# SAMSUNG

## *i*DCS100
**Digital Communication System**

# General Description

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**Intended Use**

This telephone system is intended to provide the user with voice communication between the system extensions and connection to the public switched telephone network by digital or analogue links.

The telephone system may be provided with the ability to communicate with local computer networks to provide CTI functions and features. In this case, it is capable of passing information to the computer network via a specified link.

The system is powered by mains voltage and can optionally be powered by batteries. Details of all connections and power arrangements are provided in the instructions for use. It should not be used in any other way.

# Preface

## About This Guide

The *i*DCS100 Digital Communication System is designed for small to medium–sized businesses. This Guide provides a comprehensive overview of the system including configuration, hardware descriptions and available features.

The Guide consists of the following chapters.

- Chapter 1: Introduction to the *i*DCS100

  *Information on capacities, possible configurations, the technology employed and default programming*

- Chapter 2: Hardware Descriptions

  *Describes the components of the Basic Key Service Unit and Expansion cabinets, including interface cards (such as TRK, BRI, DLI, and the station equipment available*

- Chapter 3: Specifications

  *Electrical, physical, and environmental specifications, including system tones and keyset LED indications*

- Chapter 4: Business Features Package

  *All the system, station and display features available on the *i*DCS100 to enhance your business procedures, including example reports and printouts*

## Supporting Documents

This Guide is supported by the following *i*DCS100 system guides and manuals which are available from Samsung:

- **Installation Guide**

  *Provides full instructions for installing the *i*DCS100 system including interface cards, station equipment (telephones) and optional devices such as printers and paging equipment.*

- **System Administration Guide**

  *A useful guide to system administrators for programming the most commonly used features of the telephone system.*

- **Combined Programming Manual**

  *Provides complete instructions for programming your system using MMC programs at a digital keyset.*

- **Keyset User Guides**

  *Guides are available for using a variety of Samsung keysets and standard telephones with your *i*DCS100*

# Contents

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# Chapter 1 Introduction to the *i*DCS100

This chapter contains the following sections.

- General Description

- Size and Configuration

- Technology

- Programming

# General Description

The Samsung *i*DCS100 (Digital Communications System) is a digital telephone system designed for small- to medium-sized businesses. It can operate with the functionality of a key system, PABX or a combination of both (hybrid). The system employs DSP (Digital Signal Processor) digital technology.

The *i*DCS100 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 telephone can be connected to the system: proprietary digital phones called "keysets" connect to digital line interface cards (DLI) and standard telephones (generally called single line telephones, or SLTs) connect to single line interface cards (SLI). In addition, DLI station ports are used to connect peripheral devices such as door phones and add-on modules. Miscellaneous circuits are provided to allow such optional features as external paging, music-on-hold, background music, common audible devices, alarms and emergency power failure telephones.

## Voice Over IP (VoIP)

The *i*DCS100 ITM3 interface card supports eight calls over an IP network connection using the industry-standard H.323 protocol, allowing the transfer of voice, data and images quickly and efficiently.

## Samsung Keysets

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

# Size and Configuration

The *i*DCS100 comprises a Basic Key Service Unit (KSU, Figure 1–1), Expansion cabinet, interface cards and electronic keysets. The simplest KSU has eight (8) keyset ports, but this is expandable to 18 analogue C.O. line ports, or 24 BRI lines, or 32 stations. In addition, up to eight keyset daughterboards may be added to the system along with the optional 2SLI card.

Two types of Expansion cabinet are available: Expansion A and Expansion B. Expansion A has three universal slots and one "DCS" slot for a PRI, TEPRI or Voice Mail card. Expansion B has two universal slots and two "DCS" slots: the first DCS slot is for a Voice Mail card; the second DCS slot supports a PRI or TEPRI card.

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

> NOTE: For a full description of each card discussed in this section, refer to Chapter 2, Hardware Descriptions.

The charts shown in Figures 1-2 and 1-3 describe possible configurations using the Basic KSU, Expansion cabinet and interface cards. However, by using the system's unique keyset daughterboards (KDBs), which are installed in the base of a digital keyset, the capacity of the system can be increased by one station per KDB. Installing a KDB-DLI adds another digital port while a KDB-SLI adds a single line port. You can mix and match these two types of KDB to get up to a total of eight KDBs in the system. Using this method allows the system to expand to a maximum of 64 stations. Adding the optional 2SLI card to the KSU provides a further two SLI ports. The combination of the Basic KSU plus three expansion cards in the KSU, plus three expansion cards and one DCS card in the Expansion A cabinet, plus eight KDBs, plus a 2SLI card provides a maximum configuration of 96 ports plus a MISC card.

**Important Points to Remember:**

- Only one 2SLI card can be installed in the system.
- Only one MISC card can be installed in the system.
- Only three expansion cards can be installed in the KSU.
  An additional three expansion cards and a "DCS" card such as a PRI (TEPRI) or SVMi-8 card can be installed in an Expansion A cabinet; OR an additional two expansion cards and two "DCS" cards can be installed in an Expansion B cabinet.
- Only eight KDBs can be installed in the keysets connected to the Basic KSU.
- The system can have up to 40 digital keysets if an SVMi-8 card is installed, but up to 48 digital keysets if not.
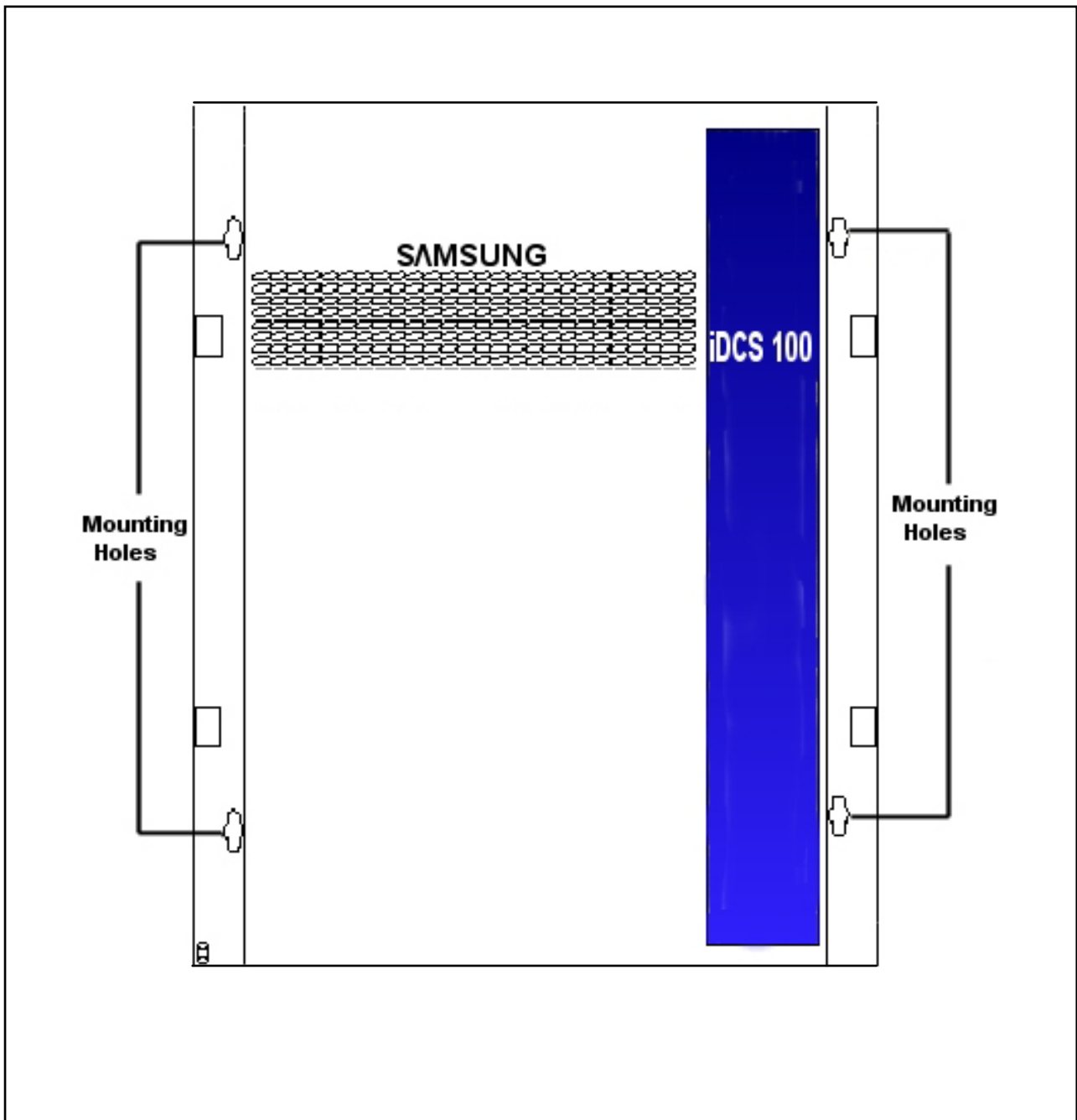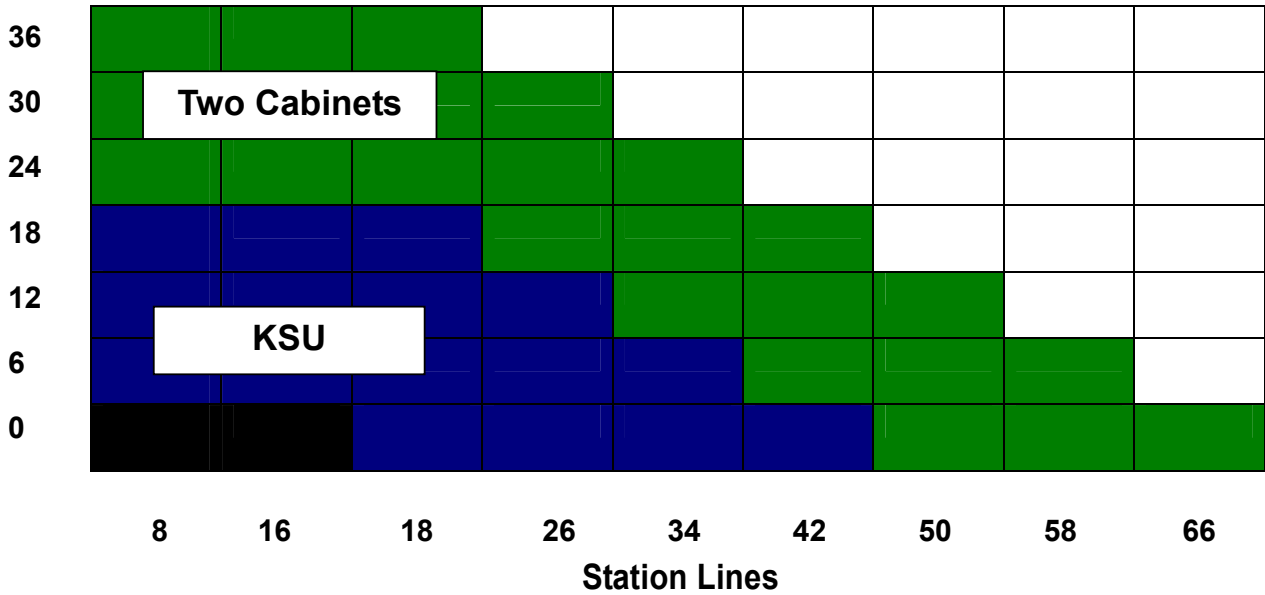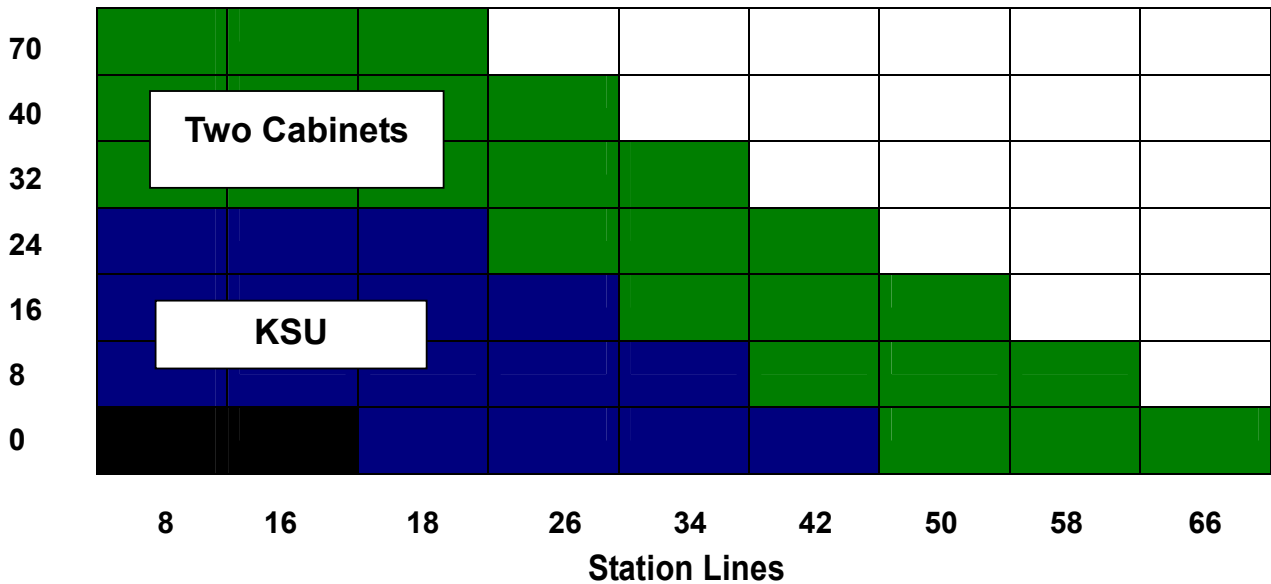
**Figure 1–1  *i*DCS100 Basic Key Service Unit**

**Trunk Lines**



**Figure 1–2   Configuration Matrix Table
(With Analogue Trunks)**

**Trunk Lines**



**Figure 1–3   Configuration Matrix Table
(With Digital Trunks)**

# Technology

## Memory

The system operates using stored program control. This program is stored in EPROM chips or flash memory. All specific customer data is stored in Random Access Memory (RAM) which is protected against the loss of AC power to the system by an onboard battery back-up system.

## Microprocessors

*i*DCS100 uses distributed processing. The primary processor is a 16–bit Motorola® MC68000 operating at a clock speed of 16 MHz. Secondary processing is carried out in some special cards, such as BRI, and also in keysets. Digital keysets use a Hitachi H8 processor for data communication.

## Switching

The system provides 256 switchable digital channels. Each of the 256 digital channels is automatically assigned to carry voice or data as required by system operation in a PCM format.

In addition to these channels, the system uses Digital Signal Processors (DSPs). Each DSP may be configured by the switching control program as a DTMF sender, a DTMF receiver or as a C.O. tone detector on a per–call basis. Four DSP channels are provided by default. Four additional DSPs are added when a MISC card is installed. This means that the system contains a total of eight DSP channels when fully expanded. The DSP channels are fully shared throughout the system as a common resource.

# Programming

*i*DCS100 is a self-configuring system. This means that immediately after applying power, the system reads the types and locations of all installed interface cards and keysets and assigns default data to them. All trunks and stations are assigned numbers according to the default numbering plan. This numbering plan is flexible and may be changed to suit customer requirements.

The system can be programmed from any LCD display keyset without interrupting system operation. There are three levels of programming: technician (or system), 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 different security passcodes and access procedures. Refer to the *Samsung Combined Programming Manual* for more information.

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

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

# Chapter 2   Hardware Descriptions

This chapter describes the hardware for the *i*DCS100 system as follows.

- Key Service Unit

- Interface Cards

- Station Equipment

# Key Service Unit (KSU)

The *i*DCS100 KSU (see [Figure 1–1](#) in Chapter 1) is a single metal cabinet containing the following:

- Power supply unit

- Processing and switching technology

- Eight 2B+D digital keyset interfaces

- Memory (MEM) card:

    *MEM3*: A removable card containing 4Mbytes of program memory, 1Mbyte data memory, with a back–up super capacitor, real-time clock, a monitor LED and a RAM clear switch

    Or

    *MEM4*: A removable card containing 8Mbytes of program memory, 1Mbyte data memory (only 512Kbytes are backed up), 512Kbytes common memory, real-time clock, a monitor LED, a RAM clear switch, a LAN interface, and a serial interface.

- One Internal Music source or an External Music interface for Music–On–Hold and Background Music

- One External Page interface

- One general–purpose dry contact

- Three universal expansion slots, a MEM card slot, a 2SLI card slot and a MISC card slot.

- Two Champ connectors for external connections, and other connectors for the Expansion cabinet and the Ring Generator Unit.

## MEM Card

The MEM3 card contains EPROM memory to support new features such as Windows PCMMC, and the ITM3 and TEPRI cards.

The MEM4 card is provided with an SIO port and a 10/100 base T LAN interface. The card has Flash memory to support new features such as Windows PCMMC, the ITM3 and TEPRI cards, a networking solution using TE/PRI, program/database upload/download and Hotel features.

## Ring Generator Unit (RGU1 or RGU2)

Two kinds of sinusoidal–waveform Ring Generator Units are available: RGU1 provides 3W ring signals; RGU2 provides 20W ring signals. RGU2 is required when a large number of single line telephones are connected to the system.

# Expansion Cabinet

One metal Expansion cabinet can be attached to the KSU. There are two types available. Expansion "A" type (Figure 2–1) comprises three Universal expansion slots and one "DCS" card slot for a PRI (TEPRI) or SVMi-8 card.   Expansion "B" type (Figure 2–2) consists of two universal expansion slots and two "DCS" card slots. The Expansion cabinet connects to the KSU via a 64-pin ribbon cable, two 2-wire power connections and an F-GND connection. It contains a 50-pin Champ connector for external connections.

Be aware that a DCS card has its own connector and the plastic case should be removed before installing the card in the Expansion cabinet.
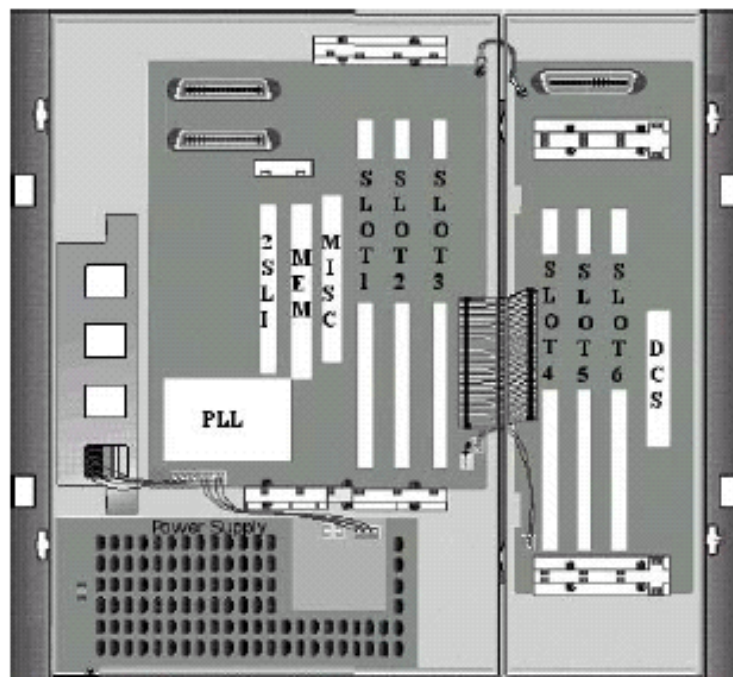


**Figure 2–1    KSU With Expansion Type "A" Cabinet**
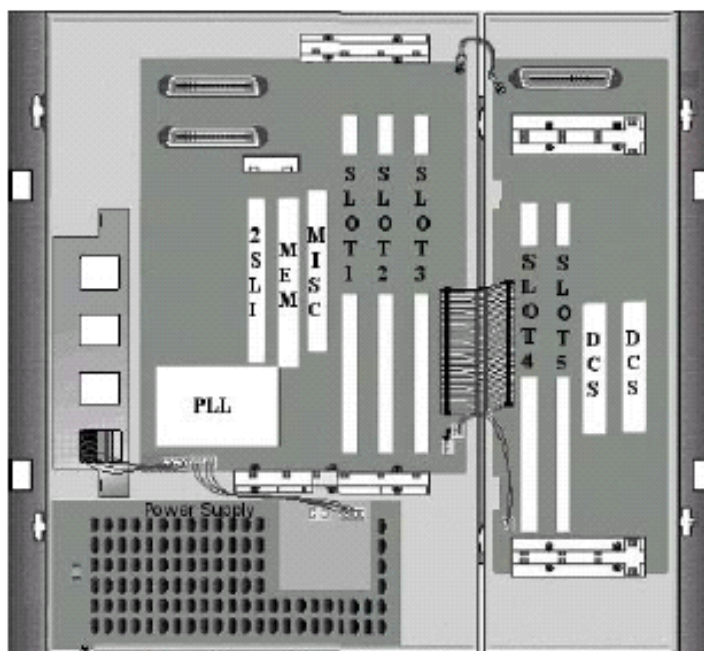
**Figure 2–2   KSU With Expansion Type "B" Cabinet**

# Interface Cards

These cards provide the interface connections for telephone lines and stations to the KSU and Expansion cabinet. They fit into the card slots to configure the system as required. Refer to the *Samsung iDCS100 Installation Guide* for information on how to recognise and install interface cards.

## 1. Trunk Cards

### AC15

Contains three 4-wire tielines. Signalling frequency is 2280 Hz.

### 3TRK

Provides three loop-start C.O. interface circuits. The first two circuits are equipped with power failure transfer (PFT) relays. Each circuit contains a Metering Pulse Detection (MPD) or Polarity Reversal Signal (PRS) interface. (The optional MPD or PRS hybrid chips for a Samsung DCS system can be used.)

### 6TRK

Provides six loop-start C.O. interface circuits. The first two C.O. circuits are equipped with PFT relays. Each circuit contains a Metering Pulse Detection (MPD) or Polarity Reversal Signal (PRS) interface. (The optional MPD or PRS hybrid chips for a Samsung DCS system can be used.).

## 2BRI

Contains two Basic Rate access ports, i.e. four ISDN channels. Protocol is compatible with Euro–ISDN BRI. For S0 applications, power feeding to ports is selectable by programming. (See also **PLL**, below.)

## 4BRI

Contains four Basic Rate access ports, i.e. eight ISDN channels. Protocol is compatible with Euro–ISDN BRI. For S0 applications, power feeding to ports is selectable by programming. (See also **PLL**, below.)

## PLL

Any ISDN card (i.e. BRI or PRI) requires that a PLL card be installed in the dedicated PLL slot on the KSU motherboard.

## TEPRI

Can be configured as a T1/E1 card or PRI card. If configured as T1/E1 it provides up to 30 trunk circuits in any combination of the following:
• Loop-start lines
• DID (Direct Inward Dialing)
• E & M tie lines or two-way DID calling
• QSIG

If configured as PRI, refer to the description for the **PRI** card, below.

## PRI

Contains one Primary Rate access port, i.e. thirty ISDN channels. Protocol is compatible with Euro–ISDN PRI. (See also **PLL**, above.)

## ITM3 (IP Telephony Module)

Supports eight Voice over IP (VoIP) channels. These channels are H.323 compliant and are used in conjunction with either the G.723 or G.729 voice compression protocols. The ITM3 card may be installed in any Universal card slot.

# 2. Station Cards

## 2SLI

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

## 8SLI

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

## 8DLI

Provides eight DLI ports for digital stations.

## 6MWSLI

100V pulse for message waiting LED working. Provides six SLI ports for industry–standard single line telephones and the ability to provide a loop-disconnect signal and a message-waiting signal. This card does not provide Long Line protection.

## Keyset Daughterboards

A variety of keyset daughterboards (KDB) are available. If installed in a digital keyset connected to the Basic KSU, a KDB provides a second DLI or SLI port. (See Station Equipment, below, for full details.)

# 3. Other Cards

## MISC (MISC 1 or MISC 2)

One dedicated slot in the Basic KSU is for a MISC card. The MISC 1 card contains one additional External Music interface for Music-On-Hold or Background Music, one additional External Page interface, one circuit for Alarm Sensor Detection, 4-channel DTMF receiver, three general–purpose dry contact relays, two RS-232C serial interfaces with connectors for PCMMC and SMDR, and a MODEM card interface. The MISC 2 card contains all these features and also provides a built–in, 4–channel AA function.

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

## MODEM

This card is a built–in modem and is installed on a MISC card.

## SVMi-4

The SVMi-4 is a self-contained Voice Mail and Auto Attendant system on a single card. It is designed to meet the demands of the sophisticated voice mail user without sacrificing simplicity. The SVMi-4 may act as an Auto Attendant system only, a Voice Mail system only, or both.

By default, the SVMi-4 can handle two calls simultaneously. It can be easily upgraded to handle up to four calls simultaneously. No external line or power connections are necessary.

The standard memory capacity is about 3.5 hours using a 64MB memory card. (Higher capacity Flash memory cards are available from Samsung.)

## SVMi-8

The SVMi-8 Voice Mail system is a fully integrated Auto Attendant/Voice Mail/Fax system on a single card. This optional card provides four or eight communication channels. Only one card is permitted per system and it should be installed in a "DCS" slot in the Expansion cabinet. (This should be the *first* DCS slot in an Expansion type B cabinet.)

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

All power to run the system comes from the power supply. Each power supply is rated according to the number of stations it will support. When SVMi-8 is installed, it counts as eight (8) stations of the PSU rating regardless of the number of Voice Processing Modules installed.

## 3BSI

Supports up to three DECT Base Stations for cordless handset communication.

# Station Equipment

Note that the keysets described here may differ according to the country of use.

## DCS Series (Euro) Keysets

### LCD 24B Keyset (Figure 2–3)

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



Figure 2–3   LCD 24B Keyset

### LCD 12B Keyset (Figure 2–4)

- 32 character display (2 x 16) with three associated soft keys and a scroll key
- 12 programmable keys (eight with tri-coloured LEDs)
- Four fixed-function keys
- Built-in speakerphone
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones
- Desk- or wall-mounted



Figure 2–4   LCD 12B Keyset

## LCD 6B Keyset <span>(Figure 2–5)</span>

- 32 character display (2 x 16) with three associated soft keys and a scroll key
- 6 programmable keys
- Four fixed-function keys
- Built-in speakerphone
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones
- Desk or wall mounted



Figure 2–5   LCD 6B Keyset

## 6B Basic/Enhanced Model Keyset <span>(Figure 2–6)</span>

- 6 programmable keys
- Four fixed-function keys
- Built-in speakerphone
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones per keyset
- Desk- or wall-mounted



Figure 2–6   6B Basic/Enhanced Model Keyset

## DS-2100B Keyset <span>(Figure 2–7)</span>

- Multi-function indicator
- Four fixed-function keys
- Built-in speakerphone
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Eight selectable ring tones per keyset
- Desk- or wall-mounted



Figure 2–7   DS-2100B Model Keyset

## 48 Button AOM (Figure 2–8)

- 48 programmable keys
- Up to four can be assigned to any DCS keyset to provide additional programmable keys

Figure 2–8   48 Button AOM

# DCS Series Keyset Daughterboards

## KDB-DLI

This daughterboard can be installed only in a 12B or 24B keyset. The KDB-DLI provides one additional DLI circuit for the connection of any digital station device such as a keyset, add-on module or DPIM. The KDB-DLI will only operate when the keyset is connected to a DLI port on the base board so it can use the second B channel. Each port is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation. (See Chapter 3 of the *Samsung iDCS100 Installation Manual* for details.)

## KDB-SLI

This daughterboard can be installed only in a 12B or 24B keyset. The KDB-SLI provides one additional SLI circuit for the connection of any standard (single line) telephone. This KDB-SLI will only operate when the keyset is connected to a DLI port on the base board so it can use the second B channel. Each port is intended for connection to one telephone. Connecting multiple telephones to a port may result in incorrect operation. (See Chapter 3 of the *Samsung iDCS100 Installation Manual* 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.

# Door Phone Interface Module (DPIM) & Door Phone (Figures 2-9 and 2-10)

- 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 a customer-provided electric door lock
- Door phone is wall-mounted
- Door phone is weather resistant
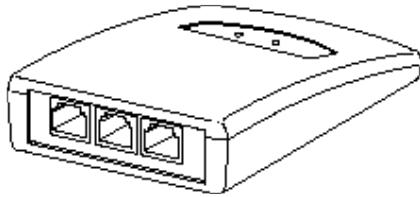


Figure 2–9   Door Phone Interface Module
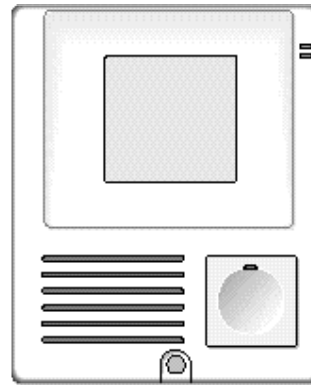


Figure 2–10   Door Phone

# *i*DCS Series Keysets

## 28 Button *i*DCS Keyset (28D) (Figure 2–11)

- 32-character display (2 x 16) with three associated soft keys and a scroll key
- 28 programmable keys with tri-coloured LEDs
- Two fixed-function keys
- Keyset Status Indicator
- Built-in speakerphone
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2–11   28 Button *i*DCS Keyset (28D)

## 18 Button *i*DCS Keyset (18D) (Figure 2–12)

- 32-character display (2 x 16) with three associated soft keys and a scroll key
- 18 programmable keys with tri-coloured LEDs
- Two fixed-function keys
- Keyset Status Indicator
- Built-in speakerphone
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted

Figure 2–12   18 Button *i*DCS Keyset (18D)

## 8 Button *i*DCS Keyset (8D) (Figure 2–13)

- 32-character display (2 x 16) with three associated soft keys and a scroll key
- 8 programmable keys with tri-coloured LEDs
- Two fixed-function keys
- Keyset Status Indicator
- Built-in speakerphone
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted

Figure 2–13   8 Button *i*DCS Keyset (8D)

## 8 Button *i*DCS Keyset (8S)

This is similar to the 8D (above) but does not have a display or keyset status indicator.

## 64 Button *i*DCS AOM (Figure 2–14)

- 64 programmable keys with red LEDs
- Up to four can be assigned to a keyset to provide additional programmable keys
- Maximum of 12 per system

Figure 2–14   64 Button *i*DCS AOM
(connected to keyset)

## 14 Button *i*DCS AOM / STRIP (Figure 2–15)

- 14 programmable keys with red LEDs
- One only can be assigned to a keyset to provide additional programmable keys



Figure 2–15   14 Button *i*DCS AOM/Strip
(connected to keyset)

# *i*DCS Series Keyset Daughterboards

# [28D and 18D Keysets Only] (Figure 2–16)

*i*DCS 28D and 18D button keysets can have one of three different types of daughterboards installed on them to enhance operation or to provide an additional local port depending on the type of daughterboard.

## *i*DCS KDB-Digital Line Interface (FKDBD)

If your keyset is connected to a Digital Line Interface (DLI) port that supports 2B+D operation, you may install a daughterboard that provides a Digital Line Interface (DLI) port for connection of a digital station device such as a keyset or 64-button add-on module.

## *i*DCS KDB-Single Line Interface (FKDBS)

If your keyset is connected to a Digital Line Interface (DLI) port that supports 2B+D operation, you may install a daughterboard that provides a Single Line Interface (SLI) port for connection of a standard telephone device such as a cordless phone.

## *i*DCS KDB-Full Duplex (FKDBF)

The standard speakerphone mode of operation for an *i*DCS keyset is "half duplex". This means that you cannot transmit and receive speech at the same time. Adding an FKDBF to your keyset will convert the speakerphone into full duplex mode, enhancing its operation. In addition, the FKDBF may have up to three 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.



Figure 2–16   *i*DCS Series Keyset Daughterboards

# Chapter 3  *i*DCS100 Specifications

This chapter provides the technical data for the *i*DCS100 hybrid/key telephone system as follows.

- Electrical Specifications

- Dimensions and Weights

- Environmental Limits

- Cable Requirements

- Power Supply

- System Tones

- Keyset LED Indications

## Electrical Specifications

| AC INPUT | 220 VAC ± 20%, 48–63 Hz or Selectable Input Voltage for some countries. |
|---|---|
| POWER CONSUMPTION (MAX) | 140 WATTS |
| DC OUTPUT | +5 VOLTS 4.0 AMPS MAX<br>-5 VOLTS 0.5 AMPS MAX (on motherboard)<br>-55 VOLTS 1.7 AMPS MAX<br>-54 VOLTS 0.4 AMPS MAX (battery) |

## Dimensions and Weights

| | HEIGHT (mm) | WIDTH (mm) | DEPTH (mm) | WEIGHT (kg) |
|---|---|---|---|---|
| SINGLE CABINET (BASIC KSU) | 464 | 365 | 148 | 7.5 |
| BASIC KSU + EXPANSION KSU | 464 | 467 | 148 | 12.5 |
| DOOR PHONE INTERFACE MODULE | 120 | 91 | 28 | 0.2 |
| DOOR PHONE | 127 | 99 | 30 | 0.2 |

Dimensions of keysets and AOMs depend on type(s) used. Refer to Chapter 2 for an overview of station equipment available.

# Environmental Limits

| | |
|---|---|
| **OPERATING TEMPERATURE** | 32–104 °F / 0–40 °C |
| **STORAGE TEMPERATURE** | 13–158 °F / -10.5–70 °C |
| **HUMIDITY** | 10%–90% non-condensing |

# Cable Requirements

| EQUIPMENT | CABLE | AWG / mm | MAX METRES |
|---|---|---|---|
| DIGITAL KEYSET | 1 PR. TWISTED | #24 / 0.5 | 400 |
| ADD-ON MODULE | 1 PR. TWISTED | #24 / 0.5 | 400 |
| SINGLE LINE STATION | 1 PR. TWISTED | #24 / 0.5 | 1000 |
| DOOR PHONE | 2 PR. TWISTED | #24 / 0.5 | 100* |

*This is the maximum distance a door phone can be from the DPIM. The DPIM can be up to 274 cable metres from the KSU.

# Power Supply

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

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

# System Tones

| TONE | CADENCE (Milliseconds) | | | |
|---|---|---|---|---|
| | On | Off | On | Off |
| **DIAL TONE**<br>A steady tone that indicates you can begin dialing | CONTINUOUS | | | |
| **RINGBACK TONE**<br>The station you dialled is ringing | 400 | 200 | 400 | 2000 |
| **DDI RINGBACK TONE**<br>Ringback tone heard by external party when dialing DDI number | 1000 | 3000 | 1000 | 3000 |
| **BUSY TONE**<br>The station you dialled is busy | 350 | 350 | 350 | 350 |
| **DND/NO MORE CALLS**<br>Fast busy tone tells you the station you dialled is in the Do Not Disturb mode or cannot receive any more calls. (Rings for 10 secs) | 250 | 250 | 250 | 250 |
| **TRANSFER/CONF**<br>Your call is being held and you can dial another party. | 100 | 100 | 100 | 100 |
| **CONFIRMATION / BARGE IN TONE**<br>Very short beeps followed (after 2 seconds) by dial tone indicate you have correctly set/cancelled a system feature or set a barge in with tone | 50 | 50 | 50 | 50 |
| **ERROR TONE**<br>A distinctive two-level beeping tone followed (after 2 seconds) by dial tone indicates you have done something incorrectly. Try again. | 100 | 100 | 100 | 100 |
| **MESSAGE WAITING**<br>A message waiting indication has been left at the SLT station | CONTINUOUS | | | |
| **HOLD / CAMP-ON**<br>Call on hold or camped on | 500 | 3500 | 500 | 3500 |
| **RING**<br>Ring over page | 1000 | 3000 | 1000 | 3000 |
| **C.O. BUSY**<br>C.O. line is busy | 350 | 350 | 350 | 350 |
| **C.O. RINGBACK**<br>C.O. line is ringing | 400 | 200 | 400 | 2000 |
| **C.O. DIAL**<br>C.O. line dialling tone | 1000 | 250 | 1000 | 250 |

# Keyset LED Indications

| CONDITION | LED COLOUR | LED ON | LED OFF |
|---|---|---|---|
| LINE IDLE | – | – | 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 (Duration 500 ms) | RED | 100 ms | 100 ms |
| OPERATOR CALLS | RED | 100 ms | 100 ms |
| ANS/RLS (DND)* | RED | 112 ipm for 500 ms | 500 ms |
| ANS/RLS (HDSET MODE) | RED | STEADY | – |
| TRSF (FORWARD ALL) | RED | STEADY | – |

*Overrides headset mode

# Chapter 4 Business Features Package

This chapter describes the features available on the *i*DCS100 keyphone system to enhance your business procedures. It is subdivided into the following sections.

- System Features
- Station Features
- Display Features
- Sample Keyset Displays
- Sample Caller ID Displays
- Sample UCD Displays
- Sample SMDR Printout

- Sample UCD Report
- UCD Call Statistics
- UCD Agent Statistics
- Sample Traffic Report
- Traffic Report Overview
- Sample Alarm Report

# System Features

AC15 Tielines
Account Code Entry
    Forced - Verified
    Forced - Not Verified
    Voluntary
Account Code Key
All Call Voice Page
Attention Tone
Authorization Codes
    Forced
    Voluntary
Auto Attendant*
Automatic Hold
Background Music
Cadence–Integrated Voice Mail*
Call Activity Display
Call Costing
Caller Identification (Caller ID)*
    Calling Line Identification (CLI) for Incoming Calls
        Caller ID (CID) Features
        Name/Number Display
        Next Call
        Save CID Number
        Store CID Number
        Inquire Park/Hold
        CID Review List
        CID Review List
        Investigate
        Abandon Call List
        CID on SMDR
        Number to Name Translation
    Calling Line Identification (CLI) for Outgoing Calls
        Outgoing CID
        Restricting Outgoing CID

Call Forwarding
    All Calls
    Busy
    No Answer
    Busy/No Answer
    Forward DND
    Follow Me
    External
    To Voice Mail
    Preset Destination
    Call Forward Busy (CFB – Networking Enabled Only)
    Call Forward No Response (CFNR – Networking Enabled Only)
    Call Forward Unconditional (CFU – Networking Enabled Only)
Call Hold
    Exclusive
    System
    Remote
Call Park and Page
Call Pickup
    Directed
    Groups
Call Waiting/Camp-On
Centrex/PBX Use
Chain Dialling
Class of Service
Common Bell Control
Computer Telephony Integration (CTI)*
    TAPI 2.1
Conference
    Add On (5 Party)
    Unsupervised
Data Security
Database Printout
DECT Service
Direct In Lines
Direct Dialling In (DDI)

Direct Inward System Access (DISA)
Direct Trunk Selection
Directory Names
DISA Security
Distinctive Ringing
Door Lock Release
Door Phones
Executive Barge-In (Override)
    With Warning Tone
    Without Warning Tone
    Trunk Monitor or Service Observing
Executive/Secretary Pooling
External Music Interfaces
External Page Interfaces
Flash Key Operation
Flexible Numbering
Hot Desking
Hot Line
In Group/Out of Group
Incoming Call Distribution
Incoming/Outgoing Service
Individual Line Control
ISDN Service
    Primary Rate Interface (PRI)
    Basic Rate Interface (BRI)
Least Cost Routing
Live System Programming
Meet Me Page and Answer
Memory Protection
Message Waiting Indications
Microphone On/Off per Station
Music on Hold—Flexible
Music on Hold—Sources
Networking
Off Premises Extensions (OPX)
Operator Group
Overflow
    Operator
    Station Group
Override Code

Paging
Park Orbits
Prime Line Selection
Private Lines
Programmable Line Privacy
Programmable Timers
Recalls
Remote Programming—PC
Ring Modes
    Time Based Routing Plans
    Automatic / Manual
    Holiday Schedule
    Temporary Override
Ring Over Page
Single Line Connections
Speed Dial Numbers
Speed Dial by Directory
Station Hunt Groups
Station Message Detail Recording (SMDR)
SVMi-4 & SVMi-8 Integrated Voice Mail*
System Alarms
System Maintenance Alarms
System Directory
Tenant Service
Toll Restriction
Toll Restriction Override
Tone or Pulse Dialling
Traffic Reporting
Transfer
Trunk Groups
Uniform Call Distribution (UCD)*
    UCD Groups
    Call Statistics
    Agent Statistics
    Group Supervisors
    Printed Reports
Universal Answer (Night Bell)
Voice Mail: In-band Integration
Walking Class of Service

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

# System Feature Descriptions

## AC15 Tielines

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

## Account Code Entry

Station users may enter an account code (maximum 12 digits) before hanging up from a call. This account code will appear in the SMDR printout for that call record. Keyset users may enter this code using an account code key without interrupting a conversation. Single line telephone (SLT) users must temporarily interrupt the call by hook-flashing and dialling 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 500 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.

## All Call Voice Page

Users can page zone 1 and all external paging zones at the same time by dialling the All Page code. Keysets may be restricted from making or receiving pages in system programming. A maximum of 40 keysets can be programmed in each internal page zone to receive page announcements.

## Attention Tone

To get users' attention, a brief tone precedes all page announcements and internal voice calls. There are separate programmable duration timers for page and voice announce tones.

## Authorisation Codes

Authorisation codes give permission to make a call. A maximum of 250 four-digit authorisation codes can be either forced or voluntary. When used, authorisation codes will automatically change the dialling station's class of service to the level assigned to the authorisation code. Authorisation codes may be programmed to print, or not print, on SMDR.

### Forced

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

### Voluntary

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

# Auto Attendant

The integrated digital Automated Attendant feature (AA) provides six ports per AA card and four ports on a MISC 2 card for simultaneous answering and call processing. Each card has 16 professionally recorded announcements to inform callers of the progress of their calls. Examples are: "I'm sorry. There is no answer", "That station is busy", and "Invalid Number. Please try again". A maximum of 127 seconds of super capacitor-backed random access memory (RAM) provide up to 48 customer recordings for announcements or greetings. (This RAM will hold data for up to 100 hours without power supplied.) Twelve individual AA Plans, each with its own dialling options, allow you to build call routing branches as needed. Callers are routed through the branches by dialling extension numbers or single digits. AA is compatible with the SVMi-4, SVMi-8 and Cadence Voice Mail systems.

> NOTE: Announcements recorded on one AA card cannot 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 key 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. Internal 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.

# Cadence—Integrated Voice Mail

The *i*DCS100 can be equipped with Samsung's proprietary integrated Cadence Voice Mail and Auto Attendant card (CVM8A). It provides four or eight ports of voice processing (expandable from four to eight ports). Because it is built into the system it provides such features as one-touch Call Record, Answering Machine Emulation and Voice Mailbox Administration with interactive keyset displays.

# Call Activity Display

The *i*DCS100 will record and buffer all calling activity within the system. With a Call Activity Display (CAD) key, the system will display a "snapshot" of the following information:

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

> NOTE: This feature is only available with a MEM4 card installed.

# Call Costing

The *i*DCS100 provides programmable call costing tables to calculate the cost of incoming and outgoing calls. Rates are calculated by the number dialled, 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. The relevant portion of the cost for a call handled by multiple stations will be allocated to each station.

# Caller Identification (Caller ID or CID)

The *i*DCS100 supports caller identification on ISDN circuits as a means of identifying an incoming caller. It is also possible for station users to identify themselves to external parties by sending CID information when making calls.

> NOTE: CID is sometimes referred to as Calling Line Identification Presentation (CLIP).

## 1. Calling Line Identification (CLI) for Incoming Calls

With ISDN, calling party information is referred to as Calling Line Identification (CLI) and is supported on both BRI and PRI type circuits.

The *i*DCS100 supports 'Number only' delivery format provided by the telephone company. Names can be attached to telephone numbers of frequent callers via the CID translation table.

### Caller Identification (CID) Features

The following features apply to all forms of caller identification. However, for simplicity, caller identification is referred to as CID.

#### Name/Number Display

Each display keyset user can decide to see either the name or number in the display first. Regardless of which is selected to be seen first, the NND key can be used to view the other.

#### 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 CID information associated with this next call in queue at your station. Either the CID name or number will show in the display depending on your selection.

#### Save CID Number

At any time during an incoming call that provides CID information, you may press the SAVE key. This saves the CID number in the Save Number feature. Pressing the Saved Number Redial (SNR) key will dial the CID number.

#### Store CID Number

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

#### Inquire Park/Hold

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

### CID Review List

This feature allows display keyset users to review CID information for calls sent to their stations. The review list is 10 to 50 calls on 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 a key to dial the person back.

### Investigate (I-SPY)

This feature allows selected stations with a special class of service to investigate any call in progress. If CID information is available for an incoming call, you can see 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.

### Abandoned Call List

There is a system-wide abandoned call list that stores CID 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 use the NND key to toggle between the CID name, number and the date and time the call came in. The abandoned call list will store up to 50 unanswered calls.

### CID on SMDR

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

### Number to Name Translation

The system provides a translation table for 350 entries. When the CID number is received, the table is searched. When a match is found, the system will display the corresponding name.

## 2. Calling Line Identification (CLI) for Outgoing Calls

### Outgoing CID

A station user can choose to have an identifying number sent to called parties when a call is made. This number can be any valid number the user selects in programming options (the DDI number, for example). One of four numbers can be selected, depending on the outgoing trunk circuit.

### Restricting Outgoing CID

Sending of CLI information can be turned off either permanently in MMC programming, or on a one-time basis using a programmed NOCLIP key at the station.

## 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 forwarding station by using the transfer feature. The forwarding station user can continue to originate calls as usual. If no key is programmed as Forward All, the Transfer (or 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 make and receive calls as usual. The timer is programmable on a per-station basis by the system administrator 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 both 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 mode 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

This feature forwards incoming C.O. calls to an external number via a C.O. trunk if allowed by class of service. Internal calls may also be programmed to forward to an external number via a C.O. trunk. These calls will forward only after the programmable external call forward delay timer expires.

### To Voice Mail

Each station may be programmed to allow or deny the ability to forward internal 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 installer or system administrator. If a station does not have Forward No Answer set, the call will ring this preset destination if one is programmed.

### Call Forward Busy (CFB) (Networking Enabled Only)

This is a different feature from the normal call Forward Busy and is only used when the forward destination is in a different node of the network. The operation of the feature is the same as the normal Forward Busy: when the forwarded station is busy, a calling station will be forwarded to the programmed destination.

### Call Forward No Response (CFNR) (Networking Enabled Only)

This is a different feature from the normal call Forward No Answer and is only used when the forward destination is in a different node of the network. The operation of the feature is the same as the normal Forward No Answer: when the forwarded station does not answer after a programmed time, a calling station will be forwarded to the programmed destination.

### Call Forward Unconditional (CFU) (Networking Enabled Only)

This is a different feature from the normal call Forward All and is only used when the forward destination is in a different node of the network. The operation of the feature is the same as the normal Forward All: all calls to the forwarded station will be forwarded to the programmed destination.

## Call Hold (Exclusive)

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

## Call Hold (System)

Outside calls can be placed on system hold at any station. Users may dial the access code or press the HOLD key. Calls on system hold may be retrieved at any station.

## Call Hold (Remote)

Outside calls can be placed on hold at a remote station. This allows calls to be answered at one station and placed on hold at another station. The user can then move to that station or the party that the call was intended for can have that call placed at their station. The call or trunk key will flash at the 'remote hold' station.

> NOTE: You cannot use system hold or remote hold for internal calls.

## 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 keys to press and there is no lost time looking for a free zone.

## Call Pickup

### Directed

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

### Groups

The group pickup feature allows users to answer any call ringing within any pickup group. There are 20 pickup groups available. A station cannot be in more than one pickup group. To use this feature, station users either dial the access code or press the assigned feature key followed by the pickup group number.

## Call Waiting/Camp-on

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

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

# 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 keys. Toll restriction programming can ignore PBX or CENTREX access codes so that toll calls can be controlled when using these services.

# Chain Dialling

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

# Class of Service

The system allows a maximum of 30 station classes of service. Each class of service can be customised in memory to allow or deny access to features and to define a station's dialling class. Each station can be assigned different classes of service according to the ring plan table.

# Common Bell Control

The MISC card 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 *i*DCS100 and a personal computer (PC) or a local area network (LAN). CID 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 system.

### *TAPI 2.1

TAPI 2.1 is the method of integrating the *i*DCS100 system and a PC. TAPI 2.1 is a LAN-based solution allowing PCs to communicate directly with the telephone system over the PCs' LAN. This establishes a logical connection rather than a physical connection between telephone and PC. It eliminates the cost and administrative overhead of connecting every PC to a desktop phone. It emphasises third-party call control. (For example: calls can be tracked as they are transferred, making it more suited to large office applications).

# Conference

The system allows six simultaneous conferences with up to five parties in 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.

> NOTE: This feature requires individual trunk keys and Auto Hold to be enabled.

## Data Security

Single line telephones used with modems and fax machines can be programmed so that they will not receive any system-generated tones that would disrupt data transmissions. In addition, these devices receive C.O. ringing pattern instead of internal 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 using PCMMC (the PC program for configuring the telephone system). 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 printed.

## DECT Service

The system provides DECT cordless communications in a single office or throughout a large commercial or industrial complex. To implement this service, you need a 3BSI card, DECT Base Station(s) and DECT handsets. Users of this service meet improved overall efficiency, since they can be reached or make calls while away from their desks.

## Direct in Lines

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

## Direct Dialling In (DDI)

Direct Dialling In (DDI) refers to digit-steered inbound call handling. This service is provided over ISDN PRI and BRI circuits.

## 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 then place internal calls or, if permitted, calls using C.O. lines. The caller must have a tone dial phone and know their DISA security code. DISA lines can be used as both-way lines or incoming only and may be active/inactive according to the ring plan table. 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 DDI translation table may be assigned a name (maximum 11 characters). These names are displayed during calls with these ports and in the case of station and speed dial names, can be used to originate calls. See the Dial by Name feature in *Display Features*.

## DISA Security

Telephone fraud and long-distance theft are a serious concern. The *i*DCS100 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 allowed number of incorrect passcode attempts and the time for which 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 type of call received by a user can be recognised by the type of ring heard. For example, in the UK, outside calls have a double ring repeated while internal calls have a single ring repeated.

In addition, any trunk or station can be programmed to ring a keyset with a predefined ring tone (selectable between 1 and 8), or to ring a single line telephone with a predefined cadence (selectable between 1 and 5). This provides for easy identification of special lines or extensions that ring your phone.

## 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 in the range 100–2500 ms.

## Door Phones

The door phone interface module (DPIM) provides for connection of a door phone to a DLI port. Pressing the key 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.

## 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 10 seconds. This feature does not work from single line telephones.

### 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 telephones.

> **WARNING: Barge-in without tone may violate laws concerning the right to privacy. Samsung Telecoms UK is in no way responsible for the possible misuse of this feature.**

**Trunk Monitor or Service Observing**

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

# Executive/Secretary Pooling

Each keyset may be defined as an executive (BOSS) or a secretary (SECR) keyset in system programming. Each 'executive' can have up to four 'secretaries', and each 'secretary' can have up to four 'executives', assigned to it. These arrangements are known as executive/secretary pools. There can be multiple pools in a system. When an executive is in DND mode, all calls to the executive ring the first secretary assigned to that executive; if that secretary is busy, the call hunts to the next available secretary assigned. If the secretary needs to communicate with the executive while the latter is in DND mode, pressing the corresponding executive key on the secretary's keyset results in an Auto Answer internal call being made to the executive (providing the executive is free). The *i*DCS100 software has 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.

# External Music Interfaces

The system provides up to two inputs for connecting to customer-provided external music sources. The Basic KSU provides one input on the base board (selectable internal/external) and the optional MISC card provides another. Music sources can be used to provide background music, or any of the varied Music-On-Hold (MOH) functions.

# External Page Interfaces

The system base board provides one external page output and the optional MISC card provides an additional external page output and three relays which can be used for page zone control. Multiple relays may be assigned to each zone.

# Flash Key Operation

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

# Flexible Numbering

System programming allows stations to have 2-, 3- or 4-digit extension numbers beginning with the digit 2 or 3. By default, extension numbers begin with 201. Station group numbers can be three or four digits beginning with the digit 5. Other numbering plans can be used.

Using digits other than '2', '3' or '5' will require the installer to change other feature access codes in the system default numbering plan. Take this into account when referring to Samsung Keyset User Guides as these all assume that the default numbering plan is being used.

# Hot Desking

Hot Desking gives users mobility by allowing them to locate to any selected station and, simply by dialling a code at the station, transfer all the features they normally require (a specified extension number, pickup groups, paging groups, call barring, voice mailbox, and so on) to the station. This feature is also referred to as Set Relocation (see *Station Features*).

## Hot Line

Stations can be programmed to automatically 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, if required.

## 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 key, provided that there is someone still in the group. There is, however, a system option to allow all members to log out of a station group if this is required. Stations logged 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 can log back into the group by pressing the key again. Users who do not have this key may dial the access code and the group desired. A station user is allowed to be in several groups, provided a key and the extender for that group are assigned for each group on the user's keyset. Logging in and out can be done with or without Agent ID codes (see Uniform Call Distribution).

## Incoming Call Distribution

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

## Incoming/Outgoing Service

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

## Individual Line Control

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

## ISDN Service

The *i*DCS100 supports ISDN service through both the Primary Rate Interface (PRI) and the Basic Rate Interface (BRI).

### Primary Rate Interface (PRI)

Simultaneous data calls, calling party and calling line identification, high-speed call setup and disconnect are among the benefits of ISDN calling. The 30B+D configuration of ISDN allows call information to be delivered via the data channel (the "D" of 30B+D) thus leaving the bearer channels (the "B" of 30B+D) available for single use or combined use to provide a wider bandwidth for data and video.

### Basic Rate Interface (BRI)

The 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 among other 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.

# Least Cost Routing

Least Cost Routing (LCR) is the ability to automatically select the most cost effective central office route for the outside number dialled by any station. The *i*DCS100 LCR program includes the following features:

- Option to use or not use LCR
- Programmable LCR access code
- Digit analysis table: 1000 entries, each with 10 digits
- Routing by time of day and day of week (four time bands per day)
- Routing according to individual station class
- Modify digits table: 100 entries
- Flexible trunk group advance timer
- Option to use or not use trunk group advance warning tones

# Live System Programming

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

# Meet Me Page and Answer

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

# Memory Protection

In the event that system power is lost, all customer data contained in memory is retained by the use of a "super capacitor" for approximately 7 days. In addition, the PCMMC program may be used to produce a backup copy of the customer database.

# Message Waiting Indications

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

# 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 dialling and group listening are still possible.

# Music-On-Hold (MOH)—Flexible

The *i*DCS100 allows its music sources to be used in a very flexible manner.

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 (MOH), DDI MOH and UCD MOH.

Each UCD group can have a designated music source to be played while a caller is in queue.

## Music-On-Hold (MOH)—Sources

The system provides for up to six different types of MOH source, including silence ("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 MCP card is played to the listener.

**External source**: Up to two external sources (such as a digital announcer or radio)—one connected to the base board and one to a MISC card—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 an MOH source and used to repeatedly play a message recorded on the AA card to the listener.

**Voicemail Sound File**: If the system has an optional Cadence/SVMi-8/SVMi-4 card installed, up to 100 custom recorded sound files from the Voice Mail card can be used for MOH sources. For information on creating the sound files, see your Samsung Voice Mail system documentation. Each VMMOH source requires a dedicated VM port/channel.

## Networking

The networking feature allows up to four *i*DCS100 systems to be connected together with some important feature transparency. The physical connection between the systems is via a proprietary ISDN connection (a TEPRI card must be used) and is based on the QSIG specification. The following features are supported between networked systems.

**Call Completion, Busy Station (CCBS)** also known as Callback or Busy Station Callback. When a station (A) in one system calls a station (B) in another system across the network link, and station B is busy, station A can set a Callback to station B. When station B becomes idle, the system will ring station A; when station A answers, the system will ring station B.

**Call Completion, No Response (CCNR)** also known as Callback or No Answer Callback. When a station (A) in one system calls a station (B) in another system across the network link, and station (B) does not answer, station A can set a Callback to station B. When station B indicates that its user is present by becoming busy (e.g. when the user lifts the handset), and then becomes idle again, the system will ring station A; when station A answers, the system will ring station B.

**Call Forward Busy (CFB)**. This is a different feature from the normal Call Forward Busy and is only used when the forward destination is in a different node of the network. Operation of the feature is the same as the normal Forward Busy: when the forwarded station is busy, a calling station will be forwarded to the programmed destination.

**Call Forward No Response (CFNR)**. This is a different feature from the normal Call Forward No Answer and is only used when the forward destination is in a different node of the network. Operation of the feature is the same as the normal Forward No Answer: if the forwarded station does not answer after a programmed time, a calling station will be forwarded to the programmed destination.

**Call Forward Unconditional (CFU)**. This is a different feature from the normal Call Forward All and is only used when the forward destination is in a different node of the network. Operation of the feature is the same as the normal Forward All: all calls to the forwarded station will be forwarded to the programmed destination.

**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 EXT FWD option in MMC 210. It is therefore suggested that this option be set to ON in a networked switch to avoid confusion in operation between networked and non-networked calls.

**Call Intrusion (Barge In)**. This feature operates in the same manner as in a non-networked switch.

**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 key. The AUTO CAMPON feature will not work on calls across a network link if set ON in MMC 110.

**Call Transfer**. Calls answered in one network node can be transferred to a station or station group in another network node.

**Transfer Retrieve**. Calls on Transfer Hold during a screened transfer can be retrieved by pressing the Call key for that call.

**Transfer Recall**. Calls transferred across a network link will recall to the transferring station after the originating system's transfer recall timer expires. After recalling, if not answered prior to the system's attendant recall timer expiring, the call will recall to the system's designated operator group. Attendant recalls will not recall to a "Centralised Attendant" (see below).

**DDI with Pass Through**. Incoming DDI calls can be routed through one switch across a network link to be processed by the DDI table of the destination switch.

**Do Not Disturb (DND)**. This feature operates in the same manner as in a non-networked switch. An option in MMC 823 determines the type of DND tone sent across the network link.

**Caller ID (CID)**. CID in the forms that are currently available (PRI Name and Number and BRI Number) will be transported across the network link with the original call.

**Centralised Attendant**. This feature allows a user in any switch to dial "0" and ring at the designated Central Attendant group. Each system on the network requires its own designated attendant group for local usage and recalls.

**Internal Calling/Uniform Dialling 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 to access local trunks in another networked system.

**Centralised Voice Mail with Message Waiting Lights**. This feature will operate only with Cadence, SVMi-8 or SVMi-4 voicemail systems. Users in one node can call forward (CFNR, CFB and CFU) to the voice mail group in a different switch and messages left in that switch will be indicated on the VMSG key in the originating switch. Messages can be returned to voice mail by pressing the VMSG key.

## Off Premises Extensions (OPX)

A single line (tip and ring) extension from a 2SLI card only may be connected to telephone company-provided OPX circuits to remote locations. 8SLI cards and KDB-SLIs do not support off premises extensions.

## Operator Group

The operator group can contain up to 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

Unanswered calls to the operator group or station groups can overflow to other preset destinations after a programmed period of time. Each group has its own timer. The overflow destination can be a station or station group.

## Override Code

This feature allows users to make emergency outside calls from a station that has a forced code, such as an Account Code or Authorisation Code, enabled but without requiring them to enter a forced code. The basis of this feature is an override code table containing five entries of up to 11 digits each. The system will examine digits that are dialled from a station to see if they match any entry in the Emergency Number 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 four internal and four external paging zones. Stations can page any individual zone, all internal zones, all external zones or all zones simultaneously. Using system programming, each station may be allowed or denied the ability to make and/or receive page announcements to 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 dialling a park code plus the orbit number. Calls parked in this manner can also be retrieved by dialling the Park Pickup code 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 the Hot Line feature).

## Private Lines

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

## Programmable Line Privacy (PRB Key)

Each outside line can be programmed to ignore automatic line privacy. This allows up to four other parties to join your conversation by simply pressing a line key. (This is similar to 1A2 key telephone operation.)

# Programmable Timers

There are over 50 programmable system timers to allow each installation to be customised 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 keys with tri-coloured LEDs will flash amber.

# Remote Programming

Remote programming allows you to access the system database from a remote location to make changes to the customer database. You need either an external modem or the optional internal MODEM card, and a PC running the PCMMC program.

# Ring Modes

The system can be programmed to allow calls to ring defined destinations based on ring plan settings.

### Time-Based Routing Plans

Each C.O. line or DDI number can be programmed to ring at any station or station group. Each line can be assigned a ring destination based on six different ring plans according to time of day and day of the week.

### Automatic / Manual

Ring destinations will automatically change according to 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 plan until manually taken out.

### Holiday Schedule

The system has a table of 60 dates that are used to define holidays. On a date designated as a holiday, the system will remain in a ring plan for that calendar day. This feature will override the ring plan timetable.

### Temporary Override

The system can, at any time, be forced into a specific ring plan for a temporary period 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 system ring plan mode.

# Single Line Connections

Single line ports allow connection of a variety of single line telephones (SLTs) plus fax machines, answering machines, loud bells, computer modems, cordless phones and credit card machines. When connecting customer-provided equipment to these extensions, compatibility should be checked before purchase to ensure correct operation. C.O. ring cadence can be selected for SLTs: this is helpful when optional devices cannot detect system internal ring cadence.

## Speed Dial Numbers

A library of 1500 speed dial numbers may be allocated as needed. The system list can have up to 500 numbers and each station can have up to 50 numbers. Speed dial numbers are assigned in blocks of 10. Each speed dial number may contain up to 24 digits.

## Speed Dial by Directory

The system allows the user to look up a speed dial number, using the name allocated to it, 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 20 station hunt groups. One of three ring patterns—sequential, distributed and unconditional—is available for each group. Each unconditional group may contain a maximum of 32 stations 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.

## 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 dialled (maximum 18), an account code (if entered), the DDI number and name. 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 SMDR Printout at the end of this chapter.

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

## SVMi-4 and SVMi-8 Integrated Voice Mail

The *i*DCS100 can be connected to Samsung's proprietary SVMi-4 or SVMi-8 integrated Voice Mail and Auto Attendant system. SVMi-4 provides two or four ports, and SVMi-8 four or eight ports, of voice processing. (Both systems are upgradeable.) Features include one-touch Call Recording, Answering Machine Emulation and Voice Mailbox Administration with interactive keyset displays. Ask your dealer for information on Samsung VM systems.

## 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 station(s).

## System Maintenance Alarms

The system continuously performs internal self-diagnostics. When either a major or minor fault is detected, the system can ring stations which have a System 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 is stored in a buffer and can be reviewed at a display keyset or sent to a printer. (See the Sample Alarm Report at the end of this chapter.)

NOTE: System Maintenance Alarms are only available with a MEM4 card installed.

# System Directory

Each station, station group and outside line can have a directory name up to 11 characters. This name will appear on keyset displays to provide additional information about lines and stations.

# Toll Restriction

There are 250 Allow entries and 250 Deny entries (each entry up to 11 digits) in the system tables. Each of these entries can apply to dialling classes B, C, D, E, F and G. Expensive calls, as well as specific area and office codes, can be allowed or denied on a per-class basis. Class A stations have no dialling restrictions and Class H stations cannot make outside calls.

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

### Special Code Table

A Special Code Table of 10 entries (four digits each) allows use of telephone company features such as CID Blocking or Call Waiting Disable 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 Authorisation Code feature.

# Tone or Pulse Dialling

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

# Traffic Reporting

The system can store peg counts for various types of calls. These peg counts can be printed on-demand, daily, hourly, or for up to three separate programmable shifts. The report includes statistics for each trunk, trunk group, station, station groups and page announcements. (See Sample Traffic Report at the end of this chapter.)

NOTE: Traffic Reporting is only available with a MEM4 card installed.

# 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 dialling a code or pressing a key. There are 11 trunk groups available.

# Uniform Call Distribution (UCD)

UCD* is used whenever an organisation expects to have more ringing calls than people ("agents") to answer them. It prevents callers from receiving busy signals or lengthy delays before being answered. 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 to allow the agent to finish up work associated with a previous call.

*NOTE: Requires Auto Attendant (AA) card. 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 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 for 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 to/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 (Night Bell)

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

# Voice Mail: In-band Integration

The system uses DTMF tones (in-band 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 a key to retrieve messages from the voice mail system. A Voice Mail Transfer (VT) key permits keyset users to easily transfer a caller directly to an individual voice mailbox without navigating through menus.

# Voice over IP (VoIP)

The ITM3 VoIP card supports up to 8 voice calls over an IP network connection using the industry standards-based H.323 protocol. The ITM3 card fits into any universal card slot in the Basic KSU.

VoIP is transported by the ITM3 card using the ITU standards-based H.323 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 ITM3 uses G.711, G.729A or G.723 standards voice compression codecs. This allows for a selectable 64kbps, 8kbps or 6.3kbps bandwidth 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 ITM3 H.323 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 nominally 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 mandatory.

The ITM3 is 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 applying the VoIP feature. Network congestion affects call quality in any VoIP application.

# Walking Class of Service (WCOS)

This feature allows users to make calls or use features from a station that is normally restricted. The feature is similar to the Authorisation Code feature. Both methods change the class of service to correspond with the station passcode or authorisation code that is dialled. After the call is completed, the station returns to its programmed class of service.

# Station Features

Add-On Module
Appointment Reminder
Automatic Hold
Automatic Privacy
Background Music
Busy Station Callback
Busy Station Indications (BLF)
Call Forwarding
Call Pickup
Direct Station Selection (DSS)
Do Not Disturb (Override)
Do Not Disturb (Programmable)
Door Lock Release
Exclusive Hold
Group Listening
Headset Operation
Hearing Aid Compatible
Line Queuing With Callback
Line Skipping
Loud Ringing Interface
Message Waiting Light/Indication
Mute Microphone/Handset
Off-Hook Ringing

Off-Hook Voice Announce (Standard)
Off-Hook Voice Announce (Executive)
One-Time Do Not Disturb
One-Touch Dialling Keys
On-Hook Dialling
Programmable Keys
Programmed Station Messages
Protection From Barge-In
Pullout Directory Tray (Euro Keysets)
Pulse To Tone Switch Over
Redial
    Auto Retry
    Last Number
    Memo Redial
    Save Number
Remote Hold
Ring Modes
Ringing Preference
Set Relocation
Speakerphone
Station Lock
Tri-Coloured Lights
Volume Settings
Wall-Mountable Keysets

# Station Feature Descriptions

## Add-On Module

Add-on modules (AOMs) add to the capability of a keyset by increasing the number of available programmable keys.

### 14-Key AOM (for *i*DCS Series Keysets)

14 programmable keys with red LEDs can be used for feature keys, DSS/BLF keys or one-touch speed dial keys.

### 48-Key AOM (for DCS Euro Keysets)

The 48 programmable keys with red LEDs can be used for feature keys, DSS/BLF keys or one-touch speed dial keys. Up to four 48-key AOMs can be added to each keyset.

### 64-Key AOM (for *i*DCS Series Keysets)

The 64 programmable keys with red LEDs can be used for feature keys, DSS/BLF keys or one-touch speed dial keys. Up to four 64-key AOMs can be added to each keyset. A maximum of five can be installed on a system.

# Appointment Reminder

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

# 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 key automatically puts the call on hold when this feature is enabled. Pressing TRANSFER (or 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.

> NOTE: Internal calls cannot be automatically held.

# Automatic Privacy

All conversations on outside lines and internal 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 a key or dialling a code. The system rings the caller back when that station becomes idle (a system-wide maximum of 100 callbacks are allowed at one time, including busy station and busy trunk).

# Busy Station Indications (or Busy Lamp Fields, BLF)

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

# Call Forwarding

Station users can forward internal and outside calls to other destinations using the following options (refer to Call Forwarding in *System Features* for full descriptions):

● immediately (Forward All)
● when busy (Forward Busy)
● if not answered in a programmable time (Forward No Answer)
● if either busy or not answered in a programmable time (Forward Busy/No Answer)
● when in Do Not Disturb (DND) mode (Forward DND)

There are similar options for networked systems. These call 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.

An additional option called Follow Me is available. This option allows a station user to set a Forward All condition from their normal station to a remote station while at the remote station. To display the Follow Me condition, the TRANSFER (or TRSF) key lights steady red at the station that is forwarded. The TRANSFER (or TRSF) key also lights if Forward All is set and no key is programmed for Forward All.

Keyset users can be given an external call forward key 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 voicemail or not. Single line telephones must have the system administrator program this feature for them.

## Call Pickup

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

## Direct Station Selection (DSS)

Programmable keys can be assigned as DSS keys associated with extension numbers. Users press these keys to call or transfer calls to the assigned stations.

## Do Not Disturb (Programmable)

The Do Not Disturb (DND) feature is used to stop all calls to a station. System programming can allow or deny use of the DND feature for each station. Parties calling a station in DND will receive DND/No More Calls tone. When in DND mode, calls may be forwarded to another destination. (See Call Forwarding, above.) A keyset without a DND key can activate DND via the feature access code. The ANS/RLS key will flash rapidly when DND is set. There is a programmable option to allow a DDI number to override DND at its ring destination if that destination is a single extension.

## 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 (the user's secretary, for example) with a DNDO key.

## Door Lock Release

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

## Exclusive Hold

Pressing the HOLD key twice will hold an external call exclusively at a station so no other station can pick up that call. Internal calls are automatically placed on exclusive hold.

## Group Listening

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

# Headset Operation

Every keyset can be programmed to allow the use of a headset. In the headset mode, the hook-switch is disabled and the ANS/RLS key is used to answer and release calls. Keyset users may turn headset use ON/OFF by keyset programming or more easily by pressing a programmed headset ON/OFF key. The headset key lights steady red when the keyset is in headset mode. The ANS/RLS key lights if headset mode is activated by keyset programming only.

# Hearing Aid Compatible

All keysets are hearing aid compatible.

# Line Queuing with Callback

If the called outside line is busy, the station user can press the CALLBACK key or dial the access code to place the station in a callback queue. The user will be called back when the line is available (a maximum of 100 callbacks are allowed system-wide at any 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, pressing an idle line key can skip to that line without causing the previous call to go on hold.

# Loud Ringing Interface

The MISC card has three relays for control of a customer-provided loud ringing device. Any relay can be programmed to operate with a specific station or station group.

# Message Waiting Light/Indication

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

# Mute Microphone/Handset

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

# Off-Hook Ringing

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

# Off-Hook Voice Announce (Standard)

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

## One-Time Do Not Disturb

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

## One-Touch Dialling Keys

Frequently-used speed dial numbers can be assigned to one-touch dialling keys for fast accurate dialling.

## On-Hook Dialling

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

## Programmable Keys

Keysets have a number of programmable keys. The number depends on the type of keyset (e.g. 24B, 12B, 24D, 18D, etc). To personalise a keyset, each key can be programmed for one of many different uses. Examples of key assignments include individual outside lines, individual stations (DSS), group of lines, group of stations and one-touch speed dial keys. Using these keys eliminates the need to use dialling access codes.

Some feature keys have extenders that make them more specific. The extender can be a station, a group or another identifying number. (See also Add-On Module.) Examples are SPEED DIAL, SUPERVISOR, PAGE, DSS, DIRECTED PICKUP and GROUP PICKUP. For a full listing of feature extenders, refer to the *Samsung iDCS100 System Administration Guide*.

## Programmed Station Messages

A display keyset user can select one of 20 messages to be displayed both at a calling party's keyset* and on their own keyset's display. The message displays the status of the keyset user being called (e.g. "In a Meeting".) Messages 1–10 are factory-programmed and messages 11–18 are blank. Any message (1–18) may be customised by the system administrator in MMC programming, up to 16 characters maximum.

Messages 19 and 20 have a 9-character default message with a 5-character date/time extender (19 = "RETURN AT *****", 20 = "RETURN ON *****"). Keyset users' enter a time for message 19 or a date for message 20 when the message is selected. For example, "RETURN AT 1230p" or "RETURN ON JAN22". The default messages can be customised in MMC programming.

*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. Nor can a station that is not secure be barged-in on when talking to a secure station.

# Pullout Directory Tray

A pullout directory tray is conveniently located beneath all DCS (Euro) keysets. It is used to record station directory names and speed dial numbers.

# Pulse to Tone Switchover

When dialling a number on a dial pulse network, a station user can dial # and the system will begin to send DTMF tones.

# Redial

There are various external number redial options available to station users. Each type can redial up to a maximum of 18 digits.

- **AUTO RETRY**—When an outside number is dialled and a busy signal is received, the auto retry feature can be used to reserve the outside line and automatically redial the number for a programmable number of attempts (available to keyset users only).

- **LAST NUMBER REDIAL (LNR)**—The most recently dialled number on a C.O. line is saved and may be redialled by pressing the Redial key or dialling the LNR access code.

- **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).

- **SAVED NUMBER REDIAL**—Any number dialled on a C.O. line may be saved for redial at a later time.

# Remote Hold

A user can place an outside call on system hold on an available CALL or Line key at another (remote) station, rather than their own, using a simple series of key presses.

# Ring Modes

Each keyset user can select one of three distinct ways to receive internal 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 key 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 key to answer. Users may answer ringing lines in any order by pressing the flashing key.

# Set Relocation

This feature allows a user to relocate to a station other than their usual one and, by dialling a code and extension number at the station, transfer all the features and program settings (trunk ring, station group, station Class of Service, station speed dial, key assignments, call forward conditions, and so on) from their usual station to the new station. This is also referred to as Hot Desking (see *System Features*.)

## Speakerphone

Most keysets have a built-in speakerphone. The speakerphone enables calls to be made and received without the use of the handset. The *i*DCS 28D and 18D models can have a Full Duplex Speakerphone Module added.

## Station Lock

With a programmable personal station passcode, any keyset or single line telephone can be locked and unlocked to control use of each telephone. There are three options: 0=UNLOCKED, 1=LOCKED OUTGOING and 2=LOCKED ALL CALLS.

|  | 0 (UNLOCKED) | 1 (LOCKED OUTGOING) | 2 (LOCKED ALL CALLS) |
|---|---|---|---|
| Make outside calls | YES | NO | NO |
| Receive outside calls | YES | YES | NO |
| Make internal calls | YES | YES | NO |
| Receive internal calls | YES | YES | NO |

## Tri-Coloured Lights

Keysets are equipped for tri-coloured LED indications (green, red and amber). The number of tri-coloured LED keys available depends on the keyset type. On these keys, your calls always light green, other calls show red and recalls light amber.

## Volume Settings

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

## Wall-Mountable Keysets

Each keyset and add-on module can be wall mounted by reversing the base wedge.

# Display Features

| | |
|---|---|
| Account Code Display | Calling Party Number |
| Call Duration Timer | Conference Information |
| Call for Group Identification | Date and Time Display |
| Call Logs | Dial By Name |
| Call Processing Information | Dialled Number |
| Caller ID (CID) Information | Enhanced Station Programming |
|     Name/Number Display | Identification of Recalls |
|     Next Call | Identification of Transfers |
|     Save CID Number | Message Waiting Caller Number |
|     Store CID Number | Outside Line Identification |
|     Inquire Park/Hold | Override Identification |
|     CID Review List | Programmed Message Display |
|     Investigate | Soft Keys |
|     Abandoned Call List | Stopwatch Timer |
| Calling Party Name | UCD Supervisor Displays |

# Display Feature Descriptions

## Account Code Display

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

## Call Duration Timer

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

## 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 sent directly to the user's extension number.

## Call Logs

A display keyset user can review a list of up to 50 numbers containing the most recent incoming calls to the keyset and external telephone numbers dialled from the keyset. The numbers can be viewed, stored and/or dialled using the associated soft keys.

> NOTE: Call Logs are only available with a MEM4 card installed.

## Call Processing Information

During everyday call handling, the keyset display will provide helpful information, e.g. [CALL FROM 203]. In some cases, the user is prompted to take action and in other cases receives directory information.

# Caller ID (CID) Information

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

### Name/Number Display

A display keyset user can choose to see the CID name or CID number in the display first when a call is received. Regardless of which is selected to be seen first, the NND key can be used to view the other.

### 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 CID information associated with the next call in queue at the station. Either the CID name or number will show in the display depending on the NND selection (above).

### Save CID Number

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

### Store CID Number

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

### Inquire Park/Hold

When a user is informed that an incoming call is on hold or has been parked, the user may view the CID information before retrieving the call. This will influence how the user chooses to handle the call.

### CID Review List

This feature allows display keyset users to review CID information for calls sent to their stations. This list contains between 10 and 50 calls on 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 a key to dial the person back.

### Investigate

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

### Abandoned Call List

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

# Calling Party Name

For internal calls, LCD 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 internal 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 displayed. Display keysets can have a 12- or 24-hour clock in either the WESTERN or ORIENTAL display format, with day/month 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 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 quickly.

## Dialled Number

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

## Enhanced Station Programming

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

## Identification of Recalls

Hold recalls and transfer recalls can be distinguished from other ringing calls. Hold recalls indicate the recalling line or station number and the associated name. Transfer recalls indicate the recalling line or station and where it is coming from.

## Identification of Transfers

The display will identify who transferred a call to the user.

## Message Waiting Caller Number

If one or more message waiting indications have been left at a station, pressing the MESSAGE key 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 a name up to 11 characters. 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 xxx] 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 key. These keys allow the user to access features allowed by the station' class of service without requiring the keyset to have designated feature keys.

# Stopwatch Timer

Display keyset users can use this feature to time meetings, calls and other functions. Users simply press once to start the timer and press again to stop the timer.

# UCD Supervisor Displays

When UCD is used, multiple supervisors can view information about UCD group 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 agent's status (IN GROUP, OUT OF GROUP, or DND), and view each agent's 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 Keyset Displays

Display 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 some examples of the displays you may see.
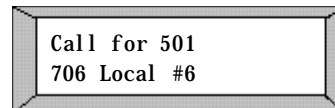
```
209: Tim Kelly
FRI 23 Sep 02:54
```
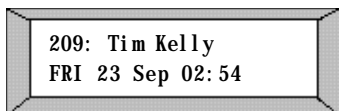
Idle display shows extension, name, day, date and time.

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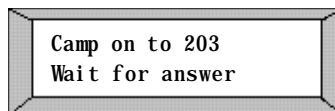
This station is camped-on to extension 203 and is waiting for 203 to answer.

```
Call for 501
202 Mr. Smith
```
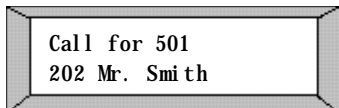
This station (e.g. in the sales department) is receiving a group call from Mr. Smith.

```
Call for 501
706 Local #6
```

This display tells you this is a new incoming call to (e.g.) the sales department.

```
203: Busy
CBK MSG CAMP →
```
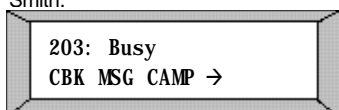
This station is calling station 203 which is currently busy.

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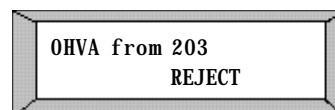
This station is receiving an off-hook voice announcement from station 203.

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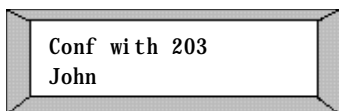
This station is on a conference call with John, extension 203.  Assume other parties will hear your conversation.

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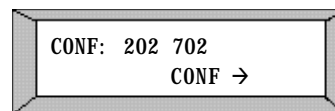
This station is on a conference call with extension 202 and trunk 702 and has the option to add two more parties.

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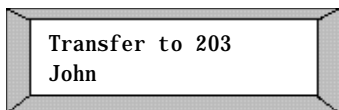
This station is transferring a call to John at extension 203.

```
Call from 201
Operator
```
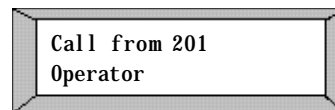
This station is receiving a call from extension 201.

```
DO NOT DISTURB
ON      OFF
```
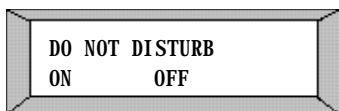
This station is setting the Do Not Disturb feature.

# Sample Caller ID Displays

```
13054264100
702: RINGING
```
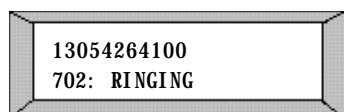
This display shows an incoming call
from 1-305-426-4100 on Line 702
ringing directly at your station.

```
13054264100
TRANSFER FM 201
```
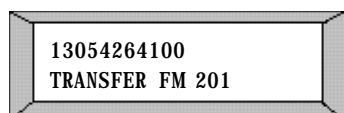
This display shows an incoming call
from 1-305-426-4100 being
transferred to you from station 201

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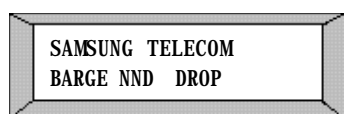
This display shows an investigation
of a station that is talking to
Samsung Telecom.  Investigator
can BARGE-in to the conversation,
DROP the call from the system or
examine further NND information.

```
SAMSUNG TELECOM
CALL FOR: 500
```
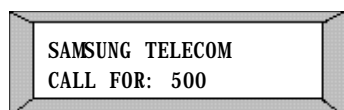
This display shows an incoming call
from Samsung Telecom ringing at
group 500.

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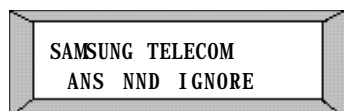
This display is seen while using the
INQUIRE feature.  It shows the
three options available while you are
checking on a held or parked call.

```
05/25, 09: 41, 702
CLEAR  NND    DIAL
```
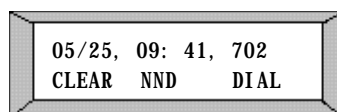
This display shows the information on the
abandoned call list. This call came in on
May 25 at 9:41 A.M on line 702. The user
can CLEAR the entry. DIAL the caller
back or examine further NND information.

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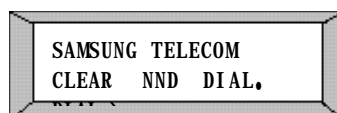
This display shows an entry in a station
review list showing the three initial options.
The arrow indicates other options available
to you by pressing the SCROLL key.

```
13054264100
 NEXT NND ANS
```
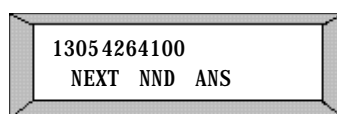
This display is seen while examining
calls in queue at your keyset.

```
TALKING TO: 203
BARGE      DROP
```
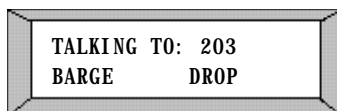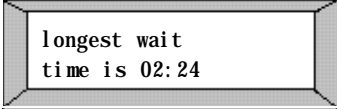
This display can be seen when
investigating an internal call.
The investigator can BARGE-in or
DROP the connection.

# Sample UCD Displays
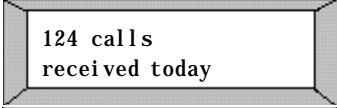
```
005 calls in
queue now
```

There are five calls currently waiting
to be answered by the UCD group.
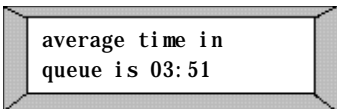
```
longest wait
time is 02:24
```

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.
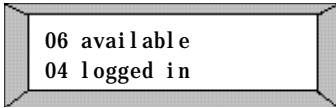
```
124 calls
received today
```

The UCD group has received 124
calls today.
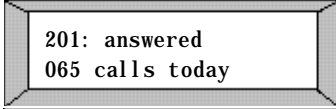
```
average time in
queue is 03:51
```

The average time on hold (waiting
to be answered) is three minutes
and 51 seconds.
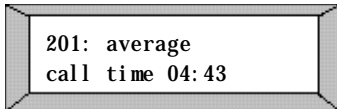
```
06 available
04 logged in
```

There are six members in the group. Four
of the members are currently logged in.
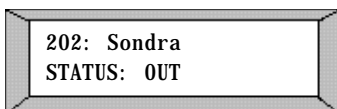
```
201: answered
065 calls today
```

The agent at station 201 has answered
65 calls today.

```
201: average
call time 04:43
```

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

```
202: Sondra
STATUS:  OUT
```

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

# Sample SMDR Printout

```
                    SMDR REPORT FOR [SAMSUNG TELECOMS] 03/24/02 11:21
         1         2         3         4         5         6         7         8         9         1         2         3
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789001234
==================================================================================================================
T EXT AUTH TRK MM/DD STT.TIME DURATION FG DIALED DIGIT        ACCOUNT CODE   CARR  COST     CLIP NUMBER   CLIP NAME
==================================================================================================================
1 202 1234 701 10/24 11:14:08 00:00:10 O  01234567890234567   123456789012   02   1234567
1 202 2234 702 10/24 11:14:18 00:00:10 DO 01234567890234567   2635577896     03   0
1 202 3274 703 10/24 11:14:28 00:00:10 I                      3536587                       01616555955   SAMSUNG TELECOM
1 202 4284 704 10/24 11:14:38 00:00:10 IT                     4434547694144                 01616555955   SAMSUNG TELECOM
1 202 5294 704 10/24 11:14:48 00:00:10 A  01234567890234567   5335                          01616555955   SAMSUNG TELECOM
1 202           10/24 11:14:08          ALARM RING
1 202           10/24 11:14:27          ALARM RING
1 202           10/24 11:20:10          DND OFF
1 202           10/24 11:20:15          DND ON
1 202           10/24 11:20:20          DND OFF
1 202           10/24 11:22:17          GROUP OUT
1 202           10/24 11:22:21          GROUP IN
```

Field descriptions:

- Tenant — 1 Digit
- Extn — 2 - 4 Digits
- Auth Code — 4 Digits
- CO No. — 2 - 4 Digits
- Date Call Made or Received — (MM/DD)
- Time Call Made or Received — (Hrs:Mins:Secs)
- Call Duration — (Hrs:Mins:Secs)
- Call Type Flag — 2 Chars
- Telephone No. Dialled — 1-18 Digits (Miscellaneous Info.)
- Account Code — 1-12 Digits
- Carrier Number — 01-16
- Call Cost — 7 Digits
- Calling Line ID Presentation on ISDN Line — 1-11 Digits
- CLIP Name — 1-15 Characters

## Call Type Flag Definitions

| Flag | Definition | Flag | Definition |
|------|------------|------|------------|
| O | Outgoing | DE | DISA call with error |
| I | Incoming | T | Transfer |
| 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 |
| A | Abandoned call | IA | Incoming call Answered |

# Sample UCD Report

```
UCD GROUP 501 : 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
```

# UCD Call Statistics

## Calls in Queue Now

How many calls are currently in queue. This 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's phone begins to ring until the time an agent answers the call. This does not include calls to an agent's phone 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 a 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: There are five members in a group: three are Out of Group, one is busy and one is idle. 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 in to 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. The caller must have overflowed to the UCD recording to be considered in queue. (An AA card is required.)

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 internal 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 the 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 the 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 call is queuing.

b) Queue time ends when

- caller is answered by an agent
- system gets disconnected from C.O. or
- caller is transferred to the 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

- caller is answered by an agent
- system gets disconnected from C.O. or
- caller is transferred to the final destination

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

## Status

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

This 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 the 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. See UCD Call Statistics.

# Sample Traffic Report

```
              TRAFFIC REPORT FOR [ SAMSUNG ] 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


   INTERNAL CALLS - COMPLETED ...................... 7178
   INTERNAL 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 -------->        <-INTERNAL->
 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 ------------------------><-INTERNAL-->
 EXT STATION-NAME ATTA ANSD NOT-ANSD DIALLED ICM-TRSF TRK-TRK PICKUP ANSD DIALLED
 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
```

# Traffic Report Overview

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

1 BEGINNING: Mar/15/2001 08:00          ENDING: Mar/15/2001 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 INTERNAL CALLS - COMPLETED.......................0000
8 INTERNAL 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 times.

**2. ACTIVITY SYSTEM TOTAL**

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 system. 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 programming.

**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, Trunk Group Select, Speed Dial, External Call Forward, DISA).

**7. INTERNAL CALLS COMPLETED**

These are all internal calls that were completed to any station, station group or device.

**8. INTERNAL CALLS NOT COMPLETED**

These are all internal 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; and also trunk calls that were transferred, were not answered, and recalled the transferring station. This includes members of the operator group that put calls on hold which then recall the operator's 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, 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

This is 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 programming.

### 3. BUSY

This is the number of times each trunk group was busy when someone attempted 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 set in MMC programming.

## 3. ATTA

Average Time To Answer for trunks (in seconds): calculated from the time that ringing voltage is detected at the trunk interface until the trunk is answered by a 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 in MMC programming.

## 7. BUSY

This is the number of times this trunk was busy when accessed by a key or dial code.

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


                <-------- 1 OUTSIDE CALL --------------------> 5 <-INTERNAL->
    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 CALL

These statistics are for outside calls that reached these station groups regardless of how they arrived 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 they 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. INTERNAL

An internal 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 internal call was answered by any group member of that specific group.

```
E***************************** INDIVIDUAL STATIONS **************************
                                                 1                    11
            <------------------ OUTSIDE CALL ------------------> <-INTERNAL->
   2        3      4    5      6       7        8       9       10    12    13
EXT STATION-NAME ATTA ANSD NOT-ANSD DIALLED ICM-TRSF TRK-TRK PICKUP ANSD
DIALLED
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 CALL

These statistics are for outside calls that reached individual stations or devices regardless of how they arrived there.

## 2. EXT

Listing of all extension numbers in the system. This also includes AA and VM ports.

## 3. STATION NAME

The name for each particular station as set in MMC programming.

## 4. ATTA

Average Time To Answer for stations is the time (in 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. Uses the same calculation method as for individual trunk ATTA.

## 5. ANSD

This is a count of how many times an outside call was answered by the specific station. Outside calls 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 the station.

## 7. DIALLED

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 programming.

## 8. ICM–TRSF

This is the number of times a trunk call was successfully transferred to another station. It includes both screened and unscreened transfers.

## 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 is 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 were not ringing at your station but were answered by you. This peg count is separate from the number of answered calls in 5 above.

### 11.  INTERNAL

Statistics for internal calls. An internal call made from a station or a station device within the system to another station.

### 12. ANSD

This is the number of times an internal call was answered by this specific station. Screened transfers count as an answered internal call.

### 13.  DIALLED

The number of times the specific station dialled another station or station group. Screened transfers count as a dialled internal call.

# Sample Alarm Report

```
            ALARM REPORT FOR [iDCS100 SAMPLE ] MAR/24/1999 19:45


================================================================================
           MM/DD/YYYY ERR.TIME ERR.CODE ERROR DISPLAY  POSITION
================================================================================
           03/14/1999 16:45:00 [MJC03] CID DSP Fault    MAP OPT:1
           03/14/1999 16:45:00 [MJC03] CID DSP Fault    MAP OPT:2
           03/14/1999 16:45:00 [MNF03] IPC Error        C1-S01
           03/14/1999 16:45:00 [MNF03] IPC Error        C1-S04
           03/14/1999 16:45:00 [MJC03] CID DSP Fault    MAP OPT:1
           03/14/1999 16:45:00 [MNF03] IPC Error        C1-S01
           03/14/1999 16:45:00 [MNF03] IPC Error        C1-S04
           03/14/1999 16:45:00 [MJC03] CID DSP Fault    MAP OPT:1
           03/14/1999 16:45:00 [MNF03] IPC Error        C1-S01
           03/14/1999 16:45:00 [MNF03] IPC Error        C1-S04
           03/14/1999 16:46:00 [MNF01] Card Out         C1-S10
           03/14/1999 16:46:00 [MNF02] Card In          C1-S10
           03/14/1999 16:47:00 [MJD01] SYNC Failure     C2-S2
           03/14/1999 16:47:00 [MJD02] SYNC Recvry      C2-S2
           03/16/1999 16:47:00 [MNF04] Trunk Fault      C1-S08-P03
           03/16/1999 16:48:00 [MNF05] Trunk Recvry     C1-S08-P01
           03/16/1999 16:48:00 [MNF05] Trunk Recvry     C1-S08-P02
           03/16/1999 16:48:00 [MNF05] Trunk Recvry     C1-S08-P03
           03/18/1999 16:51:00 [MNF01] Card Out         C1-S02
           03/18/1999 16:51:00 [MNF02] Card In          C1-S02
           03/18/1999 17:04:00 [MJC04] Ring Gen Fault   CABINET:1
           03/19/1999 17:22:00 [MJC05] Ring Gen Recvry  CABINET:1
           03/19/1999 17:23:00 [MNF01] Card Out         C1-S06
           03/20/1999 17:24:00 [MJC01] DTMF Fault       CCP OPT:1
           03/20/1999 17:24:00 [MJC01] DTMF Fault       CCP OPT:2
           03/20/1999 17:24:00 [MJC01] DTMF Fault       CCP OPT:3
           03/20/1999 17:24:00 [MJC01] DTMF Fault       CCP OPT:4
           03/20/1999 17:24:00 [MNF03] IPC Error        C1-S01
           03/20/1999 17:24:00 [MNF03] IPC Error        C1-S04
           03/24/1999 17:24:00 [MJD19] PRI Restart      C2-S6
           03/24/1999 17:25:00 [MNF16] SU Alarm         CABINET:2
```

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