

Enterprise IP Solutions

# OfficeServ 100

## General Description

The Samsung logo is a dark blue oval with the word "SAMSUNG" in white, bold, uppercase letters.

**SAMSUNG**





## **Publication Information**

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2004/12/OS100(GD)

Version 1.0



ELECTRONICS

# EU Declaration of Conformity (RTTE)

**Samsung Electronics Co., Ltd.**

259 Gongdan-Dong, Gumi-City Kyungbuk, Korea, 730-030

(factory name, address)

declare under our sole responsibility that the product

**Digital Keyphone System "OfficeServ 100"**

to which this declaration relates is in conformity with

RTTE Directive 1999/5/EC ( Annex II )  
Low Voltage Directive 73/23/EEC:93/68/EEC  
EMC Directive 89/336/EEC:92/31/EEC



By application of the following standards

EN55022 : 1998 + A1:2000 + A2:2003, EN55024 : 1998 + A1:2001 + A2:2003

EN61000-3-2:2000, EN61000-3-3 : 1995 + A1:2001

EN61000-4-2:1995 + A1:1998 + A2:2001, EN61000-4-3:2002

EN61000-4-4:1995 + A1:2001 + A2:2001, EN61000-4-5:1995

EN61000-4-6:1996 + A1:2001, EN61000-4-11:1994 + A1:2001

EN60950-1: 2001(1st Edition) and/or EN60950-1: 2001

**(Manufacturer)**

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259, Gongdan-Dong, Gumi-City  
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2004-12-04 TE Jang

(place and date of issue)

**Tae-eok Jang / General Manager**

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2004-12-04 Peter Park

(place and date of issue)

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**Samsung Electronics Co., Ltd.**

259 Gongdan-Dong, Gumi-City Kyungbuk, Korea, 730-030

(factory name, address)

declare under our sole responsibility that the product

**Digital Keyphone System "iDCS 100"**

to which this declaration relates is in conformity with

RTTE Directive 1999/5/EC ( Annex II )  
Low Voltage Directive 73/23/EEC:93/68/EEC  
EMC Directive 89/336/EEC:92/31/EEC



By application of the following standards

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EN61000-3-2:2000, EN61000-3-3 : 1995 + A1:2001

EN61000-4-2:1995 + A1:1998 + A2:2001, EN61000-4-3:2002

EN61000-4-4:1995 + A1:2001 + A2:2001, EN61000-4-5:1995

EN61000-4-6:1996 + A1:2001, EN61000-4-11:1994 + A1:2001

EN60950-1: 2001 (1st Edition) and/or EN60950-1: 2001

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2004-12-04 Peter Park

(place and date of issue)

**Peter Park / Manager**

(name and signature of authorized person)

## **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.

# OfficeServ100 General System Diagram

## iDCS Series and DCS Euro Keysets



iDCS 28D Keypad



iDCS 18D Keypad



iDCS 8D Keypad



iDCS 14B AOM



iDCS 64B AOM



DS-2100B Keypad



6B LCD (Euro) Keypad



Single Line Telephone



LCD 12B/24B (Euro) Keypad

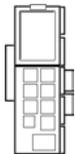


48-Button AOM

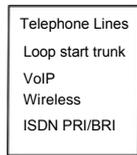
### Computer



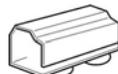
System programming  
Remote programming  
Computer telephony integration



SVMi-4/8  
voice mail &  
auto attendant



Telephone Lines  
Loop start trunk  
VoIP  
Wireless  
ISDN PRI/BRI



Loud Bells



Door phones

## 5000 Series Digital Keysets and IP Phones



DS-5021D (21B, 2-Line LCD)



ITP-5021D (21B, 2-Line LCD)



DS-5014D (14B, 2-Line LCD)



ITP-5014D (14B, 2-Line LCD)



DS-5012L (12B, Large LCD)



ITP-5012L (12B, Large LCD)



DS-5007S (7B, 2-Line LCD)



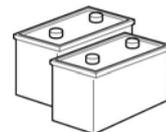
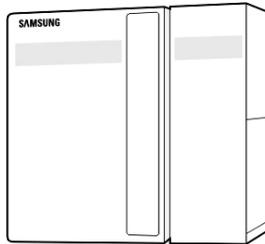
DS-5014S (14B, 2-Line LCD)



DS-5038S (38B, 2-Line LCD)



64B AOM



48VDC Battery  
Backup



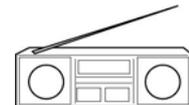
110/220V AC



External paging zones



Printer or call accounting system



External music sources



Voice mail/auto  
attendant systems



WBS24

# Preface

## About This Guide

The OfficeServ 100 Digital Communications 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 comprises the following chapters.

- **Chapter 1: Introduction to the OfficeServ 100**

*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 OfficeServ 100 to enhance your business procedures, including example reports and printouts.*

## Supporting Documents

This guide is supported by the following OfficeServ 100 system guides which are available from Samsung:

- **OfficeServ 100 Installation Guide**

*Provides full instructions for installing the OfficeServ 100 system including interface cards, station equipment (telephones) and optional devices such as printers and paging equipment.*

- **OfficeServ 100 & 500 System Administration Guide**

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

- **OfficeServ 100 Programming Guide**

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

- **Keyset and Phone User Guides**

*Guides are available for using a variety of Samsung keysets, standard telephones and mobile phones with your OfficeServ 100.*

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# Chapter 1 Introduction to the OfficeServ 100

This chapter contains the following sections.

- General Description
- Size and Configuration
- Technology
- Programming

## General Description

The Samsung OfficeServ 100 (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 OfficeServ 100 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. Three types of telephone can be connected to the system: proprietary digital phones called “keysets” connect to digital line interface cards (DLI), standard telephones (generally called single line telephones, or SLTs) connect to single line interface cards (SLI), and IP (internet) phones use the Media Gateway Interface (MGI) card.

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 OfficeServ 100 system supports calls over an IP network connection using industry-standard protocols, 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 OfficeServ 100 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 dedicated slot for a TEPRI or Voice Mail card. This provides the maximum configuration of 66 ports with analogue trunk lines or 96 ports with digital trunk lines. Expansion B has two universal slots and two dedicated slots: the first dedicated slot is for a Voice Mail card; the second dedicated slot supports a TEPRI card. This provides the maximum configuration of 66 ports with analogue trunk lines or 96 ports with digital trunk lines.

The system also has an optional MISC card which provides Music-On-Hold, external paging and other useful facilities.

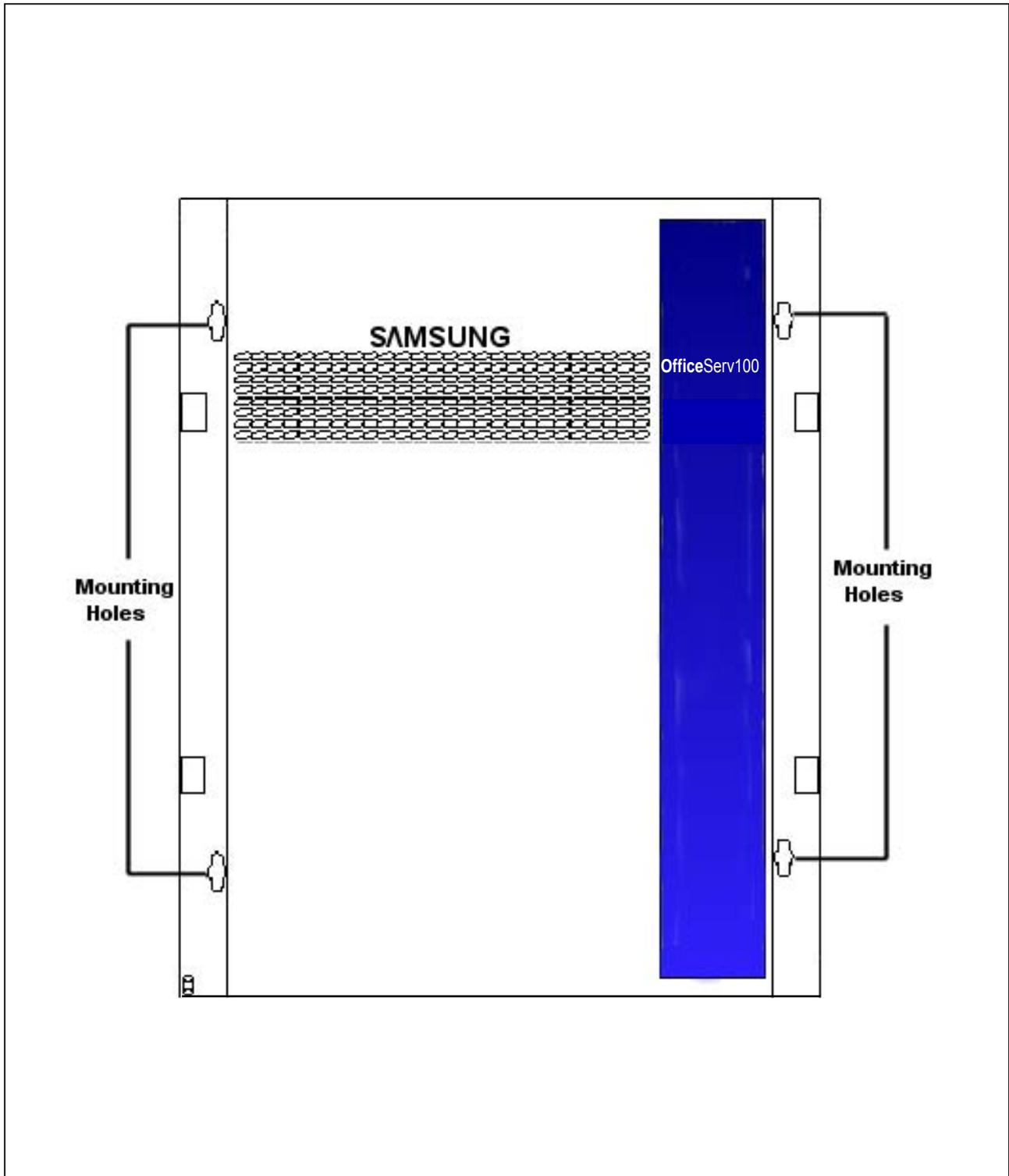


NOTE: For a full description of each card discussed in this section, refer to [Chapter 2, Hardware Descriptions](#).

The charts shown in [Figures 1-2 to 1-5](#) 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 TEPRI 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 card such as a TEPRI or SVMi-8 card can be installed in an Expansion A cabinet; OR an additional two expansion cards and a TEPRI and Voice Mail card can be installed in an Expansion B cabinet.
- A PLL card is required if ISDN cards (TEPRI, BRI) are installed
- Only eight KDBs can be installed in the keysets connected to the Basic KSU.
- The system can have up to 48 digital keysets, but this is reduced to up to 40 digital keysets if an SVMi-8 card or MGI3 card is installed.
- The number of stations allowed is reduced by four for each WBS24 installed (up to 16 if the 4WLI card supports the maximum four base stations).
- Large LCD keysets consume three times as much power as other stations.



**Figure 1–1 OfficeServ 100 Basic Key Service Unit**

### Trunk Lines

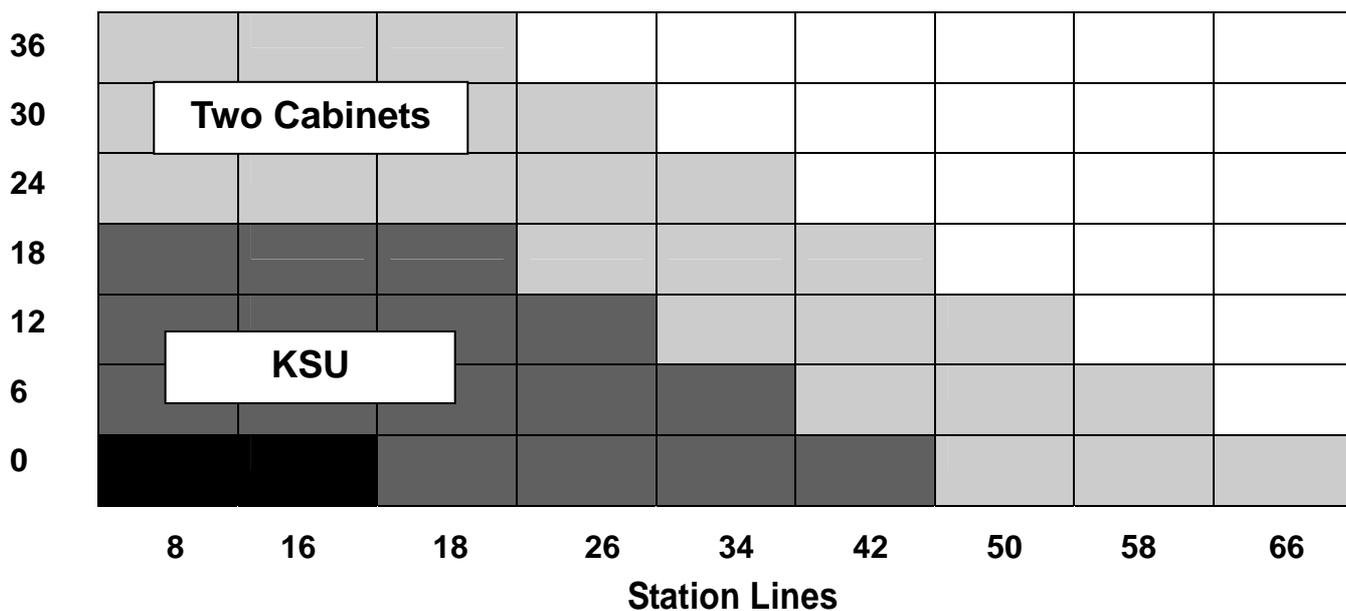


Figure 1–2 Configuration Matrix Table (With Analogue Trunks) (Expansion Type A)

### Trunk Lines

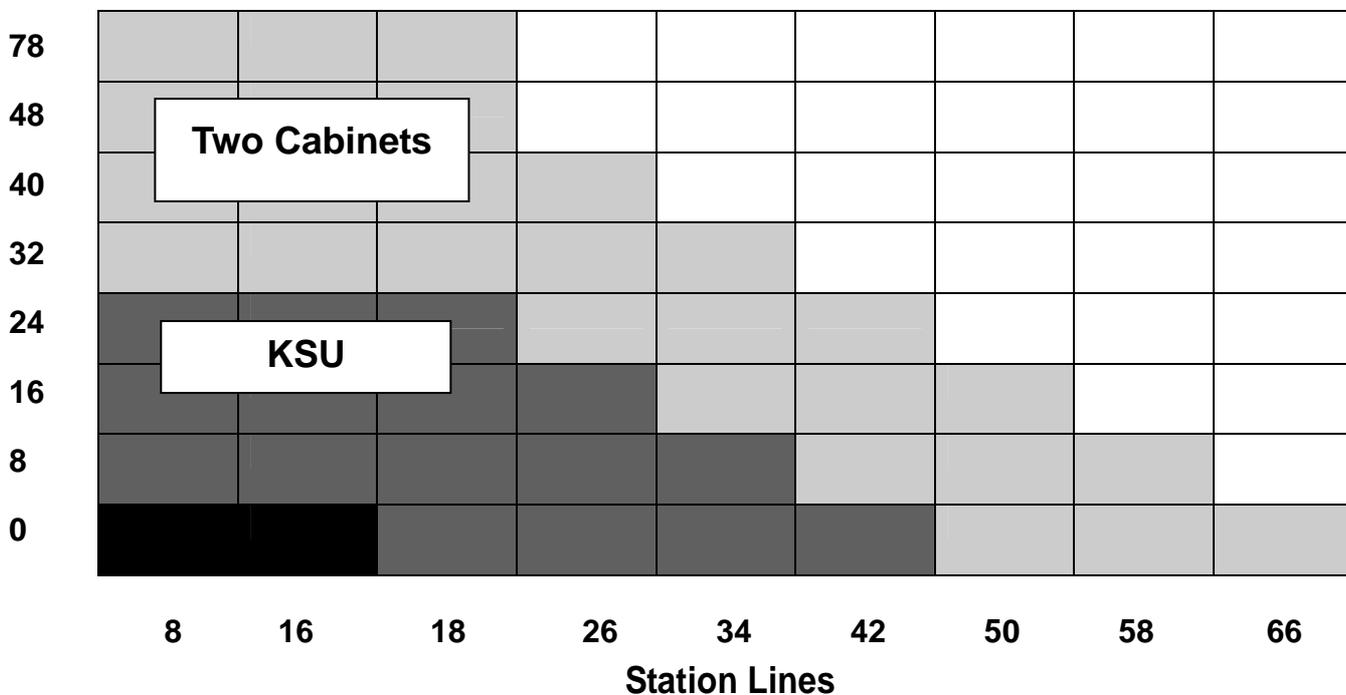


Figure 1–3 Configuration Matrix Table (With Digital Trunks) (Expansion Type A)

**Trunk Lines**

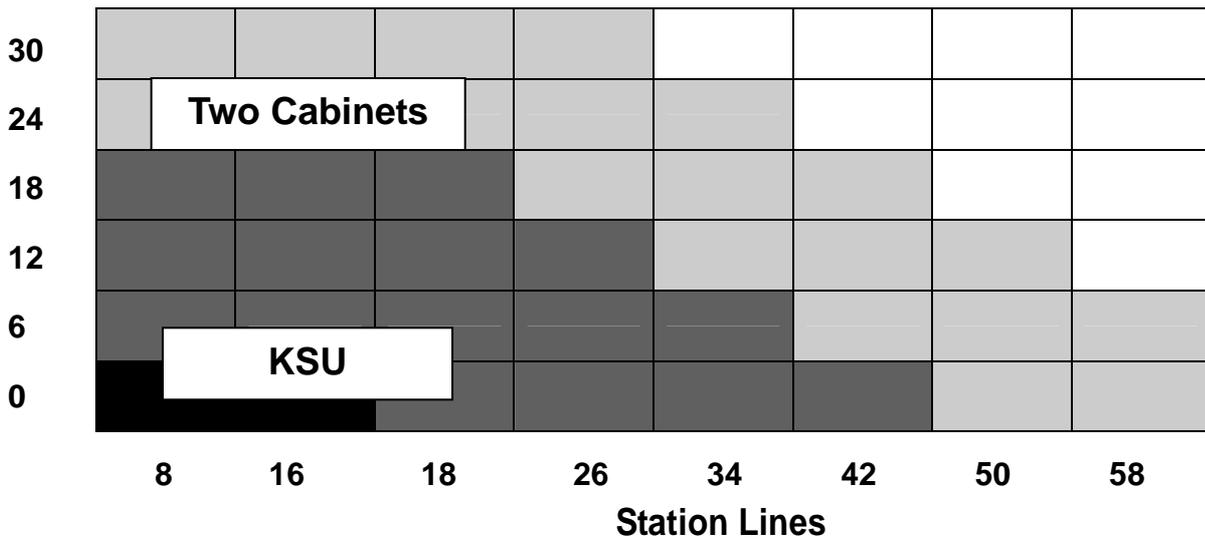


Figure 1-4 Configuration Matrix Table (With Analogue Trunks) (Expansion Type B)

**Trunk Lines**

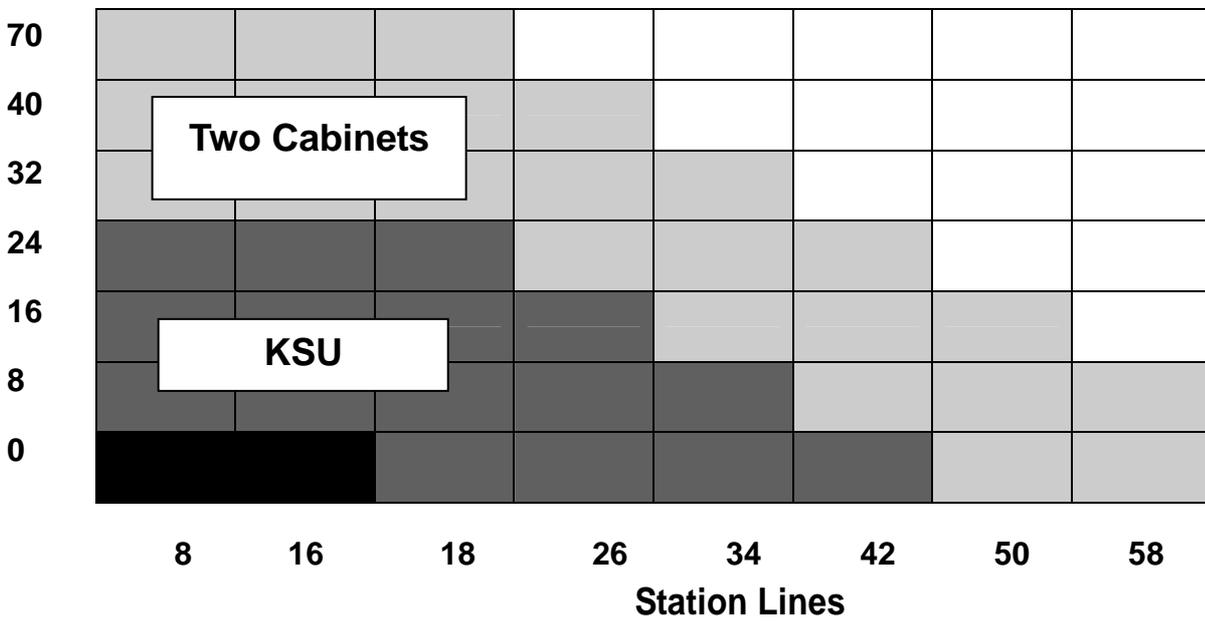


Figure 1-5 Configuration Matrix Table (With Digital Trunks) (Expansion Type B)

# Technology

## 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.

The OfficeServ 100 program is stored in 16 Mb NAND flash memory on the Main Control Processor (MCP1) card. The system boots from a 512 K boot ROM and downloads the operating program into 32 Mb of SDRAM on the MCP1 card. The customer database is stored in 1 Mb of non-volatile SRAM.

## Microprocessors

OfficeServ 100 uses distributed processing. The primary processor is a 32-bit Motorola® MPC855 on the MCP1 card operating at a clock speed of 50 MHz. Secondary processing is carried out in some special cards, such as BRI, and also in keysets. Secondary processing on the base board is done via an MC68EC000 processor running at 16 MHz to provide local control of cards. 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

OfficeServ 100 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 dif-

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ferent security passcodes and access procedures. Refer to the *Samsung OfficeServ 100 Programming Guide* for more information.

The system also allows the use of a proprietary computer program called OfficeServ Manager. This permits a technician to program the system using a personal computer. OfficeServ Manager 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 or Wide Area Network (WAN) connection, OfficeServ Manager 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 OfficeServ 100 system as follows.

- Key Service Unit
- Interface Cards
- Station Equipment

## Key Service Unit (KSU)

The OfficeServ 100 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
- Main Control Processor card (MCP1)
- 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 (for MCP1), 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.

## MCP1 CARD

The main control card for the system, the MCP1 is mounted in the MEM slot of the main KSU. It provides:

- 16 Mbyte NAND flash memory
- 512K boot flash memory
- 32 Mb SDRAM memory
- 2 Mb SRAM data memory (with SP program and data memory)
- 2K DPRAM for inter-processor communication
- a real-time clock
- monitoring and LAN status LEDs
- a memory clear switch
- a 10/100 base T RJ-45 LAN interface
- 9-pin serial I/O interface.

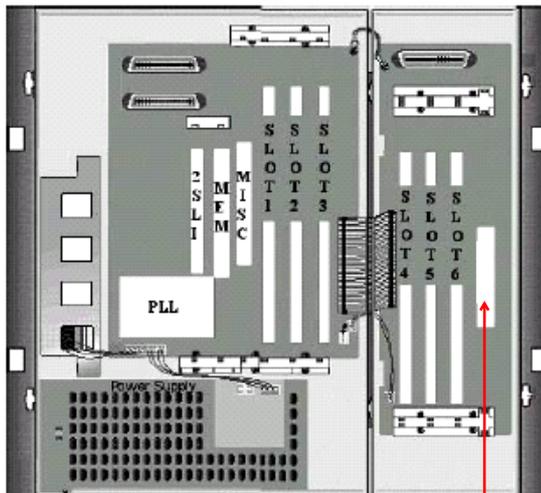
## Ring Generator Unit (RGU1 or RGU2)

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

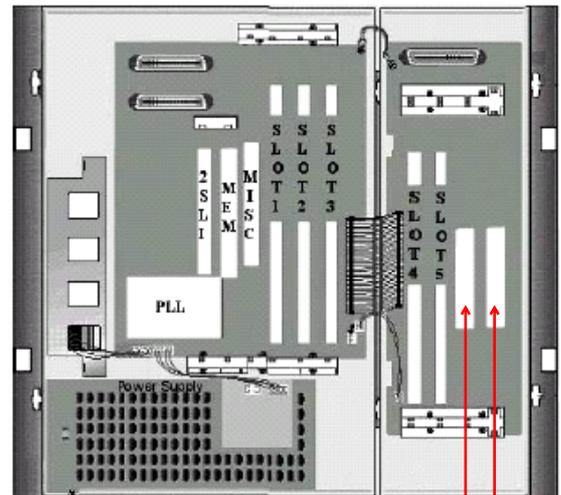
One metal Expansion cabinet can be attached to the KSU. There are two types available. Expansion "A" type (Figure 2-1) comprises three Universal expansion slots and one dedicated card slot for a TEPRI or SVMi-8 card. Expansion "B" type (Figure 2-2) consists of two universal expansion slots and two dedicated 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.

When installing an SVMi-8 card, the plastic case should first be removed.



Dedicated slot (TEPRI or SVMi-8 card)

Figure 2-1 Expansion 'A' Type



Dedicated slot (SVMi-8 card)

Dedicated slot (TEPRI card)

Figure 2-2 Expansion 'B' Type

# 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 OfficeServ 100 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 Polarity Reversal Signal (PRS) interface. (The optional 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 Polarity Reversal Signal (PRS) interface. (The optional 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, it contains 30 ISDN channels. Protocol is compatible with Euro-ISDN PRI. (See also **PLL**, above.)

## Media Gateway Interface (MGI3)

Provides a Voice over Internet Protocol (VoIP) gateway between IP and non-IP parts of the telephone system, as well as Codec conversion. The main features of the MGI3 card are:

- On-board Flash memory and data memory
- Echo cancellation function supported
- Silence suppression function supported, preventing data transfer on the network for the brief silent intervals between words during calls

Provides an 8-channel interface (expandable to 16 by the addition of a daughterboard) using the G.711, G.723 and G.729 Codecs for speech compression and T.38 protocol for fax or IP communication. It also supports proprietary SPnet IP networking.

MGI3 acts as a universal gateway for generic types of VoIP handsets. A maximum of three cards can be installed in the KSU.

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 the MGI3 card is installed, it counts as eight (8) stations of the PSU rating.

## 3BSI

Provides interface circuits for up to three base stations for DECT 8000. When the 3BSI card is installed, it counts as twelve (12) stations of the PSU rating; therefore a maximum of 36 keysets can be connected. Only one card can be installed in the KSU.

## 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.

## Keypad Daughterboards

A variety of keypad daughterboards (KDB) are available. If installed in a digital keypad 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 3 or MISC 4

MISC 3 provides a DTMF receiver (4 channels), background music, paging, three general-purpose relays, and an optional Modem. MISC 4 provides all the MISC 3 card functions and also provides a 4-port AA function.

NOTE: In future releases, the MISC card will also support the FSK (Frequency Shift Keying) Caller ID feature supporting CLIP information for SLT phones (a maximum of 16 channels for CID Tx & Rx ports).

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 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 dedicated slot in the Expansion cabinet. (This should be the first dedicated 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.

## 4WLI

The 4WLI card provides a cable interface between the OfficeServ 100 system and a COMBO type Wireless LAN (WLAN) Base Station (WBS24), which is the access point for a WLAN.

The cable interface is a digital system, using the 2B+1D Quad Digital Adaptor Subscriber Loops (QDASL) interface. One 4WLI is installed in the basic cabinet universal slot 3 and can support up to four WBS24s (see table, below). Since two DASL lines are connected to one WBS24, 2x(2B+1D) 4 voice channel simultaneous calls are supported.

Number of 4WLI cards allowed	1
Maximum number of WBS24s supported	4
Maximum number of users	64
Number of simultaneous calls	16

Each WBS24 installed counts as four stations of the PSU rating. Therefore, when the 4WLI card is supporting the maximum of four WBS24s, it counts as 16 stations.

In summary, the 4WLI card:

- provides cable interface (voice and signalling data) between the Access Point (WBS24) and the OfficeServ system;
- performs initialization to service VoIP over the WLAN;
- manages information on all voice terminals and provides service for authorised terminals;
- supports mobility and handover between Access Points for voice terminals.

# Station Equipment

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

## 5000 Series Keysets

### ① 2-Line LCD IP Keysets

#### 14-Button 2-Line LCD IP Keypad (ITP-5014D) (Figure 2-3)

- 48-character display (2x24) LCD with three associated soft keys and scroll key
- Supports data and voice transfer using Internet Protocol
- 14 programmable keys
- Navigation keys for easy use of keypad functions
- Five fixed-function keys
- Built-in speakerphone
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2-3 14-Button 2-Line LCD IP Keypad (ITP-5014D)

#### 21-Button 2-Line LCD IP Keypad (ITP-5021D) (Figure 2-4)

- 48-character display (2x24) LCD with three associated soft keys and scroll key
- Supports data and voice transfer using Internet Protocol
- 21 programmable keys
- Navigation keys for easy use of keypad functions
- Five fixed-function keys
- Built-in speakerphone
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2-4 21-Button 2-Line LCD IP Keypad (ITP-5021D)

## ② 2-Line LCD DS-5000D Keysets

### 14-Button 2-Line LCD Keypad (DS-5014D) (Figure 2-5)

- 48-character display (2x24) LCD with three associated soft keys and scroll key
- 14 programmable keys
- Navigation keys for easy use of keypad functions
- Five fixed-function keys
- Built-in speakerphone
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2-5 14-Button 2-Line LCD Keypad (DS-5014D)

### 21-Button 2-Line LCD Keypad (DS-5021D) (Figure 2-6)

- 48-character display (2x24) LCD with three associated soft keys and scroll key
- 21 programmable keys
- Navigation keys for easy use of keypad functions
- Five fixed-function keys
- Built-in speakerphone
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2-6 21-Button 2-Line LCD Keypad (DS-5021D)

## ③ 2-Line LCD DS-5000S Keysets

### 7-Button 2-Line LCD Keypad (DS-5007S) (Figure 2-7)

- 48-character display (2x24) LCD with three associated soft keys and scroll key
- 7 programmable keys
- Five fixed-function keys
- Built-in speakerphone
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2-7 7-Button 2-Line LCD Keypad (DS-5007S)

### 14-Button 2-Line LCD Keypad (DS-5014S) (Figure 2-8)

- 48-character display (2x24) LCD with three associated soft keys and scroll key
- 14 programmable keys
- Five fixed-function keys
- Built-in speakerphone
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2-8 14 Button 2-Line LCD Keypad (DS-5014S)

### 38-Button 2-Line LCD Keypad (DS-5038S) (Figure 2-9)

- 48-character display (2x24) LCD with three associated soft keys and scroll key
- 38 programmable keys
- Five fixed-function keys
- Built-in speakerphone
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes
- Desk- or wall-mounted



Figure 2-9 38-Button 2-Line LCD Keypad (DS-5038S)

## 4 Large LCD Keysets

### 12-Button Large LCD IP Keypad (ITP-5012L) (Figure 2-10)

- Large LCD with 12 keys for feature selection
- Supports data and voice transfer using Internet Protocol
- Navigation keys for easy use of keypad functions
- Five fixed-function keys
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes



Figure 2-10 12-Button Large LCD IP Keypad (ITP-5012L)

### 12-Button Large LCD Keypad (DS-5012L) (Figure 2-11)

- Large LCD with 12 keys for feature selection
- Supports data transfer, handset calls and full-duplex speakerphone
- USB interface
- Navigation keys for easy use of keypad functions
- Five fixed-function keys
- Keypad Status Indicator
- Eight selectable ring tones
- Volume Up/Down keys for digital control of speaker, handset and ringer volumes



Figure 2-11 12-Button Large LCD Keypad (DS-5012L)

## 5000 Series Add-On Module

### DS-5064B 64-Button AOM (Figure 2-12)

- 64 programmable keys with red LEDs
- Up to four can be assigned to a keypad to provide additional programmable keys
- Maximum of 48 per system



Figure 2-12 64B AOM (DS-5064B)

## 5000 Series Keypad Daughterboards

[DS-5014D, DS-5021D and DS-5038S Keypads Only]

DS-5014D, DS-5021D and DS-5038S keypads support 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.

### KDB-Digital Line Interface (KDB-DLI)

If your keypad 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 keypad or 64 button add-on module.



### KDB-Single Line Interface (KDB-SLI)

If your keypad 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.



### KDB-Full Duplex (KDB-F)

The standard speakerphone mode of operation for 2-line LCD keypads is “half duplex”. This means that you cannot transmit and receive speech at the same time. Adding a KDB-F to your keypad will convert the speakerphone into full duplex mode, enhancing its operation. In addition, the KDB-F may have up to three external microphones attached to it for conference room type applications. These microphones require an “EXTMIC” key programmed on the keypad to activate or deactivate them.



## DCS Series (Euro) Keysets

### LCD 24B Keypad (Figure 2-13)

- 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 2-13 LCD 24B Keypad

### LCD 12B Keypad (Figure 2-14)

- 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 2-14 LCD 12B Keypad

### LCD 6B Keypad (Figure 2-15)

- 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 2-15 LCD 6B Keypad

## 6B Basic/Enhanced Model Keypad (Figure 2-16)

- 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 keypad
- Desk- or wall-mounted



Figure 2-16 6B Basic/Enhanced Model Keypad

## DS-2100B Keypad (Figure 2-17)

- 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 keypad
- Desk- or wall-mounted



Figure 2-17 DS-2100B Model Keypad

## DCS Series Add-On Module

### 48-Button AOM (Figure 2-18)

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



Figure 2-18 48-Button AOM

## DCS Series Keypad Daughterboards

### KDB-Digital Line Interface (KDB-DLI)

This daughterboard can be installed only in a 12B or 24B keypad. The KDB-DLI provides one additional DLI circuit for the connection of any digital station device such as a keypad, add-on module or DPIM. The KDB-DLI will only operate when the keypad 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 OfficeServ 100 Installation Manual for details.)

### KDB-Single Line Interface (KDB-SLI)

This daughterboard can be installed only in a 12B or 24B keypad. 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 keypad 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 OfficeServ 100 Installation Guide* 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.

## iDCS Series Keypads

### 28-Button iDCS Keypad (28D) (Figure 2-19)

- 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
- Keypad 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 2-19 28-Button iDCS Keypad (28D)

### 18-Button *i*DCS Keypad (18D) (Figure 2–20)

- 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
- Keypad 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 Keypad (18D)

### 8-Button *i*DCS Keypad (8D) (Figure 2–21)

- 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
- Keypad 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 2–21 8-Button *i*DCS Keypad (8D)

### 8-Button *i*DCS Keypad (8S)

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

## *i*DCS Series Add-On Modules

### 64-Button *i*DCS AOM (Figure 2–22)

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



Figure 2–22 64-Button *i*DCS AOM

### 14-Button *i*DCS AOM / STRIP (Figure 2–23)

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



Figure 2–23 14-Button *i*DCS AOM/Strip  
(connected to keyset)

## *i*DCS Series Keyset Daughterboards

### [28D and 18D Keysets Only] (Figure 2–24)

*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 2–24 *i*DCS Series Keyset  
Daughterboards

## Door Phone Interface Module (DPIM) & Door Phone

(Figures 2-25, 2-26, 2-27)

- 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
- An external weatherproof doorphone is also available.

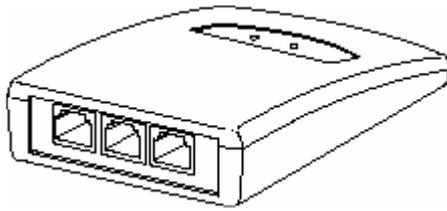


Figure 2-25 Door Phone Interface Module

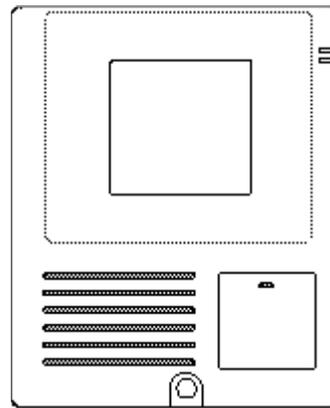


Figure 2-26 Door Phone

Figure 2-27 Weatherproof  
Door Phone



# Chapter 3 OfficeServ 100 Specifications

This chapter provides the technical data for the OfficeServ 100 hybrid/key telephone system as follows.

- Electrical Specifications
- Dimensions and Weights
- Environmental Limits
- Cable Requirements
- Power Supply
- System Tones
- Keypad LED Indications

## Electrical Specifications

<b>AC INPUT</b>	220–240 VAC, 50 Hz, 3A.
<b>POWER CONSUMPTION (MAX)</b>	140 WATTS
<b>DC OUTPUT</b>	FUSE RATING 2A +5 VOLTS 4.0 AMPS MAX -55 VOLTS 1.7 AMPS MAX (SLT/Keypad feed) -54 VOLTS 0.4 AMPS MAX (battery)

## Dimensions and Weights

	<b>HEIGHT (mm)</b>	<b>WIDTH (mm)</b>	<b>DEPTH (mm)</b>	<b>WEIGHT (kg)</b>
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
WBS24	328	80	41	0.5
WIP-5000M (MOBILE PHONE)	43	126	19	0.1

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

## Environmental Limits

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

## Cable Requirements

<b>EQUIPMENT</b>	<b>CABLE</b>	<b>AWG / mm</b>	<b>MAX METRES</b>
DIGITAL KEYSER	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*
WBS24	2 PR. TWISTED	#24 / 0.5	400

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

## Power Supply

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

\*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
<b>DIAL TONE</b> A steady tone that indicates you can begin dialing	CONTINUOUS			
<b>RINGBACK TONE</b> The station you dialled is ringing	400	200	400	2000
<b>DDI RINGBACK TONE</b> Ringback tone heard by external party when dialing DDI number	1000	3000	1000	3000
<b>BUSY TONE</b> The station you dialled is busy	350	350	350	350
<b>DND/NO MORE CALLS</b> 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
<b>TRANSFER/CONF</b> Your call is being held and you can dial another party.	100	100	100	100
<b>CONFIRMATION / BARGE IN TONE</b> 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
<b>ERROR TONE</b> 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
<b>MESSAGE WAITING</b> A message waiting indication has been left at the SLT station	CONTINUOUS			

TONE	CADENCE (Milliseconds)			
	On	Off	On	Off
HOLD / CAMP-ON Call on hold or camped on	500	3500	500	3500
RING Ring over page	1000	3000	1000	3000
C.O. BUSY C.O. line is busy	350	350	350	350
C.O. RINGBACK C.O. line is ringing	400	200	400	2000
C.O. DIAL C.O. line dialling tone	1000	250	1000	250

## Keypad 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
DND MODE*	RED	112 ipm for 500 ms	500 ms
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 OfficeServ 100 keyphone system to enhance your business procedures. It is subdivided into the following sections.

- System Features
- Station Features
- Display Features
- Sample Keypad 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 Tie Lines
- Account Code Entry
  - Forced - Verified
  - Forced - Not Verified
  - Voluntary
- Account Code Key
- Account Code Key (One Touch)
- All Call Voice Page
- Attention Tone
- Authorization Codes
  - Forced
  - Voluntary
- Auto Attendant\*
- Automatic Hold
- Background Music
- Boss/Secretary Service
- Call Activity Display
- Call Costing
- Caller Identification (Caller ID)\*
  1. 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
      - Investigate
      - Abandon Call List
      - CID on SMDR
      - Number to Name Translation
  2. 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
  - To Voice Mail
  - Preset Destination
- Call Hold (Exclusive)
- Call Hold (System)
- Call Hold (Remote)
- Call Park and Page
- Call Pickup
  - Directed
  - Groups
  - Established
- Call Priority by CLI or DDI
- Call Routing by CLI
- 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
  - Split
- 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
- Group Conference
- Hot Desking
- Hot Line

In Group/Out of Group	Remote Programming—PC
Incoming Call Distribution	Ring Modes
Incoming/Outgoing Service	Time Based Routing Plans
Individual Line Control	Automatic / Manual
IP Phone Interface	Holiday Schedule
ISDN Service	Temporary Override
Primary Rate Interface (PRI)	Ring Over Page
Basic Rate Interface (BRI)	Single Line Connections
ITP Time Zone	Speed Dial Numbers
Large LCD Phone Interface	Speed Dial by Directory
Least Cost Routing	Station Hunt Groups
Live System Programming	Station Message Detail Recording (SMDR)
Meet Me Page and Answer	SVMi-4 & SVMi-8 Integrated Voice Mail*
Memory Protection	System Alarms
Message Waiting Indications	System Maintenance Alarms
Microphone On/Off per Station	System Directory
Music on Hold—Flexible	Tenant Service
Music on Hold—Sources	Toll Restriction
Networking	Toll Restriction Override
Off Premises Extensions (OPX)	Tone or Pulse Dialling
OfficeServ Call	Traffic Reporting
OfficeServ EasySet	Transfer
OfficeServ Link	Trunk Groups
OfficeServ Operator	Uniform Call Distribution (UCD)*
Operator Group	UCD Groups
Overflow	Call Statistics
Override Code	Agent Statistics
Paging	Group Supervisors
Park Orbits	Printed Reports
Prime Line Selection	Universal Answer (Night Bell)
Private Lines	Virtual Extensions
Programmable Line Privacy (PRB Key)	Voice over IP (VoIP)
Programmable Timers	Voice Mail: In-band Integration
Recalls	Walking Class of Service

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

## System Feature Descriptions

### AC15 Tie Lines

Your system can be connected to another system with a tie line. Use it to make calls to stations in the other system. If programming allows, you can access lines in the other system to make outside calls. Tie line calls can be put on hold, transferred and conferenced in the same way as other outside calls. Users accessing the tie line 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 tie line. Your local telephone company may use AC15 tie lines to provide DDI service. In this case, these tie lines can be programmed to follow the DDI translation table. Translated AC15 tie line calls have time-based routing capabilities.

### 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. Keypad 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.

**Account Code Key—One Touch**

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

**Extender = 000** When programmed with an extender of 000, pressing the key prompts the user to enter an account code without interrupting a call.

**Extender = 001–999** When programmed with an extender ranging from 001 to 999, pressing the key will automatically insert the account code entered for that number. This is known as One-Touch account codes. This option can be denied in system programming to prevent users from bypassing the security of system account codes.

**No Extender** When programmed without an extender, pressing the key will prompt the user to enter the number in the system account code table where the account code is stored.

**All Call Voice Page**

Users can page all internal and 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 authorisation codes (between four and 10 digits) 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 four ports on a MISC 4 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 4 minutes 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 and SVMi-8 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.

## Boss/Secretary Service

See [Executive/Secretary Pooling](#) for a description of setting up and using 'Boss' and 'Secretary' keysets. The following features are also available to enhance this mode of working.

### Executive Answer Mode

You can set the response mode for each executive (boss) keyset to Ring, Automatic Answer or Voice Announce. (See [Ring Modes](#) in Station Features.)

### Executive Status

The status of an executive can be set by the executive or the secretary. Others can verify the set status through the Easyset application.

### Divert

'Divert' allows an executive to automatically transfer all incoming calls to the secretary. Divert can only be set from the keyset designated as a BOSS keyset using a programmed DIVERT key. Pressing the key while the keyset is idle, or when a call is ringing, will transfer calls to the secretary. Pressing the key again turns off the Divert feature.

## Call Activity Display

The OfficeServ 100 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

## Call Costing

The OfficeServ 100 provides programmable call costing tables to calculate the cost of incoming and outgoing calls. Rates are calculated by the number dialed, and may include surcharges. Display keysets can be set to show the call duration timer or the call cost. The SMDR report will show either the call duration or the call cost depending on the station selection. 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 OfficeServ 100 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 OfficeServ 100 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.

An added option in MMC 110 (Station On/Off) called CID REVW ALL can be used to define the review list. If this option is set to ON, both answered and unanswered calls are recorded in the review list. If set to OFF, only calls that are not answered at the station are recorded.

### *Investigate (ISPY)*

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 500 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.

Also, the CLIR with Number option in MMCs 834 and 837 allows outgoing CLI to be sent to a network provider (e.g. for call charging) but not to the called party. The provider must be able to handle this feature.

## 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.

Note: For forwarding to an external number to be allowed, the option ICM EXT FWD in MMC 210 must be set to ON.

### *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 make 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.

*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 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.

### Established

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

## Call Priority by CLI or DLI

Incoming calls can be given a priority between 1 and 8 (1 is highest, 8 lowest). If calls are placed in a queue for answering, a high priority call goes to the front of the queue.

## Call Routing by CLI

An incoming call with CLI can be routed to a specified destination, irrespective of any other routing set up in the system. Alternatively, the call may be rejected.

## 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 OfficeServ 100 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 OfficeServ 100 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.

### Split

A station user can 'split' a conference into separate outside calls, then speak with each caller privately. Individual callers can then be put back in conference again in any combination.



NOTE: This feature requires individual trunk keys and Auto-hold must 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. 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 OfficeServ 100 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, station, DDI number or CLI number 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 Business Communications is in no way responsible for the possible misuse of this feature.**

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### **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 OfficeServ 100 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.

See also [Boss/Secretary Service](#) for additional features available for executive/secretary working.

### **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 Keypad User Guides as these all assume that the default numbering plan is being used.

## Group Conference

A programmed GCONF key can be used to automatically call a preset number and include the called party in a conference when the call is answered. Up to five numbers, including the keyset from which the conference is supervised, may be assigned to a conference group. Up to five conference groups can be assigned to an extension.

## 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.

## IP Phone Interface

An additional Media Gateway Interface (MG13) card is not required for calls between local IP phones, but must be installed to allow IP phones to call digital keysets and non-IP phones. The MG13 card is required for Internet Fax. Up to three MG13 cards can be installed per system.

## ISDN Service

The OfficeServ 100 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.

## ITP Time Zone

ITP keysets can be programmed to allow the time display to differ from the system time, if the keysets are located in another country or time zone for example.

## Large LCD Phone Interface

Large LCD phones provide various features such as Virtual AOM, a Phone Book, and en-block/overlap dialling. LCD navigation (similar to that of a mobile phone) using navigation keys and menu/feature selection keys allows users to select features, discussed in this chapter, without the need for programmable keys or feature codes.

## 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 OfficeServ 100 LCR program includes the following features:

- Option to use or not use LCR
- Programmable LCR access code
- Digit analysis table: 500 entries, each with 10 digits
- Routing by time of day and day of week (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 con-

trolled 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 OfficeServ 100 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.

Each DDI number can have a designated music source to be played while a caller is on hold or 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, any 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 Voice Mail card installed, up to 100 custom recorded sound files from the card can be used for MOH sources. For information on creating the sound files, see your Samsung Voice Mail system documentation. Each VM MOH source requires a dedicated VM port/channel.

## Networking

The networking feature allows a number of OfficeServ 100 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. A Centralised Attendant can be set for each of the six ring plans if required: set the USE REMOTE ATTN in MMC 825 to YES and assign an attendant for each ring plan.

**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 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.

**Message Key and Light.** The MSG key on a station can be activated across a network node so that they can reply to messages sent from the other system by pressing the key. The key works for Message and VMAA groups (third part VM systems should be tested prior to installation).

**Group Overflow to Network Node.** UCD groups can overflow to other network nodes. In programming, the Next Port for overflow is set as a network station or group. When overflow occurs, the original group stops ringing.

**UCD Final Destination.** UCD groups can be assigned network stations or groups as the Final Destination.

**Trunk Ring Across Network Nodes.** Trunk lines can be set to ring a network station or group in MMC 406.

**Paging Across Network Nodes.** Paging to remote nodes can be achieved by assigning a Network Page key (MMC 722/723) or code (MMC 724). The page zone is the network link number assigned in MMC 820 (01–49) followed by the page group. For example, a key programmed as NPG051 will page the node assigned to Link 05 and access internal paging group 1.

**VT Key Across Network Nodes.** If a centralised SVM system is used, the VT key will work for local voicemail and remote stations, local stations and remote voicemail, and remote voicemail and remote stations.

**Enhanced Centralised Voice Mail.** Display and soft keys can work on remote stations. The message count is displayed, and when a mailbox is accessed the display shows options FWD, DEL, REPLY, etc.

**BLF Across Network Nodes.** A Network Station (NS) key can be programmed in the same way as a DS key. With a station extender, it will flash when the station rings and steady when it is busy. Pressing the key rings the station, and ringing calls can be picked up from the station when the key flashes. Holding calls and Call Park and Page are also supported.

NOTE: For direct pickup, DSS KEY DPU in MMC 210 must be set ON. The BLF feature is only available when systems are networked via the Internet Protocol and not Q-SIG, and is restricted to a maximum of 400 stations per node.

**Remote Hold Across Network Nodes.** Remote hold works as for non-networked systems.

**AA Card Network Support.** Destinations for AA plans can be stations or groups in other nodes. Programming is the same as for non-networked systems.

**Public to Public MGI Channel.** This option in MMC 840 allows an MGI channel to be used if there are voice problems between remote ITP keysets in the same private zone (e.g. home workers on the same DSL).

### **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.

### **OfficeServ Call**

Provides simple control of stations, access to a user's personal information manager, and many other features.

### **OfficeServ EasySet**

The EasySet application is used for configuring the keys and functions of digital keysets and IP phones through a PC. A number of features including the Short Message Service (SMS) and a diary are available through this application.

### **OfficeServ Link**

Provides access control for other applications.

### **OfficeServ Operator**

Provides a Windows™ screen-based operator's console. Up to five can be installed on one system to provide enhanced operator features and call handling.

### **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 eight entries of up to 14 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—PC

Remote programming allows you to access the system database from a remote location to make changes to the customer database. You need an external modem, the optional internal Modem card, or a Wide Area Network (WAN) connection and a PC running the OfficeServ Manager 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 2500 speed dial numbers may be allocated as needed. The system list can have up to 500 or 950 numbers (as set in MMC 861) 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 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 OfficeServ 100 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.)

## 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 12 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 the Sample Traffic Report at the end of this chapter.)

### **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.

## Virtual Extensions

The system has a number of virtual extensions available. These can be used for a number of functions such as Hot Desking, Computer Telephony Integration (CTI) and pre-programmed call forwarding. Systems provide both SLT and digital line (DLI) virtual extensions.

## 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. Keypad users can press a key to retrieve messages from the voice mail system. A Voice Mail Transfer (VT) key permits keypad users to easily transfer a caller directly to an individual voice mailbox without navigating through menus.

## Voice over IP (VoIP)

The MGI3 VoIP card supports voice calls over an IP network connection using the industry standards-based H.323 protocol. The card fits into any universal card slot in the Basic KSU.

VoIP is transported by the MGI3 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 MGI3 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 MGI3 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 MGI3 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 dialed. 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 Log  
Call Pickup  
Direct Station Selection (DSS)  
Do Not Disturb (Programmable)  
Do Not Disturb Override  
Door Lock Release  
Exclusive Hold  
Group Listening  
Headset Operation  
Hearing Aid Compatible  
Line Queuing With Callback  
Line Skipping  
Loud Ringing Interface  
Manual Signalling  
Message Waiting Light/Indication  
Mute Microphone/Handset  
Off-Hook Ringing  
Off-Hook Voice Announce  
One-Time Do Not Disturb  
One-Touch Dialling Keys  
On-Hook Dialling  
Programmable Keys  
Programmed Station Messages  
Protection From Barge-In  
Pullout Directory Tray (DCS Euro Keysets)  
Pulse To Tone Switch Over  
Redial  
    Auto Retry  
    Last Number  
    Manual Retry  
    Memo Redial  
    Save Number  
Remote Hold  
Reset Station Features  
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 iDCS 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 iDCS 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.

#### 64-Key AOM (DS-5064B) for 5000 Series Keysets

The 64 programmable keys add to the capability of any 5000 series keyset. Up to four 64-key AOMs can be added to a keyset. A maximum of eight 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

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

## 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 keypad 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)

The same options are used 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.

Keypad 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 Log

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

## 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 or keyset status indicator (if fitted) 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 calls are answered and released by pressing a specific key (such as the ANS/RLS key on some keysets). 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.

## 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

A customer-provided loud ringing device can be controlled using a dry contact pair on the KSU. The device can be programmed to operate with a specific station or station group.

## Manual Signalling

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

## Message Waiting Light/Indication

When a message indication is left at a keyset, the MESSAGE key will slowly flash red. If fitted, the keyset status indicator will also flash. 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

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. 14 (DS-5014D), 21 (DS-5021D), 24B (Euro), 12B (Euro), and so on. 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.

Feature keys that can have extenders to make them more specific include SPEED DIAL, SUPERVISOR, PAGE, DSS, DIRECTED PICKUP, GROUP PICKUP, BOSS, PARK, PROGRAMMED MESSAGE, IN AND OUT OF GROUP, FORWARD and VOICE MAIL TRANSFER. For a full listing of keys and extenders, refer to the *Samsung OfficeServ 100 Programming Guide* or *System Administration Guide*.

## Programmed Station Messages

A station user may select one of a number of messages to be displayed both at a calling party's keyset and on the station's display. There are 15 possible messages (01–15) supported.

Messages 01–10 are pre-set with a selection of single-line text, but these can be changed in programming. The remaining messages (11–15) can be customised by the system administrator, up to 16 characters maximum.



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

## Protection from Barge-In

Each station can be programmed as secure or not secure. Secure stations cannot be barged-in on. Nor can a station that is not secure be barged-in on when talking to a secure station.

## Pullout Directory Tray (DCS Euro keysets)

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).
- **MEMO REDIAL**—When you are calling directory assistance you can store the number you are given using the dial pad and SAVE number feature (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.

## Reset Station Features

An All Clear (ALLCLR) code can be dialled at a station to reset all features set at the station such as station lock, call forward, alarm reminders, station messages and DND.

## 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.

## Ringling 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 ringling preference is turned off, the user must press the flashing key to answer. Users may answer ringling 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 DS-5014D, DS-5021D, DS-5038S, iDCS 28D and iDCS18D 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

Most 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

Most keysets and add-on modules can be wall mounted using the base wedge. Large LCD keysets can only be desk mounted.

## Display Features

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

## 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 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 dialed, the user can quickly hang up before billing begins.

## Enhanced Station Programming

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

## Identification of Recalls

Hold recalls and transfer recalls 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 keyset LCD (except for large LCD keysets), there are three soft keys. These keys allow the user to access features allowed by the station's 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.

## Text Messaging

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

Up to 10 messages can be stored in the system memory and sent to another display keyset. Only display keysets that are allowed in system programming will receive the TMSG soft key in the display and can use this feature.

## 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.

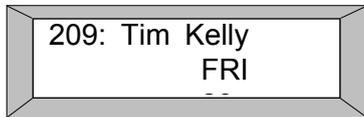


NOTE: Accessing this screen will also allow a supervisor to change the status of each agent (IN GROUP, OUT OF GROUP, or DND).

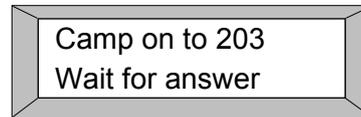
---

## Sample Keypad Displays

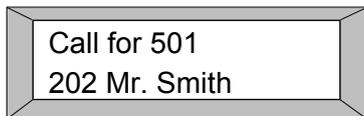
Display keysets have a large, easy-to-read liquid crystal display. Helpful call processing information is provided so everyday call handling is quick and easy. Here are some examples of the displays you may see in a 2-line LCD.



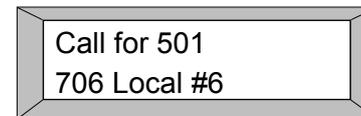
Idle display shows extension, name, day, date and time.



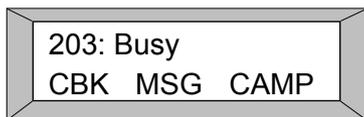
This station is camped-on to extension 203 and is waiting for 203 to answer.



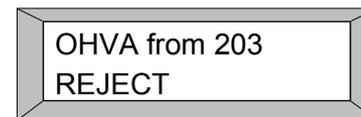
This station (e.g. in the sales department) is receiving a group call from Mr. Smith.



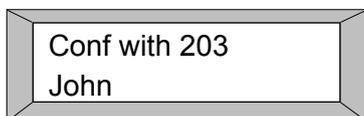
This display tells you this is a new incoming call to (e.g.) the sales department.



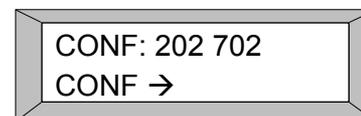
This station is calling station 203 which is currently busy.



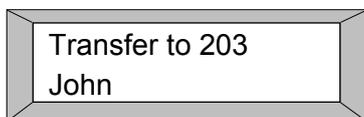
This station is receiving an off-hook voice announcement from station 203.



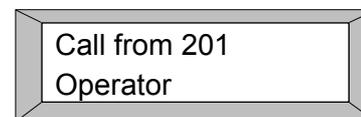
This station is on a conference call with John, extension 203. Assume other parties will hear your conversation.



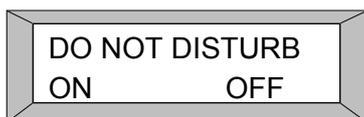
This station is on a conference call with extension 202 and trunk 702 and has the option to add two more parties.



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

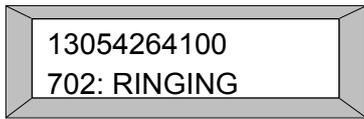


This station is receiving a call from extension 201.

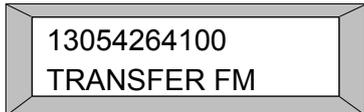


This station is setting the Do Not Disturb feature.

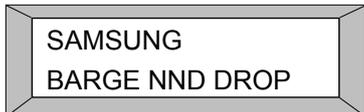
## Sample Caller ID Displays



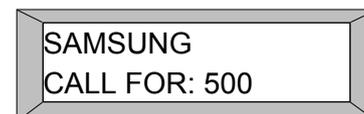
This display shows an incoming call from 1-305-426-4100 on Line 702 ringing directly at your station.



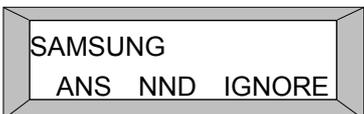
This display shows an incoming call from 1-305-426-4100 being transferred to you from station 201



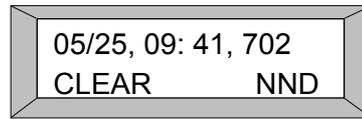
This display shows an investigation of a station that is talking to Samsung. The investigator can BARGE-in to the conversation, DROP the call from the system or examine further NND



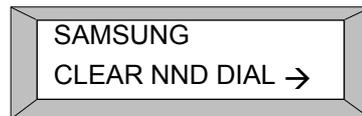
This display shows an incoming call from Samsung ringing at group 500.



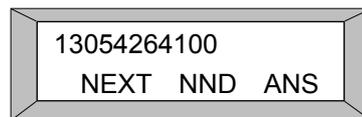
This display is seen while using the INQUIRE feature. It shows the three options available while you are checking on a held or parked call.



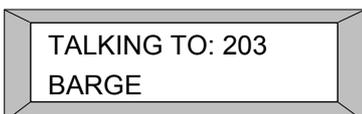
This display shows the information on the abandoned call list. This call came in on May 25 at 9:41 A.M on line 702. The user can CLEAR the entry. DIAL the caller back or examine further NND information.



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



This display is seen while examining calls in queue at your key-set.



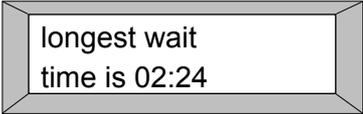
This display can be seen when investigating an internal call. The investigator can BARGE-in or DROP the connection.

## Sample UCD Displays



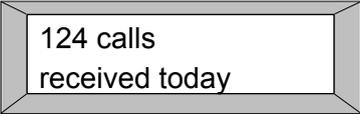
005 calls in  
queue now

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



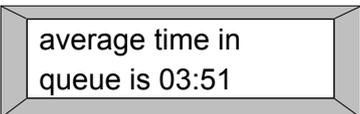
longest wait  
time is 02:24

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.



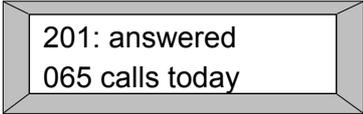
average time in  
queue is 03:51

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.



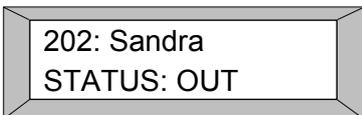
201: answered  
065 calls today

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: Sandra  
STATUS: OUT

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



# 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  
9124518  
8005213  
801203  
80200

\*\*\*\*\* 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 GROUP \*\*\*\*\*

```

<----- 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 [OfficeServ 100 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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