iDCS 500

Installation Guide

Preface

About This Manual

iDCS 500, Digital Communication System, is a digital telephone system designed for small to medium–sized businesses.   This manual provides the information about installation of the Samsung iDCS 500, Digital Communication System, including information about connecting the equipment.

This guide consists of following 11 chapters. Find and read necessary chapters.

- Site Requirements

- Installing Single/Multiple Cabinet Configurations

- Installing Printed Circuit Cards

- Power Up Procedures

- Connecting Central Office Circuits

- Connecting Station Equipment

- Connecting Optional Equipment

- Installing Keyset Daughter Boards

- Software and Database Management

- Adding Cards to The System

- SVMi-8 Set Up

Supporting Documents

Further detail on all of the aspects covered in this manual is included in the system General Description and Programming guide.   The iDCS 500 system provides the following manuals for more information:

- General Description Guide
  This manual provides an overview of the Samsung iDCS 500, Digital Communication System, including system structure and hardware, features and facilities and specifications.

- Installation Guide (This Manual)
  This manual provides the information about installation of the Samsung iDCS 500, Digital Communication System, including information about connecting the equipments.

- Programming Guide
  iDCS 500 system provides MMC(Man Machine Communication) program.   Users can configure the system using the MMC program at the digital telephone.
  This manual describes how to use the MMC program.

- Service Manual
  This manual is for the engineers who service the iDCS 500.   This manual introduces the functions of the iDCS 500 and describes the configurations, and main circuit functions of each part. Moreover, this manual provides Troubleshooting for solving problems that you may run into during the use of iDCS 500 and various Servicing Diagrams and Layouts with Parts List.

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IMPORTANT SAFEGUARDS

1. When using your telephone equipment, basic safety precautions should always be followed to risk of fire, electric shock and injury to persons, including the following and To limit the risk of personal injury, always follow these precautions before connection TELCO Circuit :

   a. Never install telephone wiring during a lightning storm.
      There may be a remote risk of electric shock from lightning.
   b. Never install telephone jacks in a wet location unless the jack is specifically designed for wet locations.
   c. Never touch noninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
   d. Use caution when installing or modifying telephone lines.
   e. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
   f. Do not use the telephone to report a gas leak in the vicinity of the leak.
   g.Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

SAVE THESE INSTRUCTIONS

2. Battery Back-up connector :
   a.   "CAUTION : To reduce risk of fire and injury to persons, use only a sealed nickel cadmium or lead-acid battery supply capable of handling a charge current of 0.45 A, a charge Voltage of -54 V dc and d discharge rated of 45 Ah.
   b.

" CAUTION "
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the manufacturer.
Dispose of used batteries according
to the manufacturer's instructions.

3. Disconnect Device : Disconnect Device is an Appliance Coupler.

4. Fuse :

" CAUTION "
Double pole ∕ neutral fusing
+
ATTENTION
Double pole ∕ fusible sur le neutre.

   a. CAUTION : For continued protection against risk of fire, replace only with same type and rating of fuse
   b. CAUTION : DISCONNECT POWER BEFORE CHANGING FUSE.

5. " Telephone Power " and the symbol   ⚠   or the words " See instruction manual. "

The instruction manual shall include the following :
   a. The current limitations and maximum overcurrent protection for telecommunication circuits.
   b. reference to the specific power supply or current limiting device provided with the product.
   c. detailed instructions showing the proper method of installation and connections to the telecommunication wiring system.

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Chapter 1
Site Requirements

Chapter 1 Site Requirements

When you are planning the installation of the iDCS 500 system, choose a site that meets the following requirements:

- Select a location for the iDCS 500 system that has enough space for easy installation and adequate lighting. **(see Figure 1–1)**.
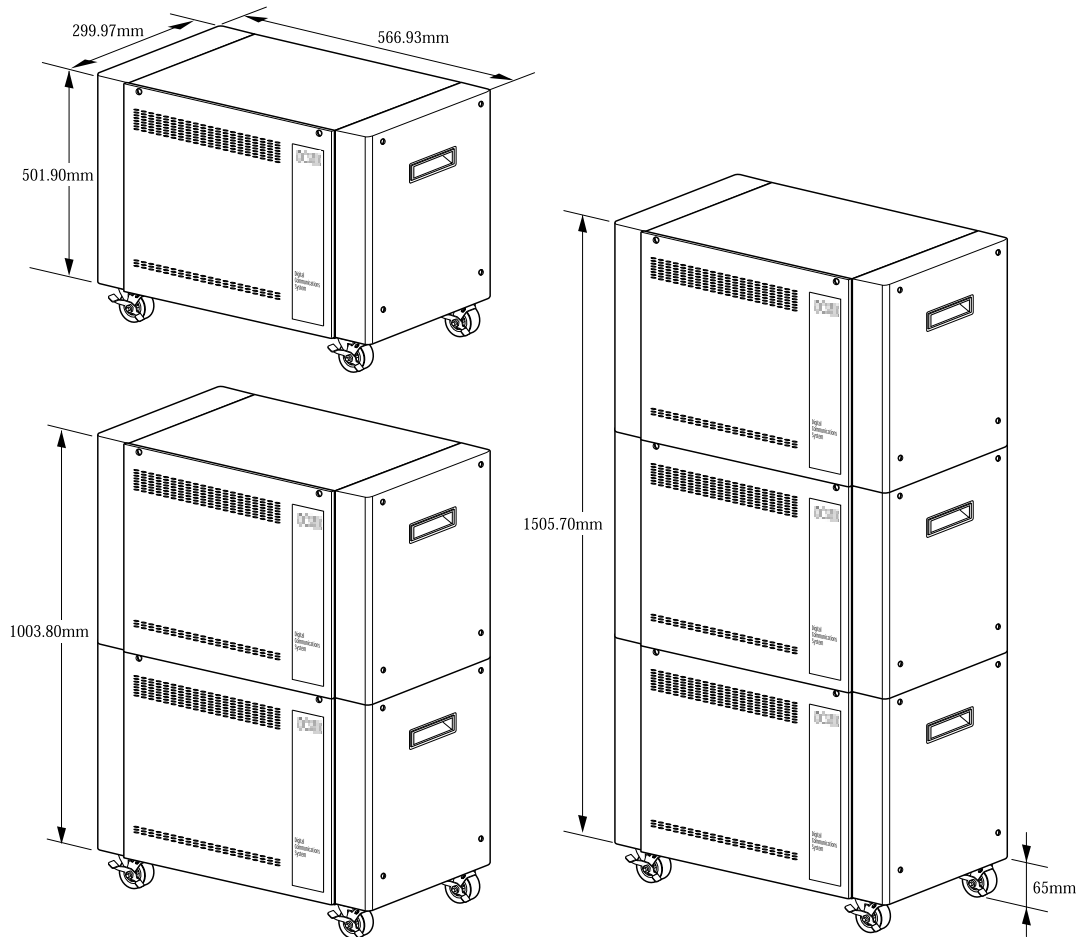
Figure 1-1 Key Service Unit Dimensions

- Select a location that will minimize cable lengths. See the Cable Requirements Table in the iDCS 500 General Description Guide.

- The equipment should not be exposed to direct sunlight, corrosive fumes, dust, constant vibration or strong magnetic fields such as those generated by motors and copy machines.

- A direct commercial AC power outlet is required. Do not use extension cords. Preferably, a dedicated circuit should be used to minimize the risk of other electrical equipment being connected that could adversely affect system operation.

- Ensure that all wires and cables going to and coming from the iDCS 500 are properly routed. Do not cross fluorescent lights or run parallel with AC wires.

- The equipment must be located in an environment that will maintain a temperature range of 32°~77°F (0°~25°C) and a humidity range of 10%~90% non-condensing.

- This equipment is to be installed only in Restricted Access Areas (Dedicated Equipment Rooms, Equipment Closets, or the like).

- Allow at least 254mm clearance on both sides and 254mm clearance on top of the system to ensure proper ventilation and access to the interior of the cabinet.

- Do not install in close proximity to a fire sprinkler head or to other sources of water.

- Space consideration must be made to allow floor or wall mounting. Do not wall mount a multiple cabinet system.

Meeting these requirements will help to ensure proper performance and greater life expectancy of the system.

Chapter 2
Installing Single/Multiple Cabinet Configurations

Chapter 2 Installing Single/Multiple Cabinet Configurations

UNPACKING AND INSPECTION

The iDCS 500 can be configured as a single cabinet, a dual cabinet system or a three cabinet system.

A iDCS 500 single cabinet system may be wall, floor, or rack mounted while multiple cabinets systems may only be floor or rack mounted. Do not attempt to wall mount any system other than a single cabinet system.

All the iDCS 500 cabinets are identical when shipped from Samsung. After unpacking the cabinet(s), inspect for signs of physical damage. If any damage is detected, do not attempt installation. Contact Samsung Technical Support Department.

Check to see that each iDCS 500 Cabinet carton includes the following items:

- iDCS 500 Cabinet

- Top cover

- Left and right side covers

- Front cover

- Cabinet leg mounting kit

- AC power and DC power cables

Check to see that all additional iDCS 500 hardware and software is available for installation at this time.

- Floor mounting equipment (legs or castors), if required.

- Cards required to make the iDCS 500 system functional. (i.e., power supply, central processor, station and trunk cards.)

SINGLE CABINET INSTALLATION
- WALL OR FLOOR MOUNT

A iDCS 500 single cabinet system can be wall-mounted using four screws in the rear keyholes or floor mounted with the standard legs provided or optional locking castors. The castor kit must be ordered. Remove side and front covers of the cabinet prior to installation to avoid damaging the covers and to allow access to the interior.

For a wall mounted system, the cabinet should be securely mounted on a plywood backboard at least 1.6cm thick. Insert into the back board, 40cm apart two (minimum size #10) screws **(see Figure 2–1)**.
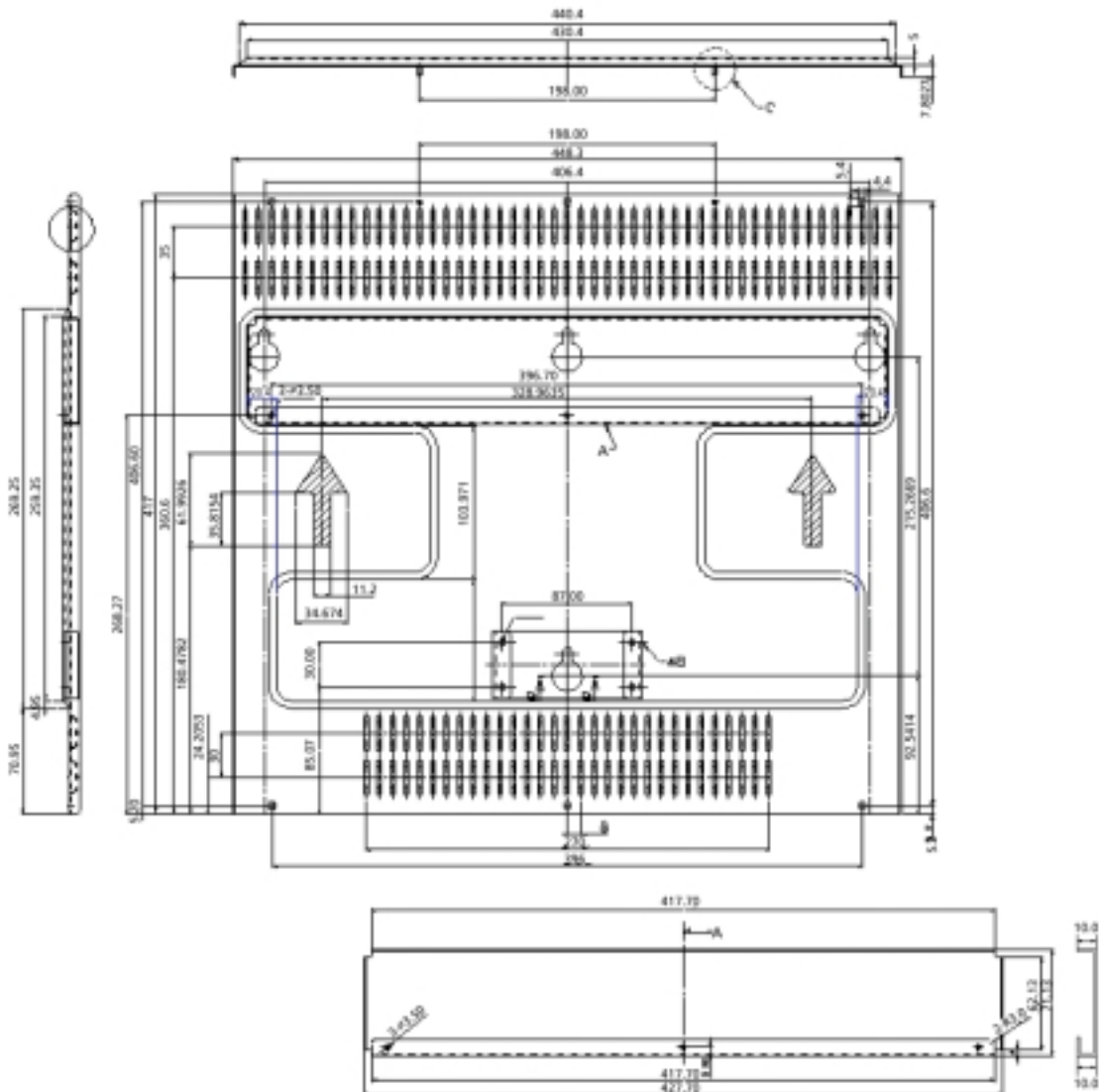
Figure 2-1   iDCS 500 Wall Mounting

Hang the iDCS 500 cabinet onto the screws installed in the backboard. Connect the AC power cord, but do not turn ON, to the system prior to installing any card. (Refer to Section 'Grounding'). When a Power supply is installed, verify that the power switch is in the proper voltage setting, 110V or 220V required. **(see Figure 2–3)**

> *NOTE:*   Wall mount a single cabinet configuration only.   Multiple cabinet configurations MUST be floor mounted with legs or locking castors or mounted in a 19 inch rack.

To floor mount, locate the optional legs or locking castors.   Remove side and front covers of the cabinets prior to installation to avoid damaging the covers and to allow access to the interior.   Place the cabinet on a secure surface (floor or workbench) with the front of the cabinet (card slots) facing up. With the enclosed machine screws mount the legs or castors on each corner of the first cabinet **(see Figure 2–2)**.   Place cabinet upright in the desired location.
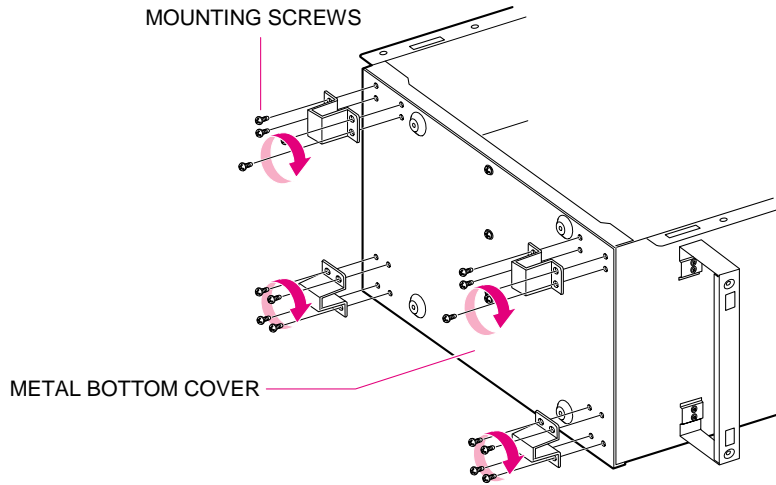
Figure 2-2   Attaching legs to main cabinet

The final step in installing the cabinet is installing the required PSU-B, MCP (iDCS 500 Main Control Processor) with SmartMedia card, station and/or trunk cards and MDF cables.   **See sections 'Power Connection', 'MDF Cabling', Chapter 3, and Chapter 9 of this manual** to determine the basic required configuration and to make the system operational.

As the system is for Technician access only, when replacing the front cover the screws must be tightened using a screw driver.

> *CAUTION:*   The metal bottom cover (see the Figure 2-2) should be installed to the shelf 1(bottom), but it should be removed from the other shelves(shelf 2 and Shelf3)

TWO CABINET INSTALLATION - FLOOR MOUNT

Check to see that each iDCS 500 cabinet carton includes the following items:

- iDCS 500 Cabinet

- Top cover
  Left and right side covers

- Front cover

- Cabinet leg mounting kit

- AC power and Battery Cables

Check to see that all additional iDCS 500 hardware and software is available for installation at this time.

- Floor mounting equipment (foot or castors).

- Cards required to make the iDCS 500 system functional.   i.e., power supply, central processor, station and trunk cards

1. Mount the legs or castors to one of the iDCS 500 cabinets as the floor mounted base cabinet. Prepare both of the iDCS 500 Cabinets by removing the side and front covers of both cabinets prior to installation to avoid damaging the covers and to allow access to the interior.   Remove the top cover from the bottom cabinet and the base and rear panels from the upper cabinet.

   Place the upper cabinet on top of the main/lower cabinet ensuring that the upper cabinet locating bumps are snug in the lower cabinet locating dimples.   Install the two provided screws in the dimples in the front lower panel of the upper cabinet and the two provided screws in the dimples in the rear lower panel of the upper cabinet.   Replace the rear panel on the upper cabinet. Connect the AC power cord and the AC power cable between cabinets, but do not turn ON, to the system prior to installing any cards.
   (refer to Section   'Grounding').   When a power supply is installed, verify that the power switch is in the proper voltage setting, 110V or 220V required.   **(see Figure 2–3)** position.   **See sections 'Power Connection' 'MDF Cabling', Chapter 3, and Chapter 4 of this manual** to determine the basic required configuration and to make the system operational.

THREE CABINET INSTALLATION - FLOOR MOUNT

Check to see that each iDCS 500 cabinet carton includes the following items:

- iDCS 500 Cabinet

- Top cover
  Left and right side covers

- Front cover

- Cabinet leg mounting kit

- AC power and Battery Cables

Check to see that all additional iDCS 500 hardware and software is available for installation at this time.

- Floor mounting equipment (foot or castors).

- Cards required to make the iDCS 500 system functional.   i.e., power supply, central processor, station and trunk cards

1. Mount the legs or castors to one of the iDCS 500 cabinets as the floor mounted base cabinet.   Prepare all of the iDCS 500 Cabinets by removing the side and front covers of the three cabinets prior to installation to avoid damaging the covers and to allow access to the interior.   Remove the top cover from the bottom and center cabinets and the base and rear panels from the upper two cabinets.

2. Place the center cabinet on top of the main/base cabinet ensuring that the center cabinet locating bumps are snug in the lower cabinet locating dimples.   Install the two provided screws in the dimples in the front lower panel of the center cabinet and the two provided screws in the dimples in the rear lower panel of the center cabinet. Replace the rear panel on the center cabinet.

3. Place the top cabinet on top of the center cabinet ensuring that the top cabinet locating bumps are snug in the center cabinet locating dimples.   Install the two provided screws in the dimples in the lower panel of the top cabinet and the two provided screws in the dimples in the rear lower panel of the top cabinet.   Replace the rear panel on the top cabinet. Connect the AC power cord and the AC power cable between cabinets, but do not turn ON, to the system prior to installing any cards. (refer to Section 'Grounding').   When a power supply is installed, verify that the power switch is in the proper voltage setting, 110V or 220V required.   **(see Figure 2-3)** position.   **See sections 'Power Connection', '8 MDF Cabling', Chapter 3, and Chapter 4 of this manual** to determine the basic required configuration and to make the system operation.

   As the system is for Technician access only, when replacing the front cover the screws must be tightened using a screw driver.

VOLTAGE SETTING

FUSES
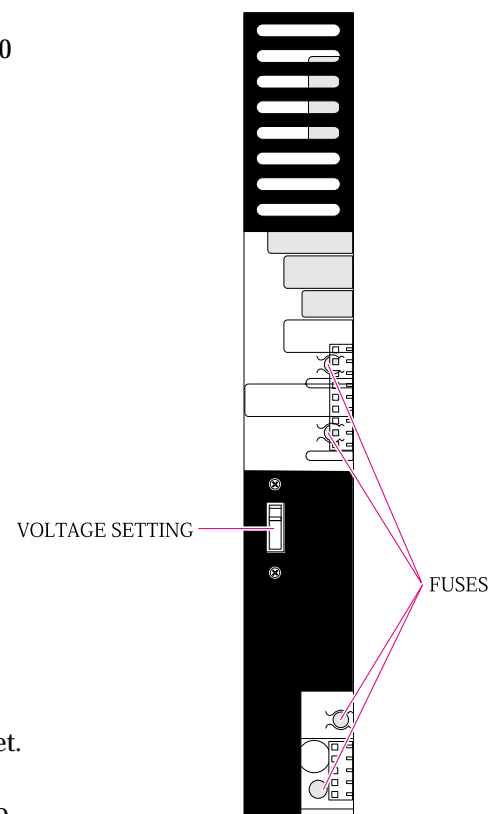
Figure 2-3   Setting Voltage on PSU-B

ADDING AN iDCS 500 EXPANSION CABINET

> *WARNING:* Unplug all sources of AC and DC electricity from the system before attempting this procedure.

1. Unplug the system AC and/or DC power sources.

2. Disconnect all cables and wires from the system.

3. Proceed as instructed in Section 'Two Cabinet Installation', Section 'three cabinet installation', or Section 'Rack Mounting a Cabinet'.

4. Insert the PSU-B, LCP and additional cards in the added cabinet.

5. Connect CIC cable assembly to the LCP.

6. Connect the AC/Battery Cables to the cabinets.

As the system is for Technician access only, when replacing the front cover the screws must be tightened using a screw driver.

> *NOTE:* To activate the new cabinet, the additional card slots must have any new cards inserted and recognized by the MCP processor. **See System Programming Section MMC 806 and MMC 724**.

RACK MOUNTING AN iDCS 500 CABINET

Prepare all of the iDCS 500 cabinets by removing the side and front covers of the cabinets prior to installation to avoid damaging the covers and to allow access to the interior.   In addition the top covers and the bottom panels from the cabinets must be removed.

1. Remove the four screws holding each side cover support bracket and remove the brackets from both sides of the cabinet **(see Figure 2-4)**.   These brackets are not required for rack mounting.
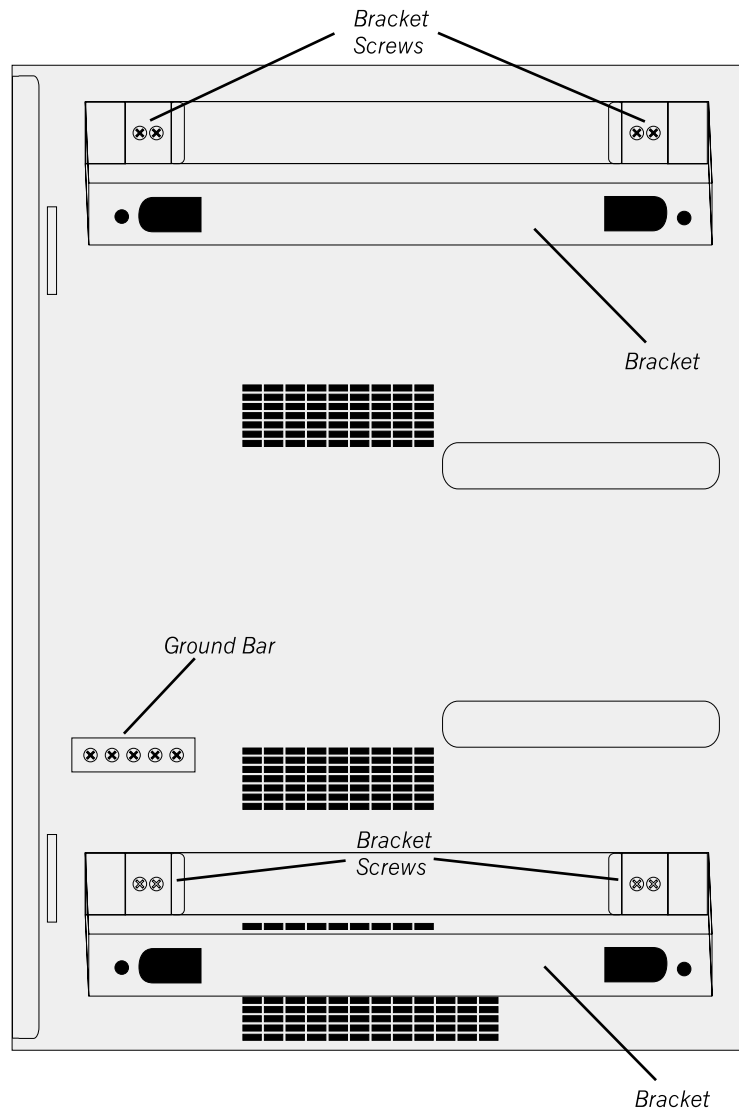
Figure 2-4   Side Cover Mounting Brackets

2. Remove the ground bar from the left side of the cabinet **(see Figure 2-4)**.

3. Remove the breakout panels from the base of all the cabinets to allow cable access.

4. Install the cabinets in the rack, leaving approximately 50mm of space between each cabinet to allow cable access, and secure each cabinet with eight screws in the mounting flange holes **(see Figure 2-5)**.
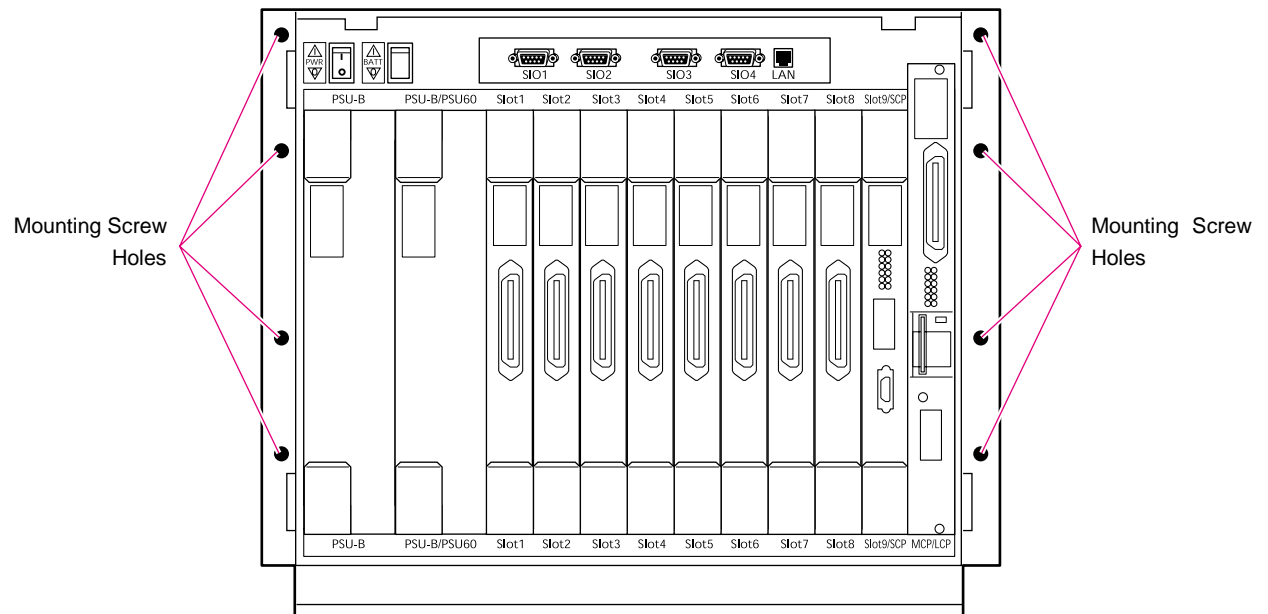
Figure 2-5   Securing Cabinet in a Rack

NOTE: The 50mm gap between cabinets requires a longer Cabinet Interconnect Cable (CICR) than usual for multiple cabinet installations.

5. Reattach Grounding bar to each cabinet and connect them together as described in Section 'Grounding'.

As the system is for Technician access only, when replacing the front cover the screws must be tightened using a screw driver.

GROUNDING

The Protective Earth (PE) connection to the iDCS 500 cabinet is provided via the three core mains lead. The protective earth to the expansion cabinets is also provided by the 3 core mains lead (supplied with the LCP card) linking the expansion cabinets to each other and the main cabinet.

Ensure that the AC power point, which the iDCS 500 system is connected to, is suitably grounded.

WARNING: Hazardous telecommunications network voltages may be present if analogue trunks are connected! Earth connection is essential before connecting analogue (PSTN) trunks. These trunks must be removed, then mains and battery power disconnected, before the rear panel is removed for ANY reason.

In some circumstances, the iDCS 500 system may require an alternative to the protective earth provided via the power cord. This would be required if the protective earth provided is poor and contains noise that may prevent the digital data bus operating correctly. This may result in erratic operation of the iDCS 500. The alternative protective earth will be required if using a UPS battery system that does not pass the ground through the power cord resulting in no ground to the system. Using a UPS of this type is not recommended.

Alternative Earthing Arrangements

An alternative earth should also be used in the following circumstances:

1. An E1 connection to the TEPRI card is required.

2. An ITM3 card is to be connected to the system.

3. In cases where the earth provided via the AC power cord is causing problems with the system. i.e., due to noise

In cases where an alternative earth is to be provided, the grounding bar on the bottom of the left side of the cabinet must be connected to a permanent bonded earth. Connection between the bonded earth terminal and the system must be via a 2.5 sq mm green/yellow insulated wire.

Connection between cabinets in a multiple cabinet system must use a 25 Amp rated earth conductor. The earth wire between the cabinets can also be connected using the grounding bar in each cabinet. A separate earth wire must be run from the main cabinet to each expansion cabinet.

When a permanent bonded earth is used the earth conductor in the power supply cord MUST be disconnected from the system. This can be achieved by:

1. Removing the main cabinet back cover (See WARNING above).

2. Removing the screw securing the earth wires to the cabinet in the top right hand side of the main cabinet.

3. Disconnect the green/yellow earth wire coming from the mains cable only. The second green/yellow sheathed earth wire connected to the iDCS 500 backplane MUST be reconnected.

4. Secure the green/yellow sheathed earth wire to the cabinet using the screw removed in 2 above.

Failure to provide an adequate ground may cause a safety hazard, confusing trouble symptoms or even circuit card failure.

> *WARNING:*   Remove Amp Champ connectors from trunk cards and unplug the power cord from the AC outlet before attempting to connect the alternative ground. Hazardous voltage may cause death or injury. Observe extreme caution when working with AC power.

The reason for the above paragraphs is that when conventional analog telephone circuits are connected to the iDCS 500 system, under fault conditions (i.e., the tip and/or ring conductor is crossed with a power line, or the circuit is affected by lightning), it is possible for hazardous potentials to appear across the tip and ring wiring coming into the iDCS 500 cabinet(s) from the outside plant (i.e., overhead cables, buried cables, cable head pedestal). These iDCS 500 trunk circuits are provided with both primary and secondary protection circuitry which will attempt to drain off these high voltages and currents to ground. Obviously, it is important to have a good source of ground connected to the iDCS 500 system to drain this energy off.

Also, certain metallic analog circuits (e.g. E & M trunks) require a flow of current to earth ground for normal operation and/or to resolve fault conditions. Again, a good earth ground source is required by the iDCS 500 system.

These precautions are taken for safety reasons to protect personnel working on the iDCS 500 system and also for operational reasons to accommodate ground return and/or ground-referenced analog telephone circuits, which require this solid earth ground connection for normal functioning.

POWER CONNECTIONS

AC POWER CORD ASSEMBLY

The AC Power Cord Assembly plugs into the AC power socket which is located on the left side of the cabinet.   The AC connection is a standard computer type power cord **(see Figure 2-6)**.
Use only the mains lead supplied with the iDCS 500 system that has the warning label affixed.

Power Input Location
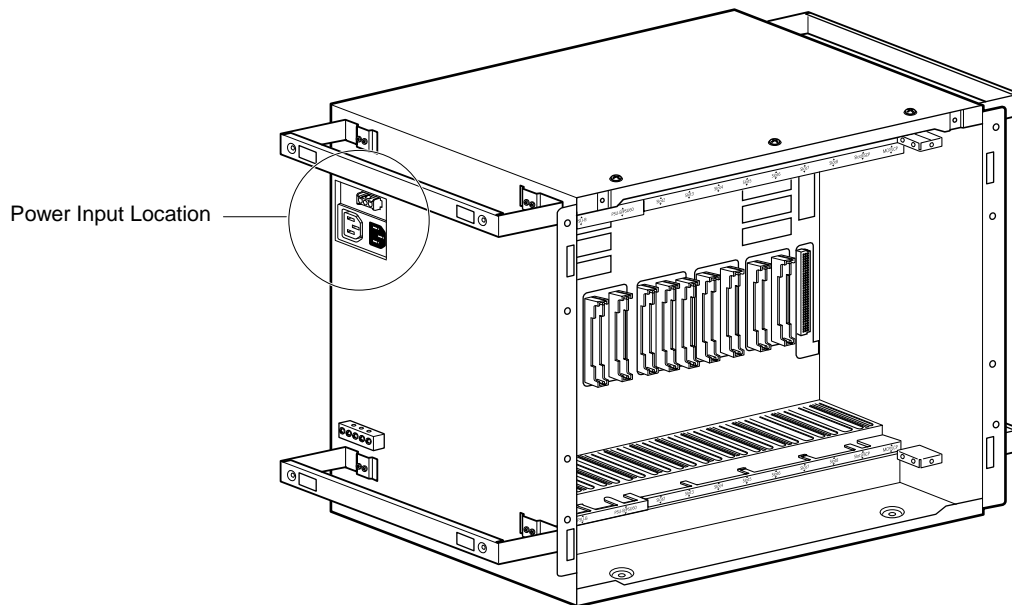
Figure 2-6   iDCS 500 Power Input Location

⚡ *WARNING:*   Do Not Connect AC Power To The System **(see Chapter 4 Power Up Procedures)**.

iDCS 500 POWER SUPPLY UNIT (PSU-B)

The iDCS 500 PSU-B is the power supply for the iDCS 500 cabinet(s) **(see Figure 2-3)**.   A second PSU-B or a PSU60 is required if more than 56 stations are installed in a cabinet.   This same rule applies to each cabinet.   Insert the first PSU in the first slot of the cabinet.   Before a PSU is installed, verify that the power switch is in the proper voltage setting position, 110V or 220V required.   If two or more PSU's are to be installed use the same procedure for each card.

⚡ *WARNING:*   Do Not Connect AC Power To The System **(see Chapter 4 Power Up Procedures)**.

Before the second PSU can be installed it will be necessary to remove the safety cover-plate that protects the power socket on the backplane. Be sure that AC power is not applied before touching this plate. Undo the screw holding the cover-plate to remove it.

EXTERNAL –48VDC BATTERY SOURCE

CAUTION: To reduce risk of fire and injury to persons, use only a 48 V battery supply capable of handling a charge current of 0.45A, a charge voltage of –54 VDC and a discharge rate of 45 AH. The battery source output must be fused (AC 125V 5 Amp) and a separate battery source must be used for each iDCS 500 cabinet installed. Only an approved battery back-up unit should be used.

The iDCS 500 provides for connection of an external battery plant (i.e. to provide -48VDC to power the system). The PSU-B/PSU60 provides -56VDC at 0.4 amperes charging current (i.e. when AC power is present) which allows for float charging from the iDCS 500 to emergency backup batteries. The iDCS 500 can also run without AC power on a -48VDC battery system or rectifier. There should be no more than a -0.5VDC drop in voltage from the iDCS 500 and the batteries. Ensure polarity prior to connecting the external -48VDC power source to the system.

The -48VDC cable assembly has a male 3 pin mate and lock connector on the system end **(see Figure 2-7)**. Insert this end of the DC cable into the battery (BATT) connector on the left hand side of the cabinet. Attach the other end of the DC power cable to the -48VDC power source.

white (+)

black (–)

CONNECT TO EITHER A OR B

12V 12V

12V 12V

OPTION A

6V 6V

6V 6V

6V 6V

6V 6V

OPTION B

BATTERIES SHOULD BE PLACED WITHIN THREE FEET OF KSU
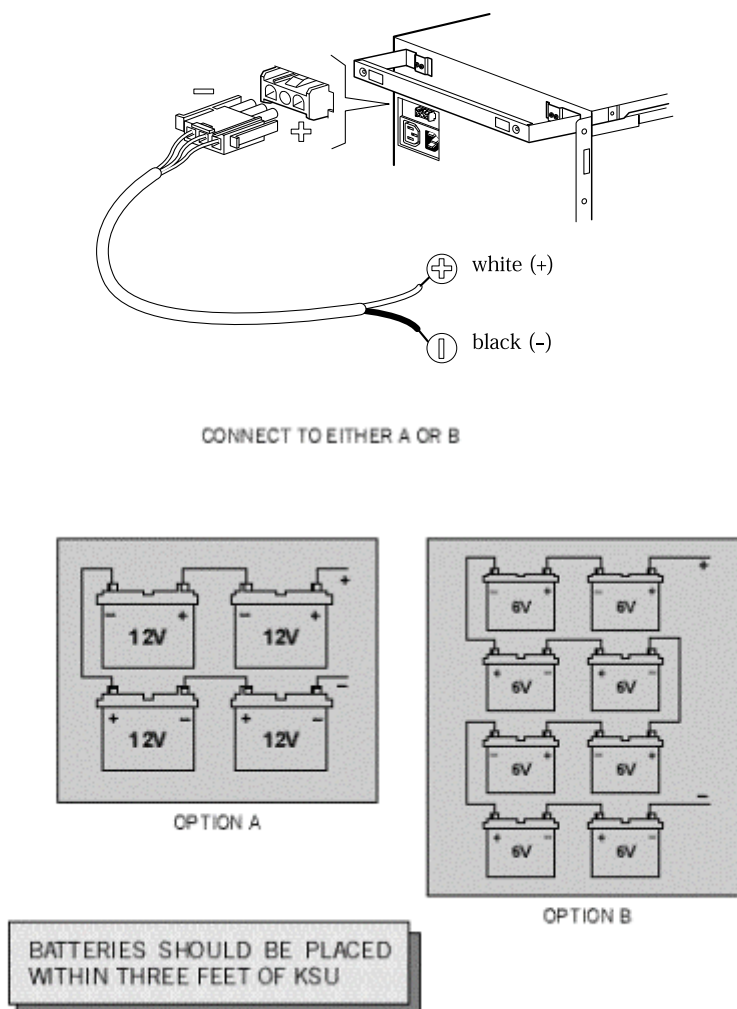
Figure 2-7   Reserve Power Battery Connections

WARNING: Be sure the proper polarity is observed.   Equipment damage will result if polarity is reversed. Do not connect external AC or DC power to the System **(see Chapter 4 Power Up Procedures)**.

RINGER CARD INSTALLATION

The ringer card is designed to provide ring for single line telephones connected to the various single line telephone (SLT) interface cards (8SLI, 8MWSLI, 16SLI and 16MWSLI) installed in each cabinet in the system. To minimise the use of Ringer cards it is recommended that all SLI interface cards be installed into a single cabinet. Note SLI daughter cards have an onboard ringer and therefore do not used the Ringer Card to provide ring.

> *NOTE:*   External Ringer is used in only Australia and Italy.

> *WARNING:* Hazardous telecommunications network voltages may be present if analogue trunks are connected! Earth connection is essential before connecting analogue (PSTN) trunks. These trunks must be removed, then mains and battery power disconnected, before the rear panel is removed for ANY reason.

To Install

Remove the 6 screws securing the back cover to the cabinet with SLT interface cards installed. Remove the Ringer Card from its protective covering and position onto the 4 stand-offs located at the rear of the cabinet. Using the screws provided in the Ringer card to the stand-offs (**see Figure 2-8).**

Ringer Connector

Ringer Card
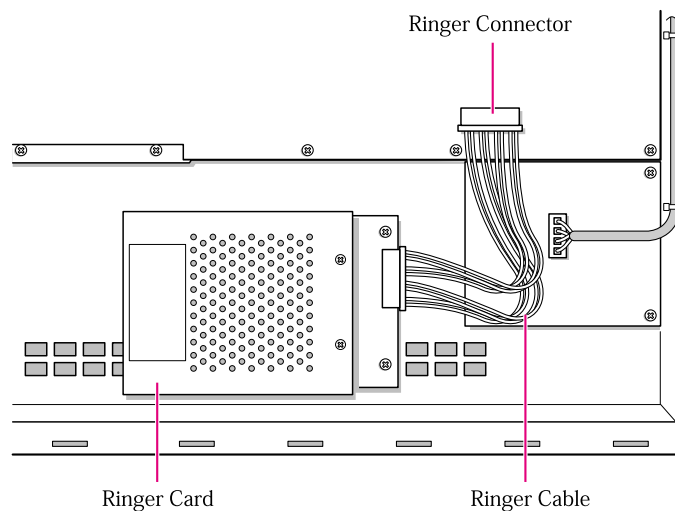
Ringer Cable

Figure 2-8   Ringer Card Location

Insert the Ringer connection cable into the Ringer socket on the motherboard as shown in Figure 2-8. Replace the back cover of the cabinet.

In the front of the cabinet locate the external ringer link as shown in Figure 2-9 and ensure that it is shorting the two right hand pins as detailed below.

External Ringer Link
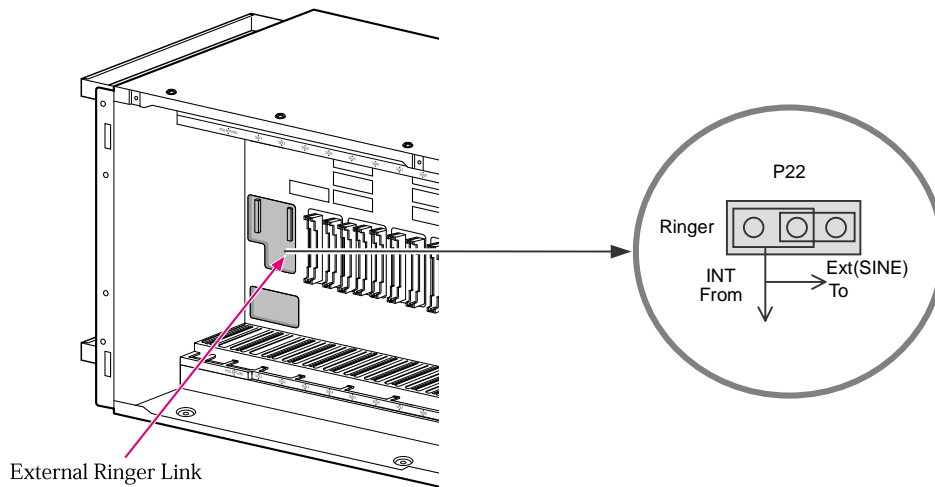
Figure 2-9 External Ringer Link ion (Only For Australia and Italy)

MDF CABLING

All connections to the iDCS 500 system are made by way of a customer-provided main distribution frame (MDF).   Each interface card (with the exception of the TEPRI, ITM3 cards) is connected to the MDF using a 25 pair female amphenol-type cable.   These cables can be routed into the iDCS 500 cabinet(s) from below or on the right side of the cabinet.

Label each cable to correspond with the slot numbers.   Label each terminating block to identify the cabinet, slot and port numbers.   Use one pair twisted jumper wire to cross-connect stations or lines to their associated port.
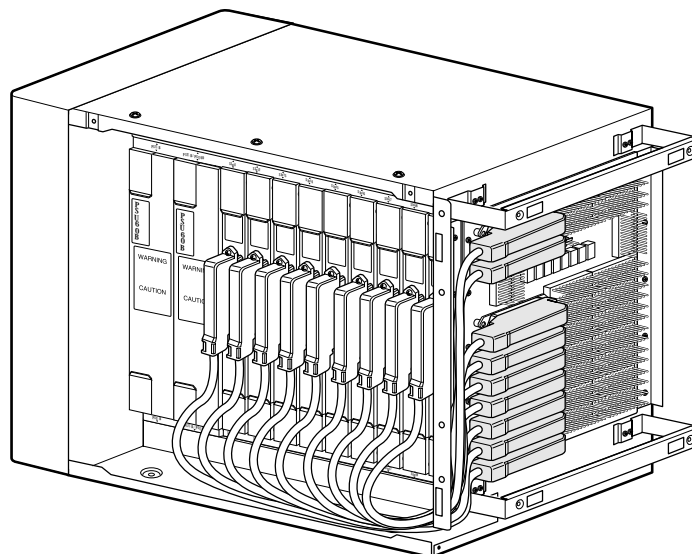
Figure 2-10   Connecting Champ Cables to the MDF boards

Chapter 3
Installing Printed Circuit Cards

Chapter 3   Installing Printed Circuit Cards

Before installing each card, unpack it and check it for signs of physical damage.   If you detect any problem, call Samsung Technical Support immediately.

MCP

The iDCS 500 Main Control Processor (MCP) controls the system operation.   The MCP installs in the MCP/LCP slot in the first cabinet of the system.   The MCP is required for all system configurations. The MCP has a 512 channel time switch matrix and positions for 3 daughter boards.   With a multiple cabinet system a ESM daughter board must be installed on the MCP to expand the switch matrix. The MCP supports the following options.

- 8 position DIP Switch

- Memory Backup On/Off Switch

- SmartMedia card slot

- 12 LED's

- 3 daughter board positions, one with external connections to support a MISC

- MOH Internal Melody

- 2 SIO circuits
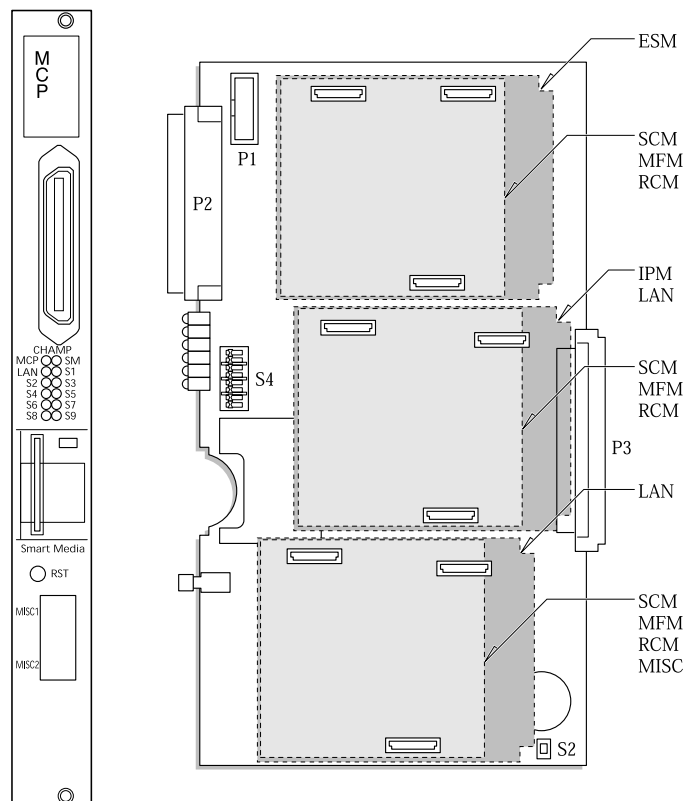
Figure 3-1   MCP Card

12 LED's give operational status of the CPU, SmartMedia status, LAN status and the status of card slots 1~9.   These are stenciled on the face of the MCP card.   The LED indications are as follows:

LED Indications for M Version System

MP	OFF	indicates the MCP card is powered down.
	ON	indicates the MCP card is booting Flicker Indicates normal operation.
SM	OFF	indicates the SmartMedia card is not installed or not recognized.
	ON	indicates the SmartMedia card is inserted and recognized Flicker indicates the SmartMedia card is being accessed.
LAN	OFF	indicates a LAN is not installed or power is off
	ON	indicates the LAN board is bootingFlicker indicates normal operation
S1~S9	OFF	indicates all circuits idle or no card installed
	ON	indicates one or more circuits busy Flicker indicates the card has a fault or is inserted in the wrong slots. (i.e. TEPRI,PRI,BRI card must be inserted in the slot 1, or 2 or 3, otherwise LED flickers.)

LED Indications for L Version System

MP	OFF	indicates the MCP card is powered down
	ON	indicates the MCP card is booting Flicker Indicates normal operation.
SM	OFF	indicates the SmartMedia card is not installed or not recognized
	ON	indicates the SmartMedia card is inserted and recognized Flicker indicates the SmartMedia card is being accessed.
LAN	OFF	indicates a LAN is not installed or power is off
	ON	indicates the LAN board is booting Flicker indicates normal operation.
S1	Not used.	
S2	SCP HDLC RX (Receive) Status	
	OFF	indicates that there is no link from the SCP card
	ON	indicates that the link from the SCP card is being set up Flicker indicates a message has been received.
S3	SCP HDLC TX (Transmit) Status	
	OFF	indicates that there is no link from the SCP card
	ON	indicates that the link from the SCP card is being set up Flicker indicates a message has been transmitted.
S4	LCP(C#2) HDLC RX (Receive) Status	
	OFF	indicates that there is no link from the LCP card
	ON	indicates that the link from the LCP card is being set up Flicker indicates a message has been received.
S5	LCP (C#2) HDLC TX (Transmit) Status	
	OFF	indicates that there is no link from the LCP card
	ON	indicates that the link from the LCP card is being set up Flicker indicates a message has been transmitted.
S6	LCP(C#3) HDLC RX (Receive) Status	
	OFF	indicates that there is no link from the LCP card
	ON	indicates that the link from the LCP card is being set up Flicker indicates a message has been received.

	LCP(C#3) HDLC TX (Transmit) Status		
S7	OFF	indicates that there is no link from the LCP card	
	ON	indicates that the link from the LCP card is being set up Flicker indicates a message has been transmitted.	
S8	Not used.		
S9	Not used.		

There are several daughter boards that can mount on the MCP **(see Figure 3-1)**. The daughter boards have offset pin connectors which prohibits improper installation of the Daughter board(s). Depending on the installation requirements the daughter boards provide the following:

- MISC : 2 External music/audio inputs, 1 external page audio output, 1 Loud bell relay contact closures (2 page relay, 1 common bell) (iDCS-M only)

- SCM : 18 Conference channels, 12 DTMF receivers (iDCS-M only)

- MFM : 12 DTMF receivers(iDCS-M only)

- RCM : 14 CID receivers and 8 R2 Receivers(iDCS-M only)

- IPM : Motorola MC 68302 25Mhz processor for message handling, 1.5 Mbyte SRAM, 4 Megabytes DRAM, 3 synchronous communication ports for inter processor communications. This board is required for multiple cabinet systems.

- LAN : 10BASE-T LAN Interface, 0.5 Megabytes of SRAM, 2 Serial I/O circuits.

- ESM : Increases the system to 1024 channel time switch. This board is required for multiple cabinet systems.

MAIN CONTROL PROCESSOR (MCP) DAUGHTER BOARD CAPABILITIES	
Position	Types of Daughter Boards allowed per position
LOC1	MFM, SCM, RCM and ESM*
LOC2	MFM, SCM, RCM, LAN and IPM**
LOC3	MFM, SCM, RCM, LAN and MISC

*   The ESM must be installed in this position in an L system

** The IPM must be installed in this position in an L system

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

DIP SWITCH USE on the iDCS 500 MCP

ON (left)		OFF (right)
4 Digit Trunk Numbers	SW8	3 Digit Trunk Numbers
4 Digit Station Groups	SW7	3 Digit Station Groups
4 Digit Station Numbers	SW6	3 Digit Station Numbers
APD Enable	SW5	APD Disable
Country Select	SW4	Country Select
Country Select	SW3	Country Select
Country Select	SW2	Country Select
Country Select	SW 1	Country Select

- Switches 1 through 4 select the country the system is installed in.

4	3	2	1	Country
OFF	OFF	OFF	OFF	Korea
OFF	OFF	OFF	ON	USA
OFF	OFF	ON	OFF	UK
OFF	OFF	ON	ON	Italy
OFF	ON	OFF	OFF	Australia
OFF	ON	OFF	ON	New Zealand
OFF	ON	ON	OFF	Holland
OFF	ON	ON	ON	Denmark

- Switch 5 select whether APD enable or not.
  APD(Auto Program Download) :
  When it is set to "ON" and the version of SMARTMEDIA is not match to current system version,
  system S/W will be replaced to the S/W of SMARTMEDIA.
- These DIP switches will not take effect unless the switches are set in the wanted position and the
  system memory is cleared manually by using the Memory Backup switch.

Install the SmartMedia card.   Install daughter board(s).   Set the MCP DIP switches on the card to the
desired positions.

Insert MCP card in the CAB slot labeled MCP/LCP **(see Figure 3-2)**.   Push firmly at the top and bottom
of the card to ensure that it is fully inserted into the back plane connector.   To prevent accidental
damage to the MCP card, the MCP/LCP connector on the back plane is positioned to mate only with
the MCP or LCP card.   Other interface cards will not mate with this connector and the MCP card will
not mate with any other connector.

NOTE: Do not insert this card with system power ON.
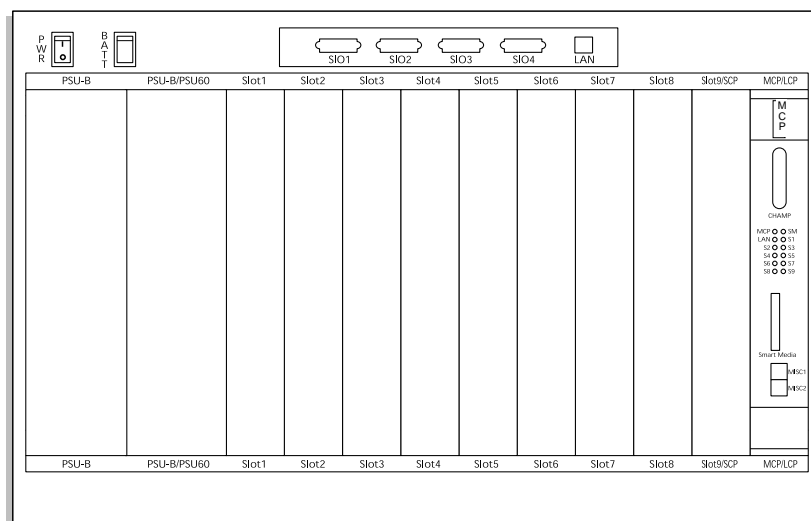
Figure 3-2   MCP Location

SCP CARD

The iDCS 500 Switch Control Processor (SCP) is used when the system is expanded to more than one cabinet.   In a multiple cabinet system the SCP becomes the processor for the first iDCS 500 cabinet and communicates via a high speed data link to the MCP.   The SCP installs in the ninth (9) slot in the first cabinet.   The SCP can have three daughter boards installed as indicated by the table below.

SWITCH CONTROL PROCESSOR (SCP) DAUGHTER BOARD CAPABILITIES	
Position	Types of Daughter Boards allowed per position
LOC1	MFM, SCM, RCM
LOC2	MFM, RCM and MISC
LOC3	MFM, RCM

* The SCM must be installed in this position of the SCP in the L system.

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

• Do not insert this card with system power ON.

• When it is set to "ON" and the version of SMARTMEDIA is not match to current system version, system S/W will be replaced to the S/W of SMARTMEDIA.
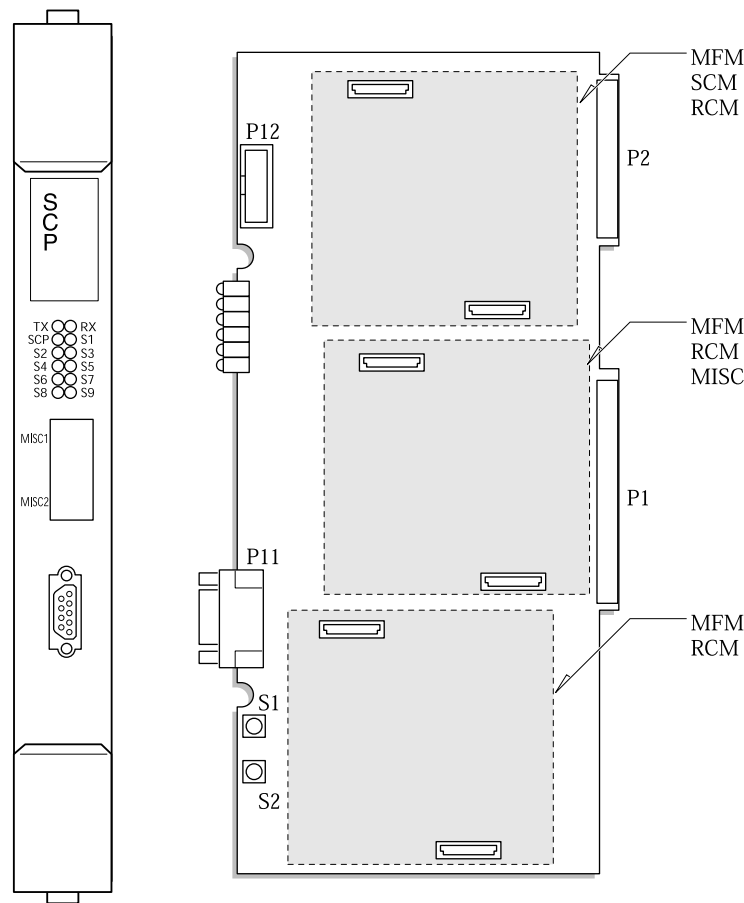
Figure 3-3   SCP Card

There are 12 LED indicators on the front of the SCP card.   The uses are as follows:

TX	SCP HDLC TX (Transmit) Status	
	OFF	indicates that there is no link from the SCP card
	ON	indicates that the link from the SCP card is being set up Flicker indicates a message has been transmitted.
RX	SCP HDLC RX (Receive) Status	
	OFF	indicates that there is no link from the SCP card
	ON	indicates that the link from the SCP card is being set up Flicker indicates a message has been received.
SCP	SCP Processor Status	
	OFF	indicates that Power is OFF
	ON	indicates that the SCP is booting Flicker indicates normal operation.
S1~S8	Card Status	
	OFF	indicates that the card is idle or not installed
	ON	indicates one or more circuits busy Flicker indicates the card has a fault or is inserted in the wrong slots. (i.e. TEPRI,PRI,BRI card must be inserted in the slot 1, or 2 or 3, otherwise LED flickers.)
S9	Not Used.	

LCP CARD

The iDCS 500 Local Control Processor (LCP) is used when the system is expanded to more than one cabinet.   The LCP is the processor for the second and or third iDCS 500 cabinet(s) and communicates via a high-speed data link to the MCP.   The LCP installs in the MCP/LCP slot in the second or third cabinets of a multiple cabinet system.   The SCP can have three daughter boards installed as indicated by the table below.

SWITCH CONTROL PROCESSOR (LCP) DAUGHTER BOARD CAPABILITIES	
Position	Types of Daughter Boards allowed per position
LOC1	MFM, RCM
LOC2	MFM, RCM and MISC
LOC3	MFM, RCM

NOTE: Only one of any type of daughter board may be installed on any processor card.
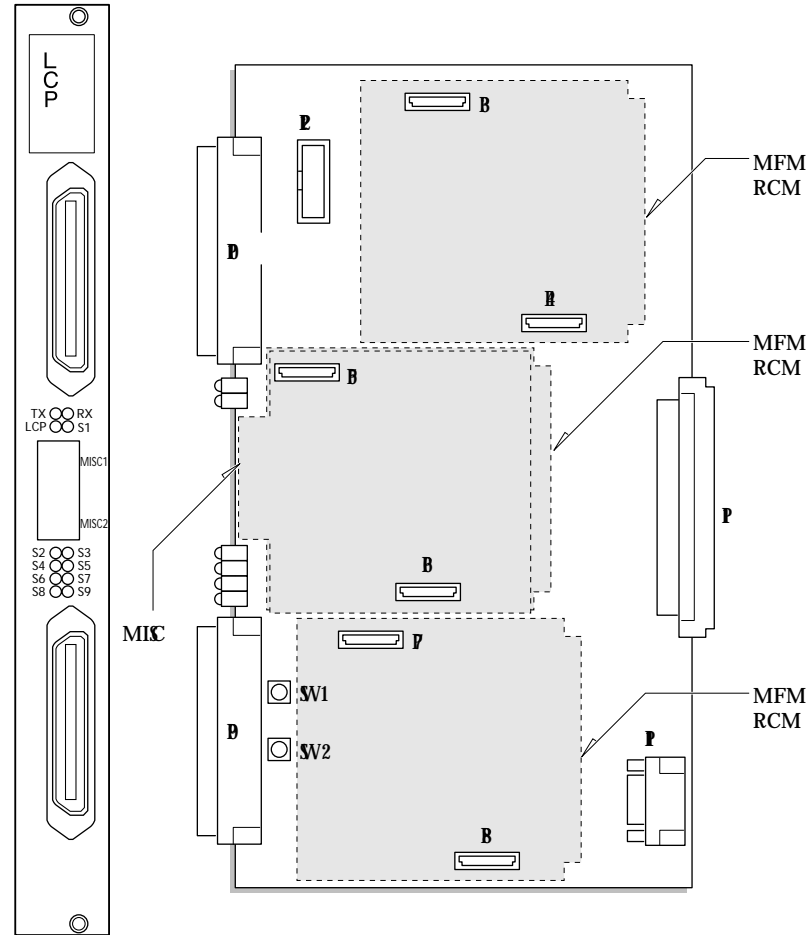
Figure 3-4 LCP Card

Push firmly at the top and bottom of the card to ensure that it is fully inserted into the back plane connector.   Connect the iDCS 500 Inter-Processor Connection cable (CIC) to the front of the LCP. Connect the opposite end of the CIC to the connector on the front of the MCP.   Connect the second CIC in a similar manner between LCP cards.   The CIC is supplied with the LCP.

NOTE: Do not insert this card with system power ON.

To prevent accidental damage to the LCP card, the MCP/LCP connector on the back plane is positioned to mate only with the MCP or LCP card.   Other interface cards will not mate with this connector and the MCP or LCP card will not mate with any other connector.

There are twelve (12) LED indicators on the front of the LCP card.   The uses are as follows:

TX	LCP HDLC TX (Transmit) Status	
	OFF	indicates that there is no link from the LCP card
	ON	indicates that the link from the LCP card is being set up Flicker indicates a message has been transmitted.
RX	LCP HDLC RX (Receive) Status	
	OFF	indicates that there is no link from the LCP card
	ON	indicates that the link from the LCP card is being set up Flicker indicates a message has been received.
LCP	LCP Processor Status	
	OFF	indicates that power is OFF
	ON	indicates that the LCP is booting Flicker indicates normal operation.
S1~S9	Card Status	
	OFF	indicates that the card is idle or not installed
	ON	indicates one or more circuits busy Flicker indicates the card has a fault or is inserted in the wrong slots. (i.e. TEPRI,PRI,BRI card must be inserted in the slot 1, or 2 or 3, otherwise LED flickers.)

ESM BOARD

This board has no selectable options and installs in position LOC1 of the MCP card when the system has more than one cabinet installed **(see Figure 3-2)**.   The ESM board is required to expand the system from 512 to 1024 time slots.   To install the ESM board remove the two (2) screws holding the MCP protective casing together **(see Figure 3-6)** and separate the two halves of the case.   Place the ESM board face down over the three connectors, taking care to properly line them up and press gently on the back of the board to seat it.   The MCP case can now be reassembled if all required daughter boards have been installed.
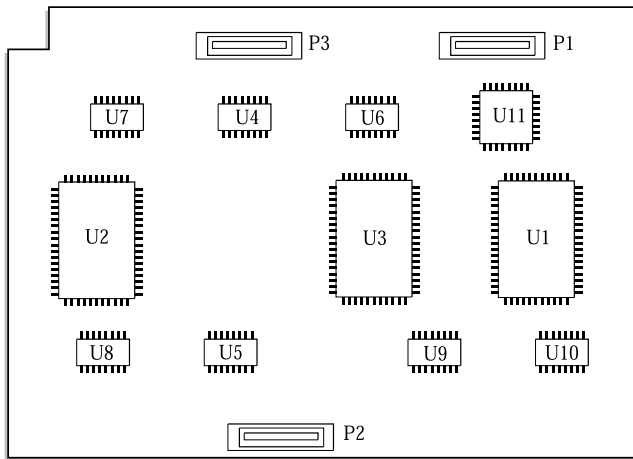
Figure 3-5   ESM Board
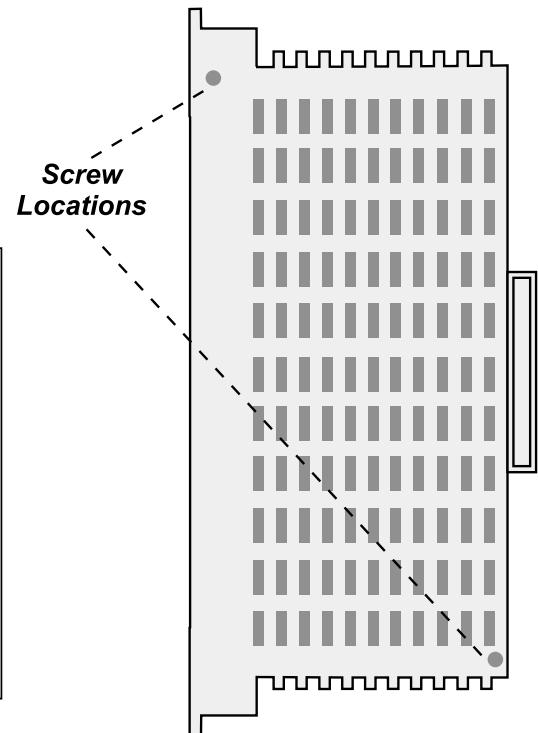
Figure 3-6   **MCP** Card Screw Location

IPM BOARD

This board has a switch S1 for memory back up and installs in position LOC2 **(see Figure 3-1)** of the MCP card when the system has more than one cabinet installed or the system is going to require the L version software in a single cabinet.   The IPM board is required to expand the system memory and to provide the message handling processor so the MCP can communicate with the SCP and LCP(s).   To install the IPM board remove the two (2) screws holding the MCP protective casing together **(see Figure 3-6)** and separate the two halves of the case.   Place the IPM board face down over the three connectors, taking care to properly line them up and press gently on the back of the board to seat it.   The MCP case can now be reassembled if all required daughter boards have been installed.

NOTE: Do not forget to turn on the memory backup switch on the IPM board before installing it on the MCP **(See Figures 3-1 and 3-7)**
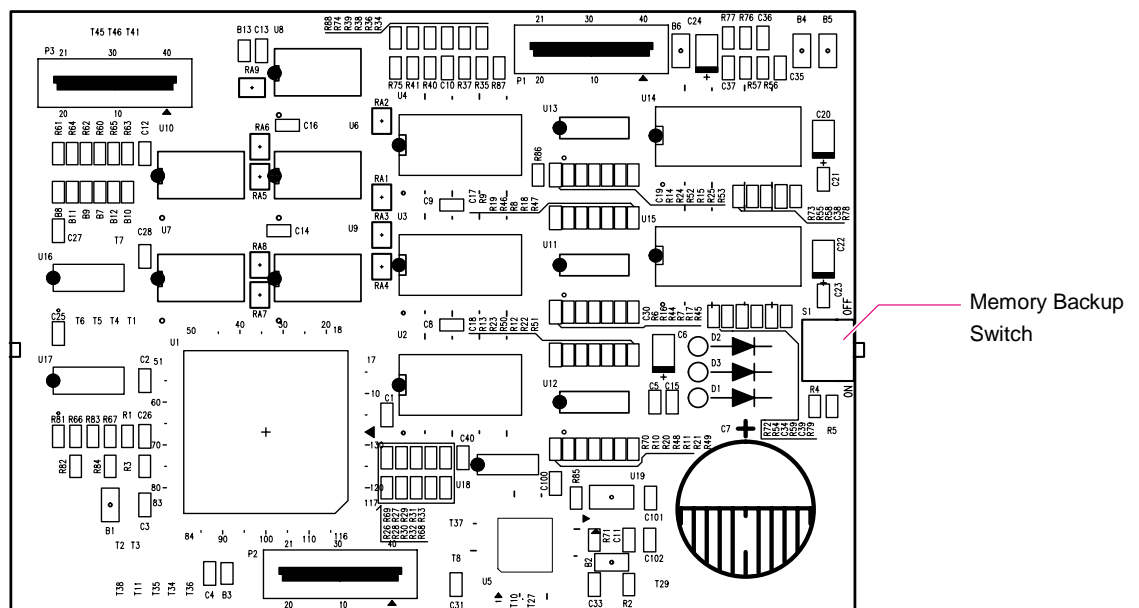
Figure 3-7   IPM Board

LAN BOARD

This board has a switch S1 for memory back up and installs in position LOC3 **(see Figure 3-1)** of the MCP card when the system has more than one cabinet installed or in position LOC2 if the system is going to require a MISC board in a single cabinet system with M version software.   The LAN board is required to expand the system memory, to provide SIO ports 3 and 4, and a 10BASE-T LAN interface processor.   To install the LAN board remove the two (2) screws holding the MCP protective casing together **(see Figure 3-6)** and separate the two halves of the case.   Place the LAN board face down over the three connectors, taking care to properly line them up and press gently on the back of the board to seat it.   The MCP case can now be reassembled if all required daughter boards have been installed.

NOTE: Do not forget to turn on the memory backup switch on the LAN board before installing it on the MCP **(see Figures 3-1 and 3-8)**.
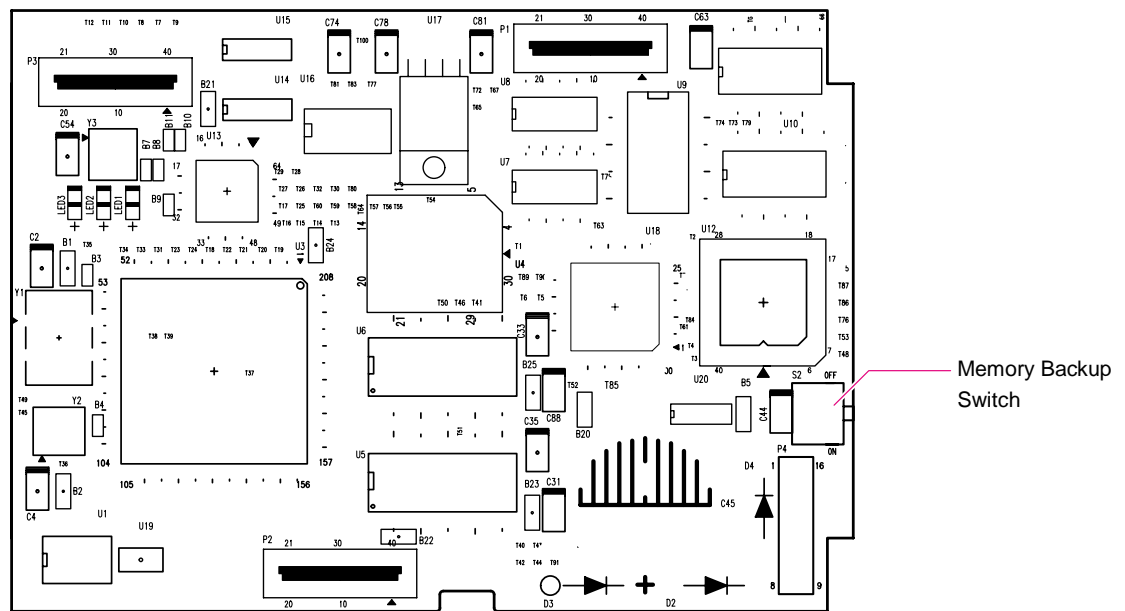
Figure 3-8   LAN Board

MISC BOARD

This board has no selectable options and installs in position LOC3 of the MCP card when the system has one cabinet installed **(see Figure 3-1)**.   If the system has more than one cabinet the MISC board must be installed in position LOC2 of the SCP card **(see Figure 3-3)** or position LOC2 of the LCP cards. Up to 3 MISC boards can be installed in a system (one on the MCP or SCP and one on each LCP). The MISC board is required to provide external music inputs, external page outputs and programmable relay contacts.   To install the MISC board remove the two (2) screws holding the MCP or LCP protective casing together **(see Figure 3-6)** or remove the 4 screws holding the SCP case together **(see Figure 3-10)** and separate the two halves of the case.   Place the MISC board face down over the two connectors, taking care to properly line them up and press gently on the back of the board to seat it. The MCP/LCP/SCP case can now be reassembled if all required daughter boards have been installed.
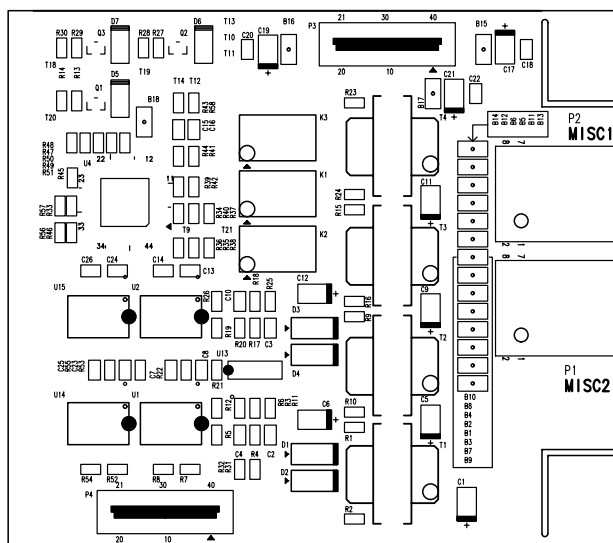
Figure 3-9   MISC Board
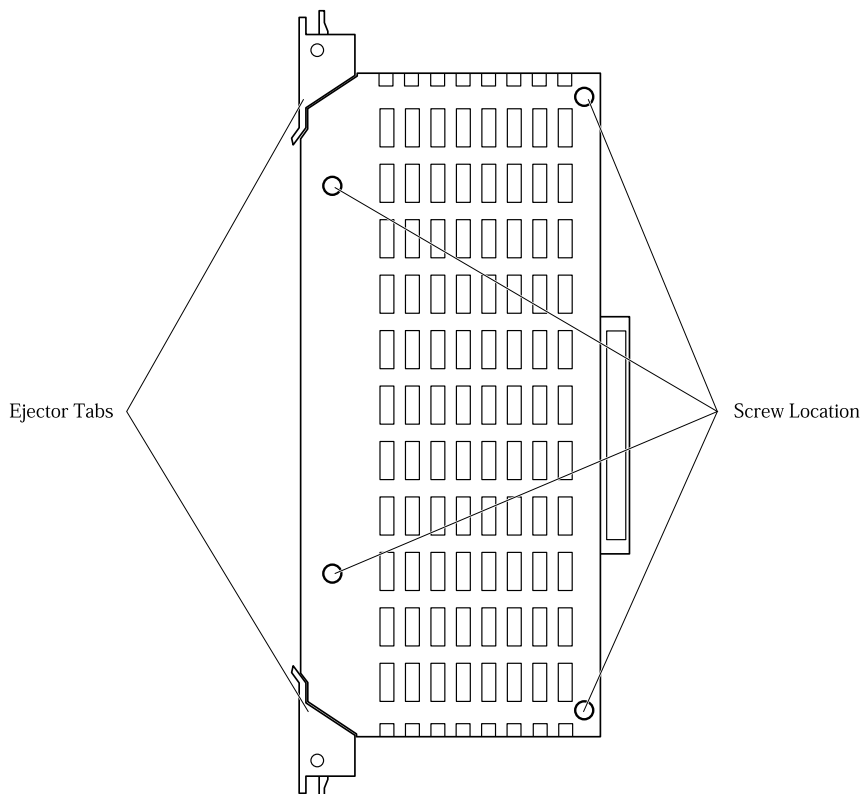
Figure 3-10   Processor Card Screw Location

SCM BOARD

This board has selectable options and installs in any available position of the MCP card when the system has one cabinet installed **(see Figure 3-1)**. If the system has more than one cabinet the SCP board may be installed in any available position of the SCP card **(see Figure 3-3)**. Only one SCM board can be installed in a system (on the MCP or SCP). The SCM board is used to increase the number of available conference circuits by 5 party 18 groups and to add 12 DSP circuits for DTMF and tone detection. To install the SCM board remove the two (2) screws holding the MCP protective casing together **(see Figure 3-6)** or remove the 4 screws holding the SCP case together **(see Figure 3-10)** and separate the two halves of the case. Place the SCM board face down over the two connectors, taking care to properly line them up and press gently on the back of the board to seat it. The MCP/SCP case can now be reassembled if all required daughter boards have been installed.

Figure 3-11   SCM Board

NOTE: Only one SCM board can be installed per system. SCM card cannot be installed with a MFM card on the same processor card.

MFM BOARD

This board has no selectable options and installs in any available position of the MCP card when the system has one cabinet installed **(see Figure 3-1)**. If the system has more than one cabinet the MFM board must be installed in position LOC3 of the MCP card, any available position of the SCP card **(see Figure 3–3)** or any available position of the LCP cards. Up to 3 MFM board can be installed in a system (one on the MCP or SCP and one on each LCP). The MFM board is used to provide an additional 12 DSP circuits for DTMF and tone detection. To install the MFM board remove the two (2) screws holding the MCP or LCP protective casing together **(see Figure 3-6)** or remove the 4 screws holding the SCP case together **(see Figure 3-10)** and separate the two halves of the case. Place the MFM board face down over the two connectors, taking care to properly line them up and press gently on the back of the board to seat it. The MCP/LCP/SCP case can now be reassembled if all required daughter boards have been installed.
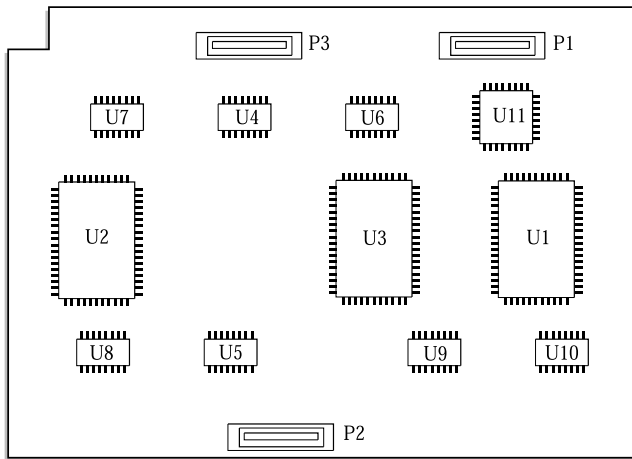

Figure 3-12   MFM Board

NOTE: Only one MFM board can be installed on each processor card. A MFM card cannot be installed onto a processor card with an SCM card installed.

RCM BOARD

This board has a selectable option for CID or R2MFC. If the system has more than one cabinet the RCM board must be installed in position LOC3 of the MCP card, any available position of the SCP card **(see Figure 3-3)** or any available position of the LCP cards. Up to 3 RCM boards can be installed in a system (one on the MCP or SCP and one on each LCP). The RCM board is used to provide 14 Caller ID DSP circuits Caller ID detection on loop start trunks (TRK B and 8TRK). To install the RCM board remove the two (2) screws holding the MCP or LCP protective casing together **(see Figure 3-6)** or remove the 4 screws holding the SCP case together **(see Figure 3-10)** and separate the two halves of the case. Place the RCM board face down over the two connectors, taking care to properly line them up and press gently on the back of the board to seat it. The MCP/LCP/SCP case can now be reassembled if all required daughter boards have been installed.

Figure 3-13   RCM Board

MODEM BOARD

This board has no selectable options and installs on the IOM board **(see Figure 3-15)**. The MODEM board provides a 56Kbps/V90 modem for communicating with the system remotely. Place the modem board face down over the two connectors, taking care to properly line them up, and lining up the holes in the MODEM board and IOM board, and press gently on the back of the board to seat it.

Figure 3-14   Modem Board

IOM BOARD

This board has no selectable options and installs on the system main cabinet **(see Figure 3-16).**   Line the IOM board up with the card slot and slide it in.   Press gently on the center of the IOM board front panel to seat it and secure the board with the two screws.

Figure 3-15   IOM Board

Figure 3-16   Cabinet/Slot Numbers

TRK B CARD

This card has no selectable options.   Insert as many TRK B cards as are needed into any universal slots **(see Figure 3-2)**.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.
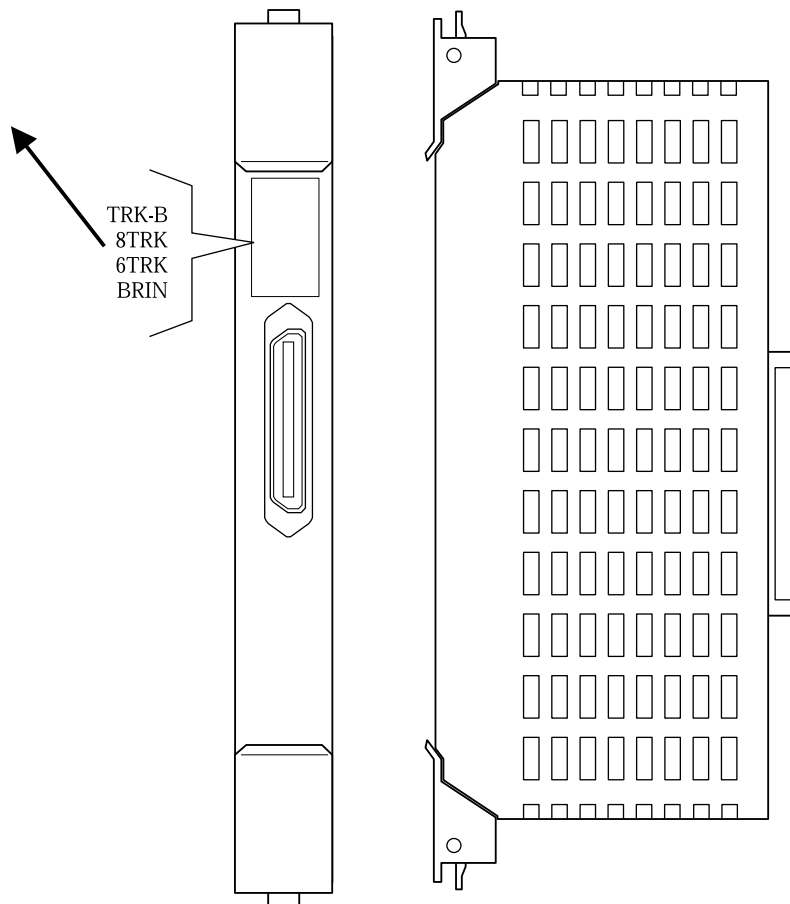
TRK-B
8TRK
6TRK
BRIN

Figure 3-17A   Interface Cards

NOTE: The hardware appearance of Line Card (i.e.: E&M,DLI,16DLI,SLI,8SLI,16SLI,8MWSLI, 16MWSLI) is identical with the above TRK B card.

6TRK CARD

This card has no selectable options.   Insert as many 6TRK cards as are needed into any universal slots. Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

8TRK CARD

This card has no selectable options.   Insert as many 8TRK cards as are needed into any universal slot. Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

PRI CARD

This PRI card must be inserted in slots 1,2 or 3 of any cabinets.   The PRI supports ISDN PRI service. Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

NOTE: Do not insert this card with system power ON.
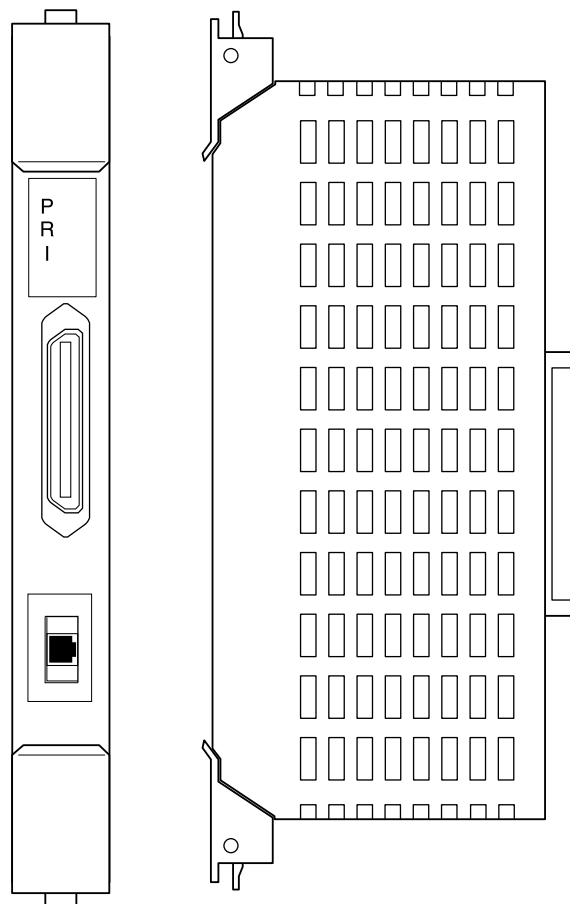
Figure 3-17B   PRI Card

8BSI CARD

The 8BSI(Base Station Interface) card must be inserted in slots 1,2 or 3 of same cabinet. If multiple 8BSI cards are installed in an iDCS 500 L system then the 8BSI cards must be installed in the same cabinet. Push firmly in the middle of the card to ensure that it is fully inserted into the back plane connector. The Samsung iDCS 500 system receives it clock information from ISDN services connected so a PRI or BRI card, where installed, must be installed in a lower slot number (e.g. C1-S1) than the 8BSI card. However if ISDN circuits are not installed, the 8BSI card would normally be installed in slot 1 of the iDCS 500 cabinet. The PRI supports ISDN PRI service.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.   ISDN cards like PRI and BRI use the external clock from the public network.   So, when a SAMSUNG DECT system use PRI or BRI, the system must align with the external clock as a slave.   Also installed 8BSI card uses the same clock as ISDN cards.   So, the SAMSUNG DECT system determined the clock priority according to the card type and the position of slot.   At first, according to the second clock priority and the 8BSI card has the lowest priority.   In the next priority.

NOTE: • Do not insert this card with system power ON.
         • A maximum of three 8BSI cards can be installed in slots 1,2 or 3 of same cabinet.

4E & M CARD

This card has the following options.

	Normal		+34dB UP		+6.0dB UP	
	Tx	Rx	Tx	Rx	Tx	Rx
PORT1	*ALL OFF	*ALL OFF	J10 ON	J30 ON	J10, J20 ON	J30, J40 ON
PORT2	*ALL OFF	*ALL OFF	J11 ON	J31 ON	J11, J21 ON	J31, J41 ON
PORT3	*ALL OFF	*ALL OFF	J12 ON	J32 ON	J12, J22 ON	J32, J42 ON
PORT4	*ALL OFF	*ALL OFF	J13 ON	J33 ON	J13, J31 ON	J33, J43 ON

Insert as many E & M cards as are needed into any universal slots.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

DLI CARD

There are no options to select on this card.   Insert up to and including nine DLI cards per cabinet as needed into any universal slots **(see note below)**.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

NOTE: If a cabinet is equipped with a single power supply unit (PSU-B), a maximum of 56 station devices may be connected to that cabinet.   However, if the cabinet is equipped with two power supply units, a maximum of 120 station devices may be connected to that cabinet.   **See the configuration section of the General Description Guide for more details**.

16DLI CARD

There are no options to select on this card.   Insert up to and including seven 16 DLI cards per cabinet as needed into any universal slots **(see note below).**   **See Figure 3-2.**   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

NOTE: 1. If a cabinet is equipped with a single power supply unit (PSU-B), a maximum of 56 station devices may be connected to that cabinet.   However, if the cabinet is equipped with two power supply units, a maximum of 120 station devices may be connected to that cabinet.   **See the configuration section of the General Description Guide for more details**.

2. Keyset daughterboards will not work if connected to this card.

SLI CARD

There are no options to select on this card.   Insert as many SLI cards as are needed into universal slots 1 through 7 **(see Figure 3-2).**   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.
This card will automatically detect DTMF or dial pulse signals from the single line telephone set.
There are no software or hardware settings required.

NOTE: 1. If a cabinet is equipped with a single power supply unit (PSU-B), a maximum of 56 station devices may be connected to that cabinet.   However, if the cabinet is equipped with two power supply units, a maximum of 120 station devices may be connected to that cabinet.   **See the configuration section of the General Description Guide for more details**.

2. Do not connect devices with a total REN greater than 2.5 to any port on this card. (Except for Australia. Australia use an external ringer.)

3. Do not connect devices with a total REN greater than 2.5 to this card. (Except for Australia. Australia use an external ringer.)

4. Ringer Frequency:
External Ringer, 20Hz , 80Vrms , SINUSOIDAL WAVE (For Australia, and Italy)
Internal Ringer, 25Hz, 80V , RECTANGULAR WAVE (For the other countries in Europe)

5. SLI port feed voltage is nominally 50VDC.

8SLI CARD

There are no options to select on this card.   Insert as many 8SLI cards as are needed into universal slots 1 through 7 **(see Figure 3-2)**.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

This card automatically detects DTMF or dial pulse signals from the SLT.   Software and hardware settings are not required.   When the 8SLI cards are highly utilized with congested traffic, the ratio of DTMF receiver will be decreased. Therefore, the MFM boards or daughter board should be added to a processor card to relieve the bottleneck.

NOTE: 1. If a cabinet is equipped with a single power supply unit (PSU-B), a maximum of 56 station devices may be connected to that cabinet.   However, if the cabinet is equipped with two power supply units, a maximum of 120 station devices may be connected to that cabinet.   **See the configuration section of the General Description Guide for more details**.

2. Do not connect devices with a total REN greater than 5.0 to this card. (Except for Australia. Australia use an external ringer.)

3. Ringer Frequency:
   External Ringer, 20Hz , 80Vrms , SINUSOIDAL WAVE (For Australia, and Italy)
   Internal Ringer, 25Hz, 80V , RECTANGULAR WAVE (For the other countries in Europe)

4. This card does not contain OPX over voltage protection circuitry.

5. SLI port feed voltage is nominally 50VDC.

16SLI CARD

There is an internal or external ring option on this card.   Insert as many 16SLI cards as are needed into universal slots 1 through 9 **(see Figure 3-2)**.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.   This card automatically detects DTMF or dial pulse signals from the SLT.   Software and hardware settings are not required.   The 16SLI has no DTMF receivers; it will share the system resources. When the 16SLI cards are highly utilized with congested traffic, the ratio of DTMF receiver will be decreased. Therefore, the MFM boards or daughter board should be added to a processor card to relieve the bottleneck.

NOTE: 1. If a cabinet is equipped with a single power supply unit (PSU-B), a maximum of 56 station devices may be connected to that cabinet.   However, if the cabinet is equipped with two power supply units, a maximum of 120 station devices may be connected to that cabinet.   **See the configuration section of the General Description Guide for more details**.

2. Do not connect devices with a total REN greater than 5.0 to this card. (Except for Australia. Australia use an external ringer.)

3. Ringer Frequency:
   External Ringer, 20Hz , 80Vrms , SINUSOIDAL WAVE (For Australia, and Italy)
   Internal Ringer, 25Hz, 80V , RECTANGULAR WAVE (For the other countries in Europe)

4. This card does not contain OPX over voltage protection circuitry.

5. SLI port feed voltage is nominally 25VDC.

BRI (SOTO) CARD

There are options for termination as follows.
- ON : with termination.
- OFF: without termination.
Insert the card into any universal slot. Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

*NOTE:* Do not insert this card with system Power ON.

8MWSLI CARD

There is an internal or external ring option on this card.   Insert as many 8MWSLI cards as are needed into universal slots 1 through 7.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

This card automatically detects DTMF or dial pulse signals from the SLT.   Software and hardware settings are not required.   The 8MWSLI supports industry standard message waiting lamps on single line phones.   The message waiting power supplied to the single line station in the iDCS is 90 to 100 VDC.   The 8MWSLI has no DTMF receivers; it will share the system wide DSP resources for DTMF decoding. When the 8MWSLI cards are highly utilized with congested traffic, the ratio of DTMF receiver will be decreased. Therefore, the MFM boards or daughter board should be added to a processor card to relieve the bottleneck.

NOTE: 1. If a cabinet is equipped with a single power supply unit (PSU-B), a maximum of 56 station devices may be connected to that cabinet.   However, if the cabinet is equipped with two power supply units, a maximum of 120 station devices may be connected to that cabinet.   **See the configuration section of the General Description Guide for more details**.

2. Do not connect devices with a total REN greater than 5.0 to this card. (Except for Australia. Australia use an external ringer.)

3. Ringer Frequency:
   External Ringer, 20Hz , 80Vrms , SINUSOIDAL WAVE (For Australia, and Italy)
   Internal Ringer, 25Hz, 80V , RECTANGULAR WAVE (For the other countries in Europe)

4. This card does not contain OPX over voltage protection circuitry.

5. The message waiting circuitry only illuminates the message lamp when the station is idle. Therefore, an 8SLI card and the 8MWSLI card follow the same configuration rules when considering a single or double power supply.

6. SLI port feed voltage is nominally 50VDC.

16MWSLI CARD

There are options as same as 16SLI CARD.   Insert up to seven 16MWSLI cards as are needed into universal slots 1 through 7.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

This card automatically detects DTMF or dial pulse signals from the SLT.   Software and hardware settings are not required.   The 16MWSLI supports industry standard message waiting lamps on single line phones.   The message waiting power supplied to the single line station in the iDCS is 90 to 100 VDC.   The 16MWSLI has no DTMF receivers; it will share the system wide DSP resources for DTMF decoding. When the 16MWSLI cards are highly utilized with congested traffic, the ratio of DTMF receiver will be decreased. Therefore, the MFM boards or daughter board should be added to a processor card to relieve the bottleneck.

NOTE: 1. If a cabinet is equipped with a single power supply unit (PSU-B), a maximum of 56 station devices may be connected to that cabinet.   However, if the cabinet is equipped with two power supply units, a maximum of 120 station devices may be connected to that cabinet.   **See the configuration section of the General Description Guide for more details**.

2. Do not connect devices with a total REN greater than 5.0 to this card. (Except for Australia. Australia use an external ringer.)

3. Ringer Frequency:
   External Ringer, 20Hz , 80Vrms , SINUSOIDAL WAVE (For Australia, and Italy)
   Internal Ringer, 25Hz, 80V , RECTANGULAR WAVE (For the other countries in Europe)

4. This card does not contain OPX over voltage protection circuitry.

5. The message waiting circuitry only illuminates the message lamp when the station is idle. Therefore, a 16SLI card and the 16MWSLI card follow the same configuration rules when considering a single or double power supply.

6. SLI port feed voltage is nominally 25VDC.

TEPRI CARD

The TEPRI card installs in slots 1, 2 or 3 of any cabinet. The iDCS 500 TEPRI supports either E1 or ISDN PRI service. The first four LEDs on the front of the card provide the status of the service (Sync, AIS, Loss and Layer 2 Active states). The second four LED's on the front of the card display the type of service. The first TEPRI card installed in the iDCS 500 is the primary source of external clocking.   The second TEPRI installed is the secondary source of external clocking. Clock selection is first cabinet, left to right then second cabinet, left to right. The primary and secondary clock sources should be mounted in the bottom cabinet to ensure stable reception of clocking from the primary and secondary sources.

There are two RJ45 modular jacks on the face of the card. The top one is labelled T1, but is the socket to use for PRI. The PRI software supports ETSI ISDN only. The bottom RJ45 socket can be used for E1 connections. However the T1 (PRI) RJ45 can be also be used for E1 connections and this is recommended. E1 service selection is achieved via dip switch settings. Refer to the Chapter 5 for PRI/E1 connection details.

The settings for E1 or PRI service are selected by a bank of dip switches as defined below (see Figure 3–19). To access the dip switches you must remove the case by removing the 4 screws (see Figure 3–20) and splitting the case.

A maximum of 9 TEPRI cards can be provided per system (3 per cabinet). Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.

The TEPRI card has a recessed RESET button that will initialize the card manually if required.

The RS232 DB 9 connector on the face of the TEPRI card allows trace monitoring of the TEPRI functions. This is used for testing purposes and only to be used under the supervision of Samsung Technical Support.

NOTE: Do not insert this card with system power ON.

TEPRI CARD DIP SWITCH

Switch No.	OFF	ON
1	E1	T1
2	T1/E1	PRI
3	24B+D	24B
4	USER	NETWORK
5	.	AFT
6	Not Used	Not Used
7	Not Used	Not Used
8	Reserved	Default

CAUTION: You must set the switch 8 as 'ON'.

TEPRI LED DEFINITIONS

LED Name	Function	Status	
		Normal Status	Error Status
SYN	Synchronization Loss. Indicates wander or loss of framing.	OFF	ON
LOS	Loss of Signal. No PCM Clocking is being received.	OFF	ON
AIS	Alarm Indicating Signal. Indicating that all one's are being received.	OFF	ON
L2	Layer 2 is active. PRI messaging is being received.	ON	OFF
IPC	IPC link set up.	OFF / IPC link set up	
CLK	Card clock status.	OFF/CARD is secondary source ON card is primary source.	
MODE	LED's TP1 & TP2 show the span type	TP1	TP2
	E1 mode	OFF	OFF
	E1 PRI mode	OFF	ON
	T1 mode	ON	OFF
	T1 PRI mode	ON	ON
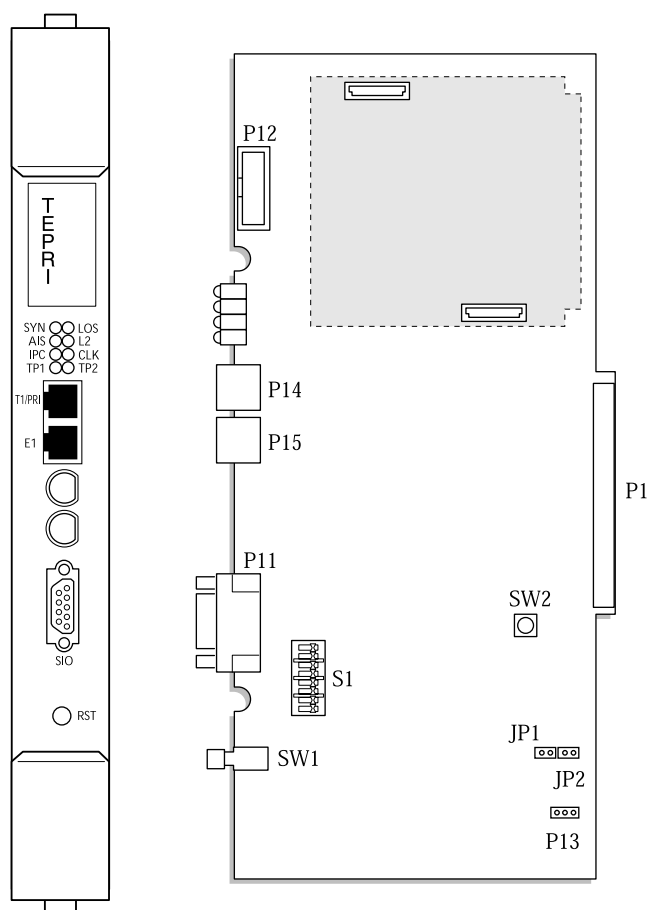
Figure 3-18   TEPRI Card
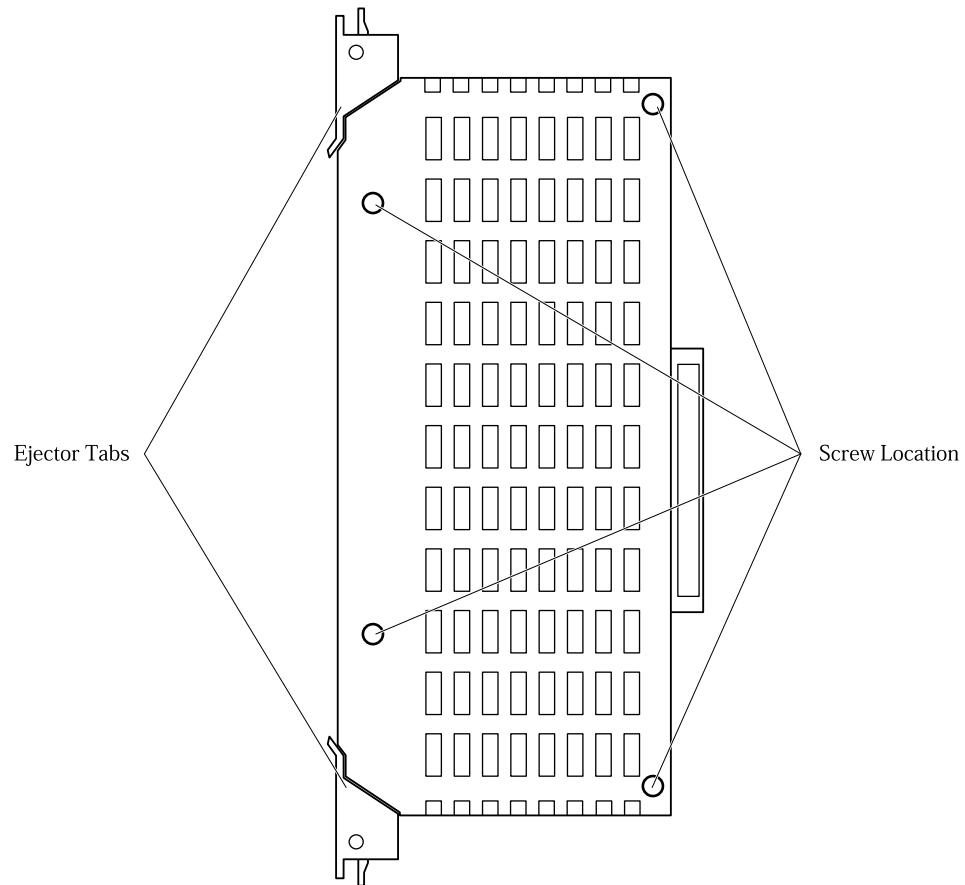
Figure 3-19   TEPRI Card Screw Location

AUTO ATTENDANT CARD

This card has no selectable options but is under software control.   Insert up to and including five AA cards into any universal card slots.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.   There is no connector on the front of this card.
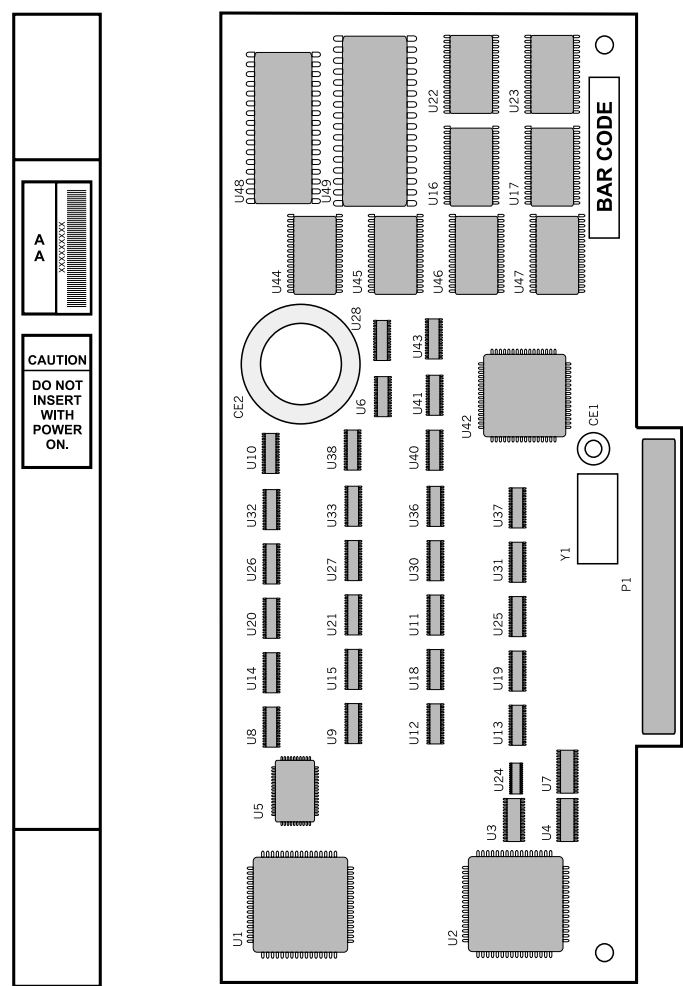
Figure 3-20   AAUCD Card

NOTE: Do not insert this card with system power ON.

SVMi-8

Note before installing this card it should be correctly configured with a hard disk drive and the appropriate number of voice processing modules.   One additional Voice Processing Module can be added.

The SVMi-8 card is installed in any universal slot of any cabinet.   Only one SVMi-8 can be installed in a iDCS 500 system and it counts as eight (8) stations of the power supply rating.   Check that the cabinet power switch is in the OFF position.   Next, position the SVMi-8 card in the grooves of the card guide and gently slide the card in until it makes contact with the connector.   Press gently but firmly on the top and bottom of the front edge of the card until the card sits in its connector.   Ensure that you have installed the correct power supply.
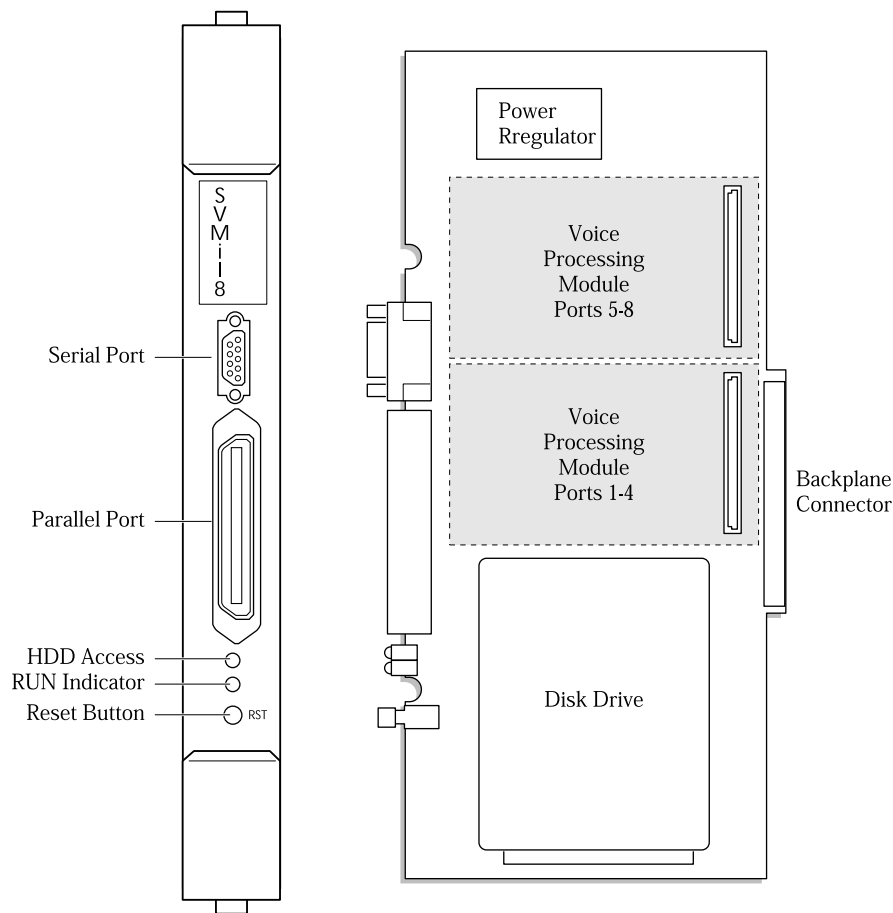
Figure 3-21   SVMi-8 Card

Now go to Chapter 11, SVMi-8 Set Up of this manual.

NOTE: Do not insert this card with system power ON.

IP TELEPHONY MODULE (ITM3)

The iDCS 500 system supports the VoIP feature using the ITM3 card. The ITM3 card is equipped with 8 VoIP ports that can be increased to 16 by the addition of the ITM3D daughter card. Two 40 pin connectors on the ITM3 card support the connection of the ITM3D daughter card. Refer to the diagram below.

The ITM3 card is installed in any universal card slot of any cabinet. Insert the ITM3 card into the card guide and slide the card until it makes contact with the back plane connector. Press firmly on the top and bottom of the card to ensure it is fully inserted into the back plane connector.

The ITM3 card takes approximately 3 minutes to initialise and during this time the relevant slot LED on the MCP/SCP/LCP card will flicker (100msec ON/OFF). At the end of the ITM3 card initialisation the slot LED will turn off.

The ITM3 card has a recessed RESET button that will initialize the ITM3 card manually if required.

The RS232 DB 9 connector on the face of the ITM3 card allows trace monitoring of the ITM3 functions. This is used for testing purposes and only to be used under the supervision of Samsung Technical Support.

The operation of the ITM3 card LEDs is described below.

There are no switches or jumpers on the ITM3 card, which require setting.

LED Name	Function
PWR	This LED is ON when +3.3 volts power is applied to ITM3 Card.
SW1	This LED is ON when S/W task for H323 stack is operates.
TX	This LED is ON when TX data is valid on only 100M Ethernet port. So it is OFF to be connected to 10M Ethernet port.
RX	This LED is ON when RX data is valid on both 10M and 100M Ethernet port.
RUN	This LED is connected the address Bus(8) pin of CPU. So it is ON when CPU is running. The faster CPU operates, the brighter LED is.
SW2	This LED indicates a processing state for voice packeting in Call.
SW3	This LED is ON when call service is ready.
SW4	This LED is flicker at a low rate to indicate O.S task in Software running.
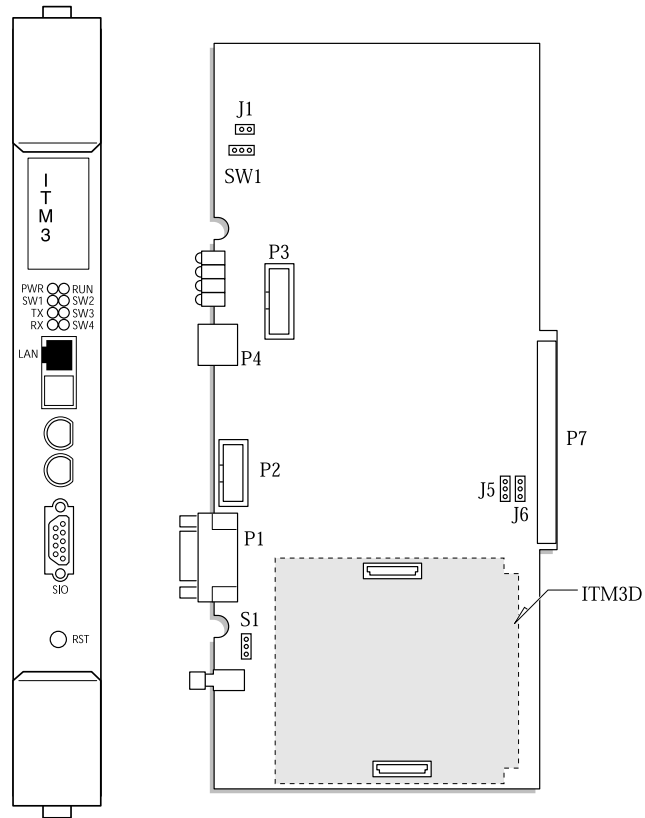
Figure 3-22 ITM3 Board

NOTE: Do not insert this card with system power ON.

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Chapter 4
Power Up Procedures

Chapter 4   Power Up Procedures

DETERMINING POWER SUPPLY REQUIREMENTS

The iDCS 500 system software controls the power (48 Volt) distribution to the various interface and option cards installed on based Station Equipment Power Units(SEPU) available. Ports on cards will be allocated power up to the capacity of the power available from the PSUs installed. Therefore in the case where only 1 PSU is installed, or the second PSU becomes faulty, only the first 56 station ports will be allocated power. Refer to the table below for interface and option card 48V power requirements.

iDCS 500 Power Supply 48 Volt Capacity

- PSU60B Slot1 : 56 ports or SEPUs

- PSU60B or PSU 60 Slot 2 : 64 ports or SEPUs

iDCS 500 Card Power Requirements

Card Type	Ports/SEPUs
16DLI, 16SLI, 16MWSLI, 8DLI,	16
8SLI, 8MWSLI, BRI S0, SVMi-8	8
8BSI	24
4SLI, E&M,	4
PRI, AA, TEPRI, 8 Trunk, 6 Trunk	0 (use 5Volts only)

To check the status of PSU installation use MMC 806, PSU,Card Pre-install Option.
P:1 means PSU-B is installed in the first slot.
P:2 means PSU-B is installed P:B means PSU-60 is installed and is in the second slot.
P:N means (i) no SEPUs have been allocated to this card, (ii) the card does not require 48V power or (iii) the PSU is faulty if installed.
[XX] means the number of ports on the card which have been supplied 48V power.

LCD Example

```
C: 1  S: 7        P: 2[08]
16DLI       ➜      16 DLI
```

Where:
C:1 = 16 DLI card is installed in Cabinet 1.
S:7 = 16 DLI card is installed in slot 7.
P:2 = 16DLI is running on the PSU in the second PSU slot.
[08] = only 8 ports have service available.

Example:
Single Cabinet with a single PSU 60B installed. The following interface cards are installed: TEPRI (slot 1), 8BSI card (slot 2), 16DLI card (slot 3), 16DLI card (slot 4), 16MWSLI card (slot 5), AA Card (slot 6)

The total SEPUs of installed cards: 0+24+16+16+16+0 = 72.

In this case the 48V power to support these cards would be allocated on the following basis: 24 SEPUs to 8BSI, 16 SEPUs to 16DLI, 16 SEPUs to 16 DLI and no power would be supplied to the 16MWSLI card.

The 16MWSLI card will be recognised if reviewed in MMC 806. However it would indicate P:N
A second PSU 60B or PSU 60 must be installed to power the 16 MWSLI ports.

Each cabinet on the iDCS 500 has two power supply slots the first of which must contain a PSU B and can supply up to 56 station devices or Station Equivalent Power Units (SEPU). The second PSU slot can contain either a PSUB or a PSU 60 and can supply up to 64 station devices or SEPUs. Several interface cards, other than station cards, consume 48V power and the consumption of these cards is rated in SEPUs. The table below indicates the SEPU rating of all the cards that consume 48V. The table also shows the loading priority of the cards, for example, if a system uses 56 SEPUs and adds a Cadence card, the system will turn off 8 SEPUs on lower priority cards to enable the Cadence to run.

Card Type	SEPU Rating	Priority Level	Notes
16 DLI	16	1	
8 DLI	16	1	Each B channel counts as a port
16 SLI	16	1	
16 MWSLI	16	1	
SVMi-8	8	1	
8 SLI	8	2	
8 MWSLI	8	2	
4 BRI	8	2	Each B channel counts as a port
SLI	4	4	
E&M	4	4	
DID	4	4	
GTRK	4	4	

To determine which PSU is supplying each card, or to determine if a card is turned on or off MMC 806 will display the status of each card as listed below:

• P:1   The card is running on PSU 1

• P2   The card is running on PSU 2

• P:N   The card is turned off

CONNECT POWER TO THE SYSTEM

During the initial installation, it is best to verify proper system operation before plugging in any amphenol-type cables to the MDF. If you have already plugged the cables in, unplug them.

Verify that the AC voltage at the dedicated electric outlet is in the range of 88~132 VAC or 220~240 VAC. Verify that the AC voltage selection switch on the PSU is set for the proper voltage 220 or 240 VAC **(see Figure 4–1).**

110/220V
selection
switch
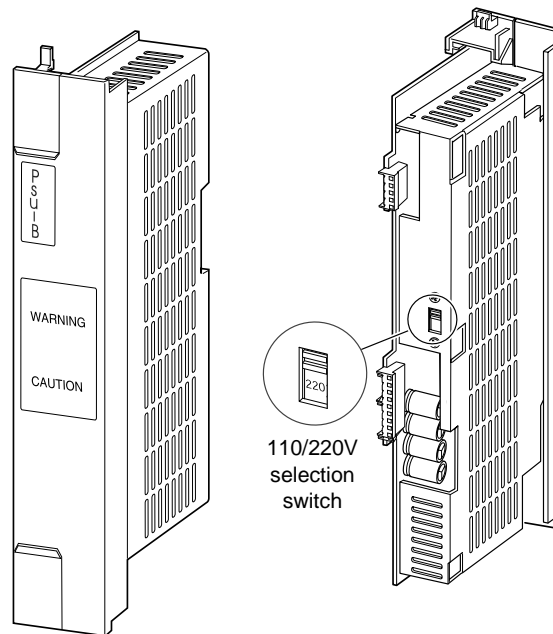
Figure 4-1   Setting Voltage on PSU-B

WARNING: The iDCS 500 PSU-B employs fuses in both the AC ACTIVE and NEUTRAL legs. Turn OFF the switch on the iDCS 500 cabinets and at the AC Outlet prior to any work on the system power supply.

Make sure all of the AC power switches are in the OFF position. Plug one end of the power cords into the power input connectors on the main cabinet and the expansion cabinets other into the dedicated polarized AC outlet or power strip. Confirm that all expansion cabinets are connected to the main cabinet with CIC cables. Verify that all power switches are in the OFF position.

Make sure all of the AC power switches in the iDCS 500 cabinets are in the OFF position. Plug one end of the AC power cord into the power input connector on the main cabinet and the daisy chain power cords between the main and expansion cabinet(s) Plug the main cabinet AC power cord into the dedicated correctly wired AC outlet. Confirm that all expansion cabinets are connected to the main cabinet with CIC cables.

PSU Fusing

Fuse	PSU-B	PSU 60	Comments
AC In – Active (F1)	AC 250V 5A (F1)	AC 250 5A	PSU60 has single AC In fuse
AC In – Neutral (F2)	AC 250V 5A (F2)		
Battery (F4)	AC 125V 3A (F4)	AC 250 2A	
-48 (F3)	AC 125V 3A (F3)	AC 250 2A	

Turn the AC power switch to the ON position on each of the expansion cabinets. Turn the AC power switch to the ON position on the main cabinet. The MP LED on the MCP pack will light steady and the SM LED will start flashing to confirm the presence of power and that the processor is booting. The MP LED will start to flash and the SM LED will go steady when the MCP has booted. At this time the Tx/Rx LED(HDLC) LEDs on the SCP and LCP cards will flash to indicate the presence of power and that the local processor is running. If the SM LED on the MCP does not light or flash then the system does not recognize the SmartMedia card. Power down the main cabinet, replace the SmartMedia card and repeat the power up process. If the power up problem is not corrected power down and remove the MCP card. Check the MCP to ensure it is configured correctly. Remember the MCP MUST have a ESM ,IPM and SCP installed to operate in a multiple cabinet system and that the SmartMedia card must contain L version software. If none of the LEDs on the MCP illuminate, unplug the system, disconnect the expansion cabinet power cords and CIC cables and repeat the test. If the LEDs on the MCP still do not illuminate, unplug the system, remove the power supply and check the AC fuse located on the bottom **(see Figure 4–1)**.

If the fuse is good but the LEDs do not illuminate, you must correct the problem before continuing. Turn off the power switch. Unplug all cards using the card ejectors. Turn the system on. Check the LEDs again. If the problem is corrected, you have a defective card. Test and remove the faulty card before continuing. If the LEDs still do not light, unplug the cabinet and change power supplies. This will probably solve the problem. If it does not, contact Samsung Technical Support.

If the LEDs on a LCP card do not light, unplug and replace the CIC cable. If this does not cure the problem, unplug and replace the LCP card. If the LED still does not light, unplug the system, remove the expansion cabinet power supply and check the AC fuse located on the bottom **(see Figure 4–1)**.

If the fuse is good but the LED does not illuminate, you must correct the problem before continuing. Turn off the power switch. Unplug all cards using the card ejectors. Turn the system on. Check the LEDs again. If the problem is corrected, you have a defective card. Test and remove the faulty card before continuing. If the LEDs still do not light, unplug the expansion cabinet and change power supplies. This will probably solve the problem. If it does not, contact Samsung Technical Support.

PROCESSOR CARD INDICATIONS

After verifying proper operation of the power supply, visually check the processor card indications. The MP LED on the MCP should flicker rapidly, indicating the main processor is functioning and the SM LED should be on steady indicating that the SmartMedia card is present and recognized. The HDLC LEDs on the SCP and LCP should be flickering and the processing LED on the LCPs should be steady.

CARD VERIFICATION

Before connecting all MDF cabling, plug in a test cable to the first DLI card. Connect a keyset and verify that it is working. Use maintenance program MMC 727 to verify the system and software versions and to confirm that all cards are recognized by the MCP. Remove the test cable and plug in all amphenol-type cables to the MDF. At this time, it is recommended that the system be defaulted using MMC 811. **See the Programming Guide for more details. Proceed with the rest of the installation.**

DEFAULT TRUNK AND STATION NUMBERING

Upon initial power up, the MCP reads each slot for the existence of a card and identifies the type of card. It stores this information as the default configuration. The trunk card in the lowest slot number is assigned trunk numbers beginning with 701. The next highest slot number with a trunk card is assigned trunk numbers following those of the first trunk card. This numbering sequence continues until the last trunk card in the highest slot number is assigned the last trunk number.

For example, if a 8TRK card is in the first slot, port C1/S1/P1 is assigned trunk number 701 (first cabinet, first slot, first trunk in the system). If the second slot has a Trunk B card installed, port C1/S2/P4 is assigned trunk number 712 (first cabinet second slot, fourth circuit, twelve trunk in the system).

Station numbers are assigned in the same manner. The lowest slot number containing any type of station card is assigned station numbers beginning with 201. The next highest slot with a station card is assigned numbers following those of the first station card. This numbering sequence continues until all of the stations are assigned. Default data assigns the 24 button keyset in the lowest port to the operator group and all trunks ring that station until the default is changed. It is recommended that the first station card be a DLI card so that the operator station will default to a keyset as extension 201. Using MMC 724, station and trunk numbers can be changed, rearranged and reassigned as needed.

NOTE: Newly added station or trunk cards come up without directory numbers.
The above examples describe a system using a three digit numbering scheme. If the DIP switches on the MCP are changed then the default numbers may be four digits. **See section 'MCP' of Chapter 3 for details on DIP switch settings**.

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Chapter 5
Connecting Central Office Circuits

Chapter 5   Connecting Central Office Circuits

SAFETY PRECAUTIONS

To limit the risk of personal injury, always follow these precautions before connecting Central Office Circuits:
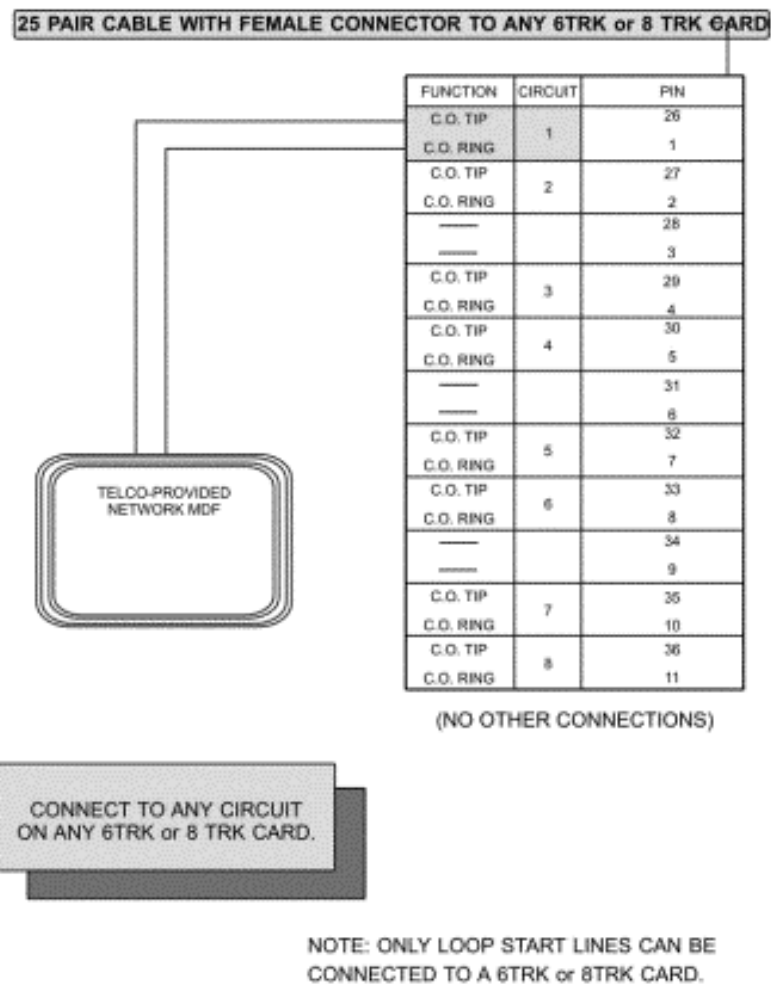
a. Never install telephone wiring during a lightning storm.

b. Never install telephone jacks in a wet location unless the jack is specifically designed for wet locations.

c. Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

d. Use caution when installing or modifying telephone lines.

TRUNK LINES – LOOP START

Using one pair twisted 0.50 mm jumper wire, cross-connect each loop start C.O. line to the Trunk B, 6TRK or 8TRK port of your choice **(see Figures 5-1 and 5-2)**.

25 PAIR CABLE WITH FEMALE CONNECTOR TO ANY TRK-B CARD

FUNCTION	CIRCUIT	PIN
C.O. TIP	1	26
C.O. RING		1
C.O. TIP	2	27
C.O. RING		2
——		28
——		3
C.O. TIP	3	29
C.O. RING		4
C.O. TIP	4	30
C.O. RING		5
——		31
——		6

TELCO-PROVIDED NETWORK MDF

(NO OTHER CONNECTIONS)

CONNECT TO ANY CIRCUIT ON ANY TRUNK B CARD.

NOTE: ONLY LOOP START LINES CAN BE CONNECTED TO A TRUNK B CARD.
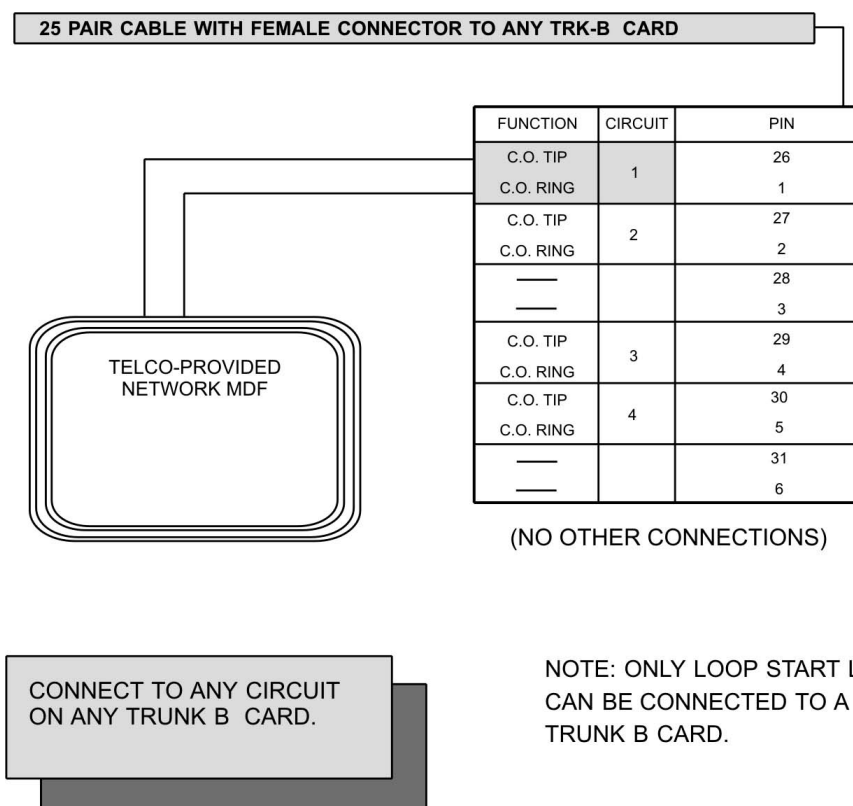
Figures 5–1   MDF Connections Loop Start Line to Trunk B Card

25 PAIR CABLE WITH FEMALE CONNECTOR TO ANY 6TRK or 8 TRK CARD

FUNCTION	CIRCUIT	PIN
C.O. TIP	1	26
C.O. RING		1
C.O. TIP	2	27
C.O. RING		2
———		28
———		3
C.O. TIP	3	29
C.O. RING		4
C.O. TIP	4	30
C.O. RING		5
———		31
———		6
C.O. TIP	5	32
C.O. RING		7
C.O. TIP	6	33
C.O. RING		8
———		34
———		9
C.O. TIP	7	35
C.O. RING		10
C.O. TIP	8	36
C.O. RING		11

TELCO-PROVIDED NETWORK MDF

(NO OTHER CONNECTIONS)

CONNECT TO ANY CIRCUIT ON ANY 6TRK or 8 TRK CARD.

NOTE: ONLY LOOP START LINES CAN BE CONNECTED TO A 6TRK or 8TRK CARD.

MDF CONNECTIONS LOOP START LINE TO 8TRK CARD

Figures 5–2   MDF Connections Loop Start Line to 6 or 8Trunk Card

E & M TIE LINES

Using two pair twisted Each E&M circuit requires 3 pairs (6W), using 0.50 mm jumper wire, cross-connect each E & M tie line to the E & M card port of your choice **(see Figure 5-3)**.

25 PAIR CABLE WITH FEMALE CONNECTOR TO ANY E & M CARD

FUNCTION	PAIR	PIN
TX1 TIP	1	26
TX1 RING		1
E1	2	27
M1		2
RX1 TIP	3	28
RX1 RING		3
TX2 TIP	4	29
TX2 RING		4
E2	5	30
M2		5
RX2 TIP	6	31
RX2 RING		6
TX3 TIP	7	32
TX3 RING		7
E3	8	33
M3		8
RX3 TIP	9	34
RX3 RING		9
TX4 TIP	10	35
TX4 RING		10
E4	11	36
M4		11
RX4 TIP	12	37
RX4 RING		12

TELCO-PROVIDED
NETWORK MDF

(NO OTHER CONNECTIONS)

CONNECT TO
4 Wire E & M CIRCUIT.
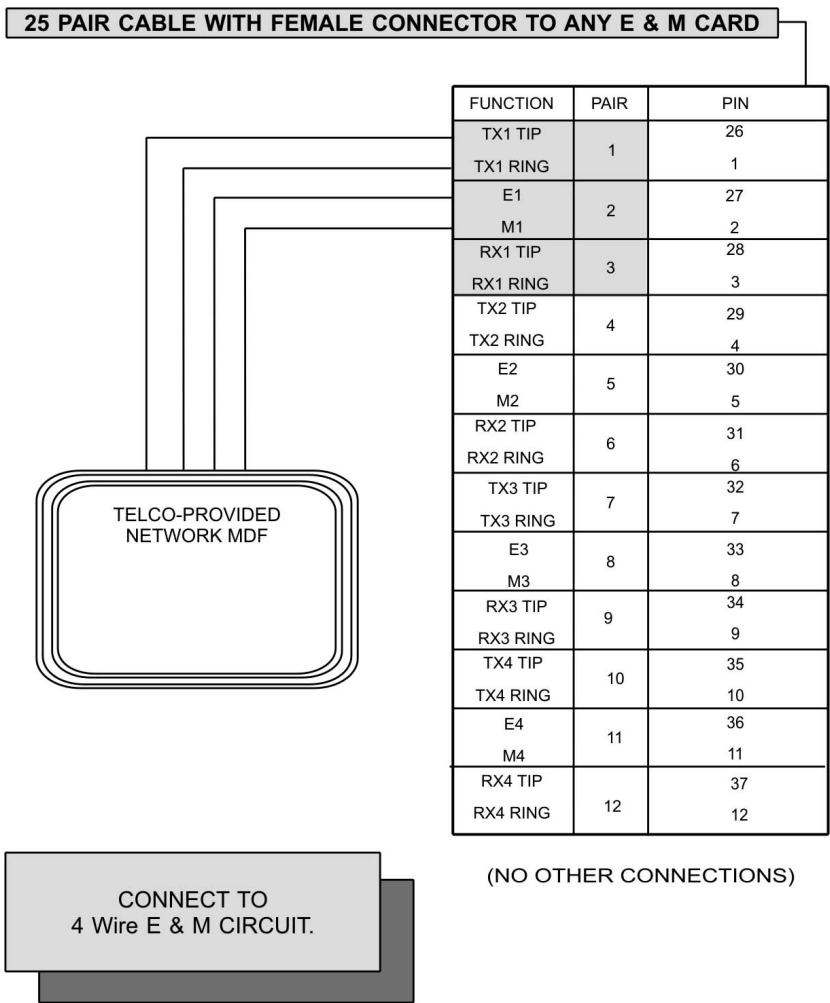
Figure 5-3   MDF Connections E&M Tie Line to E&M Tie Line and E&M Card

OFF PREMISE EXTENSIONS (OPX)

Using one pair twisted 0.50mm jumper wire, cross-connect iDCS single line extensions to telephone company OPX circuits **(see Figure 5-4).**   Circuits on the SLI card are specifically designed to meet TELCO requirements for OPX use.   These circuits are provided with the same over-voltage and over-current protection as that of C.O.   line circuits.   Using single line stations on any other SLI card or a KDb-SLI requires the installation of externally mounted protection devices.

There is no special programming required for OPX use; however, it is suggested that the OPX ports are set for CO ring in MMC 208.

25 PAIR CABLE WITH FEMALE CONNECTOR TO ANY SLI CARD

FUNCTION	CIRCUIT	PIN
SLT TIP	1	26
SLT RING		1
SLT TIP	2	27
SLT RING		2
——		28
——		3
SLT TIP	3	29
SLT RING		4
SLT TIP	4	30
SLT RING		5
——		31
——		6

TELCO-PROVIDED NETWORK MDF

(NO OTHER CONNECTIONS)

CONNECT TO ODX TIELINE CIRCUIT
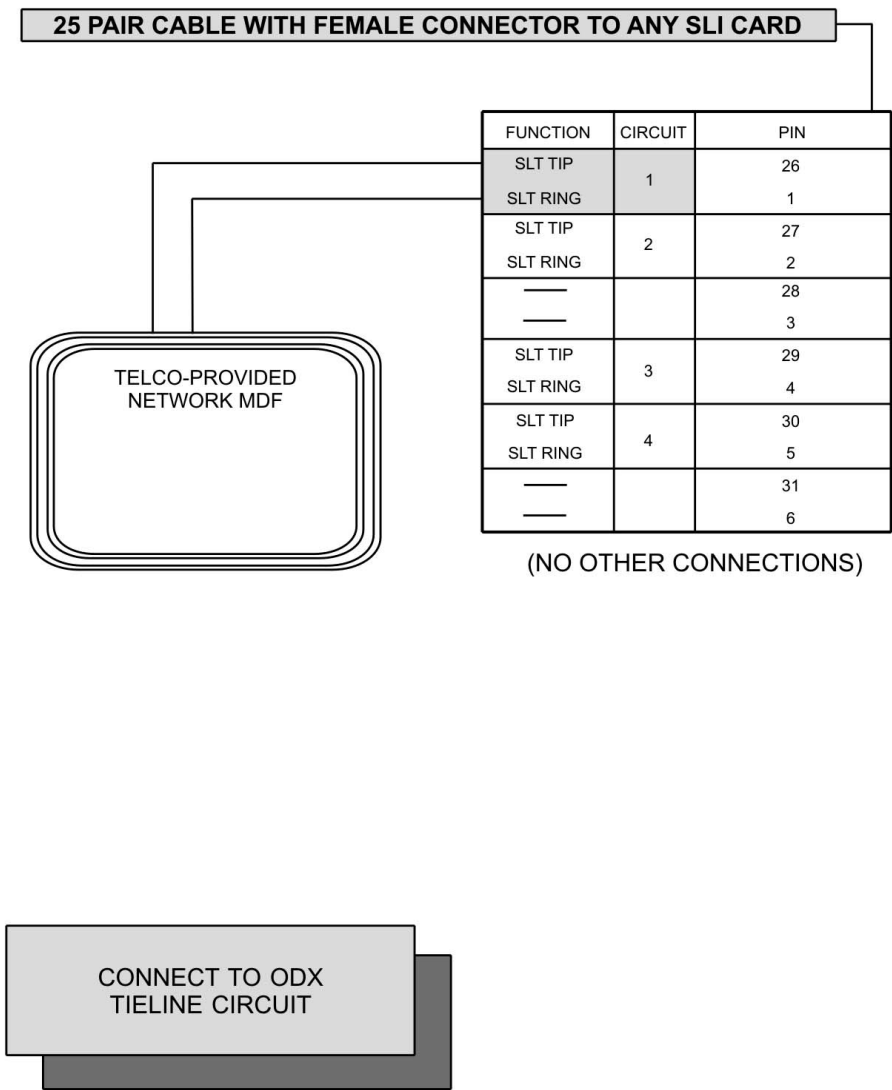
Figure 5-4   MDF Connections Off Premise Extension from SLI Card

E1/PRI CIRCUIT

E1 and PRI connection is provided via the RJ-45 socket marked T1 on the TEPRI card. Connect the system and the network terminating point (NT1) using an 8 conductor UTP CAT 5 cable.

NOTE: Where possible the system should be located within 5 metres of the Network Terminating point.
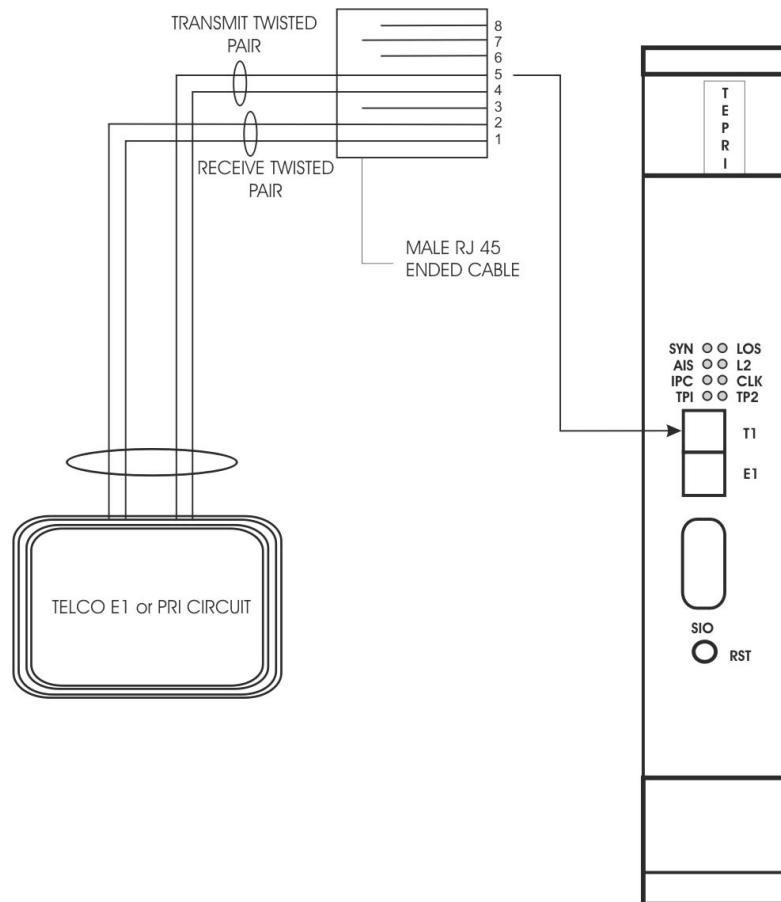
Figure 5-5　MDF Connections E1/PRI Circuit to TEPRI Card

ISDN BRI LINES

The BRI card can be used to provide direct connection to the Network Terminating point (NT1) for ISDN trunks (default mode) or ISDN terminal equipment (TE) for ISDN Stations. Connect each port of the BRI card required for use as an ISDN trunk to a separate to NT1.

NOTE: When connecting the BRI port to the NT1 care is needed if the BRI circuit is being share with other terminal equipment. In this case, the 100 ohm terminating resistors on the BRI card ports may need to be switched out of the circuit.

For ISDN station interface connection details to ISDN TE, see over and Chapter 6.

MDF STATION CONNECTIONS TO BRI CARD

FUNCTION	CIRCUIT	PIN
TX1 TIP TX1 RING	1	26 1
RX1 TIP RX1 RING	1	27 2
		28 3
TX2 TIP TX2 RING	2	29 4
RX2 TIP RX2 RING	2	30 5
		31 6
TX3 TIP TX3 RING	3	32 7
RX3 TIP RX3 RING	3	33 8
		34 9
TX4 TIP TX4 RING	4	35 10
RX4 TIP RX4 RING	4	36 11
		37 12

PAIR

CABLE TO BRI EQUIPMENT

PAIR

CUSTOMER PROVIDED BRI EQUIPMENT
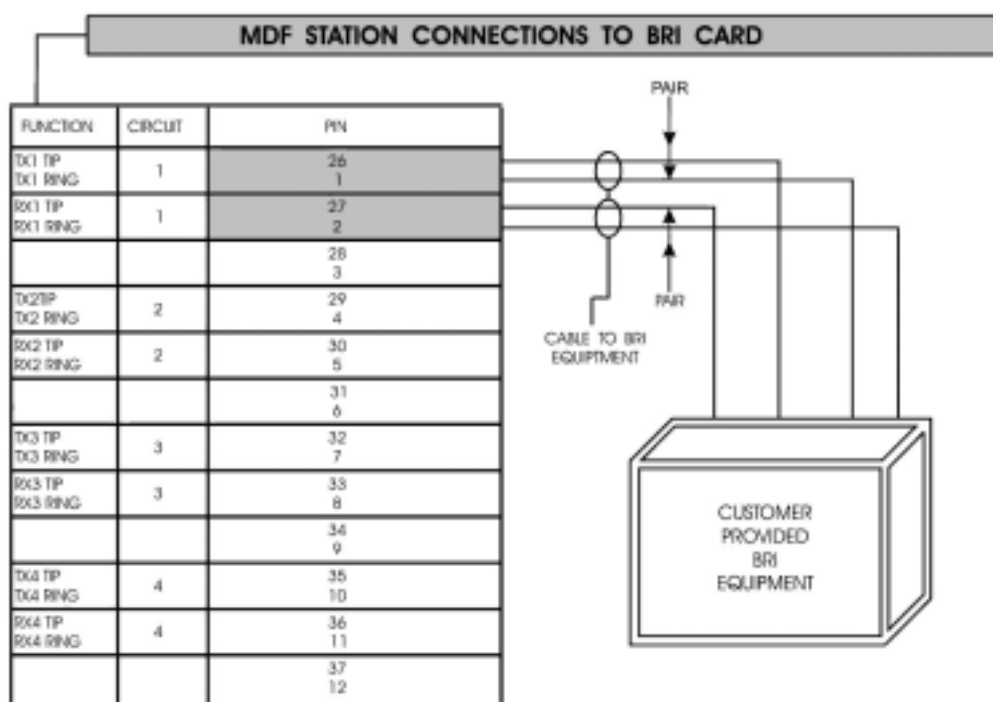
Figure 5-6A MDF Trunk Connections

MDF TRUNK CONNECTIONS TO BRI CARD

FUNCTION	CIRCUIT	PIN
TX TIP TX RING	1	26 1
RCV TIP RCV RING	1	27 2
		28 3
TX TIP TX RING	2	29 4
RCV TIP RCV RING	2	30 5
		31 6
TX TIP TX RING	3	32 7
RCV TIP RCV RING	3	33 8
		34 9
TX TIP TX RING	4	35 10
RCV TIP RCV RING	4	36 11
		37 12
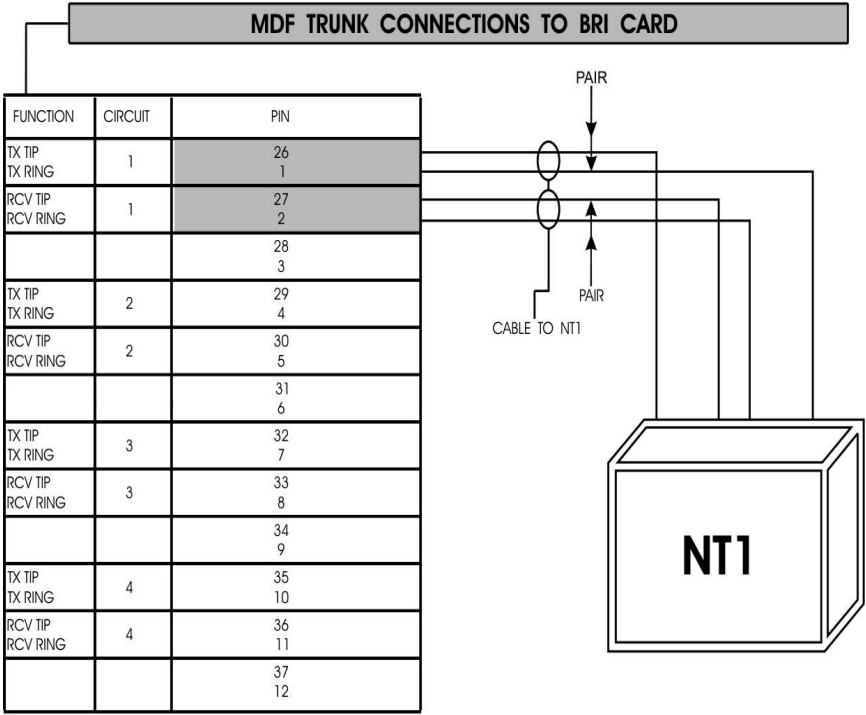
Figure 5-6B   MDF Station Connections

ISDN PRI LINES

PRI or TEPRI cards supports a RJ45 connector to access ISDN PRI lines from C.O. Connect the PRI port with given line cord as shown in Figure 5-5.

8BSI CARD

The 8BSI(Base Station Interface) card must be inserted in slots 1,2 or 3 of same cabinet. If multiple 8BSI cards are installed in an iDCS 500 L system then the 8BSI cards must be installed in the same cabinet. Push firmly in the middle of the card to ensure that it is fully inserted into the back plane connector. The Samsung iDCS 500 system receives it clock information from ISDN services connected so a PRI or BRI card, where installed, must be installed in a lower slot number (e.g. C1-S1) than the 8BSI card. However if ISDN circuits are not installed, the 8BSI card would normally be installed in slot 1 of the iDCS 500 cabinet. The PRI supports ISDN PRI service.   Push firmly in the middle of both card ejectors on each card to ensure that it is fully inserted into the back plane connector.   ISDN cards like PRI and BRI use the external clock from the public network.   So, when a SAMSUNG DECT system use PRI or BRI, the system must align with the external clock as a slave.   Also installed 8BSI card uses the same clock as ISDN cards.   So, the SAMSUNG DECT system determined the clock priority according to the card type and the position of slot.   At first, according to the second clock priority and the 8BSI card has the lowest priority. In the next priority.

NOTE: • Do not insert this card with system power ON.
   • A maximum of three 8BSI cards can be installed in slots 1,2 or 3 of same cabinet.

25 PAIR CABLE WITH FEMALE CONNECTOR TO ANY BSI CARD

RJ-45CONNECTOR

1 2 3 4 5 6 7 8

RJ45 Connector Pin No	Part	Signal	RJ45 Connector Pin No
4	0	D channel data	1
5			26
6		Sync Line	27
3			2
4	1	D channel data	4
5			29
6		Sync Line	30
3			5
4	2	D channel data	7
5			32
6		Sync Line	33
3			8
4	3	D channel data	10
5			35
6		Sync Line	36
3			11
4	4	D channel data	13
5			38
6		Sync Line	39
3			14
4	5	D channel data	16
5			41
6		Sync Line	42
3			17
4	6	D channel data	19
5			44
6		Sync Line	45
3			20
4	7	D channel data	22
5			47
6		Sync Line	48
3			23

CONNECT TO ANY PORT ON
ANY 8BSI CARD
(NB: POLARITY IS IMPORTANT)

Figure 5-7A   MDF Connections RJ-45

RG-45 MODULAR CONNECTOR TO 8BSI and DBS CONNECTOR

8BSI Connector
Mudular

DBS Connector
RJ-45
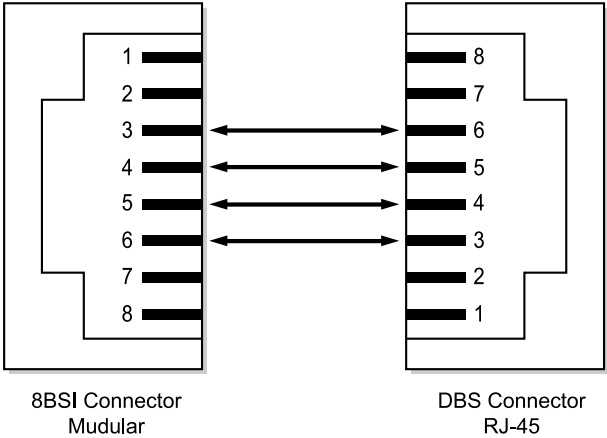
CABLE	2pr twisted
THICKNESS	0.6mm or 0.4mm
MAX LENGTH	600m with 0.6mm diameter (400m with 0.4mm)
INTERFACE	2 x U interface & 64 Kbit/sec via 4 B-channels

Figure 5-7B   Cables Between DBS and 8BSI (RJ-45 to RJ-45)

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Chapter 6
Connecting Station Equipment

Chapter 6 Connecting Station Equipment

SAFETY PRECAUTIONS

To limit the risk of personal injury, always follow these precautions before connecting telephone circuits:

a. Never install telephone wiring during a lightning storm.

b. Never install telephone jacks in a wet location unless the jack is specifically designed for wet locations.

c. Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

d. Use caution when installing or modifying telephone lines.

iDCS KEYSETS

The iDCS 500 system supports a two DLI card types for connecting keysets, 8DLI and 16 DLI. Using one pair of twisted 0.50mm jumper wire, cross connect each keyset to the DLI port (see Figure 6-1) of the DLI card type used or plug into the KDB-DLI of your choice. For convenience the diagram below provides connection details for both DLI card types.

CAUTION: To reduce the risk of fire, use only the supplied line cord or other approved line cord.

NOTE: Because the iDCS 500 is a self-configuring system, if you connect a 18 button keyset to a DLI port that previously had a 28 button keyset installed, the existing data will be rewritten with 18 button keyset default data (MMC 723). This can be avoided if you first SAVE the keyset data using MMC 721. This rule also applies to the DCS family of keysets.

25 PAIR CABLE WITH FEMALE CONNECTOR TO ANY DLI CARD

PIN	CIRCUIT	16DLI	8DLI
26 / 1	1	DLI TIP / DLI RING	DLI TIP / DLI RING
27 / 2	2	DLI TIP / DLI RING	DLI TIP / DLI RING
28 / 3		——	——
29 / 4	3	DLI TIP / DLI RING	DLI TIP / DLI RING
30 / 5	4	DLI TIP / DLI RING	DLI TIP / DLI RING
31 / 6		——	——
32 / 7	5	DLI TIP / DLI RING	DLI TIP / DLI RING
33 / 8	6	DLI TIP / DLI RING	DLI TIP / DLI RING
34 / 9		——	——
35 / 10	7	DLI TIP / DLI RING	DLI TIP / DLI RING
36 / 11	8	DLI TIP / DLI RING	DLI TIP / DLI RING
37 / 12		——	
38 / 13	9	DLI TIP / DLI RING	
39 / 14	10	DLI TIP / DLI RING	
40 / 15		——	
41 / 16	11	DLI TIP / DLI RING	
42 / 17	12	DLI TIP / DLI RING	
43 / 18		——	
44 / 19	13	DLI TIP / DLI RING	
45 / 20	14	DLI TIP / DLI RING	
46 / 21		——	
47 / 22	15	DLI TIP / DLI RING	
48 / 23	16	DLI TIP / DLI RING	

(NO OTHER CONNECTIONS)

ONE PAIR TWISTED STATION CABLE

1 2 3 4 5 6

DIGITAL KEYSET

CONNECT TO ANY CIRCUIT ON ANY DLI CARD.

Figure 6-1 MDF Connections - Digital Keyset to DLI Card

iDCS 500 ADD ON MODULES(AOM)

The iDCS 500 system supports the iDCS 64 button AOM and the DCS 48 button AOM. The system capacities are detailed in the table below.

System	DCS 48 Button AOM	iDCS 64 Button AOM
iDCS 500 M	No limitation(AOM can be connected as many as DLI port)	No limitation(AOM can be connected as many as DLI port)
iDCS 500 L	Max of 32	Max of 8

Using one pair of twisted 0.50 mm jumper wire, cross connect each AOM to the DLI port (See Figure 6-1) or plug into the KDB-DLI of your choice. Assign the AOM to a station in MMC 209. AOMs can be assigned to any keyset.

! *CAUTION:* To reduce the risk of fire, use only the supplied line cord or other approved line cord.

SINGLE LINE TELEPHONES

The iDCS 500 system supports a range of Single line telephone interface cards including: SLI, 8SLI, 8MWSLI, 16 SLI and 16MWSLI cards. Using one pair of twisted 0.50mm jumper wire, cross connect each single line telephone to the SLI port (see Figure 6-2) of the SLI card type used or plug into the KDB-SLI of your choice. For convenience the diagram below provides connection details for al SLI card types.

> **CAUTION:** To reduce the risk of fire, use only the supplied line cord or other approved line cord.

Single Line Telephones with message waiting lamps must be connected to the 8MWSLI or 16MWSLI card

25 PAIR CABLE WITH FEMALE CONNECTOR TO SLI CARDS

PIN	CIRCUIT	16SLI	8SLI	4SLI
26 / 1	1	SLT TIP / SLT RING	SLT TIP / SLT RING	SLT TIP / SLT RING
27 / 2	2	SLT TIP / SLT RING	SLT TIP / SLT RING	SLT TIP / SLT RING
28 / 3		—	—	—
29 / 4	3	SLT TIP / SLT RING	SLT TIP / SLT RING	SLT TIP / SLT RING
30 / 5	4	SLT TIP / SLT RING	SLT TIP / SLT RING	SLT TIP / SLT RING
31 / 6		—	—	
32 / 7	5	SLT TIP / SLT RING	SLT TIP / SLT RING	
33 / 8	6	SLT TIP / SLT RING	SLT TIP / SLT RING	
34 / 9		—	—	
35 / 10	7	SLT TIP / SLT RING	SLT TIP / SLT RING	
36 / 11	8	SLT TIP / SLT RING	SLT TIP / SLT RING	
37 / 12		—		
38 / 13	9	SLT RING		
39 / 14	10	SLT RING		
40 / 15		—		
41 / 16	11	SLT TIP / SLT RING		
42 / 17	12	SLT TIP / SLT RING		
43 / 18		—		
44 / 19	13	SLT TIP / SLT RING		
45 / 20	14	SLT TIP / SLT RING		
46 / 21		—		
47 / 22	15	SLT TIP / SLT RING		
48 / 23	16	SLT TIP / SLT RING		

(NO OTHER CONNECTIONS)

ONE PAIR TWISTED STATION CABLE

1 2 3 4 5 6

SINGLE LINE TELEPHONE

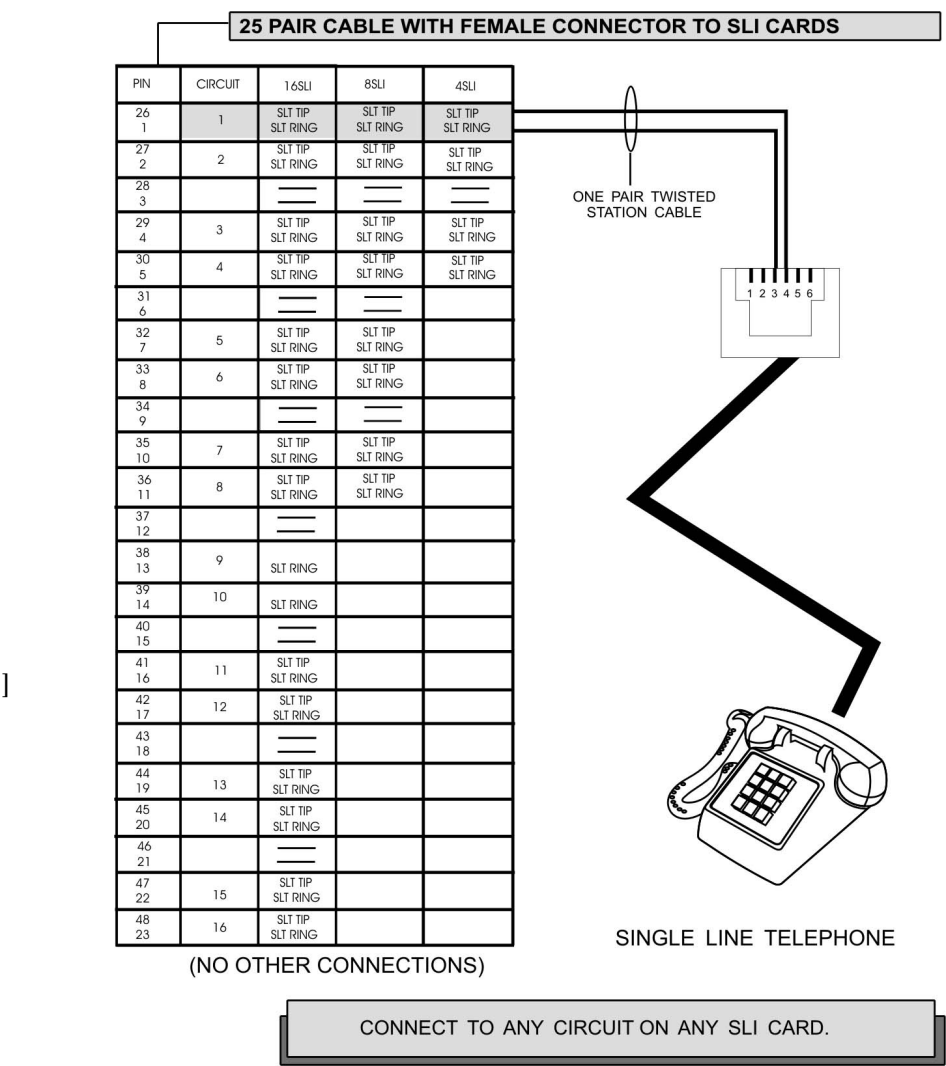CONNECT TO ANY CIRCUIT ON ANY SLI CARD.

Figure 6-2 MDF Connections - Single Line Telephone to SLI Card

DOOR PHONE AND DOOR LOCK RELEASE

Using one pair twisted 0.50 mm jumper wire, cross-connect each DPIM to the DLI port **(see Figure 6-1)** or plug into the KDB-DLI of your choice.   Next, connect the DPIM to the door phone using #24 AWG or #26 AWG twisted pair wire.

> *CAUTION:*   To reduce the risk of fire, use only the supplied line cord or other approved line cord.

When a customer-provided electric door release is installed, cross-connect the corresponding door release contacts on the DPIM to the door lock mechanism .   Use MMC 501 to program the duration of the contact closure as required.   The door release contacts on the DPIM are to be used for low voltage relay control only.   The contacts are rated at 24 VDC–1 amp.

> *WARNING:*   When connecting a customer supplied electric door release mechanism to the DPIM, an approved Line Isolation unit must be installed. Do not attempt to connect commercial AC power to the DPIM contacts
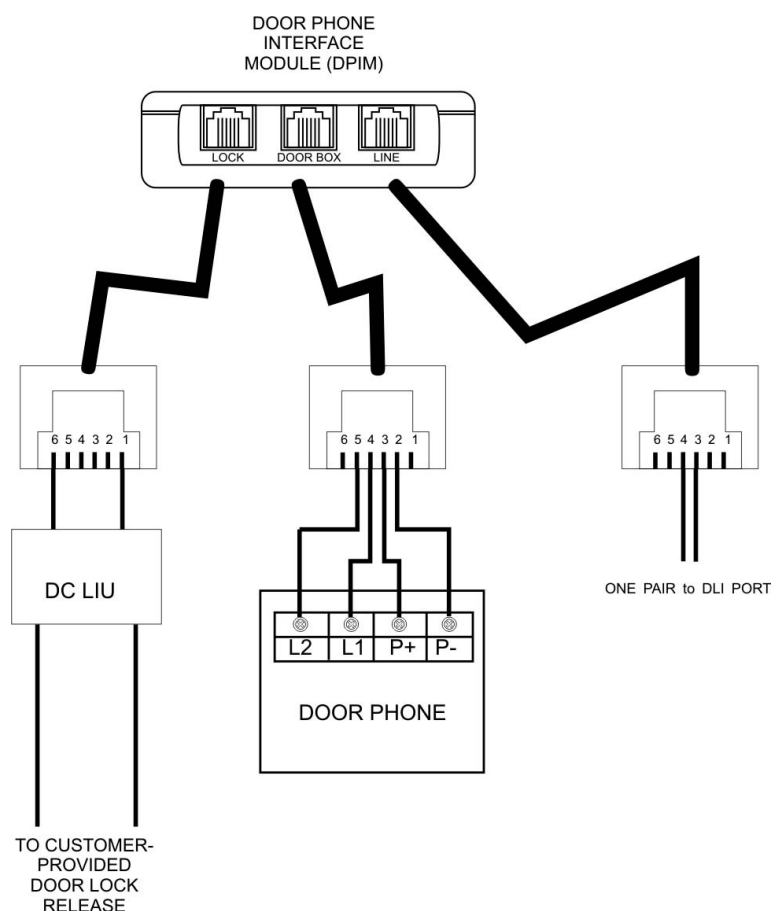

Figure 6-3 MDF Connections - Door Phone and DPIM to DLI Card

DECT STATION

DECT STATION OVERVIEW

iDCS 500 system provides DECT cordless communications in a single office or throughout a large commercial or industrial complex.   To implement this service, you need 8BSI card, DBS card and DECT handsets.   Users of this service meet improved overall efficiency, since staff can be reached or make calls wherever they are.
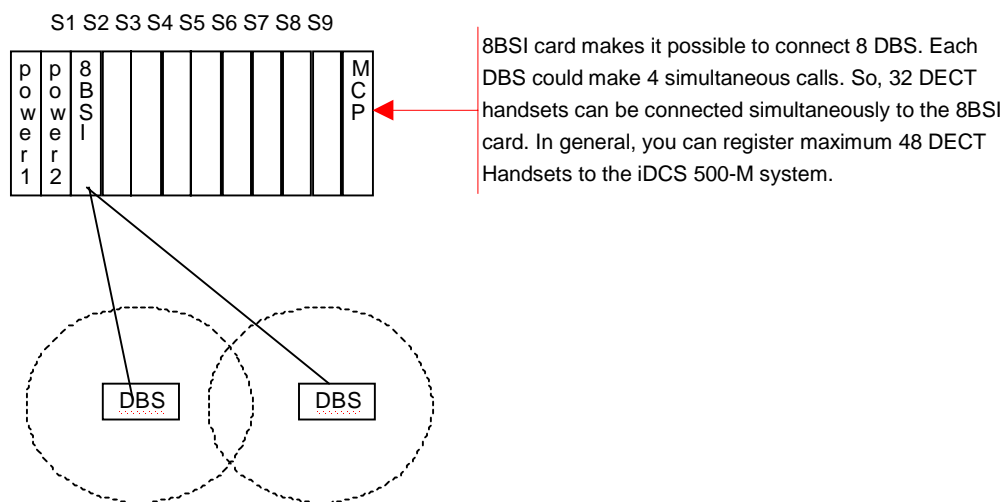
iDCS 500-M system supports one 8BSI card and the iDCS 500-L supports a maximum of three 8BSI cards.

In case of iDCS 500-L, the 8BSI cards must be installed in the same cabinet and installed in slots 1, 2 and/or 3 because the 8BSI card supports a maximum of 32 B-channels.

Using 2 pair twisted 0.64mm cable (to a length of 600 metres) or 0.40mm cable (to a length of 400 metres), cross connect each base station (DBS) to a 8BSI port (see Figure 6-4).

Block Diagram of DECT Structure in iDCS 500-M

An 8BSI card must be just installed into one of three slots lower than slot4.

S1 S2 S3 S4 S5 S6 S7 S8 S9

8BSI card makes it possible to connect 8 DBS. Each DBS could make 4 simultaneous calls. So, 32 DECT handsets can be connected simultaneously to the 8BSI card. In general, you can register maximum 48 DECT Handsets to the iDCS 500-M system.

Block Diagram of DECT Structure in iDCS 500-L

An 8BSI card must be just installed into one of three slots lower than slot4.

S1 S2 S3 S4 S5 S6 S7 S8 S9

Three 8BSI cards can be installed to the system at the same time. Each 8BSI card makes it possible to connect 8 DBS. Each DBS could make 4 simultaneous calls. So 32 DECT handsets can be connected simultaneously to an 8BSI card.   In general, you can register maximum 192 DECT Handsets to the iDCS 500-L system.

Capacity of the DECT in iDCS 500

	iDCS 500-M	iDCS 500-L	
		Basic	Expansion
Number of BSI	1	1	3
Number of DBS	8	8	24
MAX Users	48	192	192
Simultaneous calls	32	32	96

1) The maximum quantities of users(handsets) depends on configuration of system.

2) Maximum users equate to the maximum number of handsets that can be registered on the system.

3) The maximum number of simultaneous calls depends on the number of DBS connected. Each DBS can support a maximum of 4 simultaneous calls.
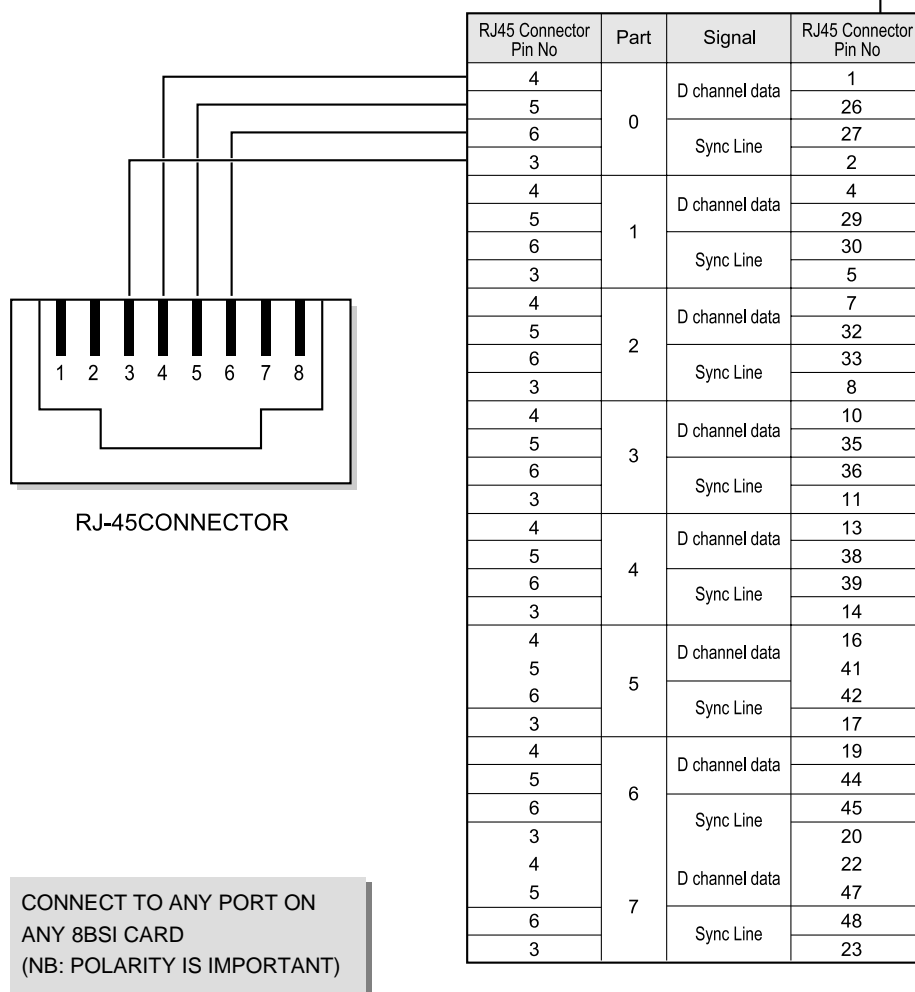
25 PAIR CABLE WITH FEMALE CONNECTOR TO ANY BSI CARD

RJ45 Connector Pin No	Part	Signal	RJ45 Connector Pin No
4	0	D channel data	1
5			26
6		Sync Line	27
3			2
4	1	D channel data	4
5			29
6		Sync Line	30
3			5
4	2	D channel data	7
5			32
6		Sync Line	33
3			8
4	3	D channel data	10
5			35
6		Sync Line	36
3			11
4	4	D channel data	13
5			38
6		Sync Line	39
3			14
4	5	D channel data	16
5			41
6		Sync Line	42
3			17
4	6	D channel data	19
5			44
6		Sync Line	45
3			20
4	7	D channel data	22
5			47
6		Sync Line	48
3			23

1 2 3 4 5 6 7 8

RJ-45CONNECTOR

CONNECT TO ANY PORT ON
ANY 8BSI CARD
(NB: POLARITY IS IMPORTANT)

Figure 6-4   MDF Connections RJ-45 to 8BSI Card

ISDN STATION(ISDN PHONE, G4 FAX, etc)

The iDCS 500 BRI card supports S-bus, ISDN Station Interface mode for connection to ISDN Terminal equipment (TE). This ISDN station mode must be programmed in MMC 423 and a DN allocated to ISDN station ports using MMC 424. For ISDN TE that require power supplied by the iDCS 500 system, this can be programmed in MMC 419 however, a BRIN card must be installed. After programming related to BRI configuration, restart the BRI card using MMC 419. Refer to iDCS 500 Programming Manual for a detailed description.

Using 2 pair twisted 0.50 mm cable, cross connect each ISDN TE to a BRI S-bus port (see figure 5-6B).

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Chapter 7
Connecting Optional Equipment

Chapter 7   Connecting Optional Equipment

MUSIC ON HOLD/BACKGROUND MUSIC

Connect each customer-provided music source to the music input on a MISC daughter board **(see Figure 7-1)**.

Each C.O. line (trunk) can be programmed to receive a music source, system-generated tone or NO MUSIC when it is put on hold.   **See MMC 408.**   Each keyset can receive a music source or NO MUSIC for background music.   **See the Programming Guide for instructions (MMC 308).**
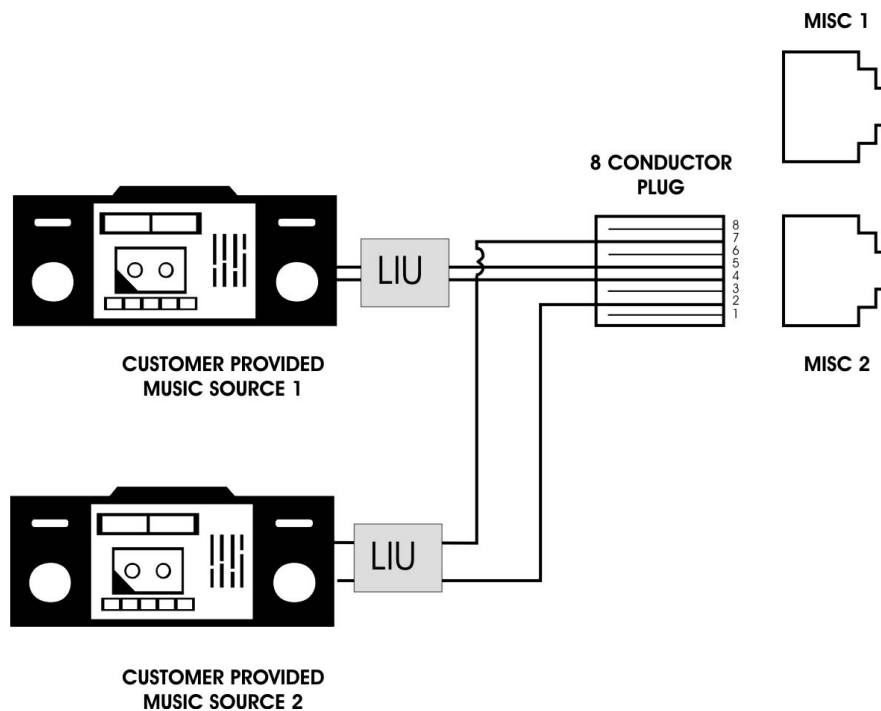

Figure 7-1   MDF Connections - MOH Source MISC Board

WARNING: When connecting a customer supplied music source to the MISC card, an approved MOH Isolation unit must be installed. Do not attempt to connect commercial AC power to the MISC card.

EXTERNAL PAGING

Each MISC daughter board provides a voice pair and a dry contact pairs to be used with customer-provided paging equipment.   Connect the customer-provided paging equipment to the page output pins of a MISC daughter board **(see Figure 7-2)**.   The relay must be assigned to the page zone in MMC 605.

The page voice pair is 600 ohm impedance.   When the amplifier page input is not 600 ohm, use an impedance matching transformer.   The paging contact pairs are for control of low voltage circuits or amplifier output.   The contacts are rated at 24 VDC−1 amp.

WARNING: When connecting customer supplied external paging equipment to the MISC card, the audio connections to the amplifier must be isolated using an approved Audio Line Isolation unit. If the MISC card relay(s) are also being used to control the paging equipment, a DC line isolation unit must be installed . Do not attempt to connect commercial AC power to the MISC contacts.
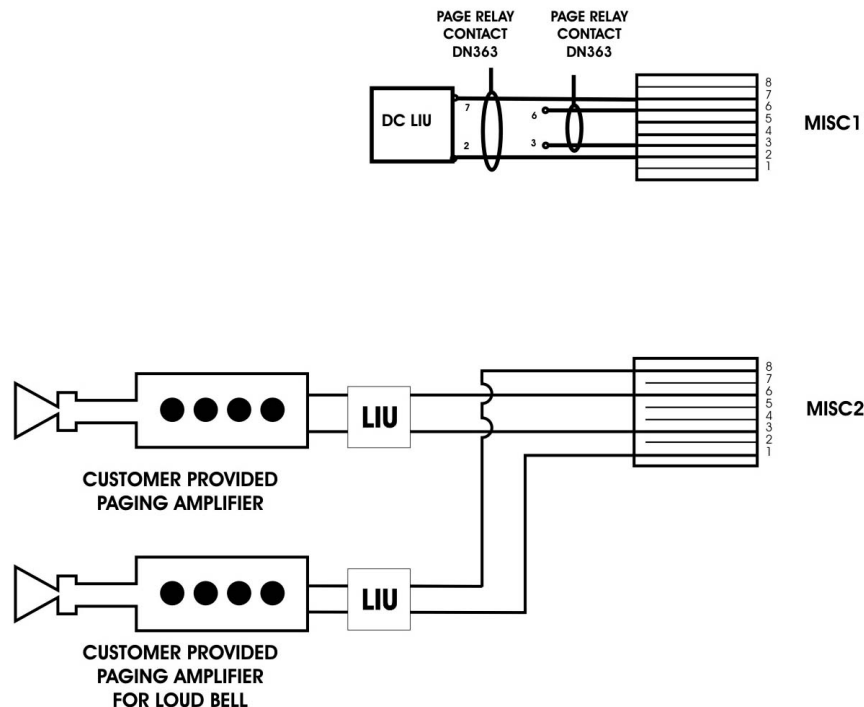
Figure 7-2   MDF Connections - Paging/Loud Bell AMP to MISC Board

COMMON BELL

A customer-provided loud ringing device can be controlled using a dry contact pair on a MISC daughter board.   **See Figure 7-3**.   By using MMC 204, programming allows for interrupted or continuous operation of the contacts.   The interrupted selection follows the C.O. ring cadence.

After connecting a common bell, you must assign it in MMC 601 to a group as a ring destination by using the code for common bell.   The basic steps for common bell operation are the following:

a. Wire the loud ringing device to the common bell control contact pair.

b. Set contacts for continuous or steady operation.

c. Program the hunt group to include the common bell.

d. Assign the trunk to ring the hunt group containing the common bell.

Common bell control can be used with station hunt groups, individual stations and Universal Answer. Contacts are rated at 24 VDC–1 amp.

> ⚡ *WARNING:*   When connecting customer supplied common bell to the MISC card, an approved DC Line Isolation unit must be installed. Do not attempt to connect commercial AC power to the MISC contacts
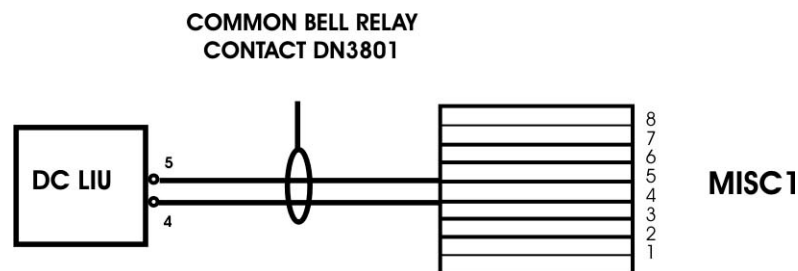

COMMON BELL RELAY CONTACT DN3801

Figure 7-3   MDF Connections - Common Bell to MISC Board

RING OVER PAGE

When a customer-provided paging system is installed, incoming calls can be assigned to ring over page.   Program the line or lines to ring a hunt group.   Using MMC 601, assign ROP as a destination in this hunt group.   Ring over page can be used for day or night operation or both.

SMDR/AAUCD/TRAFFIC/ALARMS

To receive SMDR (Station Message Detail Recording), AAUCD statistics, traffic or alarm reports connect a customer-provided printer or PC to one of the four RS232C DB9 connectors on the main cabinet **(see Figure 7-4)**.   Use a pin to pin RS232C cable.   **See Figure 7-5 and Figure 7-6** for the required pins.   When the printer or optional call accounting device needs to be more than 5 metres away from the iDCS 500 use shielded computer cable.   Connect the customer-provided equipment to the serial interface port selected.   Attach a male DB9 connector to the serial port.   The other end must meet the requirements of the device or printer.   Use MMC 725 to set SMDR print options and use MMC 804 to set the port and transmission parameters.   MMC 804 also selects the required report(s).
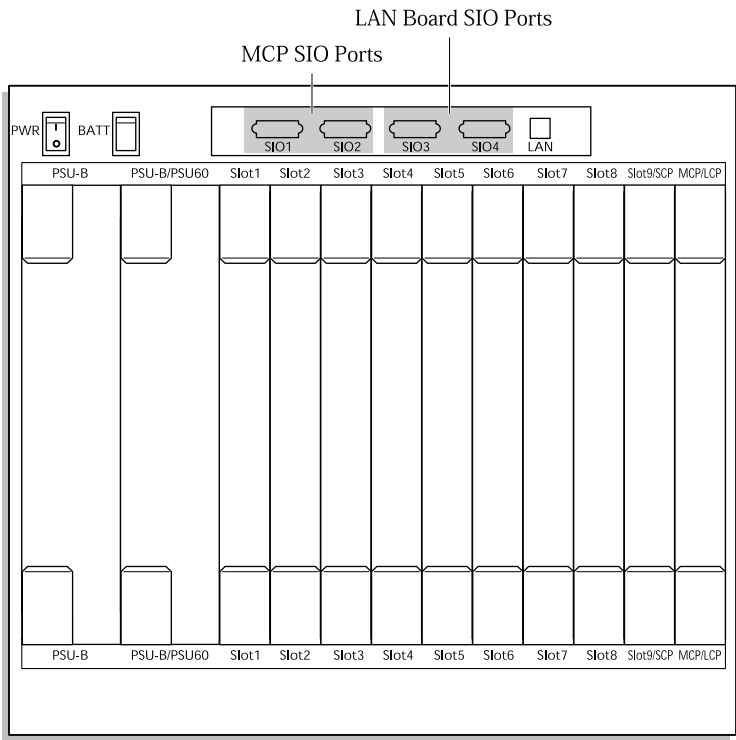

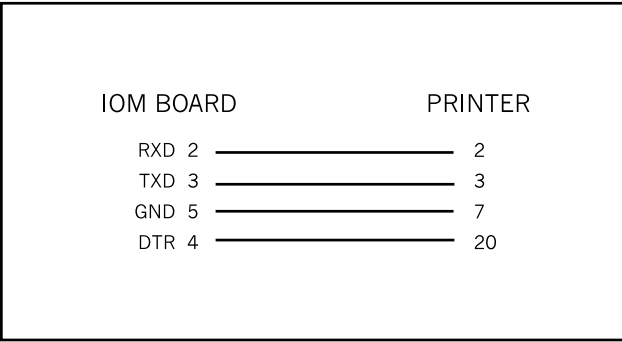
Figure 7-4   SIO Port Locations

```
                IOM BOARD                    PRINTER

                    RXD  2  ━━━━━━━━━━━━  2
                    TXD  3  ━━━━━━━━━━━━  3
                    GND  5  ━━━━━━━━━━━━  7
                    DTR  4  ━━━━━━━━━━━━  20
```

Figure 7-5   PIN Connections for IOM Board to Printer

```
                IOM BOARD                         PC
                                            COM 1    COM 2
                    RXD  2  ╲        ╱      2        3
                    TXD  3   ╲      ╱       3   OR   2
                    GND  5  ━━━━━━━━━━━━    5        7
                    DTR  4  ━━━━━━━━━━━━    4        20
                                           9 PIN    25 PIN
```
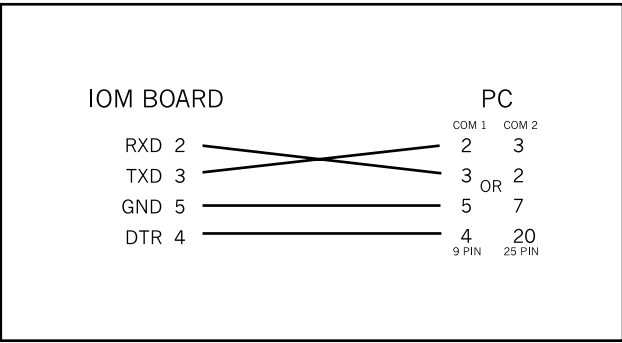
Figure 7-6   PIN Connections for IOM Board to Personal Computer

> ⚡ *WARNING:* When connecting customer supplied IT equipment to the IOM card serial ports, an approved Data Isolation Unit must be installed

PC PROGRAMMING

The iDCS 500 can be programmed with a PC equipped with DPAP-PCMMC connected to the IOM LAN port (LAN card must be installed on the MCP card) or via one of the IOM serial ports (see Figure 7.4). PC programming using the LAN port requires a data cross over cable if connecting directly to the LAN port or a standard data cable if connecting via a LAN. In both cases the iDCS 500 IP address and PC IP address (PCMMC ADDRESS) must be programmed in MMC 830.

To program the iDCS 500 via a IOM serial port use an RS232C cable with connections shown in Figure 7-6.
When the PC needs to be more than 5 metres away from the KSU, use shielded computer cable. Attach a male DB9 connector to the SIO end and one that meets the requirements of the PC to the other end.   This cable must not exceed 10 metres.   Use MMC 804 to set the transmission parameters for the serial port.

> ⚡ *WARNING:* When connecting a PC to the IOM card serial ports, an approved Data Isolation Unit must be installed.

VOICE MAIL/AUTO ATTENDANT

System operation provides special programming and hardware for use with a customer-provided voice mail/auto attendant system. The iDCS 500 supports connections to third party supplied voicemail/AA systems via SLI ports. Refer to Chapter 6 for SLI connection details.

For more information on programming these ports, **See the Programming Guide, MMCs 207, 601 and 726.**

CONNECTING SYSTEM BACKUP BATTERIES TO THE iDCS 500 POWER SUPPLY

The iDCS 500 power supplies (PSU-B and PSU60) contain a monitoring circuit to switch the system to customer provided 48VDC batteries when AC power is interrupted.   Calls in progress are not disconnected.   The power supply circuitry monitors and recharges batteries as needed.

Connect four 12V batteries or eight 6V batteries in series.   Any NICAD or lead acid (car or motorcycle type) battery can be used if its rating is not less than 6AH (amp hours) but no more than 40AH per power supply.   The batteries must be located within 1metre feet of the KSU.   Use the factory-supplied wire harness with 1metre white and black leads to connect batteries **(see Figure 7-7)**.

Observe the following precautions when installing batteries:

a. Make sure the batteries you install conform to local building, fire and safety codes.   Some battery types emit hydrogen gas during the charging state and may require venting to fresh air.

b. Do not place batteries directly on a concrete floor.   This causes them to discharge very quickly.

c. Follow the battery manufacturer's recommended installation and maintenance procedures.

d.   The backup batteries must provide a 125V 5A fuse per cabinet to protect the system from excessive discharge.
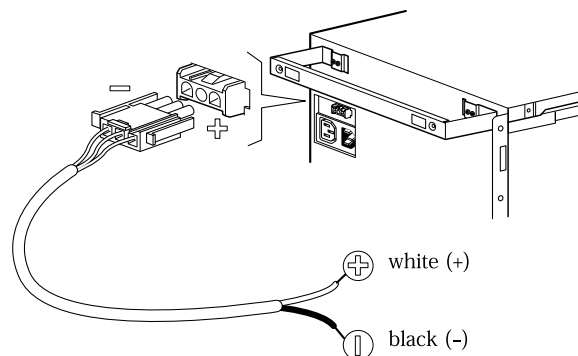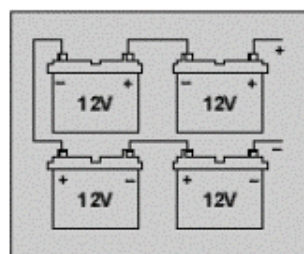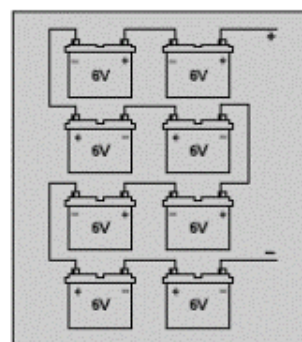
Figure 7-7   Reserve Power Battery Connections

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Chapter 8
Installing Keyset Daughter Boards

Chapter 8   Installing Keyset Daughter Boards

iDCS KDB-DIGITAL LINE INTERFACE (FKDBD)

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

iDCS KDB-SINGLE LINE INTERFACE (FKDBS)

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

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

iDCS KDB-FULL DUPLEX (FKDBF)

The standard speakerphone mode of operation for an iDCS keyset is "half duplex".   This means that you cannot transmit and receive speech at the same time.   Adding a FKDBF to your keyset will convert the speakerphone into full duplex mode enhancing its operation.   In addition the FKDBF may have up to 3 external microphones attached to it for conference room type applications.   These microphones require an "EXTMIC" key programmed on the keyset to activate or deactivate them.

KDB-DLI

This daughter board can be installed only in the DCS 12 or DCS 24 button keyset.   Before performing this procedure, unplug the line cord from the keyset and remove the base wedge.   Place the keyset face down on a soft surface and remove the four base retaining screws.   Separate the base from the keyset and place the keyset aside.   Attach the KDB-DLI to the keyset base with the four screws that are supplied.   Take care to ensure that the modular socket shows through the access hole in the base invert the base assembly over the keyset and plug the ribbon cable into the socket on the keyset PCB while making sure that no damage occurs to the keyset PCB.   Reattach the base to the keyset and test to ensure normal keyset operation.

KDB-SLI

This daughter board can be installed only in the DCS 12 or DCS 24 button keyset.   Before performing this procedure, unplug the line cord from the keyset and remove the base wedge.   Place the keyset face down on a soft surface and remove the four base retaining screws.   Separate the base from the keyset and place the keyset aside.   Attach the KDB-SLI to the keyset base with the six screws that are supplied.   Take care to ensure that the modular socket shows through the access hole in the base. Invert the base assembly over the keyset and plug the ribbon cable into the socket on the keyset PCB while making sure no damage occurs to the keyset PCB.   Reattach the base to the keyset and test to ensure normal keyset operation.

CONNECTING TO THE KDBS

There are two methods for connecting devices to keyset daughter boards.   The simplest method is to connect the second device directly by means of a line cord.
The second method is to use a multi-pair station cable, connecting separate station jacks to the first two pairs.   A line cord can now be connected between the daughter board and the second jack.   This returns the daughter board port to the MDF for cross-connection to another cable run.

Chapter 9
Software and Database Management

Chapter 9   Software and Database Management

SOFTWARE MANAGEMENT

The iDCS 500 operating software is stored on the SmartMedia card which is inserted into the front of the MCP card. The SmartMedia card has 16 Megabytes of NAND flash memory and is formatted, with a custom format to allow faster loading, in a similar manner to a hard disk. In addition to the operating system the SmartMedia card can carry operating software for the IPM board, the LAN board the SCP/LCP cards (These two cards run the same software) and the TEPRI card. The SmartMedia card also has the capability to store a backup system database in addition the operating software files.

The SmartMedia card is supplied in two versions iDCS 500-M and iDCS 500-L. The files contained on each version of the SmartMedia card is detailed in the table below.
Caution: iDCS 500-M SmartMedia card will not operate in an iDCS 500-L system and vice versa. Please ensure the correct version of SmartMedia is installed for each system configuration.

SmartMedia Files

Type	iDCS 500-M	iDCS 500-L
MCP	MCPMXXXX.PGM	MCPLXXXX.PGM
SCP/LCP	NA	SCPDXXXX.PGM
LAN	LANVXXX	LANVXXX
TEPRI	PRI_XXXX.PGM	PRI_XXXX.PGM
Customer Db	Database.mcp	Database.mcp

NOTE: 1. The above File names will be seen when viewing the files for downloading in MMC 818.
2. XXXX or XXX indicates the program date or version number.
3. When downloading or uploading the customer Database to the SmartMedia card the file
4. name will not be displayed in MMC 815. This is for reference only.

Software can be downloaded from the SmartMedia card to the cards listed above using MMC 818 and will be stored in those cards on-board flash memory. The cards will automatically reboot, load and run the new software when the download process is complete.

Using PCMMC over a LAN connection to the system the software files can be uploaded to the SmartMedia card. The files are first uploaded to the LAN Board on the MCP card and then transferred to the SmartMedia card. Once the files are loaded onto the SmartMedia card they can be manipulated with MMC 818 as before.

DATABASE MANAGEMENT

The customer database of the iDCS 500 is stored in super capacitor backed RAM in up to three locations depending on the system configuration. In an M version system it is only stored on the MCP itself and for the additional features provided with the addition of a LAN board their specific part of the database is stored on the LAN board itself. In an L version system the customer database is split between the MCP card and the IPM board with the additional features provided with the addition of a LAN board their specific part of the database is stored on the LAN board as in the M version.

The Customer database can be saved to the SmartMedia card using MMC 815 where it is stored as a single file. This save can be performed manually or the system can be programmed to save the database automatically at a designated time every day. Using PCMMC the database can be downloaded from the system and stored on the PC or it can be uploaded from the PC to the system. The database uploaded from PCMMC is not stored in the SmartMedia card but is loaded directly into active memory.

Chapter 10
Adding Cards To The System

Chapter 10 Adding Cards To The System

ADDING STATIONS AND TRUNKS

1. Remove the covers of the system cabinets in order to locate a suitable empty card slot. Having located a suitable slot, insert the new card into the slot and push firmly in the middle of both card ejectors on the card to ensure that it is fully inserted into the back plane connector.

   NOTE: The iDCS 500 cabinet that the new card is to be installed in should be turned OFF prior to inserting new cards. The same would apply when removing cards.

2. After the new cards are inserted, the system must be told to recognize the new cards. This is done through the use of MMC 806 Card Pre-Install. Use this MMC for each new card that is installed.

3. The new cards must be assigned directory numbers according to the system numbering plan in MMC 724. The technician must know the software port assignments of the new cards so the ports can be assigned correct numbers. These software port assignments are detailed in Figure 10-1.
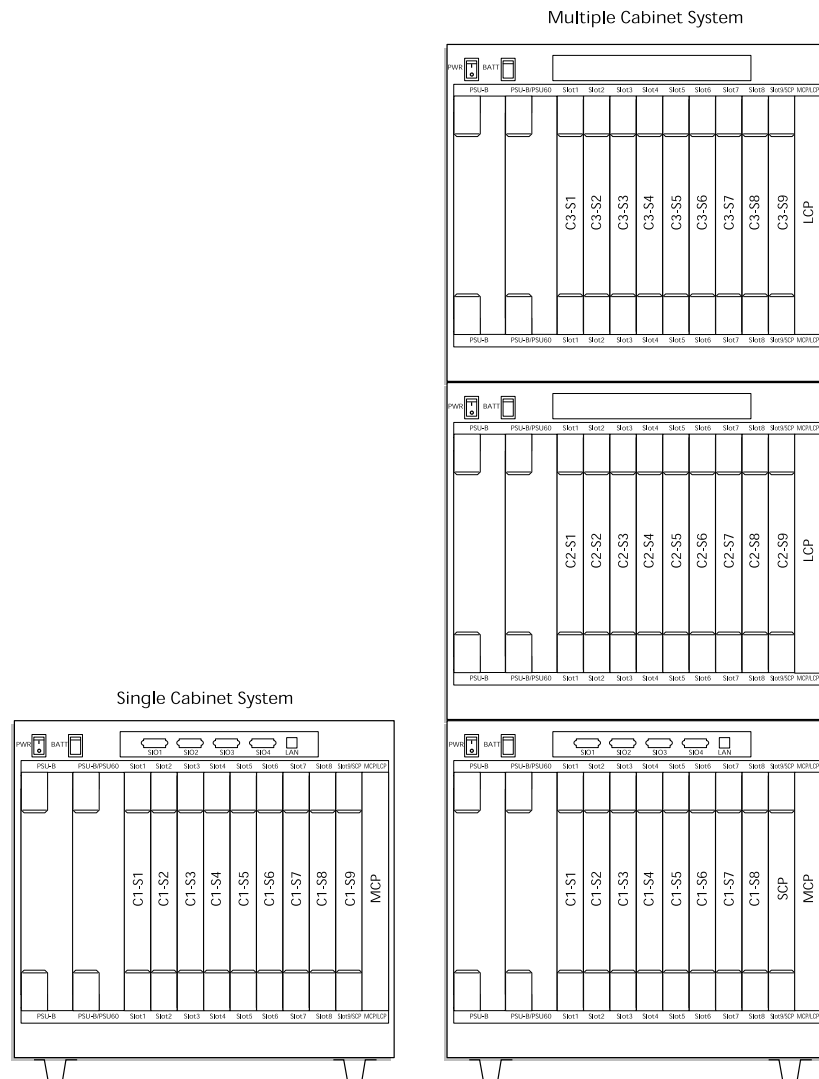

Figure 10-1 Cabinet Slot Numbers

GRADING THE iDCS 500 FOR DTMF RECEIVERS

DSP's (Digital Signal Processors) are used in the iDCS 500 system as DTMF receivers. Considerations must be made when using features of the system that require DSP's. Different system traffic patterns may affect the availability of common resource DSP's. Calculating or "grading" these DSP's is required to ensure adequate system performance. There are 4 DSP's on each cabinet and 12 on each MFM processor daughter board. These common use DSP's are shared and any card requiring a receiver will be able to make use of them. After a DSP receives the expected number of digits it is released and then assigned to the next call.

The following devices: **1.** Analog DID, **2.** Analog E&M, **3.** Digital E1 DID, **4.** Digital E1 E&M, **5.** DISA trunks, **6.** 8 SLI, **7.** 8MWSLI, **8.** KdbSLI, **9.** 16 SLI, and **10.** 16 MWSLI require DSP resources to receive DTMF digits.

EXAMPLE CONFIGURATION: A single cabinet system with 16 single line ports and an E1 with E&M trunks. There are 4 DSP's on the main cabinet. In this configuration there would not be enough DSP's to provide an adequate number of DTMF receivers. A MFM daughter board should be installed to add an additional 12 DSP's making the total number of DSP's in the system 16.

Proper programming of trunks that require DSP's allows for better utilization of the available DSP's. It is recommended that only the trunks on the E1 Span that are going to be used should be programmed. E1 trunks that are not used should be programmed in MMC 411 as UNUSED. This is because some E1 providers send an offhook or seized signal on unused or busied out E1 channels. This will cause the iDCS to assign DSP's to trunks that are not in use.

Analog DID and E&M trunks will not use a DSP unless the trunk is seized. Unused analog trunks should not be cross connected until ready for use. This will eliminate the possibility of a "short" on the frame causing a DSP to be assigned.

> *NOTE:* The four circuit SLI card (4SLI) has four dedicated analog DTMF receivers. One receiver is dedicated to each port on this card, and only this card. These analog receivers cannot be used by any other system device. They are NOT a common resource.

> *NOTE:* The AA card has 8 DSP's that are dedicated exclusively for AA ports. They can not be used for any other purpose. This one DSP for each port ratio enables the AA card to answer 8 incoming calls at the same time.

INSTALLING AA CARD IN EXISTING SYSTEM

There are several things to note when installing the AA card in an existing system:

- The iDCS 500 system cabinet must be turned OFF before installing a new AA card.

- After installing the AA card, you must perform a "card preinstall" as detailed in MMC 806.

- After completing a card preinstall, use MMC 724 to assign the AA port numbers (you can use any unused numbers, but the default numbers 3951–3990 will not conflict with any feature codes or station and trunk numbers).

Chapter 11
SVMi-8 Set Up

Chapter 11   SVMi-8 Set Up

INTRODUCTION

This section provides the additional steps required to set up the SVMi-8 card for operation in the iDCS telephone system. Included is information regarding the Activity LED, HDD LED, Reset Button and Power Requirements.

LED INDICATIONS

There are two LEDs on this card. The HDD LED will flash green whenever the hard disk drive is being accessed. The Activity (ACT) LED has various indications as defined in the table below.

ACT LED	SVMi-8
STEADY RED	SVMi-8 software is not running.
OFF	SVMi-8 software is running, no calls are in progress.
STEADY GREEN	SVMi-8 software is running, one or more calls are in progress.
FLASHING GREEN	SVMi-8 software is initializing. SVMi-8 is not ready to process calls.

RESET BUTTON

The red button marked RST is the Reset button. Immediately after plugging in the SVMi-8 card and turning the iDCS power switch ON, you **MUST** press this button to initialize SVMi-8   **(See installation step 6 below).**

Pressing this button during operation will disconnect all callers in SVMi-8 and restart the card.

POWER REQUIREMENTS

It is important to understand that all the power to run this self contained Voice Mail system comes from the phone system power supply. Each of the iDCS phone system power supplies are rated according to how many stations they will support. When SVMi-8 is installed in the iDCS it counts as 8 stations of the PSU rating regardless of the number of the VPMs installed.

INSTALLATION OF THE SVMi-8

Follow the steps below to ensure that the SVMi-8 is properly setup.

1. **INSPECTION**
   Unpack and inspect the unit for obvious damage. This card should be labeled SVMi-8. If it is not, you have the wrong card.

2. **INSERTING THE CARD**
   Check that the iDCS power switch is the OFF position. The SVMi-8 card is installed in any universal slot of any cabinet. Next position the SVMi-8 card in the grooves of the card guide and gently slide the card in until it makes contact with the connector. Press gently but firmly on the top and bottom of the front edge of the card until the card sits in its connector.

3. **POWER UP**
   Complete installation of all other required iDCS interface cards and turn the iDCS power switch ON.

4. **CONFIRM OPERATION**
   Wait for the ACT LED to be either **OFF** or **ON** steady green. Either of these conditions indicates normal operation as defined in the table above.

5. **iDCS PROGRAMMING**
   Perform the following iDCS programming steps A through F. It is necessary to perform these at this time so that the SVMi-8 will read these MMCs and initialize accordingly.

   MMC 601: All SVMi-8 ports must be assigned to SVMi-8 group. By default this will be the last available group on the system (529 or 5029 iDCS 500-M and 549 or 5049 iDCS 500-L) and will automatically be set as Bi-VMS GRP when the system recognises the card.

   MMC 601: Select either SEQUENTIAL or DISTRIBUTED ring mode.

   MMC 207: If you are using SVMi-8 for Auto Attendant use MMC 406 to set the desired trunk(s) to ring group 529.

   If you are using SVMi-8 for Voice Mail make sure that all desired stations are forwarded to group 529.

   MMC 406: For Auto Attendant use set the desired trunks to ring SVMi-8 group.

   MMC 102: For Voicemail use make sure all desired stations are programmed to forward to the SVMi-8 group.

   MMC 714: Used to set DID numbers to ring the SVMi-8 group directly.

   MMC 751: Select "NO" for each station that you DO NOT want to create a mailbox for.

6. **INITIALIZE SVMi-8**
   Press the red RST button to read these MMCs and initialize SVMi-8 accordingly.

TESTING THE HARDWARE

1. Call each SVMi-8 port individually and confirm that SVMi-8 answers.

2. Call group the SVMi-8 group and confirm that SVMi-8 answers.

If steps 1 and 2 above proved to be successful you have completed the installation and setup of the SVMi-8 hardware.

You are now ready to begin programming the SVMi-8 Voice Mail/Auto Attendant system parameters.

MMC 750:   After programming set Download to NO to ensure that the next time the SVMi-8 reset button or the system is powered OFF and then ON that the programming on the SVMi-8 is not lost.

REMOVING THE SVMI-8 CARD

To remove the SVMi-8 card from the system to relocate or replace it, please follow these steps.

1. In MMC 754 set VM Halt status to OFF, this will stop further processing by the SVMi-8 and protect the HDD when the card is removed.

2. Check that the ACT LED is OFF and then turn the system OFF.

3. Remove the SVMi-8 card.

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