iDCS 500 Release 2

Digital Communications System
General Description

Publication Information

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32 Button AOM

64 Button AOM

System Programming
Remote Programming
Computer Telephony Integration

Door Phone

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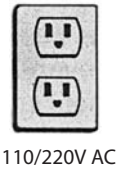

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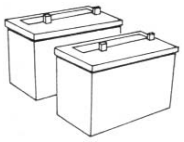

48 VDC Battery Backup

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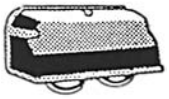

Loud Bells

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External Paging 4 Zones

Telephone Lines
-Loop/Ground Start
-DID
-Tie Line
-T1
-ISDN PRI/BRI

PART 1. SYSTEM OVERVIEW

1.1 GENERAL DESCRIPTION

The SAMSUNG iDCS 500 Release 2 (Digital Communications System) is a VoIP enabled digital telephone system designed for small to medium-sized businesses. It can operate with the functionality of a square key system, PABX or a combination of both (hybrid). The DCS employs DSP (Digital Signal Processors) digital technology. With integrated Media Gateway Cards (MGI), local IP keysets, remote IP keysets and IP networking are easily and economically added as needed.

The iDCS 500 Release 2 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) or connect to an Ethernet LAN and communicate with the system through the Media Gateway Interface cards (MGI). 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, and common audible devices. All interface cards are encased in an anti-static plastic enclosure and most can be inserted or removed with power on to eliminate unnecessary service interruptions while performing maintenance.

All 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 iDCS 500 Release 2 system is both economical and easy. Begin with a single cabinet configured as a basic Key Service Unit and then add up to two more cabinets as your business grows. Its low and medium density card design allows greater flexibility when configuring a system for the right combination of lines and stations. A removable software cartridge (SmartMedia card) makes it convenient to upgrade to future feature packages.

1.2 SIZE AND CONFIGURATION

The iDCS 500 Release 2 is a fully modular system comprised of a single cabinet configured as a Key Service Unit, up to two additional cabinets, interface cards and electronic keysets. A fully expanded system using the T1/PRI cards can have a maximum of 352 lines or 360 stations. Without the T1/PRI cards, the maximum number of lines is 208 and the maximum number of stations is 360. The maximum number of ports supported by the system is 488. Each cabinet of the system supports two power supply units, the first of which must be a PSU-B and can support up to 56 stations. When assisted by a second PSU-B the cabinet can support up to 120 station devices. Both power supply units are connected to the DC bus for external battery backup. Each cabinet also has four (4) Digital Signal Processor (DSP) channels for use as DTMF receivers or tone detectors.

FIGURE 1-1

SINGLE CABINET SYSTEM

A single cabinet system has eight universal interface card slots, a dual purpose interface card / signal processor card, a main processor card slot, and two power supply slots, the first of which must be occupied by a PSU-B (see Figure 1–1). If "M" version software is used then nine slots can be used for interface cards. If "L" version software is used then eight interface cards can be installed and an SCP2 card must be installed in the dual purpose slot. Station or trunk (Line) cards can be installed in any interface card slot. TEPRI or WLI (future) cards must be installed in slots 1, 2 or 3. This allows a maximum of 120 stations or 120 lines with T1's being used or 72 lines without T1's.

TWO CABINET SYSTEM

When it is required that the basic system be expanded to provide a capacity greater than that described above, the Release 2 Signal Control Processor (SCP2) card must be installed in slot nine of the first cabinet. This card provides an intermediate level of processing to control the first cabinet therefore freeing resources on the Release 2 Main Control Processor (MCP2) to control the entire system. Adding the SCP2 card therefore reduces the number of universal card slots in the first cabinet to eight. In addition, the MCP2 card must be equipped with an ESM daughter board. All other types of daughter boards must be installed on the SCP2 card or LCP2 card.

Adding one expansion cabinet makes the system a two cabinet system with 17 universal card slots (see Figure 1–2). This allows a maximum of 240 stations or 232 lines when using T1/PRI cards. Without the T1/PRI cards, the maximum number of lines is 136 while the maximum number of stations remains at 240. This second cabinet is controlled by a Release 2 Local Control Processor (LCP2) in a similar manner to the SCP2 in the first cabinet and connects to the MCP2 via a 25 pair cable. The LCP2 processor card resides in the dedicated slot 10 of the second cabinet and therefore does not deplete the number of universal card slots.

FIGURE 1-2

Note: The first power supply slot in each cabinet must be occupied by a PSU-B to supply sufficient power to all 10 slots (9 universal and a processor slot) and support up to 56 stations. The second power supply slot can be occupied by either a PSU60 or PSU-B. Do not use a PSU40 in either PSU slot.

THREE CABINET SYSTEM

In a fully expanded three cabinet system, there are 26 universal card slots (see Figure 1–3). This allows a maximum of 360 stations or 352 lines when using T1/PRI cards. Without T1/PRI cards, the maximum number of lines is 208 and the maximum number of stations is 360. The third cabinet is also controlled by a Local Control Processor (LCP2) in a similar manner to the LCP2 in the second cabinet and connects to the second cabinets' LCP2 via a 25 pair cable. This processor resides in a dedicated slot 10 and therefore does not deplete the number of universal card slots. In addition, the MCP2 card must be equipped with an ESM daughter board. All other types of daughter board must be installed on the SCP2 card or LCP2 card.

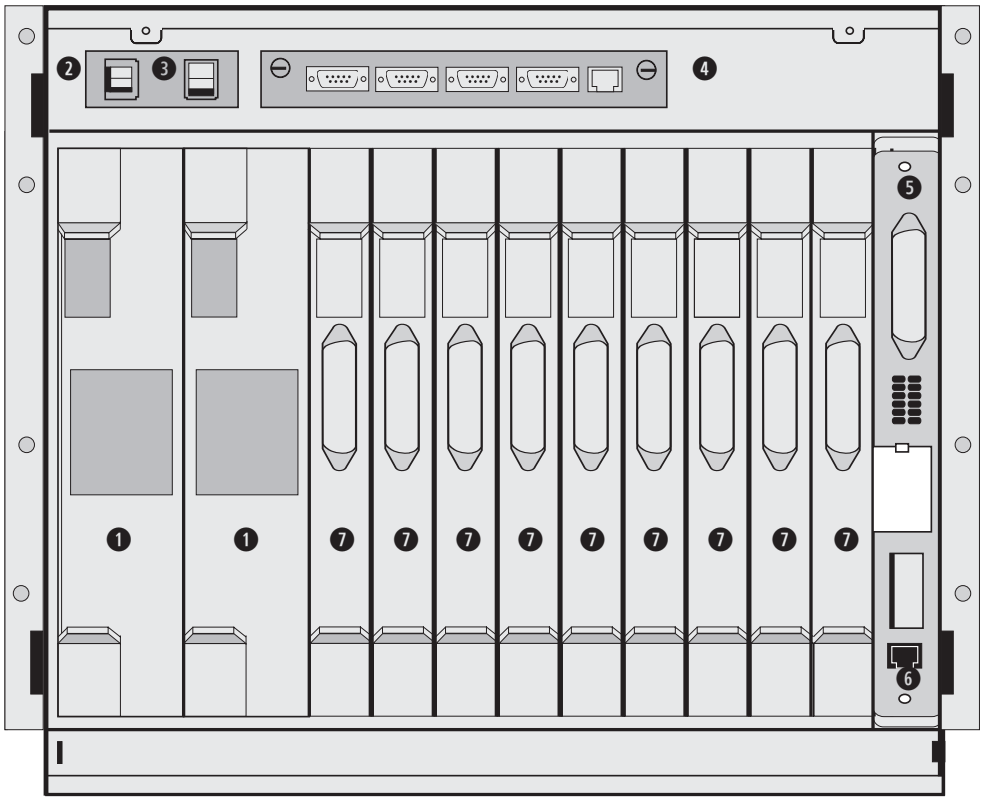
Note: The first power supply slot in each cabinet must be occupied by a PSU-B to supply sufficient power to all 10 slots (9 universal and a processor slot) and support up to 56 stations. The second power supply slot can be occupied by either a PSU60 or PSU-B. Do not use a PSU40 in either PSU slot.

FIGURE 1-3

1.3 MAXIMUM DEVICE QUANTITIES

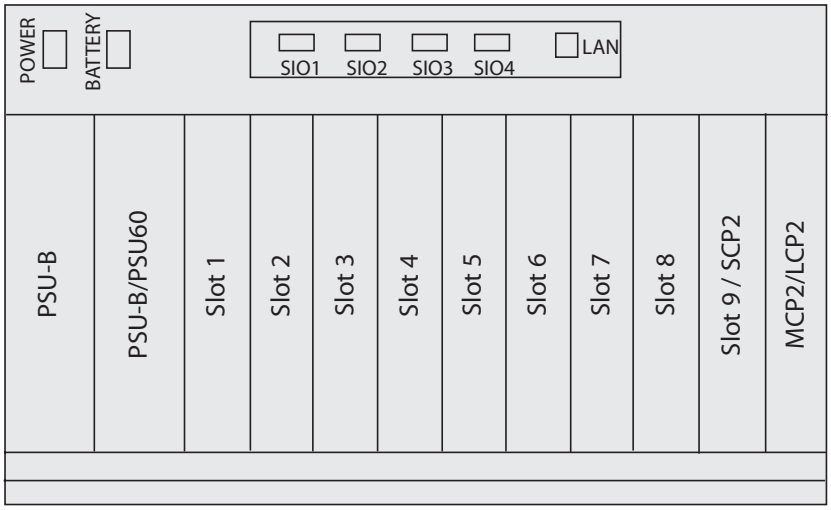
DEVICE TYPE	MAXIMUM	NOTES
Physical Ports	488	In a 3 cabinet system
Stations ■ Digital ■ Analog ■ IP	600† 360* 360* 240	† TDM and IP stations combined. *Maximum number of stations without any trunks. Limited by the number of available universal slots and power supply units.
Trunks ■ Analog - Loop Start - Ground Start - E&M - DID ■ Digital - T1/PRI - BRI	352* 208 208 104 104 104 216 216/207 104	*Maximum number of trunks without any stations. Limited by the number of available universal slots. Maximum 3 per cabinet, 9 per system. Use any universal card slot.
Networking Nodes ■ Using QSIG over PRI ■ Using QSIG over IP	 15 15	 Uses available T1/PRI card slots. Limited by IP Address Table, MMC 820.
Media Gateway Ports	240	Required to connect an IP phone to a TDM device including paging and background music and ports used for networking or trunking.
Conferencing Circuits ■ 5 Party Add-On ■ Unsupervised ■ Barge-In ■ Call Record ■ AME	 6/24 6/24 6/24 6/24 6/24	 System Wide Conference Circuits. 6 Default, 24 Maximum with SCM board.
Music On Hold Inputs	6	2 per MISC card. Maximum 3 MISC cards per system.
Paging ■ Audio Output ■ Internal Zones ■ External Zones	 3 5 4	1 per MISC card. Maximum 3 MISC cards per system. (99 members each zone) Requires customer provided equipment.
Auto Attendant Ports	40	Maximum 5, 8 port AA cards per system.
Voice Mail / Auto Attendant Ports ■ SVMi-8E ■ SVMi-16E	16 8 16	System can have only one of the SVMi cards installed.
Loud Bell Audio Output	3	1 per MISC card, 3 per system. Requires customer provided equipment.

1.4 INTERIOR VIEW OF THE CABINET

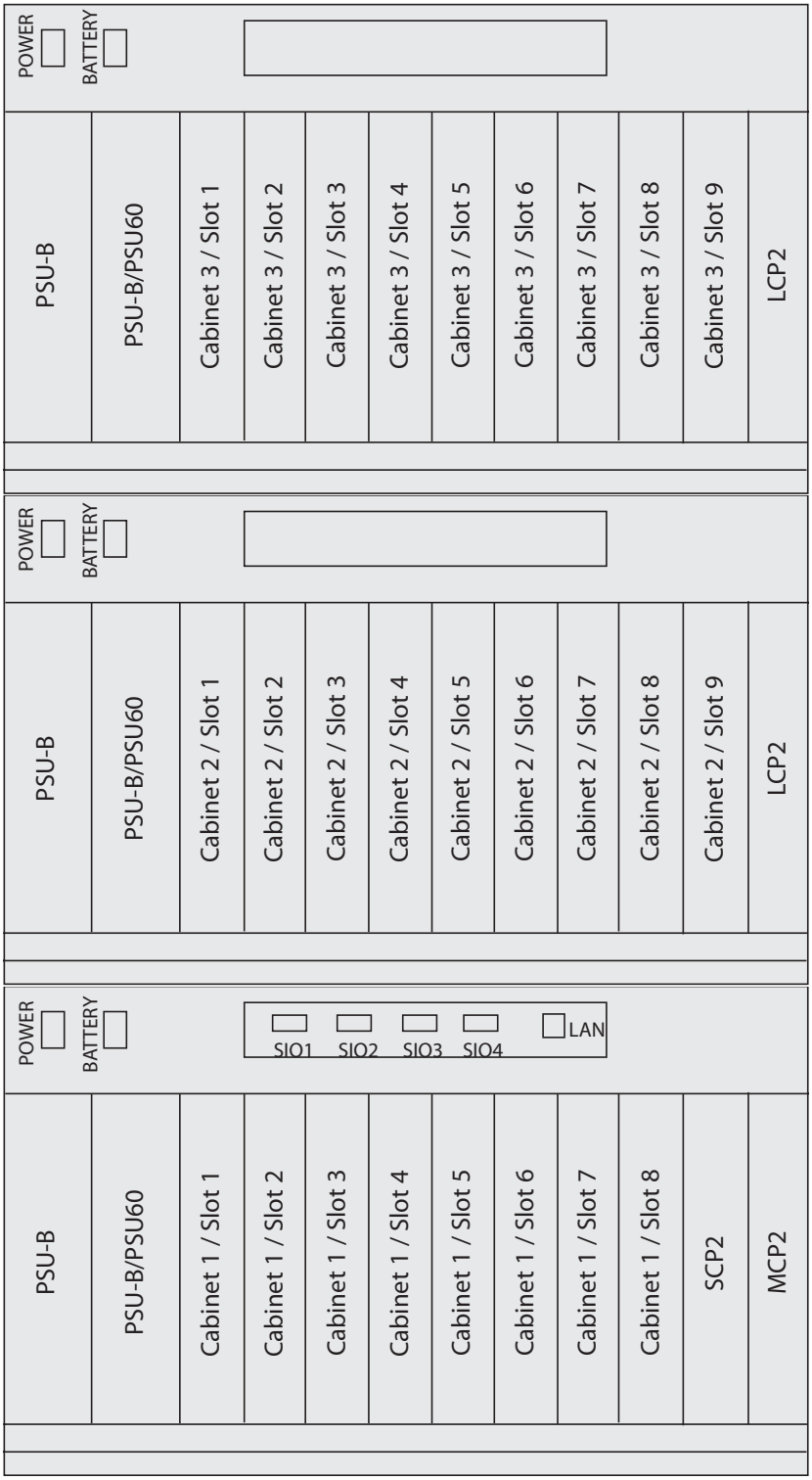


1. Power Supply Slots (2)
2. A/C Power Switch
3. Battery Backup Power Switch
4. Serial I/O Ports
5. Main Control Processor
6. LAN Connection
7. Interface Cards

1.5 BAYFACE LAYOUT - SINGLE CABINET SYSTEM



1.6 BAYFACE LAYOUT - MULTIPLE CABINET SYSTEM



1.7 TECHNOLOGY

MEMORY

The system operates using stored program control. This program is stored on a SmartMedia card inserted into the Main Control Processor card (MCP2) and contains sixteen Megabytes of NAND-Flash memory. The Smart Media card also provides space for a backup customer database and a backup operating program. The system boots from a 1 Megabyte boot ROM and downloads the operating program into thirty two megabytes of DRAM on the Main Control Processor (MCP2) card. The customer database is stored in four megabytes of non-volatile SRAM.

MICROPROCESSORS

The iDCS 500 Release 2 uses distributed processing. Its primary processor is a 32 bit Motorola MC68360 operating at a clock speed of 50 MHz on the MCP2 card. This provides all the processing necessary for a single cabinet system. In a multi cabinet system the secondary level of processing is on the SCP2 card for the first cabinet and on the LCP2 cards for the expansion cabinets. These secondary processors are MC68302 processors running at 16 MHz and provide local control of each cabinet. The tertiary level of processing is done in the keysets. The digital keysets use a Hitachi H8 processor for data communication within the system.

1.8 PROGRAMMING

The iDCS 500 Release 2 is a self-configuring system. This means that immediately after applying power, the iDCS 500 Release 2 reads the types and locations of all installed interface cards and keysets and assigns default data to them. This data provides for system operation within a few minutes after applying power. All trunks and stations are assigned three or four digit numbers according to the settings of the switches on the MCP2 card and the default numbering plan. This numbering plan is flexible and may be changed to suit customer requirements. The installing technician customizes this default data to meet the end user's requirements.

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

The iDCS 500 Release 2 also allows the use of a proprietary computer program called SAPM-PCMMC. This permits a technician to program the system using a personal computer. SAPM-PCMMC can be used on-site to modify the customer database or to download (save) the entire customer database to a file. This file can then be saved as a backup and be uploaded when required to restore the database. Through the use of modems, SAPM-PCMMC can access the iDCS 500 Release 2 system remotely (off-site) to make database changes or perform uploads or downloads of the customer database as if the technician were on-site.

1.9 SOFTWARE VERSIONS

The iDCS 500 R2 system can be equipped with one of two versions of software to meet different customer needs.

M VERSION-RELEASE 2

This version of software provides the software features for a single cabinet system and requires only the MCP2 card to run.

L VERSION-RELEASE 2

This version of software is required to run a multiple cabinet system although it can be used in a single cabinet environment. For L version software to operate correctly each cabinet must have its own "Local" processor card installed in it, that is the SCP2 for the first cabinet and the LCP2 for the second and third cabinets. In addition, in a multiple cabinet environment, the MCP2 card MUST have an ESM daughterboard installed in position D1.

PART 2. HARDWARE DESCRIPTIONS

2.1 SYSTEM CABINETS

The cabinets that make up the iDCS 500 Release 2 system are of metal construction and may be utilized as either as an expansion cabinet or as a main cabinet / key service unit (KSU). The cabinets may be used individually or may be stacked up to three (3) high to achieve maximum capacity. A single cabinet may be wall mounted for smaller applications or alternatively the system may be mounted in a standard nineteen inch (19") equipment rack after removal of the side panels and their supporting brackets. Each cabinet is comprised of the following:

- Eight interface card slots
- One dual purpose interface card / signal processor slot (see Part 1.2 Size and Configuration)
- One processor card slot
- Two power supply slots
- One IOM board slot for use when the cabinet is the main cabinet/KSU (see Part 2.2.4 IOM Board)
- AC power connector
- DC power (Battery Backup) connector
- Four DSPs for the DTMF and tone detection

NOTE: The first power supply slot must be occupied by a PSU-B power supply to supply sufficient power to all 10 slots (8 interface, one dual purpose and one processor slot). The second power supply slot can be occupied by either a PSU 60 or a PSU-B. Do not install a PSU 40 in any PSU slot.

2.2 COMMON CONTROL CARDS

2.2.1 PROCESSOR CARDS

The iDCS 500 Release 2 requires a processor card or cards in order to operate. In a single cabinet iDCS 500 Release 2 system, running M version software only one processor card, the Main Control Processor (MCP2), is required. When the system is expanded to two or three cabinets or L software is required, a second Switch Control Processor (SCP2) is required for the main cabinet to assist the MCP2, and each expansion cabinet requires its own Local Control Processor (LCP2). These processor cards are described below.

MAIN CONTROL PROCESSOR (MCP2)

The Main Control Processor (MCP2) is installed in a dedicated processor slot, slot 10, of the first cabinet and has positions for three daughter boards. The first daughter board position (MCP2_D1) can support one of four types of daughter board, a Multi-Frequency Module (MFM), a Switch/Conference Module (SCM), an R2/CID Module (RCM), in a single cabinet system running M version software and is required to support the Expanded Switching Module (ESM) in a multiple cabinet system running L software. The second daughter board position (MCP2_D2) can support the MFM, the SCM, or the RCM board. The third daughter board (MCP2_D3) can support a Miscellaneous (MISC) daughter board, the MFM, the SCM, or the RCM board.

MAIN CONTROL PROCESSOR (MCP2) DAUGHTER BOARD CAPABILITIES	
Position	**Types of Daughter Boards allowed per position**
MCP2 - D1	MFM, SCM, RCM and ESM*
MCP2 - D2	MFM, SCM and RCM
MCP2 - D3	MFM, SCM, RCM and MISC

* The ESM must be installed in this position in a Multiple Cabinet .

Note: Only one of any type of daughter board may be installed on any processor card. In an L version system ONLY the ESM board can be installed on the MCP2 card. Do not install any other types of daughterboard on the MCP2 in an L version system. Other daughterboards may be installed on the SCP2 card.

SWITCH CONTROL PROCESSOR (SCP2)

The Switch Control Processor (SCP2) is installed in slot 9 of the KSU and reduces the available universal card slots to eight. The SCP2 card is required when the system is to be expanded beyond a single cabinet or L version software is required. The SCP2 card has positions for three optional daughter boards. The first daughter board position (SCP2-D1) can support one of three types of daughter board, a Multi-Frequency Module (MFM), a Switch/Conference Module (SCM) or an R2/CID Module (RCM). The second daughter board position (SCP2-D2) can support the MFM, the SCM, the RCM or the MISC. The third daughter board position (SCP2-D3) can support one of the three types of daughter board, a Multi-Frequency Module (MFM), a Switch/Conference Module (SCM) or an R2/CID Module (RCM).

Note: Only one of any type of daughter board may be installed on any processor card.

SWITCH CONTROL PROCESSOR (SCP2) DAUGHTER	
Position	**Types of Daughter Boards allowed per position**
SCP2 - D1	MFM, SCM, RCM
SCP2 - D2	MFM, SCM, RCM, and MISC
SCP2 - D3	MFM, SCM, RCM

LOCAL CONTROL PROCESSOR (LCP2)

The Local Control Processor (LCP2) card is installed in a dedicated processor slot, slot 10, of each Expansion KSU and does not reduce the available universal card slots of that cabinet. The LCP2 card has positions for three daughter boards. The first daughter board position (LCP2-D1) can support one of two types of daughter board, a Multi-Frequency Module (MFM), or an R2/CID Module (RCM). The second daughter board position (LCP2-D2) can support the MFM, the RCM or the MISC. The third daughter board position (LCP2-D3) can support one of two types of daughter board, a Multi-Frequency Module (MFM), or an R2/CID Module (RCM).

LOCAL CONTROL PROCESSOR (LCP2) DAUGHTER BOARD CAPABILITIES

Position	Types of Daughter Boards allowed per position
LCP2 -D1	MFM, RCM
LCP2 -D2	MFM, RCM and MISC
LCP2 -D3	MFM, RCM

Note: Only one of any type of daughter board may be installed on any processor card.

2.2.2 PROCESSOR CARD DAUGHTER BOARDS

There are five types of daughter board that fit on the various processor cards. Some daughter boards will only work on the Main Control Processor (MCP2) and the rest will work on any processor card. The various daughter boards and their uses are described below.

SWITCH AND CONFERENCE MODULE (SCM)

The Switch and Conference Module installs on the MCP2 or the SCP2 processor cards. In a single cabinet system the SCM can be installed in MCP2-D1, however in a multiple cabinet system the SCM must be installed on the SCP2 as the MCP2 must have the ESM daughter board. The system, regardless of size can only support one SCM daughter board. Adding a SCM daughter board to the system increases the number of conference bridges in the system from six to twenty four. In addition, the SCM also adds twelve DSPs for DTMF and tone detection.

- Twelve (12) DSPs for DTMF and tone detection
- Eighteen (18) conference bridges (for a system total of 24)

MULTI-FREQUENCY MODULE (MFM)

The MFM Module installs in any position of any of the processor cards. The main purpose of the MFM daughter board is to provide DSPs for DTMF and tone detection.

The receivers are also used for DID trunks, E&M trunks, DISA, DNIS and ANI.

- Twelve (12) DSPs for DTMF and tone detection.

EXPANDED SWITCH MODULE (ESM)

The Expanded Switch Module is used to expand the time switch matrix from 512 channels in a single cabinet to the 1024 channels required for a multiple cabinet systems.

The ESM daughter board installs in position MCP2-D1 and consists of the following:

- 1024 channel time switch matrix

Note: This is the ONLY daughterboard that can be installed on the MCP2 in an L version system.

R2/CID MODULE (RCM)

The R2/CID Module installs in any position on any of the processor cards. The main purpose of the RCM daughter board is to provide Caller ID decoders for use with that telephone company provided service over analog trunks. A secondary use of the RCM is to provide R2 MFC senders and receivers to the system although these are not used in the US. The system can support up to three of these cards for a total of 42 CID receivers.

The RCM consists of the following:

- Fourteen (14) CID receivers (for use with Caller ID on analog trunks)

R2/CID-Tx MODULE (RCM2)

This card has the same functionality as the RCM plus DSPs to transmit CID information to analog station ports.

The RCM2 consists of the following:

- Fourteen (14) CID receivers
- Sixteen (16) CID senders

MISCELLANEOUS FUNCTION MODULE (MISC)

The Miscellaneous Function Module (MISC) daughter board installs in position MCP2-D3 on the MCP2 card in a single cabinet system or in position SCP2-D2 on the SCP2 or position LCP2-D2 on the LCP2 card(s) in a multiple cabinet system. The MISC daughter board is used to provide external music on hold/audio inputs (radios, digital announcers, etc.), external paging auto output, loud bell, common bell and programmable dry contact closures. The system can support up to three of these daughter boards, one on the MCP2 or SCP2 and one on each of the LCP2s.
The MISC consists of the following:

- Two (2) external music/audio inputs
- One (1) external paging audio output
- One (1) loud bell audio output
- One (1) common bell relay contact closure
- Two (2) software assignable relay contact closures

2.2.3 SMARTMEDIA CARDS

An iDCS 500 Release 2 system must have a SmartMedia card installed in the main control processor (MCP2) as the SmartMedia card contains the system operating software. The SmartMedia card can also be used to store a back-up customer database to supplement the database stored on the MCP2 card. In addition the SmartMedia card can store backup copies of the operating software for the SCP2, LCP2, and TEPRI cards.

2.2.4 INPUT–OUTPUT MODEM (IOM) BOARD

The Input Output Modem board installs in the first cabinet and provides access to the two serial I/O ports on the Main Control Processor (MCP2) card. Ports 1 and 4 are not used on a Release 2 system. The IOM board also has provision to have an internal 56K/V.90 modem installed on it (see Part 2.2.5).

2.2.5 MODEM DAUGHTER BOARD

The Modem daughter board installs on the Input Output Modem card. The modem provides a 56K/V90 connection to the system for use for remote administration and/or programming. The card has a default extension number of 3999 and eliminates the need for an external modem, serial cable, single line telephone port and serial I/O port on the system.

2.3 INTERFACE CARDS

These cards provide the interface connections for telephone lines and stations to the KSU and expansion cabinets. These cards fit into the universal card slots to configure the system as required. iDCS 500 Release 2 interface cards are encased in a static dissipative ABS plastic shell to protect the PCB during handling.

2.3.1 TRUNK CARDS

TRUNK B1

This card contains four loop start C.O. line interface circuits with C.O. disconnect detection. It also contains the circuitry needed for Caller ID. It can be inserted in any universal card slot in all cabinets.

TRUNK C1

This card contains eight loop start C.O. line interface circuits with C.O. disconnect detection. It also contains the circuitry needed for Caller ID. It can be inserted in any universal card slot in all cabinets.

GTRK

This card contains four ground start C.O. line interface circuits with disconnect detection. It can be inserted in any universal card slot in any cabinets.

DID

This card contains four Direct Inward Dialing (DID) trunk interface circuits. This card can be inserted in any universal card slot 2 through 9 in any cabinet.

E & M

This card contains four 2 wire E & M tie lines, type one interface configuration (TL11M). It can be inserted in any universal card slot in all cabinets. This card can be used for two way DID calling.

TEPRI DIGITAL TRUNK

When programmed as a T1 this card provides up to 24 trunk circuits in any combination of the following:

- Loop start lines
- DID (Direct Inward Dialing)
- Ground start lines
- E & M tie lines or two way DID calling

When the card is programmed as a PRI it will provide 23 bearer channels and 1 data channel (23B+D). This card can be installed in any of the first three slots of any cabinet.

4 BRI (BASIC RATE INTERFACE–4BRI)

The 4 BRI card supports 4 trunk or station level ISDN Basic Rate Interface (i.e., 2B plus D) circuits. The 4BRI can be inserted in any universal slot.

MGI2 (MEDIA GATEWAY INTERFACE)

The MGI2 card supports 16 VOIP channels. These channels are H.323 and SIP compliant and are used in conjunction with either the G.711 (64K) or G.729A (8K) voice compression protocols. The MGI2 card may be installed in any universal card slot up to a maximum of 5 cards per cabinet. The MGI2 only supports in-band signaling.

The MGI2 cards provide the following services on a per-channel basis:

- H.323 IP Trunking (VoIP connections to other H.323 gateways)
- SIP IP Trunking
- ITP Phones
- IP Networking (Networking multiple iDCS 500 R2 and iDCS 100 R2 systems over IP networks)

Note: There is a maximum of 5 MGI cards per cabinet (15 per system). All 5 can be MGI2 or a combination of MGI2 and MGI3 cards, as long as there is no more than 2 MGI3 cards per cabinet.

MGI3 (MEDIA GATEWAY INTERFACE)

The MGI3 card supports up to 16 VoIP channels. There are 8 embedded on the card. An additional 8 channels can be added by plugging in a daughterboard.

The MGI3 has the capabilities of the MGI2 plus the following:

- G.723.1 (5.3K-6.4K) CODEC
- G.729 (8K) CODEC

- T.38 Fax CODEC
- H.245 Trunking
- Out-of-band signaling of DTMF tones

Note: There is a maximum of 5 MGI cards per cabinet (15 per system). All 5 can be MGI2 or a combination of MGI2 and MGI3 cards, as long as there is no more than 2 MGI3 cards per cabinet.

E911 CARD

The E911 card supports up to 4 CAMA (Centralized Automatic Message Accounting) type loop start trunks to provide CESID (Caller Emergency Services ID). These trunks are connected directly to the PSAP (Public Services Answering Point) to pass on calling station information to enable the emergency services to correctly locate the source of the call such as a building floor.

2.3.2 STATION CARDS

DLI

This card is an eight circuit digital station interface card that provides 2B+D service when installed in any universal card slot in all cabinets. Keyset daughter boards will only work when connected to this card.

16DLI

This card is a sixteen circuit digital station interface card that provides 1B+D service when installed in any universal card slot in all cabinets. Keyset daughter boards will not work when connected to this card.

SLI

This card is a four circuit analog station interface for industry standard single line telephones or other analog peripheral devices (voice mail, etc.). Each circuit is equipped with an analog DTMF receiver and provides the over-voltage protection required for connection to telephone company off premises extension circuits (OPX). It can be inserted in any universal card slot in all cabinets. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card. See the installation manual part 3 for details.

8SLI

This card is a eight circuit analog station interface for industry standard single line telephones or other analog peripheral devices. The 8SLI does not contain any over-voltage protection and is not qualified as OPX. It also does not contain DTMF receivers, but shares system DSP resources. It can be inserted in any universal card slot in all cabinets. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card. See the installation manual part 3 for details.

16SLI

This card is a sixteen circuit analog station interface for industry standard single line telephones or other analog peripheral devices. The 16SLI does not contain any over-voltage protection and is not qualified as OPX. It also does not contain DTMF receivers, but shares system DSP resources. It can be inserted in any universal card slot in all cabinets. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card. See the installation manual part 3 for details.

8MWSLI

This card is an eight circuit analog station interface for industry standard single line telephones that require operation of an industry standard message waiting lamp with a voltage range of 85 ~ 96 VDC. The lamp can be programmed to be on continuously or flash at a programmable rate of 100ms to 2000ms ON/OFF times. The 8MWSLI does not contain any over-voltage protection and is not qualified as OPX. It also does not contain DTMF receivers, but instead shares the system DSP resources. It can be inserted in any universal card slot in all cabinets. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card. See the installation manual part 3 for details.

16MWSLI

This card is a sixteen circuit analog station interface for industry standard single line telephones that require operation of an industry standard message waiting lamp with a voltage range of 85 ~ 96 VDC. The lamp can be programmed to be on continuously or flash at a programmable rate of 100ms to 2000ms ON/OFF times. The 16MWSLI does not contain any over-voltage protection and is not qualified as OPX. It also does not contain DTMF receivers, but instead shares the system DSP resources. It can be inserted in any universal card slot in all cabinets. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card. See the installation manual part 3 for details.

2.3.3 OTHER CARDS

AUTO ATTENDANT

This optional card can be used for either the Automated Attendant, Uniform Call Distribution or a combination of both. For more information about the Automated Attendant and UCD, see section 4.1 System Features.

SVMi-8E & SVMi-16E

The SVMi-8E and SVMi-16E Voice Mail system are fully integrated Auto Attendant/Voice Mail/Fax System on a single circuit card.

These optional cards provide either 4 or 8 channels of communication on the SVMi-8E and 8, 12, or 16 channels of communication on the SVMi-16E. Only one card is permitted per system and it can be installed in any universal card slot.

This fully featured self contained system is connected directly to the system data bus and communicates with the 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 the power to run this self contained Voice Mail system comes from the phone system power supply. Each of the iDCS phone system power supplies are rated according to how many stations they will support. When SVMi-8E is installed in the iDCS it counts as 8 stations of the PSU rating regardless of the number of the Voice Processing Modules (VPM) installed. The SVMi-16E counts as 8 stations of the PSU with no addition VPMs, 10 Stations of the PSU with 1 VPM, and 12 Stations of the PSU with 2 VPMs installed.

8WLI [Future Release]

The 8WLI card in an interface card providing a wireless solution for the iDCS 500 Release 2 / OfficeServ system and provides the wired interface between the iDCS 500 Release 2 / OfficeServ system and up to 8 WBS24s (WLAN Base Station 2.4 GHz). The wired interface uses 2B+1D DASL (Digital Adapter Subscriber Loops), and communicates with the MCP2 card using DPRAM (Dual Ported RAM).

A maximum of one 8WLI card can be mounted on the iDCS 500 Release 2 / OfficeServ system, and the 8WLI can interoperate with a maximum of 8 WBS24s. Since two DASL lines are connected to one WBS24, four simultaneous phone calls are possible through each of the WBS connections. Therefore, one 8WLI board can support a maximum of 32 voice channels.

2.4 STATION EQUIPMENT

2.4.1 iDCS SERIES EQUIPMENT

iDCS 28D KEYSET (See Figure 2–1)

- 32 character display (2 x 16) with three associated soft keys and a scroll key
- 28 programmable keys with tri-colored lights
- Four fixed function keys
- Terminal Status Indicator
- Built-in speakerphone
- Eight selectable ring tones
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted
- Available in dark gray or light gray

FIGURE 2-1

iDCS 18D KEYSET (See Figure 2–2)

- 32 character display (2 x 16) with three associated soft keys and a scroll key
- 18 programmable keys with tri-colored lights
- Four fixed function keys
- Terminal Status Indicator
- Built-in speakerphone
- Eight selectable ring tones
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted
- Available in dark gray or light gray

FIGURE 2-2

iDCS 8D KEYSET (see Figure 2–3)

- 32 character display (2 x 16) with three associated soft keys and a scroll key
- 8 programmable keys with tri-colored lights
- Four fixed function keys
- Terminal Status Indicator
- Built-in speakerphone
- Eight selectable ring tones
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted
- Available in dark gray or light gray

FIGURE 2-3

Note: This keyset type cannot use keyset daughter boards or the 14 button strip.

iDCS 64B AOM (See Figure 2–4)

- 64 programmable keys with red lights
- A maximum of 4 can be assigned to any keyset to provide additional programmable keys
- A maximum of 32 per system
- Available in dark gray or light gray

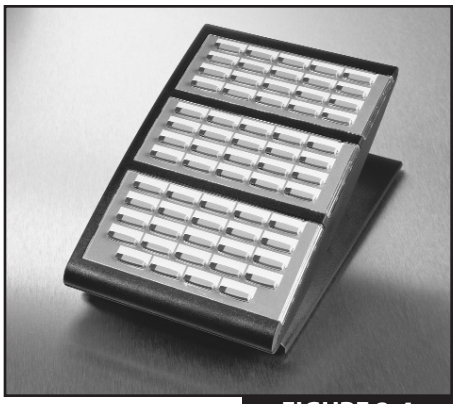


FIGURE 2-4

iDCS 14B STRIP (See Figure 2–5)

- 14 programmable keys with red lights
- A maximum of one can be added to any 28D or 18D keyset to provide additional programmable keys
- Available in dark gray or light gray

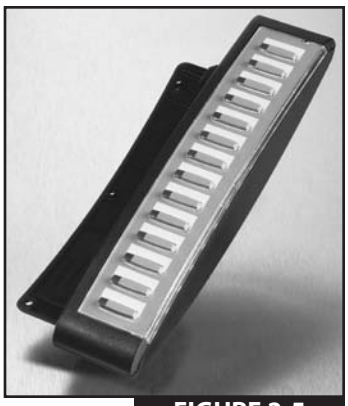


FIGURE 2-5

iDCS KDB-DIGITAL LINE INTERFACE (FKDBD)

This is a daughterboard that can be installed only in the 18 or 28 button keyset. The FKDBD will provide one additional DLI circuit for the connection of any digital station device such as a keyset, add-on module or DPIM. This FKDBD will only operate when the keyset is connected to an 8 port DLI card so it can use the second B channel. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card.

Note: Only one KDB can be installed on a keyset.

iDCS KDB-SINGLE LINE INTERFACE (FKDBS)

This is a daughter board that can be installed only in the 18 or 28 button keyset. The FKDBS will provide one additional SLI circuit for the connection of any standard telephone device. This FKDBS will only operate when the keyset is connected to an 8 port DLI card it can use the second B channel. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card.

Note: The circuitry on a FKDBS does not provide a loop open disconnect signal or have the over-voltage protection necessary for OPX operation. Only one KDB can be installed on a keyset.

iDCS KDB-FULL DUPLEX (FKDBF)

This is a daughter board that can be installed only in the 18 or 28 button keyset. The standard speakerphone mode of operation for a iDCS keyset is "half duplex". This means that you cannot transmit and receive speech at the same time. Adding a FKDBF to your keyset will convert the speakerphone into full duplex mode enhancing its operation. The FKDBF does not require a second "B" channel like the FKDBD or FKDBS and so can be used on a 16 DLI card. In addition the FKDBF may have up to three (3) external microphones attached to it for conference room type applications. These microphones require an "EXTMIC" key programmed on the keyset to activate or deactivate them.

Note: Only one KDB can be installed on a keyset.

2.4.2 DCS SERIES EQUIPMENT

LCD 24B KEYSET (See Figure 2–6)

- 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 2-6

LCD 12B KEYSET (see Figure 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

7 BUTTON MODEL KEYSET (see Figure 2–8)

- 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 2-8

SINGLE LINE TELEPHONE (See Figure 2–9)

- 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 2-9

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

32 BUTTON ADD-ON MODULE (AOM)

(see Figure 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
- Can operate as a stand-alone handsfree telephone unit

FIGURE 2-10

64 BUTTON MODULE (See Figure 2–11)

- 64 programmable keys
- Available in almond and charcoal
- A maximum of 4 can be assigned to any DCS keyset to provide additional programmable keys
- A maximum of 32 per System

FIGURE 2-11

FIGURE 2-12

FIGURE 2-13

DOOR PHONE INTERFACE MODULE (DPIM) & 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

KDb-DLI

This is a daughterboard that can be installed only in the 12 or 24 button keyset. The KDb-DLI will provide one additional DLI circuit for the connection of any digital station device such as a keyset, add-on module or DPIM. This KDb-DLI will only operate when the keyset is connected to an 8 port DLI card so it can use the second B channel. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card. See the installation manual part 3 for details.

KDb-SLI

This is a daughter board that can be installed only in the 12 or 24 button keyset. The KDb-SLI will provide one additional SLI circuit for the connection of any standard telephone device. This KDb-SLI will only operate when the keyset is connected to an 8 port DLI card it can use the second B channel. Each port on this card is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation or damage to the card. See the installation manual part 3 for details.

Note: The circuitry on a KDb-SLI does not provide a loop open disconnect signal or have the over-voltage protection necessary for OPX operation.

2.4.3 OfficeServ™ ITP-5000 SERIES EQUIPMENT

ITP-5012L IP KEYSET (See Figure 2–14)

- Built-in speakerphone
- Five fixed function keys
- 3 Inch x 2.25 LCD display with twelve associated soft keys and a scroll wheel
- UP/DOWN buttons for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones
- Navigation key

FIGURE 2-14

ITP-5021D IP KEYSET (See Figure 2–15)

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

FIGURE 2-15

2.4.4 OfficeServ™ SOFTPHONE

Samsung OfficeServ™ Softphone is a software-based application that turns your computer into a full-featured Samsung IP telephone. It is installed directly onto your laptop or desktop PC running Microsoft Windows XP or 2000 operating system. Once a USB headset or a USB handset is connected; the Softphone delivers virtually identical functionality as the ITP-5012 L and ITP-5021D desktop ITP phones.

OfficeServ™ Softphone is ideal for telecommuter and mobile users. Remote workers can simply connect their laptop to the corporate network, snap in a USB headset, and function as if they were in their own office. They can place, receive, and handle calls on both the internal and external network, providing a truly portable and practical solution.

PART 3. SPECIFICATIONS

The following tables provide technical data for the iDCS 500 Release 2 hybrid/key telephone system.

3.1a ELECTRICAL SPECIFICATIONS (PSU 60)

AC INPUT	120 (88—132) VAC (48—63 Hz)* 220 (180—260) VAC (48—63 Hz)
POWER CONSUMPTION (MAX)	120 WATTS MAX. PER PSU, FUSE RATING 3 AMP
BTU RATING (MAX)	6.8 BTU / MINUTE
DC OUTPUT	+5 VOLTS 5.0 AMPS MAX –5 VOLTS 0.5 AMPS MAX –48 VOLTS 1.4 AMPS MAXIMUM –54 VOLTS CHARGER 0.45 AMPS MAX

*Normal factory setting.

3.1b ELECTRICAL SPECIFICATIONS (PSU-B)

AC INPUT	100—120 (88—132) VAC (48—63 Hz)* 220—240 (180—260) VAC (48—63 Hz)
POWER CONSUMPTION (MAX)	150 WATTS MAX. PER PSU, FUSE RATING 5 AMP
BTU RATING (MAX)	8 BTU / MINUTE
DC OUTPUT	+5 VOLTS 8.0 AMPS MAX –5 VOLTS 1.5 AMPS MAX –48 VOLTS 1.4 AMPS MAXIMUM –54 VOLTS CHARGER 0.45 AMPS MAX

*Normal factory setting.

NOTE: Only the PSU-B should be installed in the first PSU slot (left). It is the main source of +5V DC to processor cards. It will only support 56 stations or SEPUs. The second PSU slot (right) can use either the PSU60 or PSU-B. The PSU-B will support 64 stations (SEPUs) when used in this slot. The PSU60 will support 56 stations (SEPUs) when used in this slot.

3.2 DIMENSIONS AND WEIGHTS

	HEIGHT	WIDTH	DEPTH	WEIGHT
iDCS 500 Basic System: Single Cabinet	17.5″	22.5″	12″	35 lb.
Expanded System: Two Cabinets	35″	22.5″	12″	70 lb.
Expanded System: Three Cabinets	52.5″	22.5″	12″	105 lb.
iDCS Digital Keyset (18 and 28 Button)	4.25″	8.5″	9″	2.563 lb.
iDCS Digital Keyset (8 Button)	4.25″	6.4″	9″	2.240 lb.
ITP-5021D	4″	10.5″	8.25″	2.340 lb.
ITP-5012L	4″	10.5″	8.5″	2.570 lb.
iDCS 14B Strip	5″	1.625″	8″	5.5 lb.
iDCS 64B AOM	4″	5.25″	9″	1.1 lb.
32 Button Add-On Module	4.25″	4.25″	9″	1.188 lb.
64 Button Add-On Module	4.25″	4.25″	9″	1.25 lb.
Door Phone	5″	3.88″	1.25″	6.8 oz.

3.3 ENVIRONMENTAL LIMITS

OPERATING TEMPERATURE	32—104 °F / 0—40 °C
STORAGE TEMPERATURE	-13—158 °F / -25—70 °C
HUMIDITY	10%—90% Non-Condensing

3.4 CABLE REQUIREMENTS

EQUIPMENT	CABLE	AWG	MAX FEET	MAX METERS
DIGITAL KEYSET	1 PR. TWISTED	24	1300	400
ADD-ON MODULE	1 PR. TWISTED	24	1300	400
SINGLE LINE STATION	1 PR. TWISTED	24	3000	1 KM
DOOR PHONE	2 PR. TWISTED	24	330*	100
ITP KEYSET	2 PR. CAT 5	22	330*	100

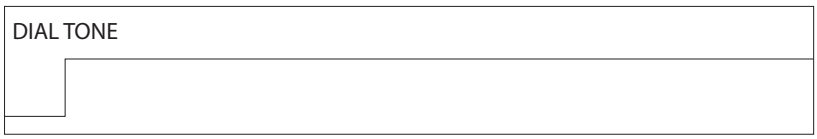
*This is the maximum distance a door phone can be from the DPIM. The DPIM can be up to 900 cable feet from the KSU. The total distance must not exceed 1230 feet.

3.5 SYSTEM TONES

TONE	FREQUENCIES	CADENCE
DIAL TONE	350 + 440 Hz	Continuous
RINGBACK TONE	440 + 480 Hz	1 sec on + 3 sec off
DID RINGBACK TONE	440 + 480 Hz	2 sec on + 4 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
TRANSFER / CONF	350 + 440 Hz	0.1 sec on + 0.1 sec off
CONFIRMATION TONE	350 + 440 Hz	0.05 sec on + 0.05 sec off
ERROR TONE	480 + 620 Hz	0.05 sec of tone 1/0.05 sec of tone 2

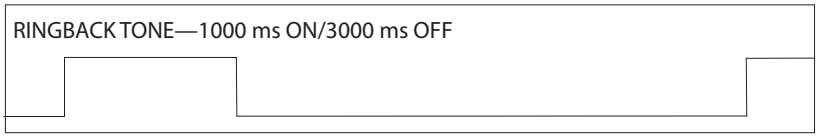
SYSTEM TONES

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



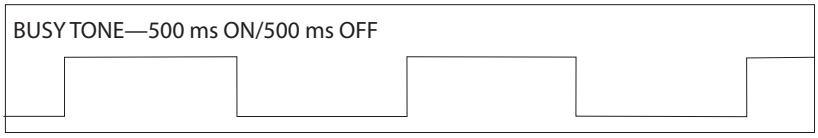
CONTINUOUS

Ringback Tone—Indicates the station you dialed is ringing.



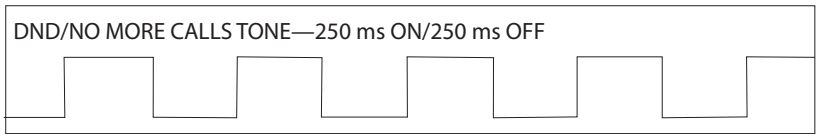
CONTINUOUS

Busy Signal—Indicates the station you dialed is busy.



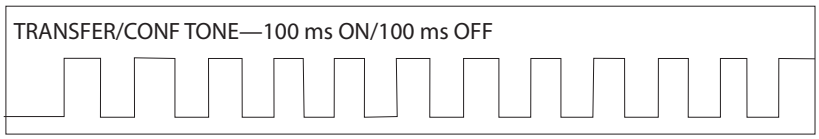
CONTINUOUS

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



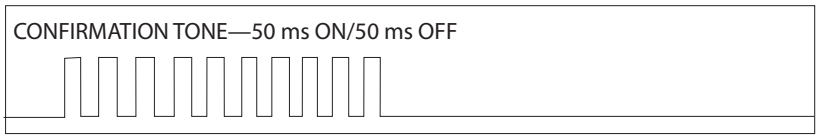
FOR TEN SECONDS

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



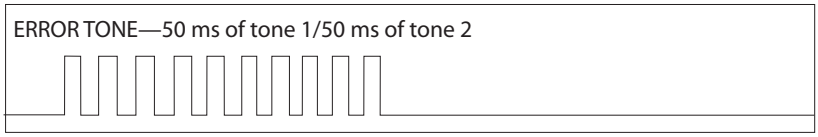
CONTINUOUS

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



FOR TWO SECONDS

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



FOR TWO SECONDS

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
OPERATOR CALLS	RED	100 ms	100 ms
ANS / RLS (DND)* (**)	RED	112 IPM for 500 ms	500 ms
ANS / RLS (HANDSET MODE)**	RED	STEADY	—
TRSF (FORWARD ALL)**	RED	STEADY	—

*Overrides headset mode
**DCS model keysets only

3.7a RESERVE POWER DURATION ESTIMATES (in minutes)*

No. of PSUs	UPS CAPACITY IN VOLT AMPS (VA)					
	250	450	600	900	1250	2000
1	5	20	30	47	75	180
2		8	10	24	40	70
3		5	7	20	36	64
4				13	22	35
5				10	13	25
6				5	10	20

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

3.7b RESERVE POWER DURATION ESTIMATES (in hours)*

No. of PSUs	BATTERY CAPACITY IN AH					
	40	80	120	160	200	240
1	15	x	x	x	x	x
2	7.5	15	x	x	x	x
3	5.3	7.5	15	x	x	x
4	4	5.3	7.5	15	x	x
5	3.2	4	5.3	7.5	15	x
6	2.7	3.2	4	5.3	7.5	15

*These are approximate values. Specific batteries, due to their internal construction, can have greater or lesser values. Note: X denotes that this system configuration cannot charge batteries of this capacity.

Samsung iDCS 500 Release 2 Table Size Comparison

	M VERSION	L VERSION
Station Groups	40	80
Trunk Groups	30	30
UCD Groups	20	20
Station Group Members	48	48
Unconditional Group Members	32	32
Trunk Group Members	99	99
Internal Page Members	99 x 5	99 x 5
External Page Members	8 x 4	8 x 4
Toll Restriction Entries	500	500
Toll Allowance Entries	500	500
DID Translation Entries	999	999
Authorization Code Entries	500	500
Account Code Entries	999	999
Station Groups	40	80
LCR Digit Entries	2000	2000
LCR Modify Digit Tables	200	200
LCR Time Tables	4	4
LCR Time Bands	4	4
LCR Route Tables	32	32
Alarm Reminder Buffers	3	3
Speed Dial Entries	2000	2500
System Buffers (MAX)	500 / 950	500/950
Station Buffers (MAX)	50	50
AA Plan Tables	12	12
AA Translation Tables	12	12
AA Translation Entries	100 x 12	100 x 12
CID Review Buffers	2000	2000

	M VERSION	L VERSION
CID Abandon Lists	100	100
CID Name Translation Entries	1000	2000
Call Buttons per Station	8	8
Call Logs Entries	2000	2000
Call Log per Station	50	50
Tenant Groups	2	2
Ring Plans	6	6
Programmed Messages	20 (15+5)	20 (15+5)
AOM Pairs per Station	4	4
Call Cost Digit Entries	500	500
Call Cost Rate Tables	8	8
PBX Access Code Entries	5	5
Special Code Entries	10	10
Emergency/Override Code Entries	8	8
Holiday Entries	60	60
Class of Service	30	30
LCR Classes	8	8
Message Waiting per Station	5	5
Conference Groups	24	24
Conference Group Members	5	5
Pickup Groups	99	99
Internal/External Page Zones	5/4	5/4
Redial & External FWD Dial Digits	18	18
IP Keysets	120	240
Virtual Extensions	62	118
Text Messages	10/100	10/100

PART 4. BUSINESS FEATURE PACKAGE

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 code key without interrupting a conversation. Single line telephone users must temporarily interrupt the call by hook-flashing and dialing the feature access code. Manually entered account codes can be up to 12 digits long. In some cases users can be forced to enter an account code and this account code may or may not be verified as described below.

Forced – Verified

When set for this option the user must enter an account code for all outgoing calls. The account code entered will be verified from a system list of 999 entries. Forced Verified codes can contain the digits 0~9.

Forced - Not Verified

When set for this option the user must enter an account code for all outgoing calls, but the account code is not verified against the system list. Non verified account codes can contain the digits 0~9, * and #.

Voluntary

In this case account codes are not required to make outgoing calls but may be used if desired. This is also the method used to assign an account code to incoming calls. These account codes can contain the digits 0~9, * and #.

ACCOUNT CODE KEY

The account code (ACCT) key can be programmed on any keyset and will appear as a soft key on display keysets. This key allows the user to enter account codes without interrupting a call.

ACCOUNT CODE KEY – ONE TOUCH

The account code (ACC) key can be programmed on any keyset. This key can be programmed with an extender and operates in three different ways depending on the extender as follows.

Extender = 000

When programmed with an extender of 000 the user will be prompted to enter an account code when the key is pressed.

Extender = 001~999

When programmed with an extender ranging from 001 to 999 the key will, when pressed, automatically insert the account code contained in that bin of the system account code list. This is known as One Touch account codes. This option can be denied in system programming to prevent users from bypassing the security of system account codes.

No Extender

When programmed without an extender the key will, when pressed, prompt the user to enter the bin number the system account code table where the account codes are stored.

ADMINISTRATOR PROGRAM KEY

This feature gives designated stations the ability to administer a number of System functions from their key-set using a flexibly assigned button. The Administrator Program (PROG) key is programmed in MMC 722. The station passcode must be changed from the default value to use this feature. See the System Administrator Guide for more information.

ALL CALL VOICE PAGE

Users can page internal zone zero 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 99 keysets can be programmed in each internal page zone to receive page announcements.

Note: Each IP keyset being paged requires an MGI channel to carry the page audio. If all MGI channels are busy then no IP keysets will receive a page.

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.

AUDIO MESSAGE WITH ALARM (TIMER) REMINDER

This feature provides an option that allows a recorded message to be played to a user when they go off hook to answer an alarm reminder ring (timed reminder ring). The message is recorded on the AA card. In addition, if the AA group is busy when the reminder call is answered the system will play a designated MOH source to the user. Alternatively System programming can define an external music source to be played when the Appointment Reminder is answered.

AUTHORIZATION CODES

Authorization codes are used to give permission to make a call. A maximum of 500 four to ten-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 the system list of 500 authorization codes.

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 500 authorization codes.

AUTO ANSWER ON CO

Allows new CO calls directed to a certain keyset to auto answer and be in the call announce mode. This means that private lines and DID calls can be "auto answered" in the same manner as intercom calls. Transferred calls and calls to a station group of which that keyset is a member will continue to ring.

AUTO ATTENDANT

The integrated digital automated attendant feature (AA) provides eight ports per card for simultaneous answering and call processing. A maximum of five cards can be installed in one system. Each card has sixteen professionally recorded announcements 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". A maximum of two minutes of super capacitor backed (100 hours) random access memory (RAM) provide up to 48 customer recordings for announcements or greetings. Twelve individual announcements (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. This system is compatible with SVM and CADENCE.

NOTE: Announcements recorded on one AA card can not be played to callers on another AA card.

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.

BRANCH GROUP

This feature allows stations included in a branch group to answer a ringing call to another station in the group by simply lifting the handset or going on speakerphone mode. This feature works well when there is a need to answer calls for people who may be away from their desk or when a common answering pool is needed. Calls can be directed to a common bell and then can be answered by anyone in the Branch Group. There are a total of 99 branch groups available, but a station can only be in one branch group.

CALL ACTIVITY DISPLAY

The iDCS 500 Release 2 will record and buffer all calling activity within the system. With a Call Activity Display (CAD) key, the iDCS 500 Release 2 will display a "snapshot" of the following information:

- The maximum number of ports that have been used
- The maximum number of trunks that have been used
- The maximum number of stations that have been used
- The current number of ports in use
- The current number of trunks in use
- The current number of stations in use

CALL COSTING

The iDCS 500 Release 2 software provides programmable call costing tables to calculate the cost of incoming and outgoing calls. Rates are calculated by the number dialed, and may include surcharges. Display keysets can be set to show the call duration timer or the call cost. The SMDR report will show either the call duration or the call cost depending on the station selection. One call handled by multiple callers will cost each call segment separately.

CALLER IDENTIFICATION

The iDCS500 supports three methods of identifying an incoming caller depending on the circuit type as described below.

Automatic Number Identification (ANI)

On a digital T1 trunk programmed as E&M trunks calling party information is called ANI. This information is the telephone number of the calling party and is sent as in-band DTMF digits during the call setup. Care should be taken to ensure the system has sufficient DTMF receiver resources to handle the expected volume of call traffic. Although ANI provides the number only, a name can be attached to the telephone number of frequent callers via the CID/ANI translation table.

Caller ID

On an analog, loop start CO line, calling party information is called Caller ID and is available from the telephone company in two formats, Number only and Name and Number, sometimes called Deluxe. The iDCS 500 Release 2 is compatible with both formats. Even if the telephone company only offers the number only, a name can be attached to the telephone number of frequent callers via the CID/ANI translation table.

Calling Line Identification (CLI)

On ISDN circuits, calling party information is called CLI and is supported on both BRI and PRI type circuits as described below.

BRI

On BRI circuits the iDCS500 only supports Number delivery and, like ANI, a name can be attached to the telephone number of frequent callers via the CID/ANI translation table.

PRI

On 5ESS and NI2 PRI circuits both name and number support is provided on the iDCS500 system. On a DMS100 circuit only Number service is provided.

CALLER ID FEATURES

The following features apply to all forms of Caller Identification, however, to make them easier to read caller identification is referred to as Caller ID.

Name/Number Display

Each LCD keyset user can decide if he/she wants to see the name or number in the display. Regardless of which one is selected to be seen first, the NND key is pressed to view the other pieces of 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 call in queue at your station. Either the Caller ID name or number will show in the display depending on your selection.

Save Caller ID Number

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

Store Caller ID Number

At any time during an incoming call that provides Caller ID information, you may press the STORE key. This saves the Caller ID 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.

Caller ID Review List

This feature allows display keyset users to review Caller ID 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. There is also an option called CID REVW ALL in the User ON/OFF options. When set to ON the feature will operate the same as described. However, when set to OFF only calls that are not answered (missed calls) at the station will be recorded in the Review list.

Investigate

This feature allows selected stations with a special class of service to investigate any call in progress. If Caller ID 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

The system has a system-wide abandon call list that stores Caller ID information for calls that rang but were not answered. The list is accessed using the administrator's passcode. When reviewing this list, you are provided options to CLEAR the entry or DIAL the number. You can see the NND key to toggle between the Caller ID name, number and the date and time the call came in. The system must be using LCR to dial numbers from the abandon call list. The abandoned call list will store up to 100 unanswered calls.

Caller ID ON SMDR

The Station Message Detail Records report can be set to include Caller ID name and Caller ID 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.

Number to Name Translation

The system provides a translation table for 1000 entries on iDCS 500 Release 2-M version software and 2000 entries on iDCS 500 Release 2-L version software. When the Caller ID number is received, the table is searched. When a match is found, the system will display the corresponding name.

Caller ID to PSTN

When calling out on ISDN-PRI services, each station can be programmed to send any one of the listed directory numbers provided on the PRI circuit. Examples are: the main number, another number or an individual DID number. (PSTN=Public Switch Telephone Network)

Caller ID to Analog Port

When equipped with the optional RCM2 card, Caller ID from the telephone company is sent to analog ports within the system.

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.

No Answer

This feature forwards calls that are not answered within a preprogrammed time. The user can originate calls as usual and receive call 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.

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.

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.

External

Stations can be programmed to forward all, forward busy, forward no answer, forward DND C.O. calls to an external number via a central office trunk if allowed by class of service. Intercom calls may also be programmed to forward to an external number via a central office trunk.

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.

Preset Destination

If desired this feature provides for a permanent (preset) forward no answer destination for each extension. It can only be programmed by the system technician or system administrator. When any station does not have FWD/NO-ANSWER set, the call will ring this preset destination if one is programmed.

Preset Forward Busy

This feature allows the Preset Forward No Answer setting to also work for Busy status. When PRESET BUSY is turned on the calls will follow the preset for both busy and no answer conditions.

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. Exclusive hold for trunk calls can be denied in class of service.

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.

Remote

Outside calls can be placed on hold at a station other than the station placing the call on hold. 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. NOTE: Intercom calls cannot be remote held.

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. There is a system option to allow a DSS key to perform a pickup function rather than a transfer function when pressed.

Groups

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 99 pickup groups available in the system. 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.

Established

This feature enables a keyset user to pick-up an establish call in progress at a single line extension connected to a modem on a PC. An EP key with this extension number must be programmed on the keyset. Established call pickup is useful with PC dialing programs that outdial from a large list of telephone numbers. Let the computer dial for you, then press the EP key to speak with the called party.

CALL RECORDING

When using Samsung's proprietary SVMi in-skin voice mail system, keyset and OfficeServ Softphone users can record their telephone conversations in their personal mailbox for playback or e-mail later.

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. Digital keysets receive an off-hook ring signal through the speaker while single line

stations and IP keysets receive a tone in the earpiece of 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.

Optionally any station can be programmed to automatically camp-on to a busy station instead of having to press the camp-on button or dial a camp-on code.

CALLER EMERGENCY SERVICE ID (CESID)

This is a service where the telephone system sends a number, usually a call back number, to the Public Service Answering point (PSAP) when a station user dials 911. This number is associated in the PSAP with a location indicating exactly where the call originated. This allows the emergency services to respond directly to the correct building or floor of a building rather than to have to make inquiries as to the location of the emergency. This service is sometimes referred to as Enhanced 911 or E-911. This service is provided in two forms in the iDCS 500 Release 2, either via a dedicated 4 port Centralized Automatic Message Accounting (CAMA) trunk card called the E911 card or via an ISDN PRI circuit configured for both way DID connected to the TEPRI card.

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.

CHAIN FORWARD

The chain forward option determines whether a forwarded intercom call that subsequently forwards to voicemail will target the original stations mailbox or the second stations mailbox.

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

The MISC daughter board provides relays that may be programmed to control a customer-provided common bell or common audible device. These contacts must be programmed as members of a station group and may provide steady or interrupted closure.

COMPUTER TELEPHONY INTEGRATION (CTI)

Computer Telephone Integration (CTI) allows integration between the iDCS 500 Release 2 and a personal computer (PC) on a local area network (LAN). Caller ID service is required for TAPI 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 iDCS 500 Release 2.

SmartCentre

Smart Centre is an ACD type reporting package that connects to the iDCS 500 Release 2 CTI link and can provide group status information to a reader board as well as providing a wide variety of printed reports showing current and historical data.

Note: SmartCentre cannot co-exist with OfficeServ™ Applications.

OfficeServ™ Link

Samsung's proprietary CTI Server Application that manages all call control functions between the iDCS 500 Release 2 Main Processor and all OfficeServ™ CTI Applications.

OfficeServ™ EasySet

OfficeServ EasySet is a web enabled application that allows keyset customization from virtually any location. The EasySet application server runs on Microsoft IIS web server software. (IIS server software is included with Windows 2000 Professional).

OfficeServ™ Call

OfficeServ Call is a call manager application with support for contact management, inbound screen pop, outbound dialing via the desktop, scheduling, and call logging, as well as providing access to some digital telephone facility programming. OfficeServ Call is a client server based application that supports both an end-user (GUI) interface and industry standards such as TAPI. The client application has support for a wide range of operating systems including Windows 2000 and Windows XP.

OfficeServ™ Operator

OfficeServ Operator is a PC-based attendant console that works in conjunction with either a TDM or IP Keyset. OfficeServ Operator can support up to 20 OfficeServ Operators Consoles simultaneously.

Note: All OfficeServ™ Applications cannot co-exist with SmartCentre.

OfficeServ™ Softphone

Samsung OfficeServ Softphone is a software-based application that turns your computer into a full-featured Samsung IP telephone. It is installed directly onto your laptop or desktop PC running Microsoft Windows operating system. Once a USB headset or a USB handset is connected; the Softphone delivers virtually identical functionality as the ITP-5012 L and ITP-5021D desktop ITP phones. OfficeServ Softphone is ideal for telecommuter and mobile users. Remote workers can simply connect their laptop to the corporate network, snap in a USB headset, and function as if they were in their own office. They can place, receive, and handle calls on both the internal and external network, providing a truly portable and practical solution.

CONFERENCE

The system allows six simultaneous conferences up to 5 parties each. If a SCM daughter board is installed, then the system allows a total of 24 simultaneous conferences up to 5 parties each.

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.

Split

A keyset user can "split" a conference into separate outside calls, then speak with each caller privately. Then the individual calls can be conferenced again in any combination. NOTE: This feature requires individual trunk buttons and auto-hold must be enabled.

CONFERENCE GROUP

Users that have a 5012L-ITP large screen keyset or OfficeServ Softphone may have 1-5 conference groups programmed. Each conference group can have up to 4 parties assigned. They can be extensions in the system or telephone numbers of people outside the system. Press the Conference Group button to call all members of the group at the same time. Status indications appear in the display. Press the corresponding softkey to drop or call parties as desired (maximum 100 users).

CUSTOMER SET RELOCATION

Customer Set Relocation allows the customer to exchange or swap similar stations in the iDCS 500 Release 2 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.

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 OfficeServ™ Manager (OSM). 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.

DAYLIGHT SAVING TIME-AUTOMATIC

The system has a table that can be programmed with the daylight savings change dates for up to 10 years. At 2:00 am on these dates the system will automatically adjust the system clock to match daylight savings time. If no dates are programmed the clock will not change.

DIALED NUMBER IDENTIFICATION SERVICE (DNIS)

When DNIS service is provided on an incoming E&M trunk the iDCS 500 Release 2 can route calls based on the numbers received. (See DID)

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) T1/COPPER

The term Direct Inward Dialing refers to types of digit steered inbound call handling. These are DID, Both Way DID, Dialed Number Identification service (DNIS) and Direct Dial In (DDI). The iDCS 500 Release 2 supports the types described below.

DID is an inbound only service where multiple telephone numbers are assigned, usually in blocks of twenty, to a single circuit or small group of circuits. These circuits can be single pair analog circuits that will terminate

on a DID card. The iDCS 500 Release 2 DID card supports up to four circuits. In addition the DID circuit can be a channel on a digital T1 service terminating on an iDCS 500 Release 2 TEPRI card.

Both way DID is a service that combines DID service with normal outbound local telephone service. This service is provided over E&M tie line circuits. These E&M tie line circuits can terminate on either the iDCS E&M card or on a channel of a digital T1 circuit on an iDCS TEPRI card.
Dialed Number Identification service (DNIS) is a feature of 800 or 900 type numbers that allows the number dialed by the caller to be identified in the telephone system by means of a sequence of DTMF digits (usually four). This service terminates on E&M tie lines. These E&M tie line circuits can terminate on either the iDCS E&M card or on a channel of a digital T1 circuit on an iDCS TEPRI card.

Direct Dial In (DDI). This is the name given to the above three services when they are provided over an ISDN PRI circuit.

The iDCS 500 R2 has an option to select which MOH source is played to callers to a specific DID number.

DID Call Limits

This option defines the maximum number of simultaneous calls that the system will accept for each DID number. Any call attempts after the Maximum Call (MC) count has been reached will be rejected and busy tone returned.

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 if DISA security codes/passcodes are turned on. DISA lines can be used as both way lines or incoming only and may be allowed or disallowed for any of the 6 ring plan time periods. The C.O. lines used for DISA must have disconnect supervision. The requirement to put in a DISA security code can be disabled if desired.

DIRECT TRUNK SELECTION

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

DIRECTORY NAMES

Each station, station group and C.O. line may be assigned a directory name (maximum 11 characters). In addition, each personal speed dial number, system speed dial number and entry in the 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 are a serious concern. The iDCS 500 Release 2 provides a strong 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

The iDCS 500 Release 2 provides distinctive ringing at a station based on selected parameters.

- Outside calls have a single ring repeated, while intercom calls have a double ring repeated.

- Any trunk or station can be programmed to ring a specific digital keyset with a predefined ring tone (1-8) or an analog station with a predefined cadence (1-5) selection.
- Digital keysets and analog stations may receive distinctive ringing based on the Caller ID number received or the DID number dialed.

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 phones follow the system ring mode plan.

E & M TIE LINES (T1/COPPER)

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 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 Ring Plan 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.

Trunk Monitor or Service Observing

This feature allows the user who barged-in to retain the trunk call after the original station has hung up.

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.

EXTERNAL MUSIC INTERFACES

The iDCS 500 Release 2 MISC card provides two inputs for connecting to customer provided external music sources. Each cabinet of the iDCS 500 Release 2 can support one MISC card for a total of three cards or six sources in a maximum sized system. These sources can be used to provide background music, or any of the varied Music On Hold (MOH) uses.

EXTERNAL PAGE INTERFACES

The iDCS 500 Release 2 MISC module provides one external page output and two zone control relays. Resources from added miscellaneous applications modules (MISC) can be combined to provide four external zones. Multiple relays may be assigned to each zone.

FLASH KEY OPERATION

While a user is on an outside line, pressing the FLASH key will send a timed disconnect signal to 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. Three digit default extension numbers begin with 201 and four digit defaults begin with 2001. Station group numbers can be three or four digits beginning with the digit 5.

Using digits other than 2, 3 or 5 will require the technician to change other default feature access codes in the system default numbering plan. User guides will need to be modified as these are all written using the iDCS 500 Release 2 default numbering plan.

GROUND START TRUNKS (T1/COPPER)

The iDCS 500 Release 2 can utilize these trunks to support a positive disconnect signal and prevent call collisions on heavy traffic usage. Caller ID or ANI service is not available on these trunks.

GROUP BUSY SETTING

This feature provides a busy signal to intercom callers that ring to a station group when all logged-in stations are busy. The feature is activated in MMC 601 and when set to ON setting, allows an intercom caller to hear a busy signal when calling a station group. Upon hearing a busy the intercom caller will know that all stations are busy and can call back. When this option is set to OFF position the intercom caller will hear ring-back tone when all stations are busy and the call will queue for the next available station. Turning this option ON will override the Overflow setting when the group is busy. The default setting is OFF.

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 0–250 seconds can be programmed to allow sufficient time to make a different call. This timer is programmable on a per station basis.

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. There is a system wide option to allow all members to log out of a station 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.

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.

IP KEYSETS

The iDCS 500 Release 2 system allows the use of Samsung proprietary keysets that use Internet Protocols (IP) for voice and data transport. They may be local to the system or installed in a remote location via a LAN/WAN. The M version of the system can support up to 120 IP stations and the L version can support up to 240 IP stations. For more information on how to setup the IP keysets please refer to the VOIP Special Applications Section of the Technical Manual.

ISDN SERVICE

Primary Rate Interface (PRI)

The iDCS 500 Release 2 supports Primary Rate Interface ISDN. PRI allows simultaneous data calls, calling party and calling line identification, high speed call setup and disconnect are among the benefits of ISDN calling. The 23+D configuration of ISDN allows call information to be delivered via the data channel (the "D" of 23B+D) thus leaving the bearer channels (the "B" of 23B+D) available for single use or combined use to provide a wider bandwidth for data and video. The iDCS 500 Release 2 supports the most popular protocol standards in the U.S.

PRI Protocols supported:
National ISDN-2 (NI2)
AT&T No. 5 ESS
DMS 100/250

Basic Rate Interface (BRI)

The iDCS 500 Release 2 BRI card supports trunk or station level Basic Rate Interface services (BRI). Trunk or station BRI use is software programmable. BRI allows simultaneous data calls, called party and calling number identification, high speed call setup and disconnect are among the benefits of ISDN calling. The 2B+D configuration of ISDN allows call information to be delivered via the data channel (the "D" of 2B+D) thus leaving the bearer channels (the "B" of 2B+D) available for single use or combined use to provide a wider bandwidth for data and video.

LAN INTERFACE

The iDCS 500 Release 2 MCP2 card provides a 10/100 base T Ethernet interface for connection to a data network. This interface allows a high speed connection for PC programming across an IP network. This interface also allows the system software to be uploaded to the SmartMedia card via the OfficeServ™ Manager program.

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 iDCS 500 Release 2 LCR program includes the following features:

- Option to use or not user LCR or a tenant basis
- Programmable LCR access code
- Digit analysis table of 2000 entries each with ten digits
- Routing by time of day and day of week (4 time bands per day)
- Modify digits table of 200 entries
- Flexible trunk group advance timer
- Option to use or not use trunk group advance warning tones

LIVE SYSTEM PROGRAMMING

The system can be programmed from any display keyset or personal computer without interrupting normal system operation. There are 3 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 OfficeServ™ Manager (OSM) program. The system can also be programmed remotely via an optional internal modem card or over the internet via the LAN card.

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 7 days. Additionally, the Smart Media card may be used to store the system database. The OfficeServ™ Manager (OSM) 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 connected to a 16MWSLI or 8MWSLI will have a message light otherwise it will receive a distinctive message waiting dial tone. Five message waiting indications can be left at any station.

MESSAGE WAITING KEY

The Message Waiting (MW) key is used in conjunction with a voicemail card. The MW key is programmed with an extender matching a station or station group number and is used to access the voice mailbox associated with the extender.

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.

MOBILITY SOLUTION

Samsung offers a Single-Line integrated Mobility (SLiM) solution that provides hand-off and roaming capabilities. Each SLiM handset requires one SLI port in the iDCS 500 Release 2 system. See your Authorized Samsung Dealer for additional information.

MULTIPLE LANGUAGE SUPPORT

The iDCS 500 Release 2 can be programmed to support multiple languages in the display. This is on a per-keyset option and when set the keyset will have its display information presented in the programmed language. The languages are defined in MMC 121. The current languages are as follows: English, Spanish, Italian, German, Portuguese, Norwegian, Danish, Dutch, Swedish, US Spanish, and Canadian French.

MUSIC ON HOLD—FLEXIBLE

The iDCS 500 Release 2 allows its music sources to be used in flexible manner as follows:

Each keyset can have a designated music source for playing as Background Music (BGM) through the keyset speaker.

Each Station can have a designated music source for playing to callers placed on Exclusive hold at that station.

Each Trunk can have a designated music source for playing to callers placed on hold. This setting is overridden by some of the other settings such as station music on hold, DID MOH and UCD MOH.

Each UCD group can have a designated music source to be played while a caller is in queue.
Each entry in the DID translation table can have a designated music source to be played when a caller to that DID number is placed on hold.

MUSIC ON HOLD – SOURCES

The iDCS 500 Release 2 provides for up to six different types of Music on Hold source including silence or "NONE" as listed below:

- None: No audio is played to the listener
- Tone: A tone or "beep" is repeated at a programmable interval
- Chime: A music chime source (Old Folks At Home) located on the MCP2 card is played to the listener.
- External Source: An external source connected to a MISC card, such as a digital announcer or radio, is played to the listener.
- Digital Announcement on AA card: If the system is equipped with an AA card the last port of this card can be flagged as a MOH source and used to repeatedly play a message recorded on the AA card to the listener.
- Voicemail Sound File: If the iDCS 500 R2 system has an optional CADENCE/SVMi card installed, up to 100 custom recorded sound files from the Voice Mail card can be used for MOH sources. For more information on creating the sound files see CADENCE/SVMi System Administrator Manual-Recording Greeting by Number. If you select this option be advised that each VMMOH source requires a dedicated CADENCE/SVMi port.

NETWORKING

The iDCS 500 Release 2 system allows up to 15 systems to be networked together with a high level of feature integration. The networked systems may be any combination of iDCS 100R2 and iDCS 500R2 systems running V2.4 or higher software. The physical connection between systems can be an IP network or proprietary PRI connection using Samsung's proprietary version of QSIG, called SPNet.

When engineering the network of systems, a discrete numbering plan must be used. The size and complexity of the numbering plan as well as the number of stations and trunks may limit the actual number of nodes available to the network.

- Auto Answer Across Network: This setting will allow station to station calls across the network to follow the auto answer setting of the called keyset.
- Call Completion, Busy Station (CCBS) also known as Callback or Busy Station Callback. When a station in one system calls a station in another system across the network link and the destination station is busy the calling station can set a Callback to the busy station. When the busy station becomes idle the system will notify the callback originating station by ringing that station and when the originating station answers, the system will call the destination station. *Not available on QSIG over PRI.*
- Call Completion, No Response (CCNR) also known as Callback or No Answer Callback. When a station in one system calls a station in another system across the network link and the destination station does not answer the calling station can set a Callback to the called station. When that station indicates the user is present by becoming busy then idle the system will notify the callback originating station by ringing that station and when the originating station answers, the system will call the destination station.
- Call Intrusion (Barge In): Calls across the network link can be barged in on however the barging station will not be muted.
- Call Offer/Call Waiting (Camp On): This feature operates in the same manner as in a non networked switch. When a called station is busy the caller can press a camp on key and appear as a ringing call on the second call button. The Auto camp on feature will not work on calls across a network link if set to ON in MMC 110.
- Call Pick-up Across the Network: This feature allows ringing calls, held calls and recalls to be picked up by other stations through the network. A station user in a Branch Office can use the Directed Pick-up, Hold Pick-up or Page/Park Pick-up codes to answers calls from the Main Office.
- Call Transfer: Calls answered in one network node can be transferred to a station or station group in another network node.
- Caller ID: Caller ID in its various forms that are currently available (Analog CID Name and Number, ANI Number, PRI Name and Number and BRI number) will be transported across the network link with the original call.
- Centralized Automated Attendant: The Samsung Automated Attendant (AA) card can transfer callers to other stations or station groups in another Node. It can be installed in any Node regardless of where the lines/trunks from the telephone company are connected. Callers to Node A can be answered by the AA Card in Node B, then transferred to Node C. An incoming caller that dials an invalid extension number to the AA can be routed after a programmable number of attempts to a predetermined station or station group anywhere in the network to receive assistance.
- Centralized Operator/Attendant: A station in any Node may dial "O" and ring a designated Centralized Operator/Attendant. When programmed, hold/transfer/camp-on/park recalls can be directed to the Centralized Operator/Attendant in a network arrangement instead of the Local Operator within that Node. Ring plan assignments will allow recalls to a Centralized Operator/Attendant during the day and to the Local Operator after hours. There can only be one Centralized Operator/Attendant designated in the network. Each Node must be set for either Local Operator or Centralized Operator/Attendant, but not both.

- Centralized Voice Mail with Message Waiting Lights: This feature allows one Voice mail system to be shared by all stations in a multi-node network. This feature is only available with the Samsung SVMi or SVMi-E integrated voice mail systems. Users in one Node can call forward their calls to the voice mail system in another Node. Messages left in the voice mail system will be indicated by lighting the corresponding voice message button or lamp on any station in any Node of the network. Messages are retrieved by pressing the VMSG button or calling the voice mail group number. In addition, display keyset user will receive softkey options to navigate through the voice mail system. Softkeys include: PLAY, SAVE, DELETE, PAUSE FAST FORWARD, REVIEW, REPLY, FORWARD, CALL and HELP.
- DID with Pass Through: Incoming DID, DNIS or DDI calls can be routed through one switch across a network link to be processed by the DID table of the destination switch.
- Direct Station Selection and Busy Lamp Indication Across the Network: A Network Station key (NS) can appear on extension "2101" in Node A. It is programmed as "NS2205" representing an extension in Node B. This NS key will light Red when extension 2205 is on the phone. Station 2101 can press this NS key to call extension 2205 in Node B. With this feature the CEO can see when the VP in New York is on the phone or may call him with the press of a button. Any keyset can have multiple NS keys. *This feature is only supported with QSIG over IP networking.*
- Do Not Disturb (DND): This feature operates in the same manner as in a non networked switch.
- Forward External: This feature operates in the same manner as a non networked system with the exception that, because calls across a network link are trunk calls, network calls do not follow the ICM FWD EXT ON/OFF setting in MMC 210. It is therefore suggested that this setting be set to ON in a networked switch to avoid confusion in operation between networked and non networked calls.
- Group Overflow Across the Network: Calls to a station group in one Node may overflow after a programmable time to another station group in another Node.
- Intercom Calling/Discrete Dialing Plan: Station to station and station to group calls can be made across the network link without having to dial an access code for a call within the network. LCR can also be programmed to route calls across a network link and to access local trunks in another networked system.
- Message Key Across the Network: This feature allows station users to set a message waiting indication to another station in another Node in the network. Upon receiving a busy or no-answer condition, press the MSG key or dial the feature code. This will light the message waiting light at the called station. To return the message press the MSG key with the flashing red LED.
- Network Page Key: With one or more of these keys users may make page announcements to page zones in others Nodes in the Network. The network page (NP) key is different than the Page key in a single node. For example, It is programmed as NPO24 where 02 = Node 2 and 4 = page zone 4 in Node 2.
- Network Trunk Ring Destination: This feature allows lines/trunks from the telephone company connected to one Node to be programmed to ring at a destination (station or station group) in another Node.
- Remote Hold Across the Network: Calls may be placed on hold at stations in another Node. Then page that Node and announce that there is a call on holding on extension 2xxx. Anybody in this Node may pick up the call by dialing 12 + 2xxx. This is useful when one Node does not have a dedicated answering position. The caller is on Hold listening to music rather then listening to ringback tone.
- Transfer Recall: Calls transferred across a network link will recall to the transferring station after the originating system transfer recall timer expires. After recalling, if not answered prior to that systems attendant recall timer expiring, the call will recall to that systems designated operator group. Attendant recalls will not recall to a 'Centralized Attendant".
- Transfer Retrieve: Calls on Transfer Hold during a screened transfer can be retrieved by pressing the call button for that call.

- Voice Mail Transfer Key: Users may transfer a caller directly to a co-workers voice mail box with out ringing their telephone by pressing the VT key and dialing their extension number. The caller will then hear that co-workers personal greeting regardless of where they are in the network.

OFF PREMISES EXTENSIONS (OPX)

A single line (tip and ring) extension from an 4SLI card may be connected to telephone company-provided OPX circuits to remote locations. Other SLI cards such as 8SLI and KDb-SLIs do not support off premises extensions as they do not have over voltage protection.

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. Operator groups are selectable per ring plan.

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 located in that system.

OVERRIDE CODES

This feature allows users to make emergency outside calls from a station that has a forced code such as Account code or authorization code enabled but without requiring them to enter a forced code. The basis of this feature is an override code table containing 8 entries of up to 11 digits each. The iDCS 500 Release 2 will examine digits that are dialed from a station to see if they match any entry in the Override Code table. If the digits match the table, the system will process the call without requiring a forced code.

PAGING

System software allows the use of five internal and four external paging zones. Stations can page any individual zone, all external zones or all external zones plus internal zone zero 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.

PARK ORBITS

The system has 10 park orbits (0–9). These orbits can be used to park calls prior to paging and allows the call to be retrieved by dialing a park code plus the orbit number. Calls parked in this manner can also be retrieved by dialing the park pickup code (10) plus the station or trunk number. This feature is in addition to Call Park and Page.

PRIME LINE SELECTION

Any station can be programmed to select a specific line, trunk group, telephone number, station or station group when the handset is lifted or the speaker key is pressed (same as Hot Line feature).

PRIORITY CALL QUEUING

This feature places calls to an UCD or NORMAL station queue ahead of other calls based on priority level (1-9). The system reads the DID number, Caller ID number or trunk ID number, compares it to a preprogrammed table, then assigns it the corresponding priority that places it in the appropriate position in the group queue.

PRIVATE LINES

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

PROGRAMMABLE LINE PRIVACY

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

RECALL TO OPERATOR

This function will allow the call to recall the operator instead of to the transferring station after the transfer recall time expires.

REDIAL REVIEW

The Redial Review feature allows a review of the last number before dialing or allows access to the Call Log Blocks if assigned. These Call Log Blocks record the last ten (10) numbers dialed. When the LNR key is pressed the last number dialed is displayed. The log can then be scrolled using the Volume (Up/Down) keys and a previously dialed number can be selected.

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. There are two connection methods, the dial-up connetion using the internal modem card and through the LAN connection on the MCP2 card. OfficeServ Manager is the proprietary programming application used to access and manipulate the database.

RING MODES

Time Based Routing - Plans

Each C.O. line can be programmed to ring at any station or station group. Each line can be assigned a ring destination based on six (6) different ring plans based on time of day and the day of the week. The system operator (intercom dial "0") can also be a different station group for each ring mode.

Automatic / Manual

Ring destinations will automatically change based on time of day and day of week.
At any time the system can be manually forced into a specific ring plan. It will remain in this ring plan until manually taken out.

Holiday Schedule

The system has a table of 20 dates that are used to define holidays. On a date designed as a holiday the system will remain in a ring plan for that calendar day providing the system was already in that ring plan. This feature will override the ring plan time table.

Temporary Override

At any time the system can be forced into a specific ring plan for a temporary period of time until the next scheduled ring plan automatically takes effect.

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.

SECRETARY POOLING

Each keyset may be defined as an executive (BOSS in programming) or a secretary (SECY in programming) in system programming. Each executive can have up to four secretaries and each secretary can have up to four executives. These arrangements are known as executive/secretary pools. There can be multiple pools in a system. When an executive is in DND, all calls to the executive ring the first secretary assigned to that executive; if that secretary is busy, the call will hunt to the next available secretary assigned to that executive. If the secretary must communicate with the executive while he/she is in DND, pressing the corresponding executive button on the secretary's keyset results in an Auto Answer intercom call being made to the executive (providing the executive is free). There is also a system wide option to allow the stations to ring rather than auto announce the executive secretary calls. A station can only be the executive of one secretary pool. In addition, a station cannot be in more than one pool.

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 iDCS 500 Release 2 intercom ring cadence.

SPEED DIAL NUMBERS

The system maintains a library of speed dial numbers that can be allocated to either a shared system wide list or to an individual user list. The M version software has a library of 2000 numbers and the L version software has 2500 numbers.

Both M and L version software can be programmed to have either 500 or 950 numbers in the system list.

The remaining numbers in the library can be assigned in blocks of 10 each to individual stations for their personal use. A maximum of 5 blocks (50 numbers) can be assigned to a station.

SPEED DIAL BY DIRECTORY

The iDCS 500 R2 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 and station. This feature requires a display keyset.

STATION HUNT GROUPS

System programming allows up to 40 station hunt groups on an iDCS 500-M system and 80 station hunt groups on an iDCS 500 Release 2-L system. One of three ring patterns—sequential, distributed and unconditional—is available for each group. Each unconditional group may contain a maximum of 32 stations and each sequential and distributed group may contain a maximum of 48 stations. A station may be assigned to more than one group. Each station group has its own recall timer for calls transferred to that group. There is a Next Hunt timer for each group to provide circular hunting within the group.

STATION MESSAGE DETAIL RECORDING (SMDR)

The system provides 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 output can be provided through one of the serial ports on the LAN port of the system. 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, authorization codes, and caller ID on incoming calls. When Caller ID is enabled a wide carriage printer is required.

STATION PAIR

This feature allows station to be assigned as a "pair". That is to say a primary and secondary. Calling the primary station will make both stations ring. Selected features such as Message Notification, DND, Callback, and Class of Service act as one station. This is convenient when an individual has two offices or an office extension and a cordless extension. NOTE: Not all system features are applicable to station pairs. Features designed for a single user may conflict with paired stations.

SYSTEM ALARMS

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 MAINTENANCE ALARMS

The iDCS 500 Release 2 continuously performs internal system diagnostics. When either a major or minor fault is detected the system can ring stations with an ALARM KEY assigned. The keyset display shows information that includes the description, location and date and time stamp for each alarm.

A log of 100 alarms are stored in a buffer and can be reviewed at a display keyset or sent to a printer.

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)

The iDCS 500 Release 2 supports two forms of tenant service as detailed below.

- System Splitting: In the first form there are several programs that allow the iDCS 500 Release 2 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 totally separate in the system and no intercom calling between tenants is permitted.
- Port Splitting: In this form of tenant services system programming is used to allow or deny access for making and receiving calls on a per station basis. These settings can be applied to Trunks, trunk groups, stations and station groups. This allows common items on the system such as the operator group and LCR to be used by everyone on the system while ensuring that each company can only access their own lines and incoming calls.

TOLL RESTRICTION

There are 500 allow and 500 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 different dialing class for each ring plan.

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.

TRAFFIC REPORTING

The iDCS 500 Release 2 system can store peg counts for various types of calls. These peg counts can be printed on-demand, daily, hourly, or up to three separate programmable shifts. The report includes statistics for each trunk, trunk group, station, station groups and page announcements. For more details and explanations see sections 4.9 and 4.10 of this document.

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

Outside lines can be grouped for easy access by dialing a code or pressing a button. There are 30 trunk groups available.

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. 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. Ask your dealer for details.

UCD 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 Busy / Manual Wrap Up Key

This is an enhancement to the call center operation that allows a button to be programmed in the flexible field of the keyset that when depressed will remove the keyset from active status within the group. When depressed again it will place the keyset back into active status for receiving calls. This provides a method for agents to extend their wrap-up time manually when necessary. This also allows agents to perform other duties such as receiving or making telephone calls without having to log out of the group or being automatically logged out if away from the phone for a short time.

Agent ID Numbers

This enhancement to the call center operation allows agents to be given a PIN number to use when logging in and out of a UCD group. This allows agents to be able to move from location to location and keep their productivity records. This new option has been added to MMC 607 (requiring PIN number to log in or out) and to MMC 718 (setting PIN numbers). There are a total of 300 PIN numbers available in the system. This feature when used in conjunction with the Smart Centre reporting package will keep agent records by PIN numbers for productivity management.

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.

VIRTUAL EXTENSIONS

The iDCS 500 Release 2 has a number of virtual extension ports encoded in the system database. They can be assigned as keyset or single line analog ports. The M version has 62 and the L version has 118. These ports have all the attributes of an actual station port including call forwarding. These virtual ports can be exchanged with real station ports using the set relocation feature to provide hot desking.

VOICE MAIL

Inband Signalling

The iDCS 500 Release 2 system uses DTMF tones (inband signalling) 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 iDCS 500 Release 2, 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.

Integrated (In-Skin)

The iDCS 500 Release 2 can be equipped with Samsung's proprietary voice mail/auto attendant card. This card provides 4 to 16 ports of voice processing. Because it is built into the system it provides such features as one touch call record, answering machine emulation, and voice mail box administration with interactive keyset displays.

Voice Over Internet Protocol (VoIP)

The iDCS 500 Release 2 system is VoIP enabled and as such supports the following VoIP services:

1) H.323 Trunking to another H.323 Gateway.
2) SIP IP Trunking.
3) IP Telephone Sets:
   a) OfficeServ ITP-5021D Keyset
   b) OfficeServ ITP-5012L Keyset

   These IP Keysets can be installed in the local office or in a remote office, home office with full feature operation.
4) IP Networking: Connect up to 15 systems together over a managed IP network.

The iDCS 500 Release 2 Media Gateway Interface (MGI) cards support up to sixteen voice calls per card over an IP network connection using the industry standards based H.323 or SIP protocol. The MGI cards fit into any

universal iDCS 500 Release 2 card slot. The iDCS 500 Release 2 supports a maximum of five MGI cards per cabinet.

VoIP is transported by the iDCS 500 Release 2 MGI cards by utilizing the ITU standards based or H.323 or SIP protocol. This standard addresses the means of transferring voice, data, and images through IP (Internet Protocol) networks.

With VoIP certain compression standards have also been adopted to represent each second of voice with an amount of bandwidth. The iDCS 500 Release 2 MGI3 utilizes G.711, G.729, G.729A or G.723 standards voice compression codec's while the MGI2 supports G711, and G729A only. This allows for a selectable 64kbps (G711), 8Kbps (G729A) or 6.3Kbps (G723) bandwidth use when preparing voice compression for IP transport. Compression is used to reduce the digitized voice into a smaller bandwidth that can be carried in smaller packets. The VoIP gateway determines the compression method for each call setup. There is also a certain amount of frame/packet overhead in each compression channel. 64K of bandwidth can support 6~7 calls simultaneously. This can vary depending on efficiency features like Silence Suppression and multiframe counts. Unlike switched networks, VoIP connections consist of a sequence of numbered data packets. Since voice conversation is usually considered "real time" these packets need to be delivered in a consistent manner with minimal delay. This can be controlled via a Gatekeeper which tracks and monitors voice packets. Gatekeepers are part of the H.323 standard but are not required. The iDCS 500 Release 2 MGI cards are Gatekeeper compliant.

In any Ethernet environment, packet transfers are subject to delays and/or loss. If these delays are greater than 200ms the voice quality will deteriorate. The Ethernet data traffic and network topology should be a consideration when using VoIP. Network congestion will affect call quality in any VoIP application.

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.

WIRELESS HANDSET—See Mobility Solution

STATION FEATURES

4.2 STATION FEATURES DESCRIPTIONS

ADD-ON MODULES

iDCS 14 BUTTON AOM

The 14B AOM attaches to the right hand side of an iDCS 18D or iDCS 28D keyset and provides 14 buttons with red LEDs. These buttons can be used for DSS keys, speed dial bins or any key that does not require a dual colored LED. Does not require a separate DLI port. It uses the same DLI port as the keyset is attached to.

32 BUTTON AOM

The DCS 32-button add-on module (AOM) adds to the capability of any keyset. The 32 programmable buttons with red buttons can be used for feature keys, DSS/BLF keys or one touch speed dial buttons. Because this AOM has a microphone and a speaker it can be used to provide executive off hook voice announce or as a stand alone unit whenever a handset and dial pad are not required. Requires one DLI port per 32B AOM.

64 BUTTON MODULE

The 64-button module adds to the capability of any keyset. Up to four 64-button modules can be added to each keyset. The 64 programmable red LED buttons with red LED can be used for feature keys, DSS/BLF keys

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

or one touch speed dial buttons. A maximum of 4 can be installed on a iDCS 500 Release 2 system running iDCS 500 Release 2-M version software, or a maximum of 32 can be installed on a iDCS 500 Release 2 system running iDCS 500 Release 2-L version software. Requires one DLI port per 64B module.

APPOINTMENT REMINDER

When programmed for a specific time, a 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 program a message to be displayed when the alarm rings. Non-display keyset users must have the system administrator program messages for them.

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. Intercom calls can be automatically held if Intercom Auto Hold is set to ON for the entire system.

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

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.

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. The system can be programmed to allow the DSS keys to be used to pickup calls at other keysets.

CALL COVERAGE KEY

These keys (buttons) provide a convenient way to cover calls ringing at other stations. Keyset users can have one or multiple call coverage keys programmed for either a station or group number. These buttons flash when a new call or recall is ringing at the programmed station. In addition, a call coverage delay ring time can be programmed to provide an audible ring tone either immediately or delayed from 1 to 250 seconds. Call coverage keys only flash and ring when the covered station is idle. When the covered station is off hook the call coverage key lights red to indicate a busy condition.

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/transfer key lights steady red at the station that is forwarded. The TRSF/transfer 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 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 FORWARD OVERRIDE

When this option is set to yes for a station then intercom calls from that station will override any call forwarding settings of the called station.

CALL LOGS

With the call log feature, a display keyset user can review up to 50 of the last incoming calls from the Caller ID review list or up to 50 of the last external telephone numbers that were dialed. The numbers can be viewed, stored and/or dialed using the associated soft keys. LCR must be enabled for dialing and storing numbers from the CID review list. Optional hardware and/or software may be needed for Caller ID.

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 iDCS 500 Release 2 has 99 programmable pickup groups.

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 (OVERRIDE)

The DND Override feature allows a keyset with a DND Override key (DNDO) and the appropriate class of service to override the DND setting at a called keyset. This will allow a user to go into DND while waiting for an important call and have that call transferred to them via a screened transfer from a station (for example the users secretary) with a DNDO key.

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. Exclusive hold for trunk calls can be denied in class of service.

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.

HEARING AID COMPATIBLE

All iDCS 500 Release 2 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.

LOUD RINGING INTERFACE

The MISC daughter board provides an audible ring tone output. This can be connected to a paging system or single loud speaker to provide loud ring tone for a specific station only. The tone is preset and can not be changed.

MANUAL SIGNALLING

Keysets can signal each other via a programmable key. This allows one station to alert another without establishing a voice conversation. Each press of the key results in a 500 milliseconds of ring tone being set to the intended station. An individual manual signaling key must be programmed for each station to be signaled.

MESSAGE WAITING LIGHT/INDICATION

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 connected to a 16MWSLI or 8MWSLI will have a message light otherwise it will receive a distinctive message waiting dial tone. Five message waiting indications can be left at any station.

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 (EXECUTIVE)

A keyset associated with an add-on module 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.

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. The L version of software has an user programmable option that will allow the OHVA to be heard through the speaker rather than in the handset.

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.

PRIVACY RELEASE

This feature will allow another station to join in on your conversation by temporarily releasing privacy on the C.O. line from your keyset.

Requires a Privacy Release key to be programmed on your keyset. A maximum of three (3) other people can join in. This uses one of the conference circuits in the system.

PROGRAMMABLE KEYS

LCD 24B and STD 24B keysets have 24 programmable keys, LCD 12B and Basic 12B keysets have 12, and 7B keysets have 12. The iDCS 28D keyset has 28 programmable keys with tri-colored lights, the iDCS 18D keyset has 18 programmable keys with tri-colored lights, and the iDCS 8D keyset has 8 programmable keys with tri-colored lights. The ITP-5021-D has 21 programmable keys with tri-colored lights and the ITP5012-L has 99 programmable keys.

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 20 messages to be displayed at a calling party's keyset to advise others of their status. Ten messages are factory-programmed but may be reprogrammed. Five can be created by the system administrator. Each display keyset user may create five additional messages unique to them.

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.

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 (available to keyset users only).
- 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.
- MANUAL RETRY with LNR—When you make an outside call and receive a busy signal you can press the LNR key to redial the same number again. This operation can be manually repeated for a limited number of attempts as defined by system programming (available to keyset users only).
- MEMO REDIAL—When you are calling directory assistance you can store the number you are given using the dial pad and SAVE number feature. There is no need for a pencil and paper (available to keyset users only).
- 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

DCS LCD 24B and DCS LCD 12B keysets have built-in speakerphone. The speakerphone enables calls to be made and received without the use of the handset. The iDCS 28D keyset and the iDCS 18D keyset can have a Full Duplex Speakerphone Module added. All ITP phones are speaker phones.

STATION LOCK

With a programmable personal station passcode, any keyset or single line station can be locked and unlocked to control use of each telephone. There are two lock options: 1=LOCKED OUTGOING and 2=LOCKED ALL CALLS. See the following table for more details.

	0 UNLOCKED	1 LOCKED OUTGOING	2 LOCKED ALL CALLS
Make Outside Calls	YES	NO	NO
Receive Outside Calls	YES	YES	NO
Make Intercom Calls	YES	YES	NO
Receive Intercom Calls	YES	YES	NO

TERMINAL STATUS INDICATOR

iDCS keysets are equipped with a terminal status indicator lamp. The terminal status indicator light is positioned on the top right corner of the keyset above the display. The terminal status indicator is a tri-colored (red, green, and amber) light that provides greater visibility of your keysets status than the individual key LEDs. The terminal status indicator provides the following indications:

– Busy/Off Hook Steady Red
– Intercom Ring Flashing Red
– Outside Call Ring Flashing Green
– Recall Ring Flashing Amber
– Message Waiting Flashing Red
– Do Not Disturb Fast Flash Red at 1 Second Intervals

TRI-COLORED LIGHTS

DCS LCD 24B keysets have 16 keys equipped for tri-colored LED indications (green, red and amber). The DCS LCD 12B model has six of these keys and the DCS 7 button keysets have three. All programmable keys on the iDCS keysets have tri-colored LEDs. 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.

DISPLAY FEATURES

4.3 DISPLAY FEATURES 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 NND key is pressed to view the other piece of CID information.

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 (MMC 119) selection.

Save CID/ANI 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/ANI 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 or ANI information before he/she retrieves the call. This will influence how the user chooses to handle the call.

CID/ANI 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/ANI information is available for an incoming call, the selected stations can know to whom the iDCS 500 Release 2 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

The system has a system-wide abandon call list that stores CID/ANI information for 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 or ANI number and the date and time the call came in. The system must be using LCR to dial numbers from the abandon call list. The abandoned call list will store up to 100 unanswered calls.

CALLING PARTY NAME

For intercom calls, display 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.

DIAL BY NAME

Each station and speed dial number can have an associated directory name. Any station or speed dial number can be selected by scrolling alphabetically through a directory list. There are three directories:

1. System wide speed dial list
2. Personal speed dial list
3. Station directory list

This online "phone book" allows display keyset users to look up and dial any speed dial number or station in seconds.

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.

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.

TEXT MESSAGING

This feature allows two display keyset users to respond to each other with preprogrammed messages. After receiving an Off Hook Voice Announcement or Station Camp-On, you may respond with a text message while continuing to talk and listen to your outside party. The other station can view this message and take the appropriate action or respond back with another text message.

Up to 100 display station users can program their own individual ten (10) text messages that can be sent to another display keyset. Only the display keysets that are allowed in the system programming (MMC 611) will receive the (TMSG) text message softkey in the display and can use this feature.

UCD SUPERVISOR DISPLAYS

With the optional AA 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

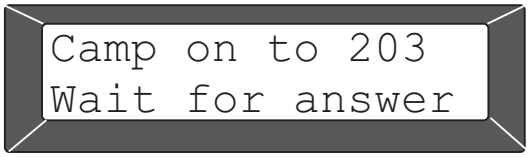
This allows the supervisor to monitor how many agents are logged in, check each agents status (IN GROUP, OUT OF GROUP, or DND), view each agents total number of calls, average call length or average ring time.

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

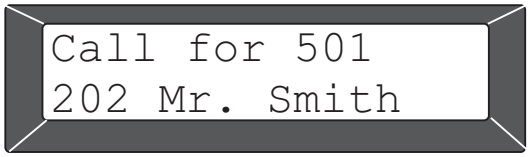
SAMPLE DISPLAYS

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.

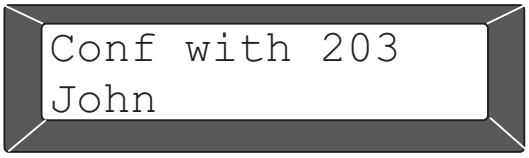


This station in the sales department is receiving a group call from Mr. Smith.

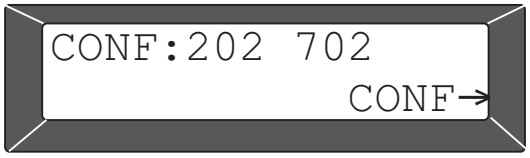
This display tells you this is a new incoming call to the sales department.

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.

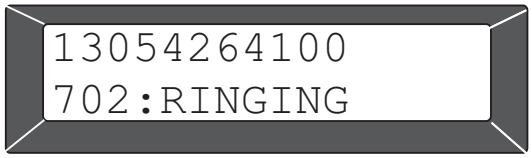
This station is transferring a call to John at extension 203.

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



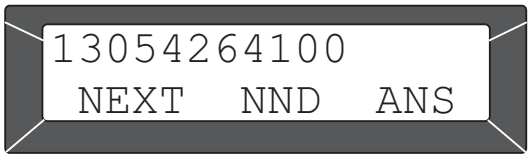
This display shows an incoming call from 1-305-426-4100 on Line 702 ringing directly at your station.

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.

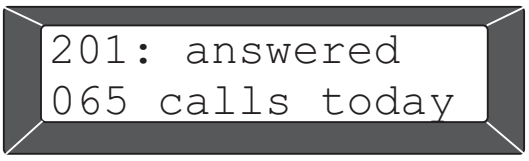
This display is seen while using the INQUIRE feature. It shows the three options available while you are checking on a held or parked call.

SAMPLE UCD DISPLAYS

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

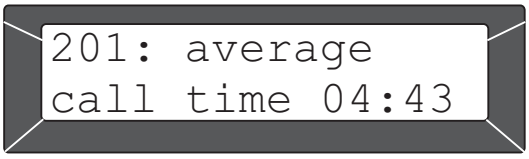
There are six members in the group. Four of the members are currently logged in.

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.

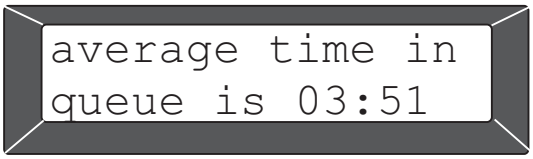


The agent at station 201 has answered 65 calls today.

The UCD group has received 124 calls today.



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



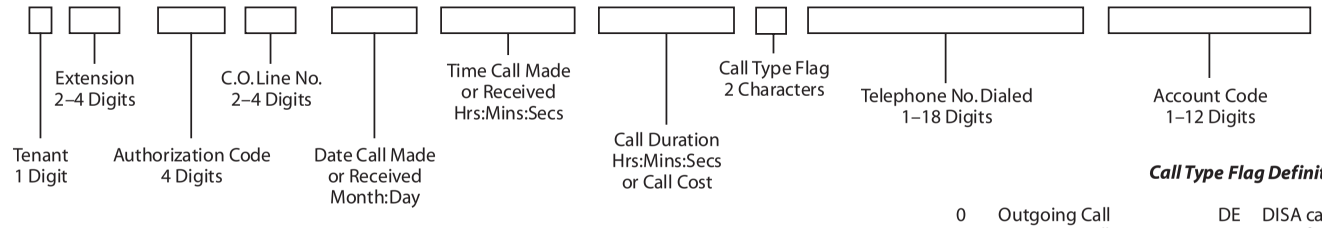
The average time on hold (waiting to be answered) is three minutes and 51 seconds.

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

4.4 SAMPLE SMDR PRINTOUT (WITHOUT CALLER ID)

```
                    SMDR REPORT FOR [STA Miami    ] Mar/21/1999 13:49

================================================================================
   T EXT   AUTH TRK   MM/DD STT.TIME DURATION FG DIALED DIGIT     ACCOUNT CODE
================================================================================
   1 3951       725   03/21 13:51:17 00:00:08 IA
   1 3951       725   03/21 13:51:25 00:00:14 IT
   1 217        744   03/21 13:51:29 00:00:14 IA
   1 235        725   03/21 13:51:39 00:00:06 T
   1 219        726   03/21 13:51:25 $  10.75 O  3056401067      *1234567890#
   1 217        744   03/21 13:51:43 00:00:40 I
   1 278        725   03/21 13:53:40 00:00:07 O  18007864782
   1 3951       726   03/21 13:54:45 00:00:07 IA
   1 219              03/21 13:55:03             GROUP OUT
   1 3951       726   03/21 13:54:52 00:00:30 IT
   1 217        726   03/21 13:55:22 00:00:16 TT
   1 235              03/21 13:55:30             DND ON
   1 218        726   03/21 13:55:38 00:00:33 TT
   1 235              03/21 13:57:50             DND OFF
   1 279  6398  727   03/21 13:57:32 $  13.25 O  3056401066
   1 219              03/21 14:00:45             GROUP IN
   1 219        726   03/21 13:56:11 00:05:38 T
   1 296        725   03/21 13:54:40 00:07:06 O  3055922900217
   1 219        717   03/21 14:03:57 00:00:15 O  19544530000       *1234567890#
```



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
IA	Incoming Ring Time Before Being Answered	TT	Caller received a transferred call and transferred it again

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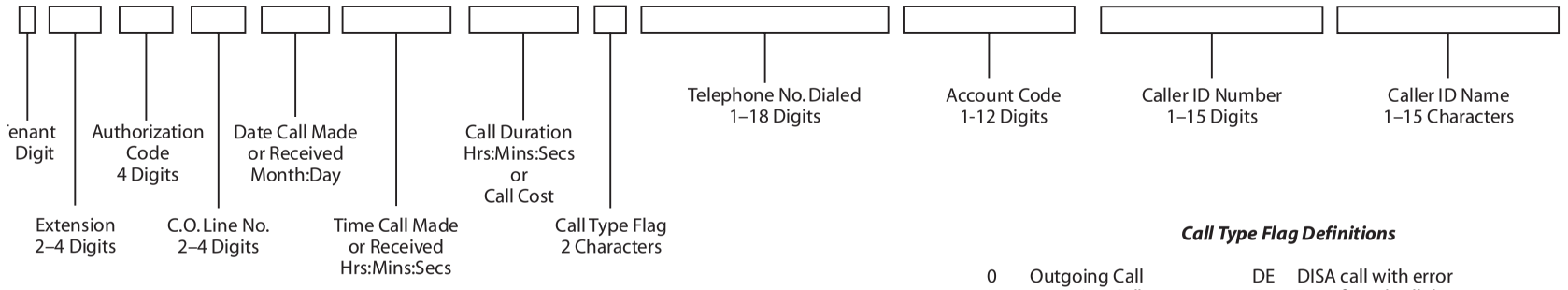
SMDR REPORT FOR [STA Miami] Mar/21/99 13:49

T	EXT	AUTH	TRK	MM/DD	STT.TIME	DURATION	FG	DIALED DIGIT	ACCOUNT CODE	CID/ANI NUMBER	CID/ANI NAME
1	3951		725	03/21	13:51:17	00:00:08	IA				
1	3951		725	03/21	13:51:25	00:00:14	IT			13055922900	SAMSUNG TELECOM
1	217		744	03/21	13:51:29	00:00:14	IA				
1	235		725	03/21	13:51:39	00:00:06	T			13055922900	SAMSUNG TELECOM
1	219		726	03/21	13:51:25	$ 10.75	O	3056401067	*1234567890#		
1	217		744	03/21	13:51:43	00:00:40	I			13055559748	PIZZA DELIVERY
1	278		725	03/21	13:53:40	00:00:07	O	18007864782			
1	3951		726	03/21	13:54:45	00:00:07	IA				
1	219			03/21	13:55:03			GROUP OUT			
1	3951		726	03/21	13:54:52	00:00:30	IT			13055922900	SAMSUNG TELECOM
1	217		726	03/21	13:55:22	00:00:16	TT			13055922900	SAMSUNG TELECOM
1	235			03/21	13:55:30			DND ON			
1	218		726	03/21	13:55:38	00:00:33	TT			13055556420	PIZZA DELIVERY
1	235			03/21	13:57:50			DND OFF			
1	279	6398	701	03/21	13:57:32	$ 13.25	O	3056401066			
1	219			03/21	14:00:45			GROUP IN			
1	219		726	03/21	13:56:11	00:05:38	T			13055922900	SAMSUNG TELECOM
1	296		725	03/21	13:54:40	00:07:06	O	3055922900217			



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		
DO	DISA call out	IT	Incoming transfer
FO	Outgoing record of forwarded call	FI	Incoming call forwarded to an external number
A	Abandoned call	OT	Outgoing transfer - Outgoing call made and transferred
IA	Incoming Ring Time Before Being Answered	TT	Caller received a transferred call and transferred it again

4.5 SAMPLE SMDR PRINTOUT (WITH CALLER ID/ANI NUMBER)

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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
```

4.7 UCD 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.

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

4.8 UCD 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.

4.9 SAMPLE TRAFFIC REPORT

```
TRAFFIC REPORT FOR [   STA Miami        ] Mar/21/1999 13:35
**************************** SYSTEM STATISTICS ******************************

BEGINNING:  Mar/15/1999  00:42                      ENDING:  Mar/21/1999 13:32

      ACTIVITY                                                SYSTEM TOTAL

      INCOMING TRUNK CALLS - ANSWERED.................          3041
      INCOMING TRUNK CALLS - NOT ANSWERED.............            26
      OUTGOING TRUNK CALLS ...........................          2168
      A SELECTED TRUNK WAS BUSY.......................            44

      INTERCOM CALLS - COMPLETED......................          7178
      INTERCOM CALLS - NOT ANSWERED...................          1540

      TRUNK RECALLS TO STATION........................           145
      TRUNK RECALLS TO OPERATOR GROUP.................            32

      INTERNAL PAGE USED..............................            35
      EXTERNAL PAGE USED..............................            79
      ALL PAGE USED...................................           231

**************************** TRUNK GROUPS **********************************

 GROUP      OUTGOING   BUSY
   9          1245      18
   800         521       3
   801          20       3
   802           0       0
************************** INDIVIDUAL TRUNKS ******************************

TRUNK      TRUNK-NAME       ATTA      ANSD      NOT-ANSD      OUTGOING    BUSY
  701      LOCAL 1             0       737          0            19         12
  702      LOCAL 2             0       541          4            26         11
  703      LOCAL 3             0       290          1            37         21

************************ STATION HUNT GROUPS ******************************

          <--------- OUTSIDE CALL --------->                    <-INTERCOM->
GROUP    ANSD    NOT-ANSD                                         ANSD
  500     439      19                                              61
  501     261      37                                              38
  502      40       2                                              77
  503      87       5                                             162
  504      19       1                                              44

********************** INDIVIDUAL STATIONS ******************************
                <------- OUTSIDE CALL ------------------------------><-INTERCOM-->
EXT STATION-NAME ATTA ANSD NOT-ANSD DIALED ICM-TRSF TRK-TRK PICKUP  ANSD DIALED
201 Operator        9  360     11      15      341       0       0    39     72
202 Barbara        12   60      2      80       20       0      12    49     66
203 Ivania          4   25      1      36        3       0      18    86     29
```

4.10 TRAFFIC REPORT OVERVIEW

```
A**************************** SYSTEM STATISTICS ****************************

1 BEGINNING:   04/01/99   08:00                          ENDING:   04/01/99 17:30

2   ACTIVITY                                                SYSTEM TOTAL

      3       INCOMING TRUNK CALLS - ANSWERED..................0000
      4       INCOMING TRUNK CALLS - NOT ANSWERED..............0000
      5       OUTGOING TRUNK CALLS ............................0000
      6       A SELECTED TRUNK WAS BUSY........................0000

      7       INTERCOM CALLS - COMPLETED.......................0000
      8       INTERCOM CALLS - NOT ANSWERED....................0000

      9       TRUNK RECALLS TO STATION.........................0000
     10       TRUNK RECALLS TO OPERATOR GROUP..................0000

     11       INTERNAL PAGE USED...............................0000
     12       EXTERNAL PAGE USED...............................0000
     13       ALL PAGE USED....................................0000
```

1. **BEGINNING & ENDING**
   This identifies when the statistics were collected. It includes dates and time.

2. **ACTIVITY:** Overall summary of traffic in the system for activities 3 to 13.

3. **INCOMING TRUNK CALLS-ANSWERED:** These are any incoming trunk calls to the system. These calls are pegged when answered by any device and/or station in the system whether it is a new call or a recall.

4. **INCOMING TRUNK CALLS-NOT ANSWERED:** These are any incoming trunk calls that were not answered by any station or device in the systems. These are the same calls that would be flagged as abandoned in SMDR.

5. **OUTGOING TRUNK CALLS:** These are all outgoing trunk calls that were originated by any station or through the DISA feature. Outgoing trunk calls are valid calls as defined by the SMDR START TIME in MMC 501.

6. **A SELECTED TRUNK WAS BUSY:** Pegged every time a trunk or trunk group was busy regardless of the manner in which it was selected (e.g., DTS key, LCR, "9", 7XX, TRK GROUP SELECT, SPD, External call forward, DISA).

7. **INTERCOM CALLS COMPLETED:** These are all intercom calls that were completed to any station, station group or device.

8. **INTERCOM CALLS NOT COMPLETED:** These are all intercom calls that were not answered and resulted in the calling party hanging up. A call to a station group that overflows to another station is considered not answered whether the overflow destination did or did not answer.

9. **TRUNK RECALLS TO STATION:** These are trunk calls that were placed on any kind of hold and recalled a station. These are also trunk calls that were transferred and were not answered and recalled the transferring station. This includes members of the operator group that put calls on hold and then recall the operators station.

10. **TRUNK RECALLS TO OPERATOR GROUP:** These are any trunk calls that recalled to the operator group.

11. **INTERNAL PAGE USED:** Peg count of every time internal page was accessed.

12. **EXTERNAL PAGE USED:** Peg count for every time external page was accessed.

13. **ALL PAGE USED:** Peg count of every time the all page feature was accessed. This does not include internal or external page, only 55+✱ or PAGE ✱.

B************************** TRUNK GROUPS **************************

1 GROUP	2 OUTGOING	3 BUSY
9	0000	0000
800	0000	0000
801	0000	0000

1. **GROUP:** A listing of all trunk groups assigned in the system.

2. **OUTGOING:** These are the number of outgoing trunk calls made using each trunk group. Pegged every time a member of this trunk group was used to make a valid outgoing call. A valid outgoing call is defined by the SMDR Start Time programmed in MMC 501.

3. **BUSY:** This is the number of times each trunk group was busy when someone attempts to access it.

C**************************** INDIVIDUAL TRUNKS ****************************

1TRUNK	2TRUNK-NAME	3ATTA	4ANSD	5NOT-ANSD	6OUTGOING	7BUSY
701		0000	0000	0000	0000	0000
702		0000	0000	0000	0000	0000
703		0000	0000	0000	0000	0000
704		0000	0000	0000	0000	0000
705		0000	0000	0000	0000	0000
706		0000	0000	0000	0000	0000
707		0000	0000	0000	0000	0000
708		0000	0000	0000	0000	0000
709		0000	0000	0000	0000	0000
710		0000	0000	0000	0000	0000

1. **TRUNK:** A listing of each trunk in the system.

2. **TRUNK NAME:** The names of each trunk as programmed in MMC 404.

3. **ATTA:** Average Time To Answer for trunks is counted in the number of seconds that ringing voltage is detected at the trunk interface and the timer stops when trunk is answered by station or device in the system. The ATTA is the sum of all answered times divided by the answered call count.

4. **ANSD:** This is the number of times this specific trunk was answered by any station or device whether it is a new call or a recall.

5. **NOT-ANSD:** This is the number of times this specific trunk rang the system but was not answered. These are the same calls that would be flagged as abandoned in SMDR.

6. **OUTGOING:** This is the number of times this trunk was used to make an outgoing call. A valid outgoing call is defined by the SMDR START TIME programmed in MMC 501.

7. **BUSY:** This is the number of times this trunk was busy when accessed by a button or dial code.

```
D************************** STATION HUNT GROUPS **************************

          <————————   1  OUTSIDE CALL ————————————————————>  5 <-INTERCOM->
2GROUP     3ANSD    4NOT-ANSD                                    6ANSD
  500       0000       0000                                       0000
  501       0000       0000                                       0000
  502       0000       0000                                       0000
  503       0000       0000                                       0000
  504       0000       0000                                       0000
```

1. **OUTSIDE CALLS:** These statistics are for outside calls that reach these station groups regardless how they arrive there.

2. **GROUP:** Listing of all station groups in the system.

3. **ANSD:** This column is a peg count of all answered trunk calls that rang to the specific group directory number regardless of how these arrived.

4. **NOT-ANSD:** The number of times any trunk call directed to the specific group number was not answered by any member of the group.

5. **INTERCOM:** An intercom call made from a station or device within the system to the specific group number.

6. **ANSD:** This is a count of how many times an intercom call was answered by any group member of that specific group.

```
E************************** INDIVIDUAL STATIONS **************************
                                        1                              11
          <———————————————— OUTSIDE CALL ————————————————> <-INTERCOM->
 2          3        4     5      6        7        8        9       10     12    13
EXT STATION-NAME ATTA ANSD NOT-ANSD DIALED ICM-TRSF TRK—TRK PICKUP ANS DIALED
201              0000 0000   0000    0000   0000     0000    0000  0000  0000
202              0000 0000   0000    0000   0000     0000    0000  0000  0000
203              0000 0000   0000    0000   0000     0000    0000  0000  0000
204              0000 0000   0000    0000   0000     0000    0000  0000  0000
205              0000 0000   0000    0000   0000     0000    0000  0000  0000
```

1. **OUTSIDE CALLS:** These statistics are for outside calls that in any way reach individual stations or devices.

2. **EXT:** Listing of all extension numbers in the system. This also includes AA, VM, and CADENCE ports.

3. **STATION NAME:** The name for each particular station as programmed in MMC 104.

4. **ATTA:** Average Time To Answer for stations is counted in the number of seconds that ringing signal is applied to a station for trunk calls and recalls. The ATTA is the sum of all answered times divided by the answered call count. Use the same calculation method as used for individual trunk ATTA.

5. **ANSD:** This is a count of how many times an outside call was answered by the specific station. Outside callers recalling a station are not counted again when they are answered.

6. **NOT-ANSD:** This is a count of how many times a trunk call was directed to the station but was not answered by this station.

7. **DIALED:** Peg count of how many times the station made a valid outside call. An outside call is defined by the SMDR start time in MMC 501.

8. **ICM-TRSF:** This is the number of times a trunk call was successfully transferred to another station using the intercom. It includes both screened and unscreened transfer.

9. **TRK–TRK:** This is the number of times a trunk call was transferred to another trunk (tie line) This is called a trunk–to–trunk transfer. This field gets pegged every time the station completes a trunk to trunk transfer.

10. **PICKUP:** This is a count of the outside calls that were picked up by the specific station. Picked-up calls are calls that are not ringing at your station but were answered by you. This peg count is separate from the number of answered call in #5 of Individual Stations section E.

11. **INTERCOM:** Statistics for intercom calls. An intercom call made from a station or a station device within the system to another station.

12. **ANSD:** This is the number of times an intercom call was answered by this specific station. Screened transfers count as an answered intercom call.

13. **DIALED:** The number of times the specific station dialed another station or station group. Screened transfers count as a dialed intercom call.

PART 5. GENERAL USER INFORMATION

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 iDCS 500 Release 2 electronic telephone 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.

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.

NOTIFICATION TO TELEPHONE COMPANY

Before connecting the iDCS 500 Release 2 system to the telephone network, the telephone company may request the following information:

- Your telephone number or all numbers that will be connected to the iDCS 500 Release 2 system.
- FCC Registration Numbers:
  Key System—Fully Protected A3LKOR-43066-KF-E
  Multi-Function (Hybrid)—Fully Protected A3KLOR-43065-MF-E
- Ringer Equivalence Number 0.5 B for TRK-B1
- Ringer Equivalence Number 1.6 B for TRK-C1

The iDCS 500 Release 2 may be configured as a key system or a hybrid system. Depending on the method of operation, the appropriate FCC number must be given to the telephone company. Certain features such as pooled access by button or dial access, LCR, off premise extensions and tie lines may require the hybrid registration. Check with the local telephone company providing the service if you are in doubt. It is the customer's responsibility to comply with local telephone company tariffs.

TELEPHONE CONNECTION REQUIREMENTS

The Federal Communications Commission (FCC) has established rules which permit the DCS to be connected directly to the telephone network using telephone company network access jacks usually referred to as "Registered Jacks."

5.3 TELEPHONE COMPANY INTERFACES

CIRCUIT TYPE	500 R2 CARD TYPE	FACILITY INTERFACE CODE	NETWORK JACK
LOOP START LINE	TRK-B TRK-B1 TRK-C1 T1-SF T1-ESF	O2LS2 04DU9-DN 04DU9-1KN	RJ21X RJ11C RJ14C RJ48C
GROUND START LINE	T1-SF T1-ESF GTRK	O4DU9-BN 04DU9-1KN O2GS2	RJ48C RJ21X RJ11C RJ14C
DID LINE	T1-SF T1-ESF DID	04DU9-BN 04DU9-1KN O2RV2-T	RJ48C RJ21X RJ11C RJ14C
E & M TIE LINE	T1-SF T1-ESF E & M	O4DU9-BN 04DU9-1KN TL11M	RJ48C RJ2EX
OFF PREMISES EXTENSION	SLI-4 circuit board only	OL13C	RJ21X RJ11C RJ14C
E911	E911	O2RV2-O	
ISDN-PRI	TE/PRI	04DU9-1KN	RJ48C
ISDN-BRI	4BRI	02155	NT1

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 iDCS 500 Release 2, 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 iDCS 500 Release 2, please contact your local SAMSUNG TELECOMMUNICATIONS AMERICA 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 iDCS 500 Release 2 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.

The iDCS 500 Release 2 system uses toll restriction and LCR features that are programmed to allow dialing over the public telephone network. The North American Numbering Plan (NANP) determines these network area codes and exchange codes. Failure to update the system programming or software may deny you access to new area codes and exchanges. Bell Communication Research (Bellcore) administers the NANP and publishes it. To obtain the latest information and keep your system current, contact Bellcore at (201) 829-3071.

HEARING AID COMPATIBILITY

All models of the iDCS 500 Release 2 are hearing aid compatible as specified in Part 68 of the FCC Rules.

5.4 UNDERWRITERS LABORATORIES

The iDCS 500 Release 2 system has been tested to comply with safety standards in the United States as listed below. This system is listed with Underwriters Laboratories.

C UL US

LISTED
51Y7
E149091
I.T.E

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 REQUIREMENTS

The iDCS 500 Release 2 is capable of providing users 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 Consumer Act of 1990 and Part 68 of the FCC Rules.

5.7 DISA WARNING

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

WARNING: As it is impossible to control who may access your DISA line it is suggested that you do not turn this feature on unless you intend to use it. If you do use this feature, it is good practice to frequently change pass-codes and periodically review your telephone records for unauthorized use.

KEY SYSTEMS DEALER AGREEMENT
SAMSUNG TELECOMMUNICATIONS AMERICA
KEY SYSTEMS LIMITED WARRANTY

SAMSUNG TELECOMMUNICATIONS AMERICA ("STA"), warrants to its authorized Dealers and to the original retail purchaser ("Users") of a STA product for a period of 24 months from the date of shipment of the Product from STA's facility, that the Product (except for lamps, fuses, and other consumable items) will be free from defects in material and workmanship. Repaired or replaced materials shall be warranted for the balance of the warranty remaining on the original equipment, or 90 days from date of shipment from STA's facility, whichever is longer.

This warranty is for the benefit of and shall apply only to authorized Dealers and to Users. This warranty will not apply if the defect arises out of accident, neglect, alteration or misuse, failure of electric power, air conditioning, humidity control, causes other than ordinary use, or causes beyond STA's control. All warranty claims shall be waived unless reported, in writing, to STA or its authorized Dealer, prior to the expiration of the applicable warranty period.

The obligation of STA under this warranty is, at the sole option of STA: 1) the repair or replacement (with new or refurbished parts), of the defective or missing parts that are causing the malfunction and which are determined to be the defective by STA, and the return shipment of such parts to the Dealer (Dealer or User shall be responsible to pay for shipment of the defective parts to STA and for all the expenses connected with their removal and reinstallation); or 2) in lieu of repair or replacement, STA may refund the price charged by STA to its Dealer for such parts as are determined by STA to be defective and which are returned to STA through an authorized Dealer within the warranty period and no later than 30 days after such malfunction, whichever occurs first.

To obtain service under this warranty:

(1) USERS must provide written notice of the malfunction to an authorized STA Dealer within the warranty period and not later than 30 days after the date of the malfunction, whichever occurs first. If the USER is unable to identify an authorized STA Dealer, USER must provide written notice of the malfunction, including proof of the date of purchase of the equipment and the serial number of the malfunctioning Product, to STA at its corporate offices. Upon receipt of such notice and determination by STA that User is eligible for Warranty service, STA will provide the USER with the name of an authorized STA Dealer to contact for warranty service DEALERS must provide written notice of malfunction to STA no later than the expiration of the warranty period 30 days after the date the Dealer becomes aware of the malfunction, whichever comes first. For purposes of this Warranty, the issuance by STA of a Material Return Authorization (MRA) number by telephone to an authorized Dealer shall be deemed to be written notice from the Dealer with respect to the material returned under that MRA.

STA MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, AND SPECIALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES ARE DEALER'S AND USER'S SOLE REMEDIES AND IN LIEU OF ALL OBLIGATIONS OR LIABILITIES ON THE PART OF STA FOR DAMAGES, INCLUDING, BUT NOT LIMITED TO, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE USE OF THE PRODUCTS, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF THE PRODUCTS, WHETHER IN A CONTRACT OR TORT ACTION. INCLUDING NEGLIGENCE, EVEN IF STA HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, THE TOTAL MAXIMUM LIABILITY OF STA FOR BREACH OF WARRANTY SHALL BE LIMITED TO A REFUND OF THE COST OF THE DEFECTIVE PRODUCT.

No Dealer and no person other than an officer of SAMSUNG TELECOMMUNICATIONS AMERICA may extend or modify this warranty, and no modification or extension of this warranty shall be effective unless in writing signed by the authorized officer of SAMSUNG TELECOMMUNICATIONS AMERICA.