE: Installing the CADENCE board reduces the maximum number of stations on the system to 32.

LEAST COST ROUTING

Least Cost Routing (LCR) is the ability to automatically select the most cost effective central office route for the outside number dialed by any station. The DCS 50si LCR program includes the following features:

- Option to use or not use LCR or a tenant basis
- Programmable LCR access code
- Digit analysis table 1000 entries each with ten digits
- Routing by time of day and day of week (4 time bands per day)
- 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

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LIVE SYSTEM PROGRAMMING

The system can be programmed from any display keyset or personal computer 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 program.

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 by the use of a “super capacitor” 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 the microphone is disabled, the keyset cannot use the speakerphone, although on-hook dialing and group listening are still possible.

MUSIC ON HOLD—FLEXIBLE

When external music sources are connected, each C.O. line may be programmed to receive one of the two external sources, internally-generated tones or no music when it is placed on hold. If there are no sources installed, each line may receive either a 50 ms tone or no music. The system-generated tone is a beep every 3.5 seconds.

NIGHT SERVICE

The DCS 50si 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.

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MANUAL

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

OFF PREMISES EXTENSIONS (OPX)

A single line (tip and ring) extension from an SLI card may be connected to telephone company-provided OPX circuits to remote locations. 8SLI cards and KDb-SLIs do not support off premises extensions.

OPERATOR GROUP

The operator group 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 a 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 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 abilities to make and/or receive page announcements to any zone or combination of zones.

POWER FAILURE TRANSFER

Each S3TRK 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 dialing and/or answering any line.

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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. This is similar to 1A2 key telephone operation.

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 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 will be 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 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 out before purchase 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 (1500)

A library of 1500 speed dial numbers may be allocated as needed. The system list can have up to 500 numbers and each station can have up to 50 numbers. Speed dial numbers are assigned in blocks of ten. Each speed dial number may contain up to 18 digits.

SPEED DIAL BY DIRECTORY

The DCS 50si system provides the user with the ability to look up a speed dial number and place the call. There are three speed dial selections: personal, system

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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 up to 30 station hunt groups. One of three ring patterns—sequential, distributed and unconditional—is available for each group. Each unconditional group may contain a maximum of 32 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 "0." Each station group has its own recall timer for calls transferred to that group.

STATION MESSAGE DETAIL RECORDING (SMDR)

The system provides, 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 dialed (maximum 18) and an account code if entered. 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 printouts.

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.

SYSTEM ALARMS

The basic KSU 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 will warn 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 will appear on keyset displays to provide additional information about lines and stations.

TENANT SERVICE (2)

There are several programs that allow the DCS 50si 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.

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TOLL RESTRICTION

There are 250 allow and 250 deny entries of 11 digits each. Each of these entries can apply to dialing classes B, C, D , E, F and G. Expensive 976, 1-900, 411 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.

SPECIAL CODE TABLE

A Special Code Table of ten entries (four digits each) allows use of telephone company features such as CID blocking (*67) or call waiting disable (*70) without interference to toll restriction or LCR. The Special Code table allows use of these custom calling features on a per call basis.

TOLL RESTRICTION 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 by using the walking class of service or authorization code feature.

TONE OR PULSE DIALING

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 9 and 80–89.

UNIFORM CALL DISTRIBUTION (UCD)

UCD 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 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.

CONTENTS

MAXIMUM OF FIVE GROUPS

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

CALL STATISTICS

UCD 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 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.

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 from the group to handle the workload.

PRINTED REPORTS

Agent supervisors may run printed reports to a customer-provided printer, showing the data available on the supervisor displays.

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 50si system uses DTMF tones (inband signaling) to communicate with any compatible voice mail system. Stations can call forward to a voice mail system. When answered, the system will send 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. A Voice Mail Transfer key permits keyset users to easily transfer a caller directly to an individual voicemail box without navigating through menus.

NOTE: Although most voice mail systems will work with the DCS 50si, the system data has default values set to work with the Starmail Voice Processing System. They may need to be changed if you are using another system.

CONTENTS

WALKING CLASS OF SERVICE

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 to correspond with the station passcode or authorization code that is dialed. After the call is completed, the station returns to its programmed class of service.

STATION FEATURES

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

4.2 STATION FEATURE DESCRIPTIONS

ADD-ON MODULE

The 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 32 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 the user 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.

CONTENTS

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 BGM on or off and the volume is controlled by the volume control keys. Once source is located in the KSU. A second source is located on the optional SMISC 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 the DND mode.

CALL FORWARDING

Station users can forward internal and outside calls to other destinations immediately (Forward All), when busy (Forward Busy) or if not answered in a programmable number of seconds (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 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 a station user 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 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


CONTENTS

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 DCS 50si 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. When in DND mode, calls may be forwarded to another destination. See Forward DND option. 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 HOLD 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. It 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 the use of a headset. In the headset mode, the hookswitch is disabled and the ANS/RLS key is used to answer and

release calls. Keyset users may turn headset operation ON/OFF by keyset programming or more easily by pressing the headset ON/OFF key. The headset key lights steady red when the keyset is in headset mode. The ANS/RLS key lights if headset mode is activated by keyset programming only.

HEARING AID COMPATIBLE

All DCS keysets are hearing aid compatible as required by Part 68 of the FCC requirements.

LINE QUEUING WITH CALLBACK

When the desired outside line 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.

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 (STANDARD)

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.

CONTENTS

OFF-HOOK VOICE ANNOUNCE (EXECUTIVE)

A keyset associated with an add-on module (AOM) may receive an executive off-hook voice announcement while on another call. The called keyset user may reply handsfree without interrupting the call in progress. Only keysets with an off-hook voice announce button (OHVA) can off-hook voice announce to keysets with AOMs.

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 canceled and the station is returned to normal service. This feature requires a programmed button.

ONE TOUCH DIALING KEYS

Frequently used speed numbers can be assigned to one touch dialing keys for fast accurate dialing.

ON-HOOK DIALING

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 and LCD 12B and Basic 12B keysets have 12. Each key can be programmed for more than 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, FORWARD and VOICE MAIL TRANSFER. The extender can be a station, a group or another identifying number.

PROGRAMMED STATION MESSAGES

Any station may select one of twenty messages to be displayed at a calling party's keyset. Ten messages are factory-programmed and the remaining ten 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 SWITCHOVER

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.

REMOTE HOLD

When you wish to place a call on hold at another station, press TRSF and dial the station number (or press the appropriate DSS key). Press the HOLD key. This will place the call on system hold on an available CALL button or Line Key at the remote station.

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 speaker 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 Basic 12B keysets have a built-in speakerphone. The speakerphone enables calls to be made and received without the use of the handset.

CONTENTS

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-COLORED LIGHTS

LCD 24B and STD 24B keysets have 16 keys equipped for tri-colored LED indications (green, red and amber). LCD 12B and Basic 12B models have six of these keys. To avoid confusion, your calls always light green, other calls show red and recalls light amber.

VOLUME SETTINGS

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

WALL-MOUNTABLE KEYSETS

Each keyset, add on module and 64 button module can be wall mounted by reversing the base wedge. The newest base wedge may not fit all wall mounting scenarios so in these cases the original wall mount/base wedge unit should be used.

CONTENTS

DISPLAY FEATURES

4.3 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.

CALLER ID INFORMATION

Caller ID information is dependent on the use of display keysets. The following list explains the displays that are used with Caller ID.

NAME/NUMBER DISPLAY

Each display keyset user can decide if he/she wants to see the Caller ID name or Caller ID 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 CID information.

CONTENTS

NEXT CALL

In the event that there is a call waiting or a camped-on call at the user's keyset, the user can press the NEXT key to display the Caller ID information associated with the next call in queue at the station. Either the CID name or CID number will show in the display depending on the N/N selection.

SAVE CID NUMBER

At any time during an incoming call that provides CID information, the user may press the SAVE key. This saves the CID number in the Save Number feature. Pressing the SAVE number redial key will dial the CID number. The system must be using LCR to dial the saved number.

STORE CID NUMBER

At any time during an incoming call that provides CID information, the user may press the STORE key. This saves the CID number as a speed dial number in the personal speed dial list. The system must be using LCR to dial the stored number.

INQUIRE PARK/HOLD

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

CID REVIEW LIST

This feature allows display keyset users to review CID information for calls sent to their stations. This list can be from ten to fifty calls in a first in, first out basis. The list includes calls that were answered and calls that rang the user's station but that were not answered. When reviewing this list, the user can press one button to dial the person back. The system must be using LCR to dial the stored number.

INVESTIGATE

This feature allows selected stations with a special class of service to investigate any call in progress. If CID information is available for an incoming call, the selected stations can know to whom the investigated 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 50si has a system-wide abandon call list that stores CID 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, the user is provided options to CLEAR the entry or DIAL the number. The user can use the NND key to toggle between the CID name, CID number and the date and time the call came in. The system must be using LCR to dial numbers from the abandon call list.

CONTENTS

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 a 12 or 24 hour clock in either the ORIENTAL or WESTERN display format with information shown in upper case or lower case letters.

DIALED 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 than 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 will identify 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.

CONTENTS

OVERRIDE IDENTIFICATION

If another station barges-in on a user's conversation, the display will alert 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, there 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 SUPERVISOR DISPLAYS

With the optional SMISC2 card, when UCD is used, multiple supervisors can view information about the UCD groups calls or agents.

CALL SCREEN

This allows the supervisor to view how many calls are in queue, the longest wait time, how many calls have been received today, what the average time in queue is and how many calls were abandoned.

AGENT SCREEN

This allows the supervisor to monitor how many agents are logged in, check each agents status (IN GROUP, OUT OF GROUP, or DND), view each agents total number of calls, average call length or average ring time.

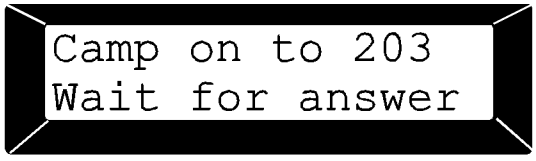
NOTE: Accessing this screen will also allow a Supervisor to change the status of each agent (IN GROUP, OUT OF GROUP, or DND).

CONTENTS

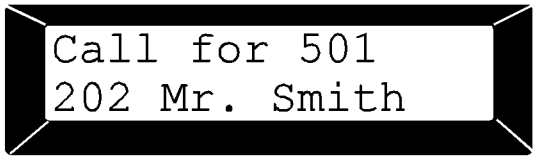
SAMPLE DISPLAYS

PROSTAR LCD 12B and LCD 24B display model keysets have a large, easy-to-read, 32 character liquid crystal display. Helpful call processing information is provided so everyday call handling is quick and easy. Here are just some of the displays you may see.

Idle display shows extension, name, day, date and time.



This station is camped-on to extension 203 and is waiting for 203 to answer.

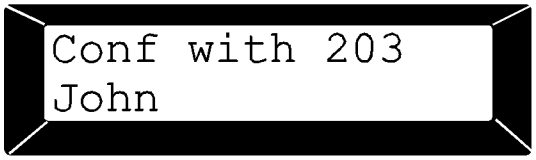


This station in the sales department is receiving a group call from Mr. Smith.

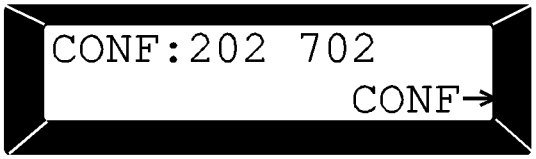
This display tells you this is a new incoming call to the sales department.

This station is calling station 203 which is currently busy.

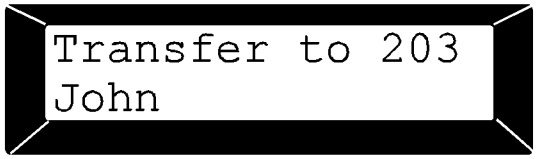
This station is receiving an off-hook voice announcement from station 203.



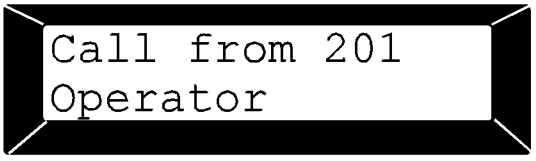
This station is on a conference call with John, extension 203. Assume other parties will hear your conversation.



This station is on a conference call with extension 202 and trunk 702 and has the option to add two more parties.



This station is transferring a call to John at extension 203.



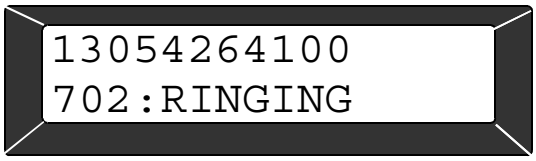
This station is receiving a call from extension 201.

This station is setting the Do Not Disturb feature.

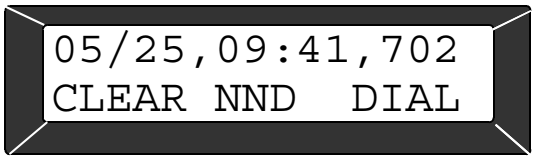
This station is speaking on trunk 703.

SAMPLE CALLER ID DISPLAYS

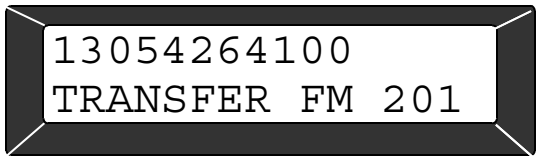
CONTENTS



This display shows an incoming call from 1-305-426-4100 on Line 702 ringing directly at your station.



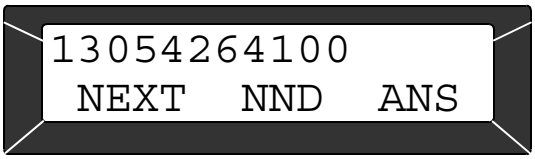
This display shows the information on the abandoned call list. This call came in on May 25 at 9:41 A.M. on line 702. The user can CLEAR the entry, DIAL the caller back or examine further NND information.



This display shows a call from 1-305-426-4100 that has been transferred to you from station 201.

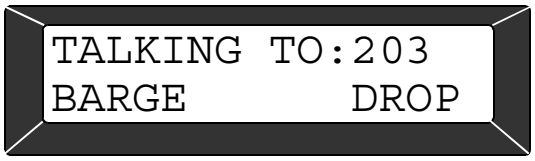
This display shows an entry in a station review list showing the three initial options. The arrow indicates other options available to you by pressing the SCROLL key.

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.



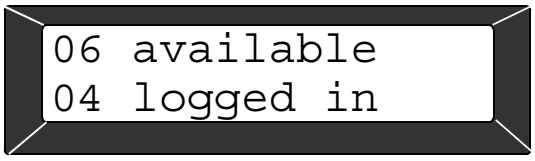
This display can be seen when investigating an intercom call. The investigator can BARGE-in or DROP the connection.

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.

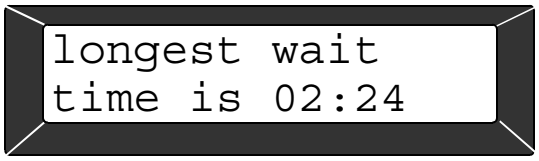
SAMPLE UCD DISPLAYS

CONTENTS

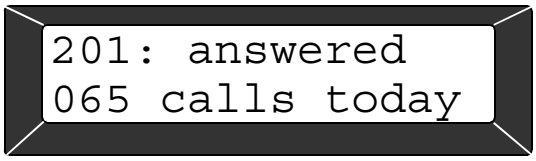
There are five calls currently waiting to be answered by the UCD group.



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

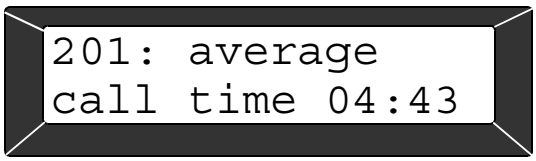


The longest call on hold (waiting to be answered) was for two minutes, 24 seconds. This data applies to all calls since the supervisor data was last cleared. It does not necessarily represent calls currently in queue.

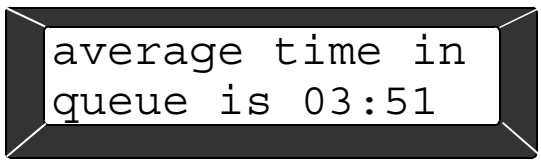


The agent at station 201 has answered 65 calls today.

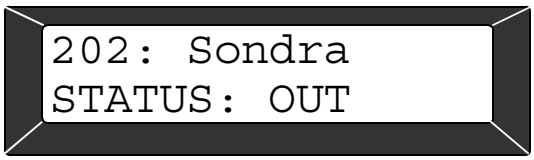
The UCD group has received 124 calls today.



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



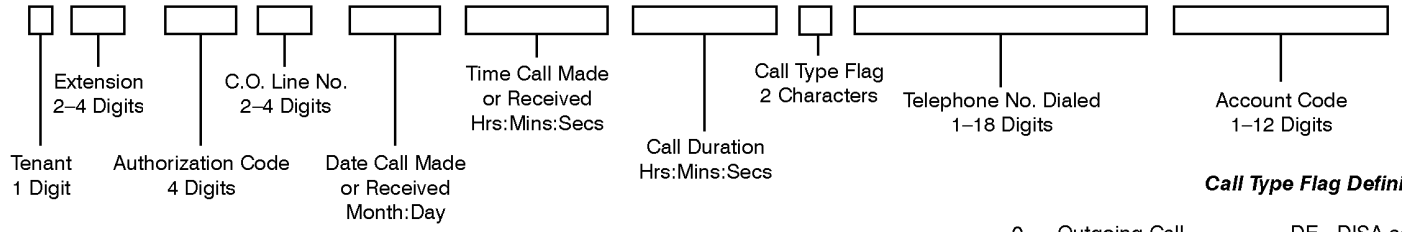
The average time on hold (waiting to be answered) is three minutes and 51 seconds.



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

SMDR REPORT FOR [Samsung R & D] 09/23/94 17:30

T	EXT	AUTH	TRK	MM/DD	STT.TIME	DURATION	FG	DIALED DIGIT	ACCOUNT CODE
1	208		705	09/23	16:12:33	00:05:12	OT	12145551234567	
1	226		703	09/23	16:13:31	00:00:29	IT		
1	202		703	09/23	16:14:00	00:00:25	TT		
1	210		704	09/23	16:15:28	00:01:52	O	4205069	1234567890*#
1	201		702	09/23	16:15:51	00:01:45	I		
1	211		703	09/23	16:19:53	00:00:25	T		987654321012
1	204	5555	703	09/23	16:18:16	00:01:57	O	4205068	
1	208		702	09/23	16:21:12	00:00:19	IT		
1	210			09/23	16:21:31	00:04:15		ALARM RINGING	
1	211		706	09/23	16:20:59	00:02:43	O	18005551234	
1	208			09/23	17:04:10			DND ON	
1	208			09/23	17:12:07			DND OFF	
1	207			09/23	17:12:05			GROUP OUT	
1	207			09/23	17:16:55			GROUP IN	
1			735	09/23	17:17:15	00:00:11	DE	3833	
1	209		735	09/23	17:17:38	00:00:30	DI		
1	735		709	09/23	17:18:08	00:12:19	DO	13055551234	
1	706		701	09/23	17:25:15	00:00:28	FI		
1	701		706	09/23	17:25:15	00:10:25	FO	4205071	
1	312	2326	705	09/23	18:00:03	00:08:12	O	13054264100	232552779600



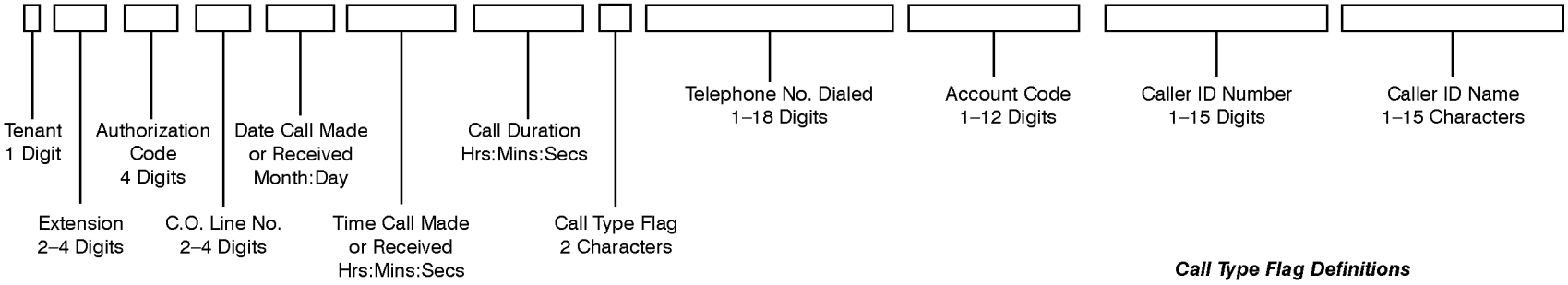
Call Type Flag Definitions

0	Outgoing Call	DE	DISA call with error
I	Incoming Call	T	Transferred call that was terminated
DI	DISA call in	IT	Incoming transfer
DO	DISA call out	FI	Incoming call forwarded to an external number
FO	Outgoing record of forwarded call	OT	Outgoing transfer - Outgoing call made and transferred
		TT	Caller received a transferred call and transferred it again

4.4 SAMPLE SMDR PRINTOUT (WITHOUT CALLER ID)

SMDR REPORT FOR [CID Sample] 01/02/95 17:12

T	EXT	AUTH	TRK	MM/DD	STT.TIME	DURATION	FG	DIALED DIGIT	ACCOUNT CODE	CID NUMBER	CID NAME
1	201		701	01/02	17:15:13	00:00:28	IT			13054264100	SAMSUNG TELECOM
1	205		701	01/02	17:15:41	00:00:02	T			13054264100	SAMSUNG TELECOM
1	217		702	01/02	17:24:49	00:00:25	IT			13055557890	CURTIS SMITH
1	202		702	01/02	17:25:14	00:00:03	T			13055552354	SUSAN HOLLINS
1	202		702	01/02	17:25:56	00:00:00	O	4264100			
1	217		702	01/02	17:26:35	00:00:11	IT			13054264385	SAMSUNG TELECOM
1	203		702	01/02	17:26:46	00:00:16	T			13054264385	SAMSUNG TELECOM
1	203		702	01/02	17:27:13	00:00:20	O	4264385			
1	203		702	01/02	17:28:04	00:00:00	O	4264385			
1	201		701	01/02	17:28:34	00:00:04	IT			13055559748	JOAN LEVIN
1	203		701	01/02	17:28:38	00:00:14	T			13055558703	LENNY WILKINS
1	203		702	01/02	17:29:54	00:01:27	OT	5556420			
1	205		702	01/02	17:31:06	00:03:00	TT			13055556420	PIZZA DELIVERY
1	209		702	01/02	17:33:24	00:02:18	T			13055556420	PIZZA DELIVERY
1			701	01/02	17:41:45	00:00:30	A			13055553426	TERRY PRUITT
1			701	01/02	17:42:15	00:00:02	A			13055554676	BLANCHE MARKER
1	203		702	01/03	17:51:17	00:00:22	O	5555069			
1			701	01/03	17:56:02	00:00:05	A			13055556733	ALEX DAULTON
1			701	01/03	17:56:07	00:00:54	A			13055559723	CHAZ NEWMAN



Call Type Flag Definitions

0	Outgoing Call
I	Incoming Call
DI	DISA call in
DO	DISA call out
FO	Outgoing record of forwarded call
A	Abandoned call
DE	DISA call with error
T	Transferred call that was terminated
IT	Incoming transfer
FI	Incoming call forwarded to an external number
OT	Outgoing transfer - Outgoing call made and transferred
TT	Caller received a transferred call and transferred it again

4.5 SAMPLE SMDR PRINTOUT (WITH CALLER ID)

CONTENTS

CONTENTS

4.6 SAMPLE UCD REPORT

```
=======================================================
UCD GROUP 529 : SALES

FROM: SUN 02 Feb 00:00
TO  : SUN 02 Feb 02:54

CALL STATISTICS
===============
AVERAGE RING TIME(TIME TO ANSWER)......00:40
NUMBER OF TIMES ALL AGENTS BUSY........00002
AVERAGE TIME IN QUEUE..................00:51
TOTAL CALLS RECEIVED...................00011
LONGEST QUEUE TIME(TODAY)..............02:14
TOTAL CALLS ABANDONED..................00004

AGENT STATISTICS
================
MEMBER  AGENT  NAME          CALLS      AVERAGE    RING
                           ANSWERED   CALL TIME   TIME
-------------------------------------------------------
01      210    JOHN          0002       01:55      00:05
02      211    SAM           0001       02:18      00:06
03      208    MIKE          0003       01:22      00:04
04      207    PETER         0001       03:16      00:05


=======================================================
UCD GROUP 515 : SUPPORT

FROM: MON 03 Jan 08:30
TO  : SUN 02 Jan 02:54

CALL STATISTICS
===============
AVERAGE RING TIME(TIME TO ANSWER)......00:07
NUMBER OF TIMES ALL AGENTS BUSY........00005
AVERAGE TIME IN QUEUE..................01:06
TOTAL CALLS RECEIVED...................00023
LONGEST QUEUE TIME(TODAY)..............01:02
TOTAL CALLS ABANDONED..................00001

AGENT STATISTICS
================
MEMBER  AGENT  NAME          CALLS      AVERAGE    RING
                           ANSWERED   CALL TIME   TIME
-------------------------------------------------------
01      223    FRED          0012       02:33      00:08
02      213    JANE          0010       01:04      00:04
```

CONTENTS

4.7 CALL STATISTICS

CALLS IN QUEUE NOW

How many calls are currently in queue.

This statistic is a real time statistic and so will not print on a report.

ABANDONED CALLS

This shows the number of callers that reached the UCD group, but hung up before being answered. A high number probably means that there are not enough agents available and the wait time is too long.

AVERAGE RING TIME

This is calculated from the time an agent begins to ring until the time an agent answers the call, this does not include ringing at an agent station that does not answer or is logged out because of the ring next option.

NUMBER OF TIMES ALL AGENTS BUSY

This is the number of times that a call is placed to an UCD group and all agents are busy or out of group. This check is made when the call is first placed to the group.

Example: If there are 5 members in a group, 3 are Out of Group one is busy and one is idle, and a call is placed to the group, because there is an idle station the all agents busy counter is not incremented.

If the idle station rings, does not answer and is logged out, although the condition of the group is now all agents busy, the check has been made and the agent busy statistic does not increment.

Also if a call comes into a group with all agents busy and then one becomes idle, the busy counter will increment because the check has been made.

AVERAGE TIME IN QUEUE

This is calculated as an average of all the calls that were in queue.

Note that this is ONLY an average of the calls that were in queue. The caller must have overflowed to the UCD recording to be considered in queue.

A call is considered in queue until it is answered or until it goes to the final destination.

TOTAL CALLS RECEIVED

The total number of times that calls were sent to a group. This includes calls that were answered by the group, calls that went to a group with all agents busy or out of group, calls that are abandoned and calls that go to UCD final destination. This includes intercom calls to the UCD group.

CONTENTS

If this number is less than the total calls received by all the agents it is possible that calls were transferred from one agent to another.

If this number is more than the total calls received by all the agents it is possible that calls were unanswered by an agent and went to final destination or callers hung up while in queue.

This statistic includes:

a) Calls answered by agent.
b) Calls that are not answered by an agent and go to final destination.
c) Calls that are sent to the UCD group but callers hang up before being answered.

LONGEST QUEUE TIME TODAY

This shows the longest call in queue today. The queue time is calculated as follows:

a) Queue time begins when a caller starts to hear the first UCD message.
b) Queue time ends when a caller is either

- Answered by an agent
- System gets disconnected from C.O. or
- Caller is transferred to final destination

LONGEST QUEUE TIME NOW

This shows the longest call currently in queue. The queue time is calculated as follows:

a) Queue time begins when a caller starts to hear the first UCD message.
b) Queue time ends when a caller is either

- Answered by an agent
- System gets disconnected from C.O. or
- Caller is transferred to final destination

CONTENTS

4.8 AGENT STATISTICS

LOGGED IN

The number of stations programmed in the UCD group and the number of stations that are currently logged in.

This statistic is a real time statistic and so will not print on a report.

STATUS

This screen shows the agents name, extension number and status. The status can be In Group, Out of group or in DND.

This statistic is a real time statistic and so will not print on a report.

CALLS ANSWERED

The total number of calls answered by the agent. This does not include ring no answer to an agent station.

If this total number is less than the calls received by the group it is possible that calls were unanswered by an agent and went to final destination or that callers hung up while in queue.

If this total number is more than the calls received by the group it is possible that calls were transferred from one agent to another.

AVERAGE CALL TIME

This is an average of all the call durations for the agent

AVERAGE RING TIME

This is an average of all the ring times for the agent. Ring times are previously explained.

PART 5. GENERAL USER INFORMATION

CONTENTS

5.1 RADIO FREQUENCY INTERFERENCE

WARNING: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and operated in accordance with the instruction manual, it may cause interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The following measures can be tried:

1. Reorient the receiving antenna.
2. Relocate the telephone with respect to the receiver.
3. Move the telephone equipment away from the receiver.
4. Plug the Key Service Unit into a different AC outlet so that the KSU and receiver are on different circuits.

5.2 FCC REQUIREMENTS

The DCS 50si Private Automatic Branch Exchange (PABX) system complies with part 68 of the Federal Communications Commission Rules and Regulations.

UNAUTHORIZED MODIFICATIONS

Any changes or modifications performed on this equipment that are not expressly approved in writing by SAMSUNG TELECOMMUNICATIONS AMERICA could cause noncompliance with the FCC rules and void the user's authority to operate the equipment.

NOTIFICATION TO TELEPHONE COMPANY

The customer must notify the telephone company of the particular line to which the connection will be made and provide it with the FCC registration number and the Ringer Equivalence Number (REN) of the protective circuit. On the right side of the PABX System is a label that contains the FCC registration number and ringer equivalence number (REN) for this equipment.

FCC Registration Numbers: A3LKOR-32706-KF-E or A3LKOR-32705-MF-E
Ringer Equivalence Number: 0.5 B

TELEPHONE CONNECTION REQUIREMENTS

The Federal Communications Commission (FCC) has established rules which permit the DCS 50si to be connected directly to the telephone network using telephone company network access jacks.

CONTENTS

5.3 TELEPHONE COMPANY INTERFACES

NOTE: Allowing this equipment to be operated in such a manner as to not provide for proper answer supervision is a violation of part 68 of the FCC's rules.

RINGER EQUIVALENCE (REN)

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most but not all areas, the sum of the RENs should not exceed 5.0. To be certain of the number of devices that may be connected to the line, as determined by the number of RENs, contact the telephone company to determine the maximum REN for the calling area.

INCIDENCE OF HARM

If the terminal equipment, the DCS 50si, causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

CHANGES TO TELEPHONE COMPANY EQUIPMENT OR FACILITIES

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications so that you may maintain uninterrupted service.

SERVICE CENTER

If trouble is experienced with the DCS 50si, please contact your local SAMSUNG TELECOMMUNICATIONS AMERICA at (305) 592-2900 for repair or warranty information. If the trouble is causing harm to the telephone network, the telephone company may request that you remove the equipment from the network until the problem is resolved.

FIELD REPAIRS

Only technicians certified on the DCS 50si are authorized by SAMSUNG TELECOMMUNICATIONS AMERICA to perform system repairs. Certified technicians may replace modular parts of a system to repair or diagnose trouble. Defective modular parts can be returned to SAMSUNG TELECOMMUNICATIONS AMERICA for repair.

GENERAL

This equipment must not be used on coin telephone lines. Connection to party line service is subject to state tariffs.

HEARING AID COMPATIBILITY

All models of the keyset are hearing aid compatible as specified in Part 68 of the FCC Rules.

CONTENTS

DISA WARNING

Lines that are used for Direct Inward System Access feature must have the disconnect supervision options provided by the telephone company insist that your service company verify this.

WARNING: As it is impossible to prevent unauthorized access to your telephone system by “hackers”, we suggest that you do not turn the DISA feature on unless you intend to use it. If you do use this feature, it is good practice to frequently change passcodes and periodically review your telephone records for unauthorized use.

5.4 SAFETY TESTS

The DCS 50si system has been tested to comply with safety standards in the United States as listed below. This system is listed with Underwriters Laboratories.

LISTED

83X3

E118093
Project No.: 98NK12204

5.5 MUSIC ON HOLD WARNING

IMPORTANT NOTICE: In accordance with US copyright laws, a license may be required from the American Society of Composers, Authors and Publishers (ASCAP) or other similar organizations if copyrighted music is transmitted through the Music on Hold feature. SAMSUNG TELECOMMUNICATIONS AMERICA hereby disclaims any liability arising out of failure to obtain such a license.

5.6 EQUAL ACCESS REQUIREMENT

This equipment is capable of providing user access to interstate providers of operator services through the use of access codes. Modifications of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990 and Part 68 of the FCC Rules.