Telstra Commander@ E105/208+ Installation and Maintenance Manual

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Telstra

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Preface

The preface explains the structure of the Commander@ E 105/208+ Installation and Maintenance Manual. It describes both the overall layout and the layout of each chapter. It also defines and illustrates the conventions used throughout the manual

Purpose of the Manual

The purpose of the Commander E 105/208+ Manual is to provide you, as Telstra Technical Staff, with a complete set of clear and concise installation and maintenance procedures. It should be used when installing a Commander E 105+ or E208+ system to ensure the process is completed correctly, safely and easily. It should also be used for maintaining the system when problems arise.

Audience

This manual is written solely for Telstra Technical Staff responsible for the installation and maintenance of the Commander E105/208+ system.

Organisation of the Manual

The Commander E105/208+ Installation and Maintenance Manual is divided into nine sections, six chapters and three appendices.

Chapter One Introduction to the Commander **E105/208+** System

This chapter introduces the Commander E105/208+ system and explains the difference between the E105+ and E208+ models. It also provides two descriptive lists: System Features and System Facilities.

Chapter Two Power and Termination Unit

This chapter introduces the Commander E 105/208+ Power and Termination Unit. It begins with a general description; a more detailled explanation follows.

Chapter Three Keystations

This chapter introduces and describes the Commander E 105/208+ keystations. It begins with a general description of the two types of keystations; a more detailled explanation follows.

Chapter Four Hardware Installation

This chapter describes the procedures for installing the Commander E105/208+ system hardware. It begins with an Installation Checklist. Each point in the checklist is thenexplained in detail.

Chapter Five System Programming

This chapter contains all the procedures for programming the Commander E 105/208+ system. It begins with a general programming procedure and then explains how to program individual features.

Chapter Six Functional Tests and Maintenance

This chapter explains the tests required to verify that the Commander E105/208+ system has been installed and programmed correctly. It also explains how to maintain the system after a fault has occurred during testing or normal daily operation.

Appendix A System Characteristics

This Appendix provides a list of all Commander E 105/208+ system limits and specifications.

Appendix B Parts Serial Item and Code list

This Appendix contains a list of every Serial Item number. A code description and remarks are provided for each item.

Appendix C System User Guide

This Appendix contains a copy of the Commander E 105/208+ System User Guide.

Manual Conventions

The symbols and typographic conventions used throughout this manual are as follows.

· Bullets iternise information and procedures.

Bold type indicates chapter, section and sub-section headings—

for example, **'Manual Conventions'.**

Bold type also indicates illustration names—

for example, 'System Block Diagram'.

Illustration numbers appear below the illustration name—

for example,

System Block Diagram
[IL01]

Capital letters within these square brackets [ ] identify keys—

for example, 'When the [REDIAL] key is pressed.. .'.

Italics emphasise important words within the text—

for example, '*Do not* over-tighten the screws.'

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Introduction to the Commander EI 05/208+ System

Chapter One
Introduction to the Commander E105/208+ System
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Chapter One
Introduction to the Commander E105/208+ System

Introduction

This chapter provides a general description of the Commander E105/208+ system, including an explanation of its features and facilities.

General Description

The Commander E 105/208+ is an enhancement of the Commander E105/208 system. It provides the essential features and facilities expected in a Commander Key System, and at the same time offers relatively simple installation and maintenance requirements.

The Commander E 105/208+ System features a distributed-intelligence architecture based on a six-wire bus configuration.

This architecture eliminates the need for bulky main equipment: the keystations themselves perform the system control functions. The use of a high-performance CMOS single-chip microcomputer in each keystation achieves this function.

A fully equipped system comprises eight keystations and one Door Station, with a maximum bus length of 500 metres (0.5 mm diameter cable).

Refer to **Illustration 1 - System Block Diagram.**

Kevstations

A single-chip microcomputer in each keystation controls all operational facilities of the Commander E105/208+ system.

An in-built speaker provides keystation tones.

A RISC microcomputer controls all keypad functions.

Program and Data Storage

The station microcomputer's program and data are stored in 8K words of ROM and 2K bits of RAM. They control all keystation and data communication functions. During a power failure, a supercapacitor back-up protects abbreviated dialling numbers (stored in RAM). This back-up also allows keystations to be unplugged and moved at will from point to point.

System Communications

A carrier-sense, multiple-access communications protocol with frequency-shift keying transmission achieves signalling between keystations on the system bus.

DIP Switches

Several keystation facilities are individually programmable via "DIP" switches located in the base of the keystation's housing.

These include:

- keystation address
- master page inclusion
- STD/IDD access
- exchange line ring assignment
- pulse or tone dialling
- auto pause insertion.

System Master Keystation

Every system installation must include a System Master Keystation. It contains the Hold and Ring Detect Board (HRDB-E), which provides all the electronics necessary for:

- exchange line ring detection
- line holding
- internal music on hold.

From a user's viewpoint, the operation of a system master keystation is identical to that of a standard keystation.

Power and Termination Unit

The other major component of the Commander E105/208+ system is the Power and Termination Unit (PTU). This compact unit houses the Power and Terminating Board (PTB-E) and Optional Facilities Board (OFB-E).

The PTU and OFB-E for the Commander E 105/208+ are the same as that used on Commander E 105/208.

Dial Pad Programming

Several keystation facilities are individually programmed via the station dial pad. These programming steps are password protected.

Power and Terminating Board (PTB-E)

The PTB-E provides output terminals for the bus and input terminals for:

- a maximum of two exchange or PABX lines
- plug-pack power supply
- telecommunications reference conductor (if required)
- power-fail telephone
- external music source.

This board also supplies system power supply regulation and the system power-fail relay, as well as exchange line electrical protection.

Optional Facilities Board (OFB-E)

An OFB-E is installed in the PTU to provide any or all of the following facilities:

- Door Station
- external music on hold
- background music

Equipped with the same high performance microcomputer as the keystdtions, the OFB-E contains the required intelligence for bus communications and control functions for the optional features.

The OFB-E is connected to the PTB-E via a flat cable.

Power Supply

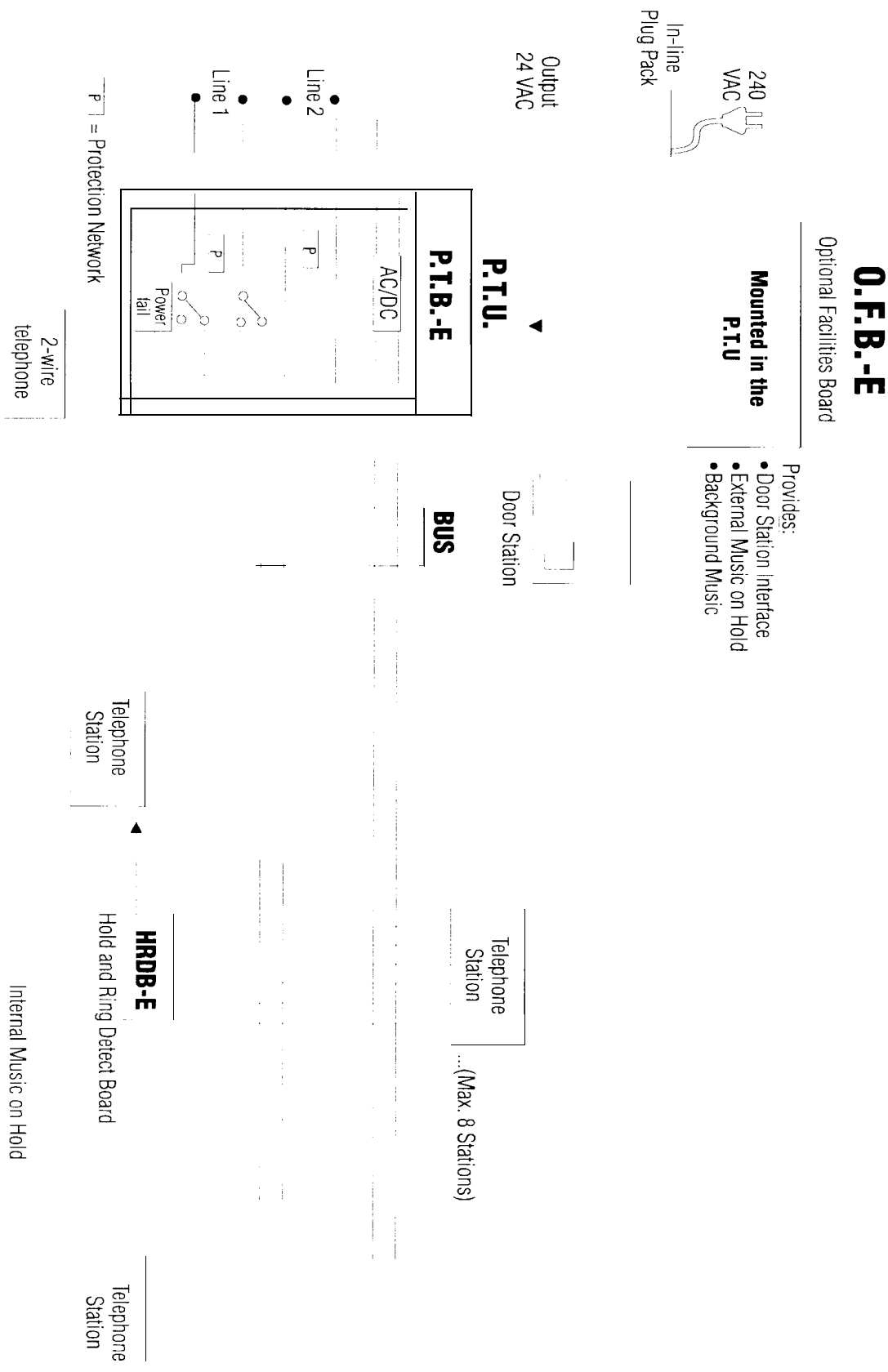
Input power is supplied to the PTB-E via a double-insulated, mains-operated, in-line plug-pack.

Powerfail

During a power failure, exchange line calls can still be made and received at a specially provided two-wire telephone that is automatically switched across the first incoming exchange pair.

Door Station

The Door Station is a compact unit incorporating a speaker and microphone. A Door Station provides two-way communications between any unsupervised area and a keystation.



System Block Diagram
[IL01]

System Features

Keystations

Four types of stations are associated with the Commander E 105/208+ system:

- E105+ Master Keystation

  Contains the hold and ring detection circuitry.for the E105-t System.
- E208+ Master Keystation

  Contains the hold and ring detection circuitry for the E208+ system.
- E208+ Standard Keystation
- Door Station

  For use on both E105+ and E208+ systems.

NOTE: Both Commander E 105+ and Commander E208+ Master Keystations have keys provided for 2 exchange lines. The E 105+ Master Keystation however differs from the E208+ in that the inbuilt HRDB-E (Hold and Ring Detect Board) is only equipped to handle 1 exchange line.

Standard Keystations are identical for both size systems.

Visual Indications

Visual indicators on each keystation show the status of:

- Exchange lines

  idle *incoming ring*

  busy *hold*

  conference
- Intercom circuit

  free *busy*

  incoming cull
- Do Not Disturb
- Speaker On.

Programmable Facilities

Several options and facilities can be programmed at each keystation via "DIP" switch settings. The DIP switches are located under the base of the keystation. A small protective cover must be removed to access the DIP switches. Further options are programmed via the keystation dial pad. These options are password protected.

System Facilities

Incoming Calls

Audible Signalling

Distinctive ring tones from the keystation loudspeaker signal incoming exchange line, intercom and hold recall calls.

NOTE: The exchange line ring cadence is internally generated within the system and **does not** track the exchange ring cadence.

Do Not Disturb

When invoked, this facility blocks the audible signals of all incoming exchange line and intercom calls. Each keystation provides visual indication of DND.

Exchange Call Automatic Answer

Each keystation can be programmed to automatically answer incoming exchange line calls when the handset is lifted.

Exchange Call Queuing

When Exchange Call Automatic Answer is selected, and more than 1 call is ringing, lifting the handset will answer the oldest call.

Flexible Ring Assignment

Each keystation can be programmed to signal or not signal incoming exchange line calls by an audible tone on a per-line basis.

During a Call

Call Transfer

Allows an exchange line call to be transferred to another keystation after it has been announced.

Conference

Allows the establishment of a conference with one external and two internal parties or three internal parties.

Hold - Common

Places a call on hold for any keystation to retrieve.

Hold - Recall

When an exchange line call is placed on hold, a reminder ring signal is activated every 90 seconds at the keystation that initiated the hold condition.

Music-On-Hold

Automatically transmits music to a caller on hold. The music may be generated internally, or provided by an external source. (The Optional Facilities Board is required for externally provided Music-On-Hold).

Off-Hook Signalling

Provides a muted audible exchange line signal to a busy keystation when it receives an incoming exchange line call.

PABX Recall

When the system operates behind a PABX, this facility enables access to the facilities of the host PABX. Only TLB is provided.

Outgoing Calls

Access Barring

Restricts the range of numbers that can be dialled on akeystation. Each keystation can be programmed for one of two classes of Access Barring via a DIP switch located in the keystation.

Class 1 unrestricted access

Class 2 access restricted to exception table entries plus access to 000, 008, 013, 016n > n, 122n > n, 11441 > 11440, 13n > n, 0175, 18nn.

Exception Table is 8 entries of 4 digits each.

Automatic Pause Insertion on PABX lines

When using the abbreviated dial and redial facilities on PABX lines, the system automatically inserts a three-second pause.

Decadic to Tone Signalling

After connecting a keystation to a called party on a decadic exchange line, the dial pad can be used to send further numbers in tone (DTMF) signalling.

Direct Exchange line Access

Direct access to exchange lines by any keystation using a single key.

last Number Redial

Press [REDIAL] to automatically redial the last number dialled.

live Key Working

After pressing an exchange line key, the loudspeaker automatically activates to allow the dialling of a number without lifting the handset.

On-Hook Dialling/Monitor

Enables a keystation to originate a call and monitor its progress without lifting the handset. However, you must use the handset to speak to the called party.

Station Abbreviated Dialling

By pressing [MEMORY] and then dialling a memory location (0-9), each keystation can access up to ten programmed numbers having a maximum of 19 digits. Each keystation has its own ten-number memory.

Station Speed Dialling

When the handset is lifted or the station is 'off-hook', and an exchange line is selected, up to 8 speed dial keys can be used to select pre-programmed speed dial numbers. These numbers are a subset of those used for station abbreviated dialling.

Internal Calls

Alternative Point Answering

Allows any keystation to answer an intercom call directed to another keystation by pressing [CONF].

Direct Keystation Selection

Allows single-button access to another keystation by pressing the required DSS key (1 to 8).

Intercom

Establishes a private call between any two keystations.

Intercom Voice/Ring Signalling

Allows the keystation user to select to make either an intercom signal call or an intercom voice call. An intercom signal call is when an intercom ring is sent to the called keystation. An intercom voice call is when, after a short tone, the caller can speak directly to the called party through the called station's inbuilt speaker.

In both cases, the called party must lift the handset to speak to the calling party.

Meet-Me Paging

After a paging announcement, the paged person can contact thecalling party by pressing [PAGE] on any keystation.

Paging

Allows paging of all other keystations through theirloudspeakers from any keystation. Individual keystations can be programmed to bar the reception of a page announcement. (Note that keystations programmed not to receive page calls are also excluded from receiving Door Station chimes).

Voice Call

Allows a keystation user to call any keystation and speakdirectly through the speaker of the called keystation.

Equipment

Door Station

Provides two-way communication between an unsupervised area and any keystation on the system. (Note that keystations programmed not to receive paging calls are also excluded from receiving door station chimes.) (The Optional Facilities Board is required to provide the Door Station facility.)

Portability

Allows movement of keystations to other sockets in the systemwhile still retaining their identity and abbreviated dialling information.

Powerfail Operation

During a power failure, exchange line calls can be made and received at a specially provided two-wire telephone.

Power Failure Memory Retention

Retains the keystation's abbreviated dialling memory during an extended power failure for a minimum of 24 hours.

Keystation Directory

A directory label designed to adhere to the face of each keystation is provided for the recording of extension numbers and abbreviated dial numbers.

Wall-Mounting Bracket

Enables keys stations to be wall-mounted.

Miscellaneous

Background Music (Optional)

Music supplied from an external source can be broadcast through keystation loudspeakers, and turned on and off at each keystation as required. The music automatically turns off when a call is in progress. The Optional Facilities Board and an external music source (including a Telstra approved Line Isolation Unit) are required to provide this facility.

Call Progress Tones

Tones indicate the call status to the user.

Confidence Tone

A low-level, audible tone indicates that a key press is registered. The user enables or disables this facility.

Headset Mode

A keystation handset may be replaced by a suitable Austel permitted headset. When connected and activated, the [SPKR] key is used to perform the off-hook function. Headset mode is protected against activation and deactivation by a two-key activation sequence.

Secrecy

All external and internal calls provide secrecy.

Visual Indication

Visual display is provided at each keystation to indicate:

- all incoming exchange line calls
- exchange line held condition
- exchange line in-use condition
- exchange line in conference
- other conditions such as intercom line status, Do Not Disturb, Speaker On and Headset Mode selected.

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Power and Termination Unit

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Power and Termination Unit
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Chapter Two
Power and Termination Unit

Introduction

This chapter provides a general description of the Power and Termination Unit and its two major components: the Power and Terminating Board (PTB-E) and Optional Facilities Board (OFB-E). It also includes PTB-E and OFB-E circuit block diagrams and a description of all circuit blocks depicted in both diagrams.

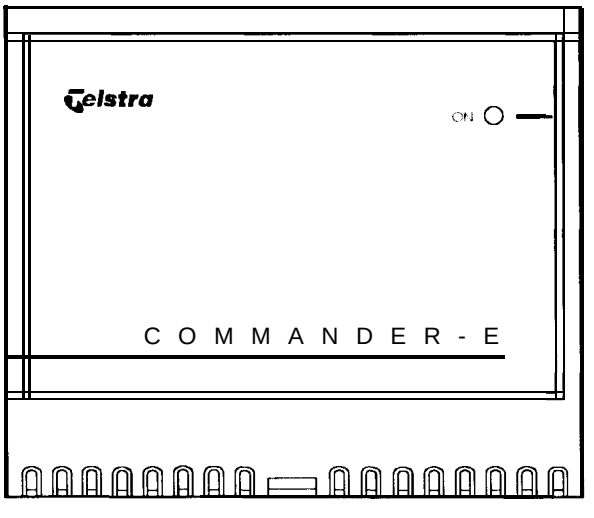
General Description

The Power and Termination Unit (PTU) houses the Power and Terminating Board (PTB-E) and Optional Facilities Board (OFB-E). Refer to **Illustration 2 - PTU.**

The PTU is a wall-mounted plastic housing that contains:

- exchange line terminations
- system bus terminations
- line protection circuitry
- power-fail relay
- system power regulation and reticulation.

An in-line, mains-operated plug-pack, supplied as part of the PTU, supplies the PTU's AC power.



PTU
[IL02]

Power and Terminating Board

Board Code - PTB-E

Location - PTU Base

Description - The PTB-E provides:

- the system terminal strip

  Used to terminate: incoming exchange lines; the system bus; the power-fail station and external background music inputs.
- power supply circuitry
- exchange line protection.

Optional Facilities Board (Optional)

Board Code - OFB-E

Location - PTU Cover

Board Description - An OFB-E is installed in the PTU when any of the following optional facilities are required:

- Door Station
- external music-on-hold
- background music

The OFB-E uses the same microcomputer as the keystations. It contains: the intelligence required for bus communications, the control features necessary for the optional facilities and the Door Station input terminals. The OFB-E connects to the PTB-E via a flat cable.

Circuit Blocks - Power and Terminating Board

Refer to **Illustration 3 - PTB-E Circuit Block Diagram.**

Transformer

A double-insulated plug-pack that delivers 24V AC Nom. to the power supply.

Power Supply

Delivers DC voltages for the system bus communications pair.

Electronic Choke

Decouples the Audio and Frequency Shift Keying signals from the DC feed.

Powerfail

When power fails, a relay releases that switches each exchange line pair in the system to a standard two-wire telephone.

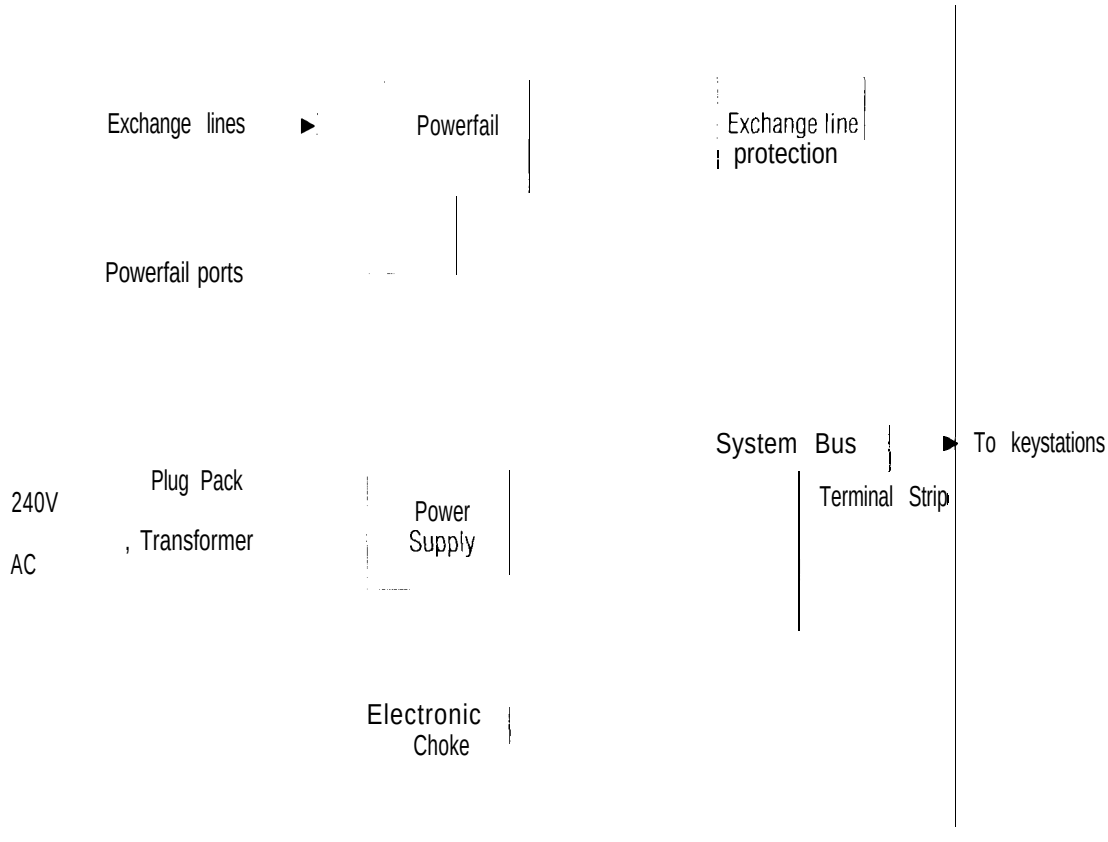
Exchange line Protection

Metal Oxide Varistors (MOV's) isolate exchange line pairs from high voltage surges on the exchange lines.

System Bus

The system bus consists of a pair of wires for each exchange line (the Commander E 105+ system contains one spare pair) and a single pair for the following:

- system communication
- power reticulation
- intercom
- paging
- conference calls.



PTB-E Circuit Block Diagram
[IL03]

Circuit Blocks - Optional Facilities Board

Refer to **Illustration 4 - OFB-E Circuit Block Diagram.**

Microcomputer Unit (MCU)

The OFB-E Microcomputer Unit controls:

- Door Station interface
- external music source interface

It works in conjunction with the keystation microcomputer to control the systems' optional facilities.

NOTE: PABX Earth Recall is not available on the Commander E105/208+.

Data Transmit and Receive

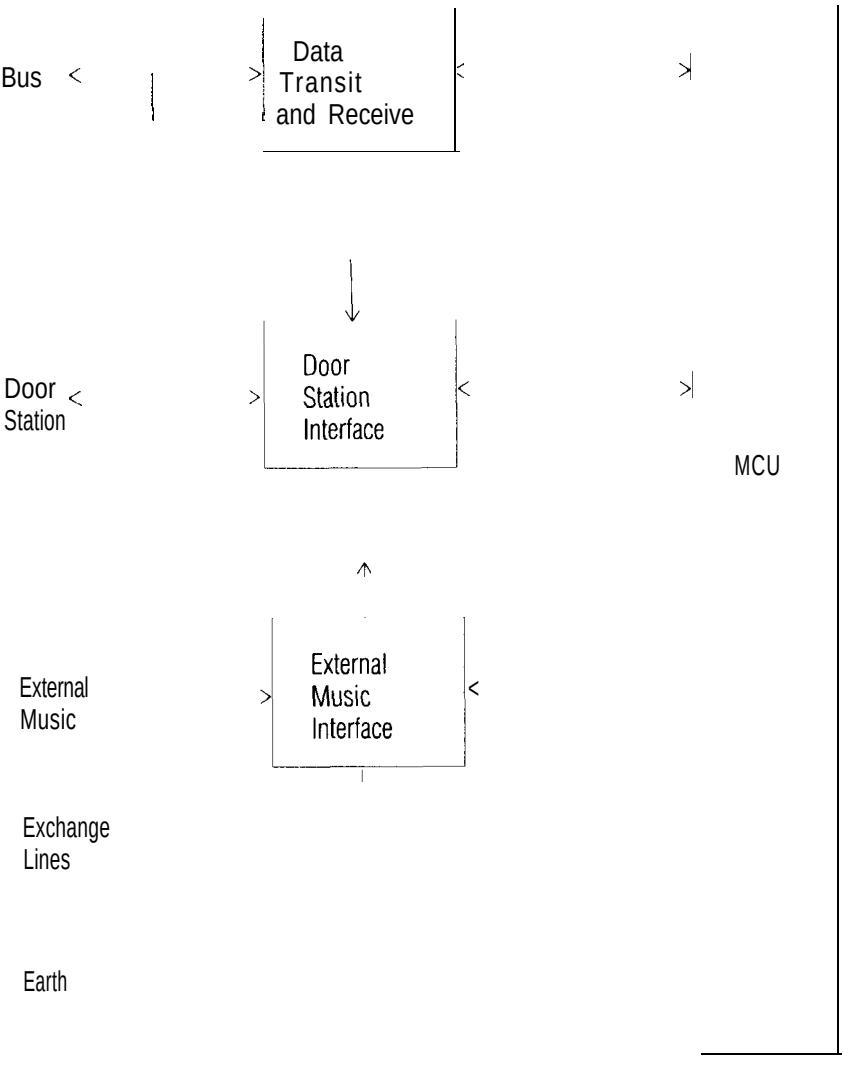
Converts data transmitted on the bus pair into logic levels for the Microcomputer Unit.

Door Station Interface

Provides circuitry to connect a single Door Station to the system. Intercom transmission between the door and keystation is via the bus intercommunication channel.

External Music Source Interface

Provides circuitry for the connection of an external music source to the system. Background music and music-on-hold are relayed to the keystations via the bus intercommunicationchannel.



OFB-E Circuit Block Diagram
[IL04]

Chapter Three
Keystations

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Chapter Three
Keystations

Introduction

This chapter provides a general description of the keystation and its two major printed circuit boards. It then provides descriptions of each keystation circuit block and a circuit block diagram.

General Description

There are 3 types of system keystations.

- E105+ Master Keystation

  Contains the hold and ring detection circuitry for the Commander El 05+ system.
- E208+ Master Station

  Contains the hold nnd ring detection circuitry for the Commander E208+ system.
- E208+ Standard Keystation

NOTE: Both Commander E 105+ and Commander E208+ Master Keystations have keys provided for 2 exchange lines. The E105+ Master Keystation however differs from the E208+ in that the inbuilt HRDB-E (Hold and Ring Detect Board) and the Control Board are only equipped to handle 1 exchange line.

Standard Keystations are identical for both size systems.

All keystations contain a telephone network that includes:

- a handset
- a dial keypad incorporating a RISC processor.
- non-locking function keys
- status Light Emitting Diodes (LEDs) (housed in keys)
- a speaker
- volume control.

The Master Keystations also carry a line hold and ring detection HRDB-E circuit board.

Refer to **Illustration 5 - E105+ and E208+ Keystation.**

Keystation Main Board

Board Code - KSB-E-A (Keystation Main Board)

Location - Keystation

Board Description - This board contains a high-performance, single CMOSchip microcomputer and associated circuitry. It controls all keystation, system and data communications functions and contains the:

- keystation power supply
- speech and audio circuitry
- data transrnit and receive circuitry
- line control circuitry.

Hold and Ring Detect Board

Board Code - HRDB-E

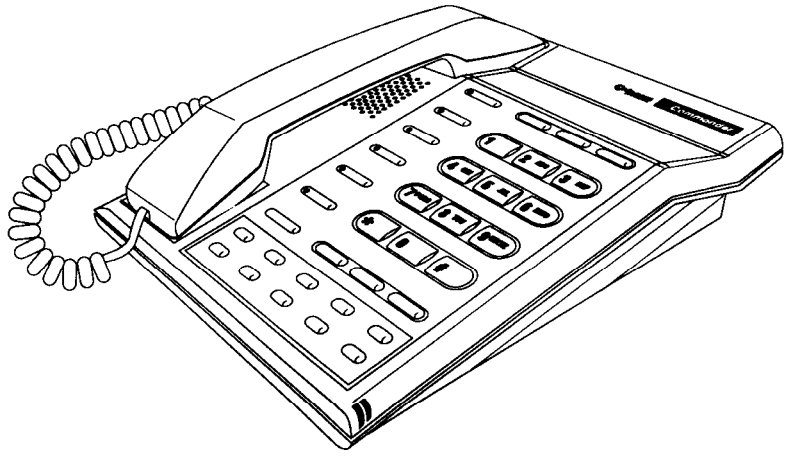
Location - Master Keystation

Board Description - This board contains circuitry that controls system ring detection and line holding functions. It also accommodates the internal music-on-hold feature. This board differs between Commander E105+ and Commander E208+ systems.

Keypad Assembly

Location - Keystation

Description - This assembly generates dialling and system function signals. It consists of a rubber keypad and printed board assembly connected to the keystation main board via a ribbon connector. The assembly is controlled by a RISC processor. This processor also handles keypad interfacing with the keystation Main Board.



Commander **E105+** and **E208+** Keystation
[IL05]

Circuit Blocks

Refer to **Illustration 6 - Keystation Circuit Block Diagram.**

Microcomputer Unit Circuit (MCU Circuit)

Controls keystation operation. The MCU works in conjunction with other keystations (and the OFB-E, if installed) to control the system operation.

Specifically, the keystation central microcomputer controls the:

- exchange line interface
- keystation communications and operation
- intercom keystation interconnection
- connection of signal tones to the keystation
- system option programming.

Keypad RISC Processor

This process or provides an intelligent interface between the keypad and the station Microcontroller unit. It provides mapping for all 'intelligent keys', such as DSS/Speed Dial keys and Centel® functions keys.

Memory

Keystation memory consists of 8K words of ROM (10 bits per word) and 5 12 words of RAM (4 bits per word).The microcomputer uses the Random Access Memory (RAM) to store abbreviated dialling codes.

The microcomputer uses Read Only Memory (ROM) to store the keystation's operating program.

Memory Back-Up Circuit

During brief power down periods, the memory back-up circuitprotects the abbreviated numbers stored in RAM. This circuit consists of a supercapacitor (charged ready for use under normal keystation operating conditions) and associated control circuitry.

Reset

When low voltages are detected, the reset circuit transmits an interrupt signal to the Microcomputer Unit (MCU) and generates a reset pulse when power is restored.

Power Supply

A DC-DC converter that steps down and isolates bus voltages to supply the keystation circuit requirements.

Isolation Transformer

Isolates keystation circuitry from the bus.

Data Transmit and Receive

Converts data transmitted on the bus power pair into logic levels, then directs the signal to the keystation MCU serial port signalling interface.

Speech Circuit

Provides an interface for the telephone network intercom channel, transmission circuit and handset.

Tone Generator

Provides the DTMF tone and all audible tones emitted by the keystation.

Audio Selector

This circuit couples either:

- audio signals from the speech circuit to the audio amplifier when connected to either the telephone line or the bus,

or

- audible tones from the tone generator to the audio amplilier when required for either audible tones in the earpiece or transmission of DTMF signals.

Audio Amplifier

Under control of the audio selector, the audio amplifier drives the keystation speaker. Line access connects lines to the speech circuit by an MCU-controlled relay.

line Access Circuit

Provides an interface between the speech circuit and either of the exchange lines. It also provides a solid-state switch fordialling purposes.

HRDB-E Board (In Master Keystation)

The HRDB-E board is contained in the system Master Keystation.

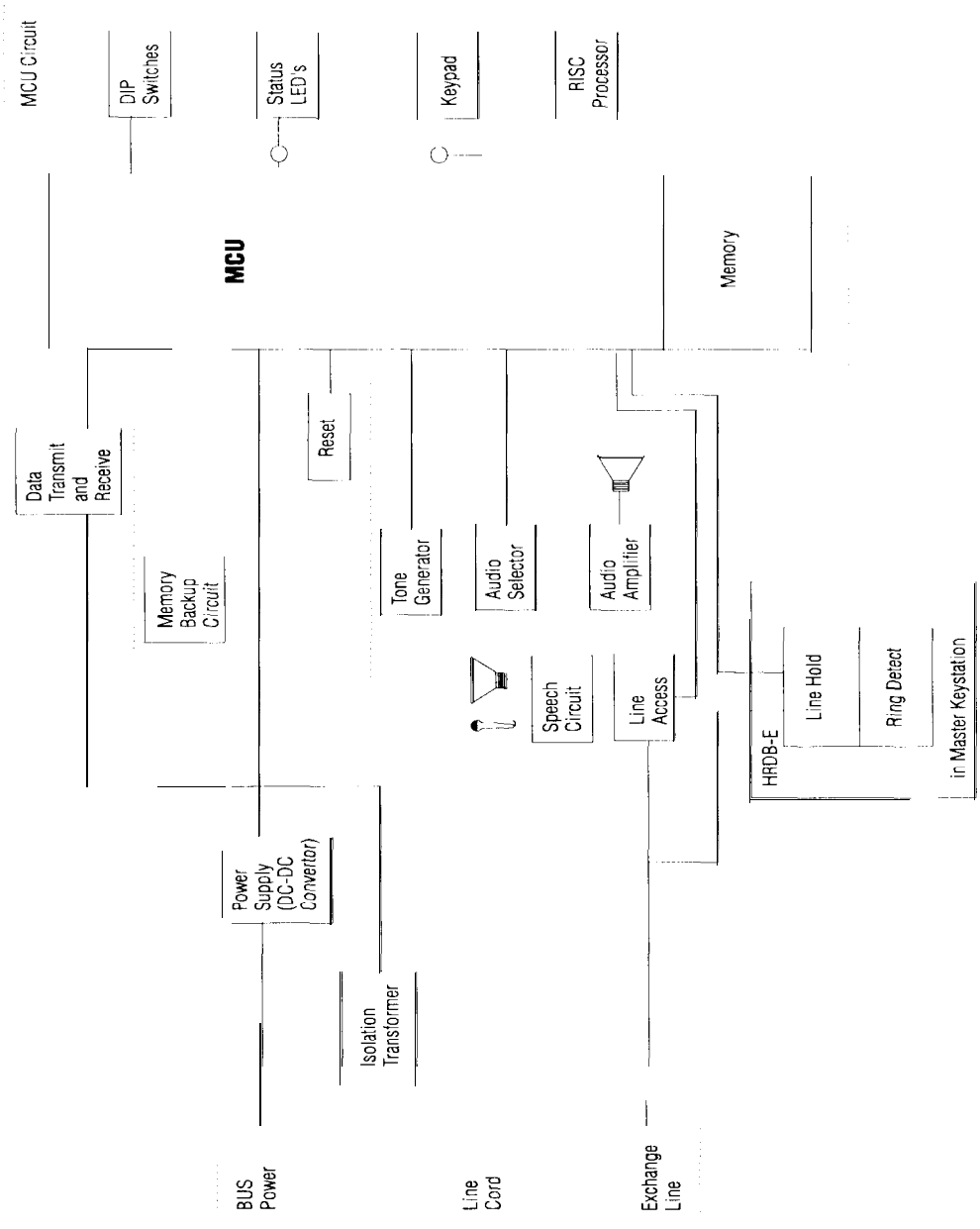
Line-Hold Circuit

Provides line-holding control at the master keystation in the system.

All other keystations in the system can assert line-holding control. They can also transmit and receive the line hold on/off codes (received by the master keystation) along the bus communications channel (service a and service b) .

Ring Detect Circuit

Provides ring detection for the master keystation only. All other keystations in the system respond to “line ringing” and “line terminated” codes transmitted by the master keystation along the bus communications channel.



Keystation Circuit Block Diagram
[IL06]

Chapter Four
Hardware Installation

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Chapter Four
Hardware Installation

Introduction

This chapter describes the procedures for installing the Commander E105/208+ system hardware.

It begins with an Installation Checklist that summarises all the hardware installation procedures. Each point in the checklist is then covered in detail, with full installation procedures and additional relevant information. Where appropriate, an illustration and reference are provided.

Component Safety Precautions

Commander E105/208+ equipment contains a considerable number of MOS and other static-sensitive components. To reduce the incidence of premature failure due to static discharge, ensure that you take the following precautions.

- *Always* discharge static from yourself before you handle a printed board assembly (PBA)
- *Always* disconnect power before handling or installing PBAs
- Always handle PBAs by the edges
- Never touch PBA tracks or edge connectors. Contaminents introduced by fingers can cause corrosion and high-resistance connections.
- Never touch components. They are physically delicate and finger pressure can fracture (but not necessarily break) components **leads.**
- Never attempt to repair power plug-packs in the field. They are powered from the 240V mains supply and contain hazardous **voltages.**

Bus cabling is polarity-sensitive. It is essential that correct polarity is maintained. Be careful when checking voltages on cabling.

BUS WIRE COLOUR	MODULAR SOCKET	BUS WIRE DESIGNATION
Green	1	L2b
Black	2	Service b (-50V)
Blue	3	Llb
White	4	Lla
Red	5	Service a (OV)
Orange	6	L2a

Table 1 - Bus Cabling

Installation Checklist

Use the following checklist in conjunction with the detailed procedures that follow to ensure that you install the Commander E 105/208+ system correctly.

- Order the necessary equipment using the Sales Form
- Locate and mount equipment
  - power and termination unit
  - power supply plug-pack
  - keystations
  - Door Station
  - power-fail telephone
- Connect and terminate cables
  - system bus
  - power supply plug-pack
  - exchange lines
  - keystations
  - modular sockets
  - Door Station
  - power-fail telephone
  - external music-on-hold
- Connect OFB-E and Telstra reference conductor (if required)
- Power up
- Check cabling
- Power down
- Plug in keystations
- Program the system (refer to Chapter Five)
- Power up
- Wait 10 seconds for the system to initialise
- Test the system (refer to Chapter Six)

IMPORTANT

- Designate sale or rental keystation
- Complete installation dates and warranty labels on equipment
- Complete site records
- Leave system user guide with system administrator.

Installation Procedures

Sales Form Completion/ Equipment Ordering

The Telephone Order for any S.B.S. must be accompanied by an S.B.S. System Order. Sales staff, after consultation with the customer, must complete the S.B.S. System Order.

Use the information provided in the System Order form to order the various items required for the installation, and to find the required programming information.

Forward three copies of the System Order to the installation area along with the Telephone Order.

On completion of the installation, any variations to the System Order must be noted on each copy of the order.

Keep one copy of the System Order with the equipment as a record of the particular installation. Return the remaining two copies to the local Telstra Business Office.

Refer to **Illustration 7 - System Order Form.**

Iocate and Mount Equipment

Customer Responsibilities

The customer is responsible for providing:

- satisfactory lighting for installation and maintenance activities
- a single-phase, correctly earthed, 220-250V,10A,50Hz AC general-purpose power outlet within one metre of the equipment.

Telstra

System Order No (Service Plus)

Commander **E105/208+** System Order Form

Customer's Name

Address

Town or Suburb Post Code

Nature of Business

Type of Payment (✓)

☐ Lease ☐ Outright Purchase

☐ Standard Rental ☐ Short Term Rental

☐ Temporary Rental ☐ Other

Customer Contact Telephone

Sales Contact Telephone

Division (✓) Comm ☐ C & G ☐ Cons ☐

STD Code Service No PABX Extn (If off PABX) Install Req Date D D M M Y Y App'n Date D D M M Y Y Date Order Issued D D M M Y Y Date Completed D D M M Y Y

		E105+ Equipment				E208+ Equipment				
Equipment	**PCMS Code**	**Exp**	**Technical Code**	**Serial/Item**	**Qty**	**PCMS Code**	**Exp**	**Technical Code**	**Serial/Item**	**Qty**
Business Starter Pack										
Power and Terminating Unit			PTU-E	546/1				PTU-E	546/1	
Optional Facilities Board			OFB-E	546/5				OFB-E	546/5	
Keystation Master			TS-E105P-M	546/209				TS-E208P-M	546/210	
Keystation			TS-E208P-S	546/212				TS-E208P-S	546/212	
Door Station			DS-E	546/13				DS-E	546/13	
Wall Mounting Kit			WMK-E	546/221				WMK-E	546/221	
Powerfail Telephone										
Wall Socket			SMK-(6x6)-CONN	268/125				SMK-(6x6)-CONN	268/125	

Programmable Options

SW1 Station Address

STN	1	2	3	4
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
Door Stn				

SW2 STN	1 All Call Page	2 STD Access	3 Ring Line 1	4 Ring Line 2	5 Dial Type	6 Auto Pause Insert	Keyboard Programming: Auto Answer
1							
2							
3							
4							
5							
6							
7							
8							
▲1	1 = Enabled 0 = Disabled (1)	1 = Enabled 0 = Disabled (1)	1 = Enabled 0 = Disabled (1)	1 = Enabled 0 = Disabled (1)	1 = Decadic 0 = DTMF (1)	1 = Enabled 0 = Disabled (0)	1 = Enabled 0 = Disabled (0)
▼0 Switch Positions		If '0' go to Exception Table					

Exception Table

Location	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8
	Entry (Maximum 4 digits)							
1	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
2	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
3	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
4	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
5	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
6	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
7	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)
8	(*)	(*)	(*)	(*)	(*)	(*)	(*)	(*)

Exchange Line Connections

	Exchange Line
	Tie = Non PABX
	= Non PABX

Tick if Required

☐ External Music Source

Permit No | Service Order No

Serial/Item 546/203

FM-00345-R01 1520

System Order Form
[IL07]

Power and Termination Unit (PTU)

Mounting Limitations

Ensure that you install equipment in a position allowing adequate access for maintenance activities. The space requirements for wall-mounted equipment are:

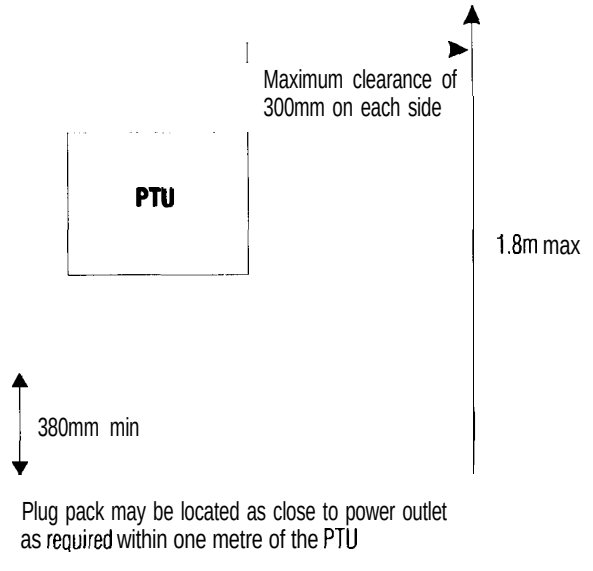
- no less than 300mtn clear wall space on each side
- no less than 380mm and no more than 1.8m from the floor
- no less than one metre of clear floor space in front of the equipment.

Refer to **Illustration 8 - Limitations to Wall Mounting.**

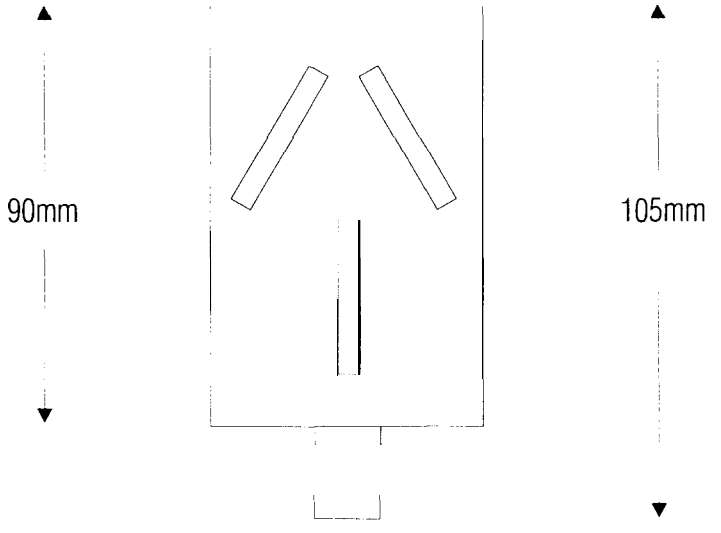
NOTE: Initial systems are equipped with a conventional non-in-line plug-pack. You may be unable to plug this type of plug-pack into some power points with limited clearance, such as a 'low-line GPO' on ducted skirting.

Accordingly, locate an appropriate 240V AC GPO to accommodate the plug-pack dimensions. Refer to **Illustration 9 - Plug-Pack Dimensions.**

If such an outlet cannot be located, a short 240V AC extension cord or similar should be used to enable installation.



limitations To Wall Mounting
[IL08]



Plug-Pack Dimensions
[IL09]

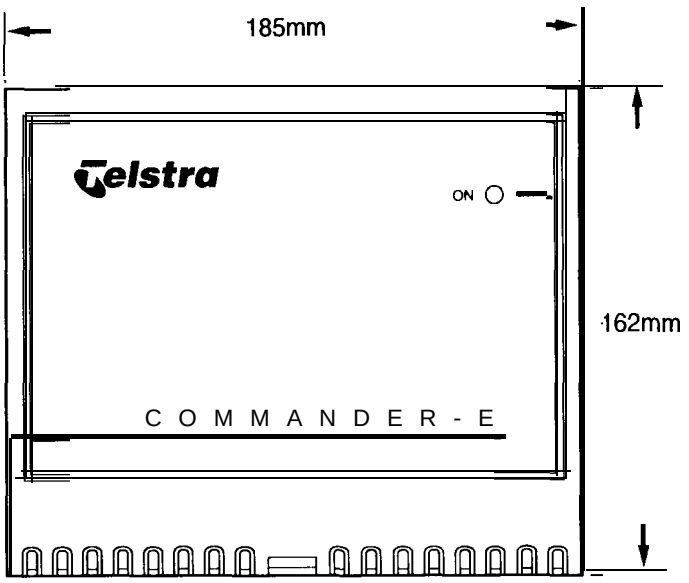
Installation Procedure

Mount the PTU as follows:

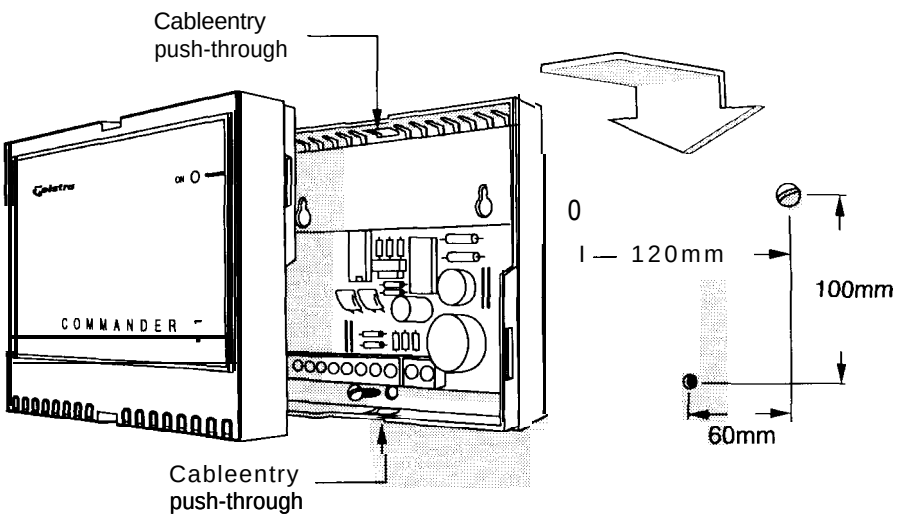
- Unclip the cover from the base by using a screwdriver in the slot in the top or bottom of the unit
- Disconnect the LED flying lead from the PTB-E
- Attach the base to the wall using three screws. Do not overtighten screws.
- Remove the cable entry tab at the bottom or top of the base by pushing firmly downwards

  You may also bring cables in from the back of the PTU through the centre hole.
- Pass the cables through the entry
- Place wires in screw terminals and tighten
- Attach LED flying lead to PTB-E
- Replace PTU cover on base.

Refer to **Illustration 10 - Power and Termination Unit Dimensions** and **Illustration 11 - Power and Termination Unit Mounting.**



Power and Termination Unit Dimensions
[IL10]



Power and Termination Unit Mounting
[IL11]

Power Supply Plug-Pack

To mount the power supply plug-pack:

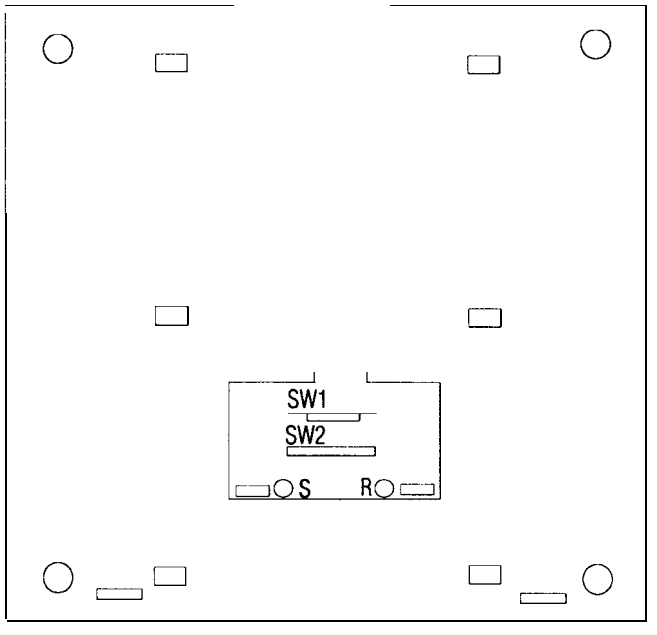
- Locate the customer supplied, 240V AC mains supply outlet (within one metre of the PTU)
- Ensure that the outlet is switched OFF
- Attach the plug-pack to the wall using the bracket supplied
- Plug power pack supply into mains outlet.

Sale/Rental Window

Refer to the System Order form to determine if the system is sold or rented. Then, before installing each keystation, identify it as follows:

- Remove the latched cover on the keystation base
- For a sold system, pierce the window next to S
- For a rented system, pierce the window next to R
- Only pierce one window on each keystation.
- Replace the cover.

Refer to **Illustration 12 - Sale/Rental Identifying Window.**



Sale/Rental Identifying Window
[IL12]

Wall Mounting Keystations

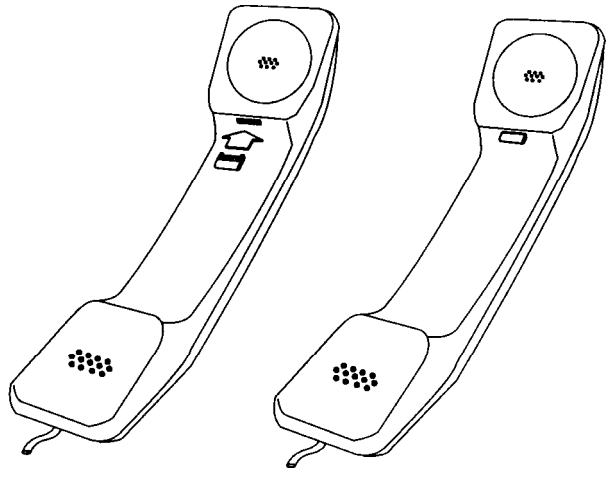
To mount a keystation on the wall:

- Obtain a Wall Mounting Kit (WMK-E)
- Push out the handset rest from the centre of the wall mounting bracket and insert it in the hole under the earpiece in the handset

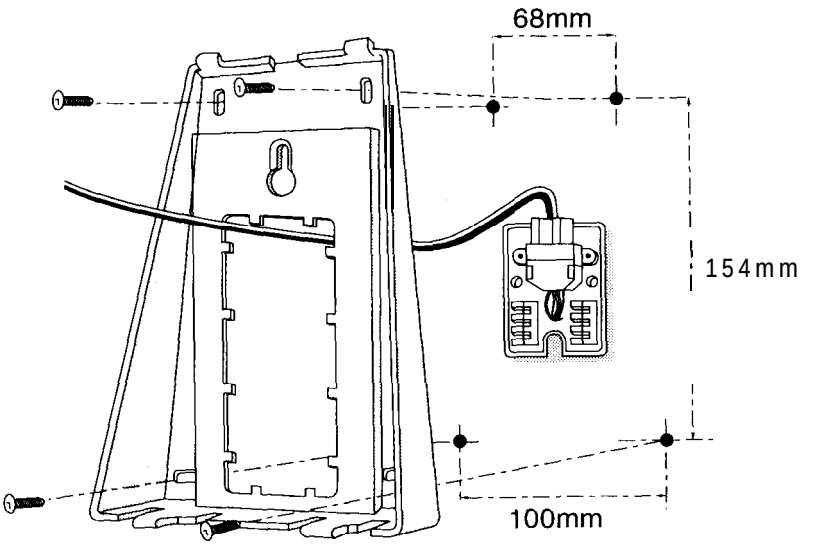
  Refer to **Illustration 13 - Installing The Handset Rest.**
- Remove and discard the modular socket cover and locate the modular socket inside the wall bracket
- Remove the centre cut-out of the wall mounting bracket
- Attach the wall mounting bracket to the wall using four screws. *Do not overtighten the screws.*

  Refer to **Illustration 14 - Keystation Wall Mounting Dimensions.**
- Connect the short line cord between the socket and the top of the key station
- Clip the keystation into the wall mounting bracket.

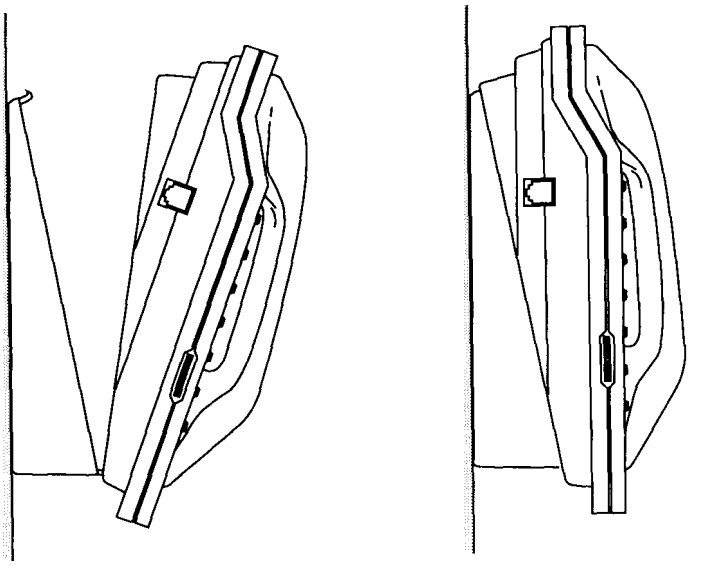
  Refer to **Illustration 15 - Wall Mounting the Keystation.**



Installing The Handset Rest
[IL13]



Keystation Wall Mounting Dimensions
[IL141



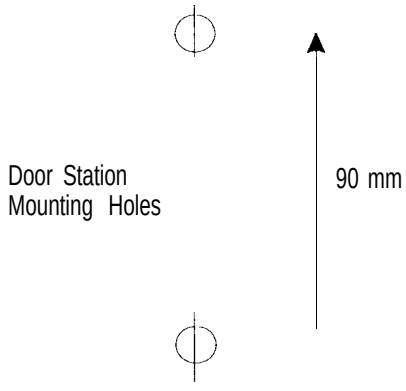
Wall Mounting the Keystation
[IL15]

Door Station

To mount a Door Station:

- Remove the base of the Door Station
- Attach the base to the wall using two screws. *Do not overtighten the screws.*

  Refer to **Illustration 16 - Wall Mounting Dimensions For Door Stations.**
- Pass the cable through the base using the cable entry at the top of the base
- Attach the Door Station to the base.



Wall Mounting Dimensions For Door Stations
[IL16]

Optional Facilities Board Installation (DFB-E)

When the OFB-E is installed in the PTU, it extends the system facilities by providing:

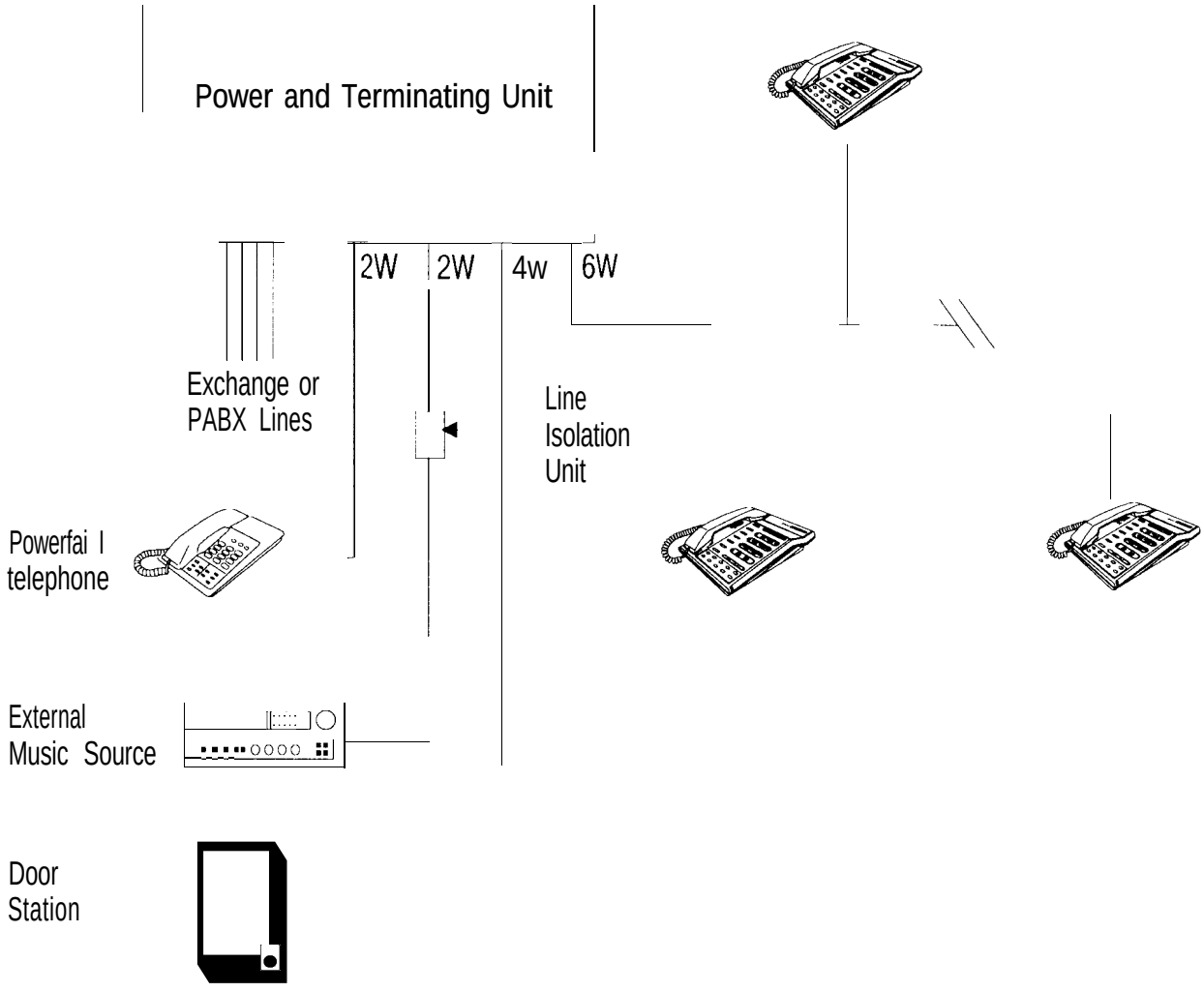
- a Door Station interface
- an external music-on-hold interface
- a background music interface

If any of these facilities are required, the OFB-E must be installed in the PTU.

To install the OFB-E:

- Mount the OFB-E in the PTU cover
- Secure it in place with the four screws provided. Do not overtighten the screws.
- Connect the cable from the OFB-E to the PTB-E.
- Select link for external music (EXT) or internal music (INT) or no music on hold (See page 5-8 for more details).

Connect and Terminate Cables



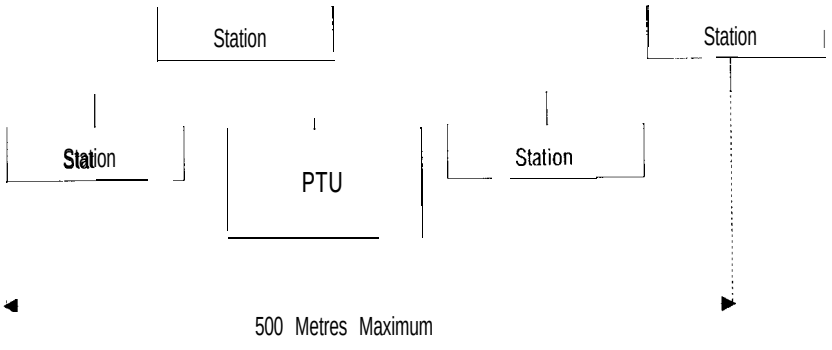
Commander **E105/208+** Cabling Scheme
[IL17]

Cabling limitations

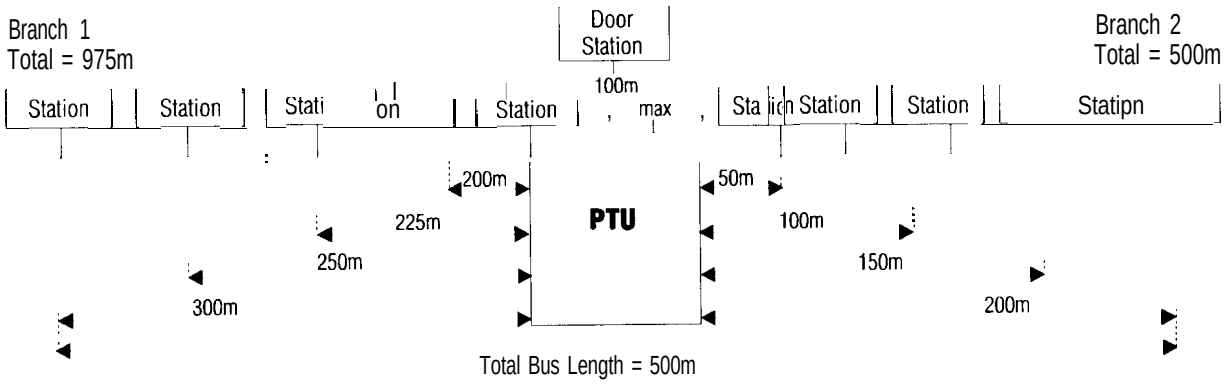
The general rules for determining the allowable bus lengths are:

- The overall bus length must not exceed 500 metres
- The total distance of all individual keystations in any one branch emanating from the PTU must not exceed 1000 metres (1 km).

Refer to **Illustration 18 - Bus Length,** and **Illustration 19 - Example of Allowable Keystation Distances.**



Bus **Length**
[IL181



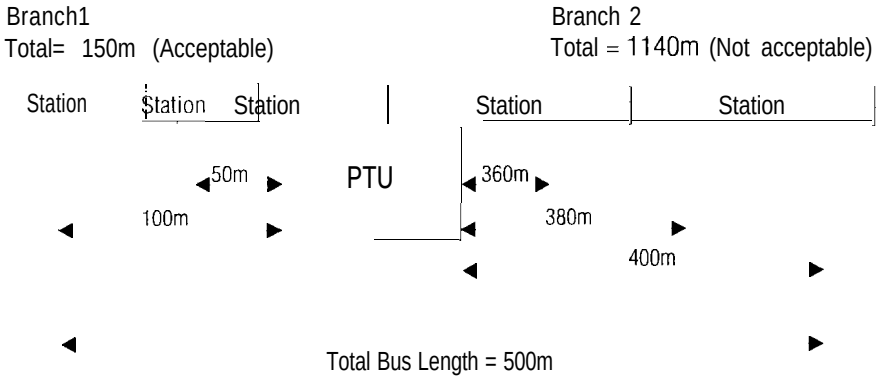
Example of Allowable Keystation Distances
[IL19]

NOTE 1: 'Star' wiring is acceptable provided the above two general rules are followed.

NOTE 2: A maximum of eight keystations can be connected to a branch.

Refer to **Illustration 20 - Example of Unacceptable Cabling Scheme.** The overall bus length is acceptable at 500m. However, the individual lengths of branch 2 add up to 1140m. This exceeds the 1000m limit per branch, and therefore makes the cabling scheme unacceptable.

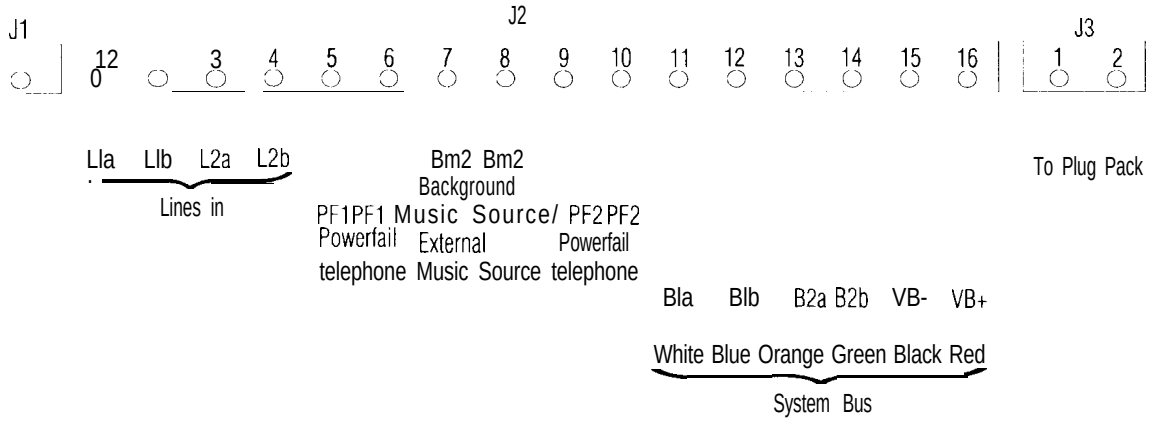
If cabled this way, the system would not function properly. In this case, the PTU should have been located as close as possible to the group of three keystations to create an acceptable overall length.



Example Of Unacceptable Cabling Scheme
[IL201

Power and Termination Unit (PTU) Terminations

Terminate the bus on the PTB-E in the PTU. Refer to **Illustration 21 - Power and Termination Unit Terminations.**



Power and Termination Unit Terminations
[IL21]

Power Supply Plug- Pack

To connect the power supply plug-pack to the Power and Termination Unit:

- Terminate on the input screw terminals J3 1 and J3 2.

NOTE: As this is an AC output, it is not polarity-dependent.

Exchange lines

To terminate incoming exchange lines:

- Terminate on the PTU on the input screw terminals J2 1 and 2 (line 1), and J2 3 and 4 (line 2).

Keystations

To cable and terminate the keystations:

- Refer to **Table 2 - Keystation Bus Cabling Terminations**
- After cabling the bus, ensure it is properly terminated and that the polarity is correct.

  Ensure the system is cabled correctly. If it is incorrect, the equipment will not operate.

It is not important in which order the keystations are connected. However, it is highly recommended that the master keystation be designated extension 1. This simplifies identification for maintenance purposes.

NOTE: Terminate the keystations on the modular sockets. Refer to the section - **Modular Socket Termination** below.

PTU TERMINALS	BUS WIRE DESTINATION	WRE **COLOUR**	MODULAR SOCKET
J2 11	Bla	White	4
J2 12	B1b	Blue	3
J213	B2a	Orange	6
J2 14	B2b	Green	1
J2 15	Service b (Vb-)	Black	2
J2 16	Service a (Vb+)	Red	5

Table 2 - Keystation Bus Cabling Terminations

Modular Socket Termination

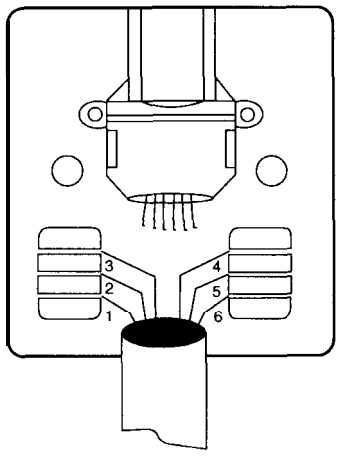
An MS-E-SMK modular socket is a surface-mounted Krone termination.

To terminate the MS-E-SMK:

- Mount the base and socket PBA assembly
- Cut and strip cable sheath to expose 30mm of conductors
- Lay the appropriate colour conductors across the required terminals and terminate using the standard Krone terminating tool

  Refer to **Illustration 22 - Modular Socket (KRONE Type).**
- Snap-fit the cover to the socket and base.

NOTE: Where termination of a second cable is required, repeat the second and third steps above.



1	Green	L2b
2	Black	Service b
3	Blue	LIb
4	White	LIa
5	Red	Service a
6	Orange	L2a

Modular Socket (KRONE Type)
[IL221

Door Station

To connect a Door Station to the PTU:

- Terminate the two pairs at the Door Station
- Terminate the two pairs on the OFB-E terminal strip J2

Refer to **Table 3 - Door Station Terminations.**

WIRE **DESIGNATION**	WIRE **COLOUR**	**DESIGNATION** DOOR **STATION**	OFB-E TERMINALS
DR+	Red	DR+	J2 1
DR-	Black	DR-	J2 2
DRA	Blue	DRA	J2 3
DRC	White	DRC	J24

Table 3 - Door Station Terminations

Power-Fail Telephone

To cable and terminate a standard two-wire telephone for apower-fail telephone:

- Run the telephone cable directly to the PTU
- Connect the cable on terminals J2 5 and J2 6, or J2 9 and J2 10, on the PTB-E as required.

Internal Music-On-Hold

Internal music-on-hold is a standard feature of the Commander E105/208+ system. You can disable it on any line if specifically requested by the customer.

To disable internal music-on-hold:

- Locate and remove or park jumper links J3 (line 1) and J4 (line 2) on the HRDB-E board in the master keystation. Refer to **Illustration 31 - Program - Internal, External, and No Music-On-Hold,** page 5-9.

External Music Source

When the customer requires external music-on-hold orbackground music, ensure that you install the OFB-E in the PTU to provide the external music source interface.

To connect an external music source:

- Terminate the external music inputs (via the Telstra approved isolation unit) to terminals J2 7 and J2 8 in the PTU
- Locate jumpers J3 (line 1) and J4 (line2) on the HRDB-E in the Master Keystation
- Move jumper link J3 from pins 1 and 2 to pins 2 and 3
- Move jumper link J4 from pins 1 and 2 to pins 2 and 3.

NOTE: For external music sources and external paging devices, relay isolation must be in accordance with Telstra Specification 1364. The device must be:

- Telstra authorised apparatus only
- Authorised specifically for use with a Commander System.

Protective Earth

This Commander System no longer requires the mandatory termination of a Telecommunications Reference Conductor (TRC) for high voltage surge protection.

NOTE: In lightning-prone areas, protect the exchange lines at their point of entry or distribution in accordance with TPH 0265N0 “Lightning Protection at Customers’ Premises” and TPH 02 16 “LSA Plus Terminating System”.

General Procedure

Power Up

To power up the Commander E 105/208+ PTU:

- Ensure the system is cabled and terminated correctly
- Ensure all printed circuit boards are set up and installed correctly
- Switch on power at the plug-pack GPO.

Check Cabling

Before installing the keystations, measure the voltage at the modular sockets to ensure that the cabling is correct.

COLOUR	PIN	VOLTAGES
Black	2	Approx. -50V DC
Red	5	0V Ref

Table 4 - Keystation Voltages

Power Down

To avoid possible damage to keystations, power down the system before they are connected.

- Switch off power at plug-pack GPO.

Plug in Keystations

After testing all sockets to ensure the cabling is correct, plug in all keystations and terminate the Door Station (if required).

Keystation Self Test

In Commander E 105/208+ systems, a self test routine is incorporated in the keystation software to assist with theirinstallation and maintenance.

The self test covers:

- speaker
- tone generator
- LEDs and keypad operation.

The self test should be performed on all keystations after they are plugged in.

Test Mode Entry

To place the keystation in Test Mode:

- Enter the password

  The password is:
  [n] [7] [9] [n]

  where [n] is the keystation address. Therefore, the password for keystation 3 is '3793'.

The password is only recognised when the keystation is completely idle that is, when:

- it is on-hook
- no system activity is taking place
- all LEDs are OFF.

You must enter the password within four seconds of pressing the first digit. If you do not correctly enter all four digits within four seconds, then you must re-enter the password from the beginning.

NOTE 1: The test mode does not check any of the RISC functions, for example, headset and DSS keys.

NOTE 2: When Test Mode is exited, the keystation is reinitialised, this will clear all programmed speed dial locations.

LED Tests

Immediately after entering test mode, all of the keystation LEDs, except RISC LEDs, illuminate for one second, then turn off.

This confirms that all LEDs are working properly.

After the LEDS have turned off, the keystation is in keyboard test mode.

Keyboard Tests

To test that each key is working correctly, refer to **Table 5 - Self Test Key Sequence and LED Responses.** Enter the keypresses in the sequence shown. The nominated LED will illuminate after you press the key.

Key to Press	**LED** to Check	Key **to Press**	**LED to** Check	Key to **Press**	Led to Check
[LINE 1]	LINE 1	[1]	LINE 1	[3]	.INE 1
[LINE 21	LINE2	[4]	LINE 2	[6]	.INE 2
[SPKR]	SPK	[7]	SPK	[9]	SPK
[DND]	DND	[*]	DND	[#]	)ND
[HSET/MODE]	LINE1	[2]	LINE1		
[RECALL]	LINE2	[5]	LINE 2		
[CONF]	SPK	[8]	SPK		
[MEMORY]	DND	[0]	DND		
[REDIAL]	INT				

Table 5 - Self Test Key Sequence and LED Responses

Audio Circuit Test

At power-up, the confidence tone is automatically enabled. To check this:

- Press any key.

If you hear the confidence tone, the speaker, audio amplifier and DTMF/Tone generator chip are functioning correctly.

Test Failure

If a keystation does not function correctly during any of the LED, Keyboard or Audio tests, the line cord and internal ribbon cable should be checked. If the keystation is still faulty, it should be replaced.

Test Mode Exit

When the test is complete:

- Go off-hook.

All LEDs will illuminate for one second, then turn off.

Programming

Refer to Chapter Five **-System Programming.**

Defective Equipment

When equipment is defective, you must complete a Customer Equipment Return Analysis Form (Form BS3 1) Available as S3 1 8/3 1.

Chapter Five
System Programming

Chapter Five
System Programming
Table of Contents

Chapter Five
System Programming

Introduction

This chapter describes the procedures for programming each feature of the Commander E105/208+ system. A programming summary is also provided at the end of the chapter.

General Description

Program the system by setting individual DIP switch positions at each keystation. The DIP switches are located behind a small cover in the base of the keystation.

Programming Hardware locations

DIP Switches

Program the Commander E 105/208+ system and key stations by setting the DIP switches at each individual keystation.

There are two DIP switches:

- DIP Switch 1 (SW 1) a four-way switch for setting the keystation address. The four switch positions are:

  SW 1.1 SW 1.2 SW 1.3 SW 1.4

- DIP Switch 2 (SW2) an eight-way switch for setting system and keystation options. The eight switch positions are:

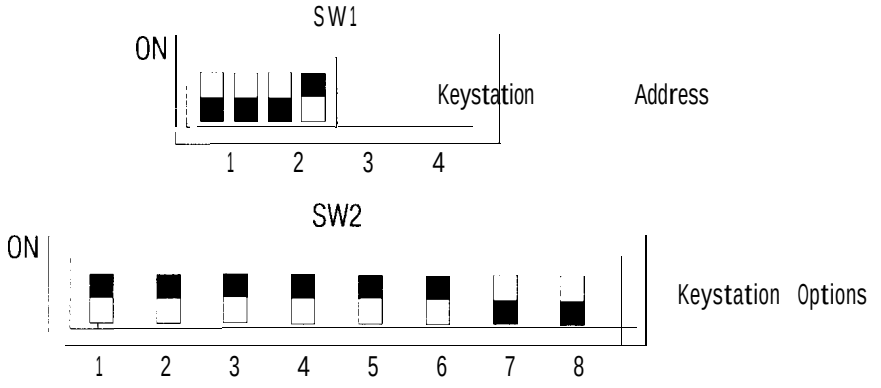
  SW 2.1 **SW 2.2** SW 2.3 SW 2.4

  SW 2.5 SW 2.6 SW 2.7 SW 2.8

To access the switches:

- Using a small flat screwdriver, remove the small cover underneath the keystation.

Refer to **Illustration 23 - Keystation DIP Switches (In Default Settings).**



Keystation DIP Switches (In Default Settings)
[IL23]

SWITCH NUMBER	OPTION	SETTING	
SW2.1	MASTERPAGEIN	enabled	disabled
sw2.2	UNRESTRICTEDACCESS	enabled	disabled
SW2.3	RING - LINE1	enabled	disabled
SW2.4	RING - LINE2	enabled	disabled
SW2.5	DIAL TYPE	decadic	DTMF
SW2.6	NOT USED		
SW2.7	NOT USED		
SW2.8	AUTO PAUSE INSERT	enabled	disabled

Table 6 - DIP Switch 2 Keystation Options

General Programming Procedure

Keystation Intercom Address

Assign the keystation addresses at each keystation by setting SW 1.

To set the keystation address:

Refer to **Table 7 - Keystation Address Settings.**

RTERCOM EXTENSION	SW 1.1	sw1.2	osw1.3	sw1.4
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	
6	0	1	1	0
7	0	1		
8	1	0	0	0

NOTE: 1 = ON 0 = OFF

Table 7 - Keystation **Address Settings**

Master Page-h

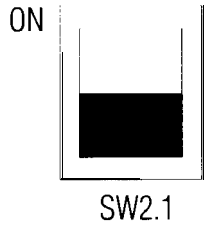
To program a keystation to receive an "All Call Page" and the Door Station chime:

- Set SW2.1 to ON.

To disable these facilities:

- Set SW2.1 to OFF.

Example



No Master Page-h
[IL24]

Keystation Access Class

Two outgoing line access classes are available for Commander E 105/208+ keystations:

- Class 1 - unrestricted calls
- Class 2 - local calls only.

Program each keystation's access class with SW 2.2.

NOTE: This switch is password protected. Refer to Page 5- 10 for full details of password.

Class 1

- To program a keystation for Class 1:
- Set SW 2.2 to ON.

Class 1 keystations have unrestricted access allowing any number of digits to be dialled.

Class 2

To program a keystation for Class 2:

- Set SW 2.2 to OFF.

In this mode, all numbers dialled are compared to an exception table. The basis of the table is that all dial input is compared to entries in the table, and if no match is found the call is barred (i.e. all numbers are barred, with the exception of.. .)

The exception table consists of two areas: A non-programmable area, with fixed emergency numbers etc, and a programmable area consisting of 8 entries of 4 digits each. At default, the programmable table is set to 'no exceptions'.

To program entries into the exception table, proceed as follows:

1. Enter [n][7][9][n+1] (where 'n' is the keystation address). Therefore the password for keystation 3 would be 3794.
2. Press [MEMORY], followed by the table number ([1] through to [8]).
3. Enter the exception code (up to 4 digits).
4. Repeat steps 2 and 3 until complete
5. Go off-hook then on-hook.

Exception table entries may be up to 4 digits long. The more digits entered, the more restricted will be the exceptions that can be dialled. In the example given below, a Melbourne user is restricted to Melbourne metro, Port Augusta, Queensland, Wollongong and AMPS (the example is based on the 10 digit AUSTEL numbering plan).

Table location	Entry	Allows
1	[9]	Allows calls within Melbourne (9XXX xxxx
2	[0][8][8][6]	Allows calls to Port Augusta ((08) 86XX XXXX)
3	[0][7]	Allows calls to Queensland and surrounding areas ((07) xxxx XXXX)
4	[0][2][4][2]	Allows call to Wollongong ((02) 42XX XXXX)
5	[0][1][8]	Allows calls to AMPS (018)XXX XXX)
6	[*]	No exceptions allowed
7	[*]	No exceptions allowed
6	[*]	No exceptions allowed

Table 8 - Example of Exception Table

The example demonstrates that adding more digits to an exception table entry 'tightens up' the number range of available destinations. Entry 2 will restrict calls to Port Augusta, while entry 3 will allow most of Queensland. To tighten entry 2 to the Sunshine Coast only for example, the entry wouldbecome [0][7][5][4]. An entry consisting of a '*' only, effectively means 'no exceptions are allowed'.

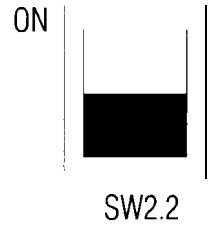
To clear an entry:

- Enter '*' at step 3 above.

The non programmable area of the table contains the following:

000, 008n, 18n, 016n, 0175, 122n, 1144n, 13n, 013.

Example



Program - Class 2
[IL251

Ring line 1

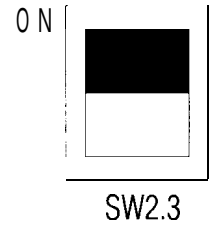
To enable calls to ring on incoming exchange line 1:

- Set SW 2.3 to ON.

To disable calls ringing on incoming exchange line 1:

- Set SW 2.3 to OFF.

Example



Program - Ring On line 1
[IL261

Ring line 2

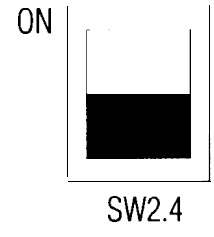
To enable calls to ring on incoming exchange line 2:

- Set SW 2.4 to ON.

To disable calls from ringing on incoming exchange line 2:

- Set SW 2.4 to OFF.

Example



Program - No Ring On line 2
[IL27]

Dial Type

To select keystation for Decadic dialling:

- Set SW 2.5 to ON.
- To select keystation for DTMF dialling:
- Set SW 2.5 to OFF.

Example

Program - OTMF **Dialling**
[IL28]

Auto Pause Insert

This option allows the keystation to insert automatically a three-second pause when using redial or abbreviated dialling on PABX lines.

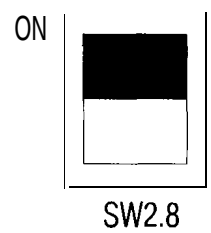
To enable the three-second pause:

- Set SW 2.8 to ON.

To disable the three-second pause:

- Set SW 2.8 to OFF.

Example



Program - Auto Pause Insert
[IL29]

Music-On-Hold

This program facility allows the following options:

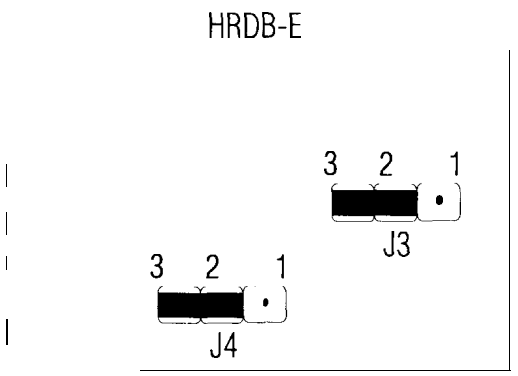
- internal music-on-hold
- external music-on-hold
- no music-on-hold.

Program this facility by positioning the links on the Hold And Ring Detect Board (HRDB-E) in the system master keystation and in the Optional Facilities Board (OFB-E).

To access the HRDB-E:

- Unscrew the five screws underneath the keystation and remove the keystation cover
- Disconnect the keystation speaker
- Unplug the ribbon cable
- Unscrew the keystation board centre securing screw and remove the board.

To find the position of the links on the HRDB-E, refer to **Illustration 30 - Music-On-Hold Links.**

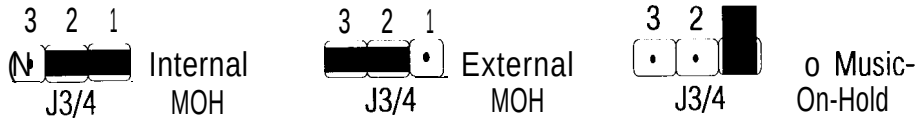


Music-On-Hold links
[IL301

MUSK: SOURCE	UNKS ON LINE 1	**HRDB-E** LINE 2	**LINK ON OFB-E**
	J3	J4	J3
INTERNALCHIMES	1&2	1&2	INT
EXTERNALMUSIC	2&3	2&3	EXT
NO MUSIC	PARK ON 1	PARK ON 1	INT

Table 9 - Music Source links

Examples



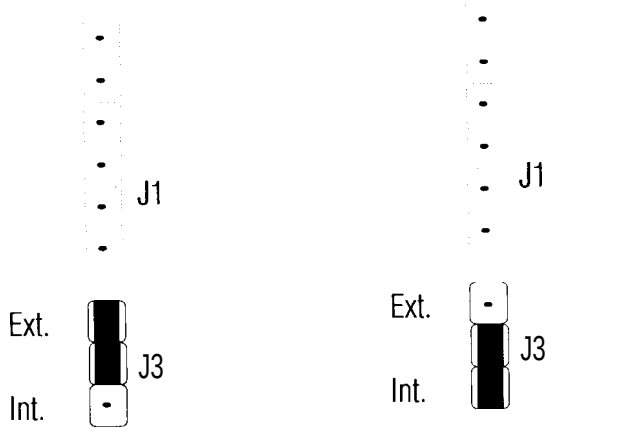
Program - internal, External, and No Music-On-Hold
[IL311

To access the OFB-E:

- Remove the PTU cover
- Position the jumper for the required setting.

NOTE: The setting of this jumper (J3) must be consistent with the setting of the jumper on the HRDB-E.

Examples



External Music-On-Hold Setting on OFB
[IL321

internal or No **Music-On-**Hold Setting on OFB
[IL33]

Background Music

To program the system for background music:

- Set the OFB-E to external music-on-hold
- Set the HRDB-E to external music-on-hold

For further details, see the previous section Music-On-Hold.

Initialise and Reset

Upon power on, an initialising routine sets up the logical and physical settings of the keystation microcomputer.

The DIP switches are scanned and internal system flags are set/reset according to the DIP switch settings.

If a change is ever made to the DIP switch settings, the keystation must be reset for the new settings to be recognised.

There are two ways to reset the keystation:

- Power system OFF, then power ON,

or

- Remove, then re-insert, the keystation's line cord
- With either method, wait approximately 10 seconds for the system to initialise.

Access Class Restriction

The STD/IDD barring DIP switch has special protection.

If the setting is changed, a password must be entered on the keypad to initiate a scan of this switch and to reset it. This procedure prevents unauthorised personnel changing the keystation access class.

This password is:

[n] [7] [9] [n]

where [n] is the keystation address. Therefore, the password for keystation 3 would be '3793'.

The password is only recognised when the keystation is completely idle that is, when:

- the keystation is on-hook
- no system activity is taking place
- all LEDs are off.

Refer to page 5-4 for programming of exception table.

Enter the password within four seconds of when you press the first digit. If you do not correctly enter all four digits within four seconds, re-enter the password from the beginning.

Exit by going Off-hook.

NOTE: This password is confidential and should not be told to the customer or to anyone else outside Telstra.

Exchange line Auto Answer

This option provides automatic answering of ringing exchange line calls Ringing calls are answered simply by lifting the handset - there is no necessity to press the [LINE] key.

If more than one call is ringing, lifting the handset will answer the oldest ringing call.

To enable Exchange Line Auto Answer:

- Enter the keypad features password.

  The password is only recognised when the keystation is completely idle that is, when:

  - the keystation is on-hook
  - no system activity is taking place
  - all LEDs are off.

  The password is:

  [n][7][9][n+1]

  where [n] is the keystation address. Therefore, the password for keystation 3 would be '3794'.

NOTE: This password differs from the Access Class Restriction Password.

All LEDs will flash once.

- Press [MEMORY][9][*]
- Press [1]
- Exit by going off-hook.

All LEDs will flash once.

To disable Exchange Line Auto Answer:

- Enter keypad features password as described above
- Press [MEMORY] [9] [*]
- Press [0]
- Exit by going off-hook.

All LEDs will flash once.

Headset Mode

Headset Mode programming is a keystation user level option, and is included here for completeness only.

A keystation handset may be replaced by a suitable Austel permitted headset. When connected and activated, the [SPKR] key is used to perform the off-hook function. Headset Mode is protected against accidental activation and de-activation by a two-key activation sequence.

To activate Headset Mode:

- Press and Hold [HSET/MODE]
- Press and Release [SPKR].

To deactivate Headset Mode:

With the handset on-hook,

- Press and Hold [HSET/MODE]
- Press and Release [SPKR].

Once activated, Headset Mode is selected as follows:

To select Headset Mode:

- Press [HSET/MODE]
- The [HSET/MODE] key will glow.

To de-select Headset Mode:

- Press [HSET/MODE]
- The [HSET/MODE] key will go out.

NOTE 1: When Headset Mode is selected, the handset function is controlled by pressing the [SPKR] key.

NOTE 2: When in Headset Mode, the station cannot be operated in off-hook mode.

Programming Summary

PROGRAM POINT	FACILITY/ OPTION	ASSIGNMENT	INITIAL VALUE
DIP Switch 1	Station Address	1.1 1.2 1.3 1.4	
(each keystation)	Extension 1	off off off on off off on off off off on on off on off off off on off on off on on off off on on on on off off off	off off off on
DIP Switch 2			
2.1	Master Page In	on enable off - disable	ON
2.2	Unrestricted Access	on enable off - disable	ON
2.3	Ring Line 1	on enable off - disable	ON
2.4	Ring Line 2	on enable off - disable	ON
2.5	Dialling type	on - Decadic off DTMF	ON
2.6	Not Used		
2.7	Not Used		
2.8	Auto pause insert	on enable off - disable	OFF
Links J3 and J4 HRDB-E (Master keystation)	Line 1 Internal M.O.H. Line 1 External M.O.H. Line 1 No M.O.H	J3 1 & 2 2 & 3 park	1 & 2
	Line 2 Internal M.O.H. Line 2 External M.O.H. Line 2 No M.O.H.	J4 1 & 2 2 & 3 park	1 & 2

Software Programming Records

Place a copy of the system program in the PTU as a record of the way the system has been programmed.

Chapter Six
Functional Tests and Maintenance

Chapter Six
Functional Tests and Maintenance
Table of Contents

Chapter Six
Functional Tests and Maintenance

Introduction

This chapter provides all the information required to test and repair the Commander E 105/208+ keystations and system.

General Description

Test the system after:

- installing it
- performing the keystationself-test
- performing the programming procedures.

Test the system in accordance with the test procedures listed in this chapter. If you encounter a fault, follow the repair actions.

This chapter also provides a comprehensive set of fault finding ables, system tests and repair actions to use for system maintenance.

CAUTION

Each test consists of a special sequence of steps. Do not perform any other action - for example, going on-hook - between the steps. If a fault interrupts the test, follow the repair suggestion(s), then restart the test at the beginning of the relevant section.

System Tests and Repair Actions

The system functions are listed in a test sequence. Test the system in this order whilst consulting the System User Guide (Appendix C) for correct operation of the functions. If a fault interrupts the test sequence, restart the test at an entry point marked *.

Keystation Installation

Check:

- the system has power
- bus wiring to the keystation

  Refer to **Table 10 - Cable Connections.**
- voltage on the wires to the keystationwith all keystations not connected.

  Refer to **Table 10 - Cable Connections.**

  If a voltage is not similar to that listed in Table IO, check the plug-pack and PTU.

WIRE	MOO. SOCKET **NUMBER**	VOLTAGE
Green	1	Line 2 b
Black	2	Service B - 50V
Blue	3	Line 1 b
White	4	Line 1 a
Red	5	Service A - OV
Orange	6	Line 2 a

Table 10 - Cable Connections

Commence tests here

*** Exchange line Seizure**

Dial tone received and line lamp on. If not, check:

- exchange line at PTU line terminals
- exchange line at PTU bus terminals

If line is not present, replace the PTU.

- bus wiring and voltage

Refer to **Table 10 - Cable Connections.**

- keystation internal ribbon cable connection
- keystation line cord and handset.

If fault still exists, repluce the keystation.

*** Incoming Exchange Call**

If the signal is not heard, check:

- master keystation is installed
- DND key is off
- keystation 'Ring Line 1' and 'Ring Line 2' programs
- bus wiring.

If fault still exists, replace the HRDB-E or muster keystation.

If a fault still exists, check:

- keystation speaker lead connection.

If fault still exists, replace the keystution.

Off-Hook Signalling

If the signal is not heard, check:

- keystation speaker lead connection.

If fault still exists, replace the keystution.

Volume Control

Adjustable low to high.

If not, replace the keystation.

Answering Exchange Call

If an incoming call is not seized, check:

- bus wiring
- keystation line cord and handset
- keystation ribbon cable connection

If a fault still exists, repluce the keystation.

Automatic Answering Exchange Call

If an incoming call is not seized when the handset is lifted, check:

- as for 'Incoming Exchange Call'
- keypad features programming

*** Outgoing Exchange Call**

If the correct number is not reached, check:

- keystation 'Unrestricted Access' program
- keystation 'Dial Type' program

Test the exchange line

If the fault still exists, replace the keystation.

Decadic to Tone Signalling

If the tone signalling is not heard after pressing [MODE], replace the keystation.

Hold

If an exchange call does not hold, check:

- keystation ribbon lead connection.

If fault still exists, replace the HRDB-E or master keystation.

If fault still exists, replace the keystation.

Music-On-Hold

Determine the music source.

- Check J3 for Line 1 and J4 for Line 2 on the HRDB-E.

Position 1 & 2 - Internal music.

Position 2 & 3 - External music.

For external music source, check:

- Music source and its connection to the PTU

If you cannot hear the source at the 610 socket, liability for repair lies with the customer.

- OFB-E is correctly installed and jumper (J3) is set correctly.

If fault still exists, replace the OFB-E.

Hold Automatic Ring Back

If ring back does not occur after 90 seconds, replace the keystation.

*** Last Number Redial**

If the system is connected to a PABX, and the correct number is not obtained, check:

- keystation' Auto-Pause Insert' program.

If fault still exists, replace the keystation.

Abbreviated and Speed Dialling

If the correct number is not obtained, check:

- correct procedure is being used to store numbers
- stored number does not violate access barring class in keystation 'Unrestricted Access' program.

If system is connected to a PABX, check:

- Auto-Pause Insert' program.

If fault still exists, replace the keystation.

System Memory Back-Up

If last number dialled and abbreviated numbers are not retained, replace the keystation.

* PABX/Centel Recall

PABX/Centel recall is not effective.

If TLB is not effective:

- remove PABX/Centel line from PTU and connect to Touchfone® *200.*
- exercise features that are controlled by Recall.

If feature works as expected, but fault still exists when the line is reconnected to the PTU, replace the keystation.

* Paging

If pages are not received, check:

- keystation 'Master Page - In' program.

If fault still exists, replace the keystation.

Do Not Disturb

If calls are not blocked, replace the keystation.

Intercom Signal or Voice Call

If an intercom call is not heard, check:

- called keystation 'Intercom Address' program
- called keystation speaker lead connection
- bus wiring.

If fault still exists, replace the keystation.

Intercom Answering

If the speech path is not present, check:

- keystation handset.

If fault still exists, replace the keystation.

On-Hook Dialling

If the dial tone is not heard, check:

- bus wiring
- keystation speaker lead connection.

If fault still exists, replace the keystation.

*** Exchange line Conference**

If a conference is not established, replace the keystation.

*** Background Music**

If music is not heard, check:

- music source and its connection to the PTU

  If music is not heard at the 610 socket, liability for repair lies with the customer:
- OFB-E is correctly installed.

  If fault still exists, replace the OFB-E.

  If fault still exists, replace the keystation.

*** Door Station**

Hear chime, and speech path is present. If not, check:

- keystation 'Master Page-In' program
- wiring at Door Station and OFB-E
- OFB-E flat cable connector.

  If fault still exists, replace the OFB-E.

  If fault still exists, replace the keystation.

*** Power-fail Telephone**

Line 1 at power-fail telephone during power failure? If not, check:

- exchange line at PTU power-fail terminals

  If line is not present, replace the PTU.
- wiring at PTU and telephone socket.

  If fault still exists, replace the power-fail telephone.

Centel Features

If Centel features do not work as expected:

- Check that correct feature Key/s are being used on the keystation.

  Refer to Keystation User Guide, and Centel User Guide.
- Try accessing the Centel feature/s at another keystation.

  If Centel features work as expected when another keystation is used, replace the keystation.
- Remove Centel line from PTU and connect to Touchfone 200. Exercise Centel features manually using the Touchfone 200. If features do not work as expected when the Touchfone 200 is used, have the network programming checked.

Maintenance

Test Equipment

Use the following equipment to maintain the Commander E 105/208+ system:

A multimeter with small test probes to measure various test voltages and to test wiring continuity between the PTU, connectors and keystations.

Normal maintenance tools such as long-nose pliers, angle cutters, a Philips-head screwdriver and flat-blade screwdriver.

Where Centel lines are connected, a test telephone equipped to generate *, # and 1 00mS TLB.

Voltage Test Points

Voltages should be measured under 'no-load' conditions that is, with all keystations unplugged.

Power Supply Plug-Pack

The power supply plug-pack supplies AC Voltage to the PTU.

Measure the voltages on the PTU input terminal strip. Refer to **Table 11 - Power Supply Test Points.**

LOCATION	TEST POINT	VOLTAGE
PTB-E	Power Supply Input terminals J3.1 and J3.2	Between 17V AC and 31V AC

Table 11 - Power Supply Test Points

Power and Termination Unit

The Power and Termination Unit supplies DC Voltage to the System Bus. Measure these voltages on the PTU terminal strip at J2 15 and 16. Refer to **Table 12 - Power and Termination** Unit Test Points.

LOCATION	**WIRECOLOUR**	TEST POINT	VOLTAGE
PTU (J2)	Black Red	Output terminal 15 Output terminal 16	Approx. -50V DC OVREF

Table 12 - Power and Termination Unit Test Points

Keystations

Measure keystation bus voltage at terminals 2 and 5 in the keystation modular socket. Refer to **Table 13 - KeystationTest Points.**

LOCATION	**WIRECOLOUR**	TEST POINT	VOLTAGE
Keystation Modular Socket	Black Red	Terminal2 Terminal5	Approx. -50V DC OVREF

Table 13 - **KeystationTest** Points

General

The amount of maintenance that can be carried out on Commander E105/208+ equipment is limited to changeover of the PTU and replacement of keystation parts. This is due to the susceptibility of the components to damage by static discharge (especially MOS components).

To protect faulty assemblies and items such as the power supply, PTU and keystation, transport them in the protective container supplied with the new item. Before returning faulty equipment, refer to the section entitled Repair Procedures at the end of this chapter.

System Plug-Pack

When the power supply plug-pack is diagnosed as being faulty, it must be replaced with a maintenance spare.

CAUTION

The system plug-pack is powered from a 240V mains supply and hazardous voltages are present within.

When replacing the system plug-pack, before disconnecting it from the PTU terminal strip J3, ensure that:

- the mains outlet is switched off
- the plug pack is removed from the outlet.

Power and Termination Unit

Any fault on the PTB-E requires replacement of the entire PTU.

Any fault on the OFB-E (where fitted) requires that it bereplaced with a maintenance spare. Do not carry out repairs on site as further damage to the board may result.

Keystations

Keystation maintenance is confined to replacing the handset, line cord and HRDB-E board (in the master keystation). To rectify a keystation PBA or keyboard assembly fault, replace the complete keystation.

Fault Finding Tables

The following tables provide an orderly set of steps for rectifying faults in an established working system. The 'fault number' indicates the order to follow when performing the diagnosis and repair procedures.

INCOMING EXCHANGE LINE FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRDB-E or Master Station	Plug Pack	Other Procedures
1	No audible incoming line signal (line lamp flashes). One station only.	2					1. Check ring assignment
2	No audible incoming line signal (line lamp flashes). More than one station.	4	3				1. Check ring assignment. 2. Check bus wiring.
3	No incoming line signal (audible or visual). One station only.	3			4		1. Check exchange line wiring. 2. Replace line cord.
4	No incoming line signal (audible or visual). More than one station,	5	4		1		2. Check exchange line wiring. 3. Check bus wiring.
5	Line lamp does not flash with exchange ring (audible signal received). One station only.						2. Check bus wiring.
6	Line lamp does not flash with exchange ring (audible signal received). More than one station.	3	2				1. Check bus wiring.

OUTGOING EXCHANGE LINE FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRBB-E **or** Master Station	Plug Pack	**Other** Procedures
7	Exchange line cannot be seized. One station only.	2					1. Replace tine cord.
8	Exchange line cannot be seized. More than one station.	4	3				1. Check incoming exchange line terminations. 2. Check bus wiring.
9	Line lamp does not light when exchange line seized One station only.	2					1. Replace line cord.
10	Line lamps do not light when exchange line seized. More than one station.		3			4	1. Check Incoming exchange line terminations. 2. Check bus wiring.
11	No dial tone when exchange line seized. Any station.	2					1. Check handset.
12	Exchange line call cannot be performed. One station only.	1					2. Check bus wiring. 3. Check access barring classes.
13	Exchange line call cannot be performed.		2				1. Check bus wiring. 3. Check access barring classes.
14	No PABX recall on a station.	1			2		1. Check station settings.

OTHER EXCHANGE LINE FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRDB-E or Master Station	Plug Pack	Other Procedures
15	Exchange line cannot be put on hold. One station only.	2			1		1. Replace line cord.
16	Exchange line cannot be put on hold. More than one station.				1		
17	Line does not flash on hold. Any station.	1			2		
18	No internal music on hold. Any station.	3			2		1. Check links J3 and J4 are in correct position on HRDB-E (pos. 1-2).
19	No external music on hold.	5		4			1. Check external music source 2. Check external music source terminators. 3. Check links J3 and J4 are in correct position on HRDB-E (pos. 1-2).
20	Exchange line cannot be release by hook switch operation. Any station.	1					
21	Exchange line not release by speaker key with handset on hook. Any station.	1					

TELEPHONE STATION FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U	OFB-E	HRDB-E or Master Station	Plug Pack	Other Procedures
22	Abbreviated or speed dialling does not function. Any station.	1					
23	Do Not Disturb does not function. Any station.	1					
24	Decadic to tone signalling mode change does not function. Any station.	1					
25	Last number redial does not function, Any station.	1					
26	Volume Control does not function. Any station.	1					
27	Confidence tone does not function. Any station.	1					
28	Access Barring does not function. Any station.	2					1. Check station programming.
29	Memory loss immediately after a power failure. Any station.	1					

INTERCOM CALL FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRDB-E a Master Station	Plug Pack	Other Procedures
30	Intercom siignal does not function. One station only.	1					
31	Intercom signal call does not function. More than one station	2	3			4	Check bus wiring.
32	Intercom voice call does not function. One station only.	1	2				
33	Intercom voice call does not function. More than one station.	2	3			4	Check bus wiring.
34	Intercom lamp does not flash on incoming call. Any station.	1					

CALL PAGE FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRDB-E a Master Station	Plug Pack	Other Procedures
35	Page call does not function. One station.	2					1. Check station is programmed for Master Page access.
36	Page call does not function. More than one station.	3	2				1. Check stations are programmed for Master Page access.

DOOR STATION AND OPTIONAL FACILITY FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRUB-E a Master Station	Plug Pack	Other Procedures
37	Door Station call cannot be performed.			1			2. Replace Door Station.
38	Door Station call not received at. One station only.	2		3			1. Check station is programmed for Master Page access.
39	Door Station call not received at. More than one station.		4	2			1. Check station is programmed for Master Page access. 3. Replace Door Station
40	Background music not functioning.		3	2			1. Check external music source and external music source terminations,

TRANSMISSION AND POWER FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRDB-E a Master Station	Plug Pack	Other Procedures
41	Poor transmission and/or reception. One station only	2					2. Check handset
42	Poor transmission and/or reception. More than one station.		2				1. Check bus wiring.
43	No power to system.		3			2	1. Check fuse F1 on PTB-E.

MICELLANEOUS FAULTS

Fault No.	Fault Description	TEST/REPLACEMENT SEQUENCE IN PREFERRED ORDER					
		Station	P.T.U.	OFB-E	HRUB-E a Master Station	Plug Pack	Other Procedures
44	Conference call not possible.	1	2				
45	Transferring calls not possible.	1	2				

Repair Procedures

Repair of Commander E105/208+ systems is limited to replacing PBA's and the spare parts as listed in Appendix B - Field Maintenance Parts.

Always pack faulty items in the carton and packaging supplied with the new item. Forward the package to your local store, where it is then sent to the National Repair Centre.

Printed Board Assemblies (PBA's)

Do not attempt to repair a PBA on site or in a field depot. Any fault in a PBA requires replacement of the entire assembly.

Pack a faulty PBA in the same carton and packaging supplied with the new assembly. Forward the package to your local store, where it will then be sent to the National Repair Centre.

NOTE: Customer Equipment Return Analysis Form (BS3 1) S818/3 1

PBA's. Write as many details of the fault condition as possible on the label.

Appendix A
System Characteristics

Appendix A
System Characteristics

System Capacities and limits

	E105+	E208+
BUS Wires Required	4	6
BUS Limit (0.5MM Cable)	500M	500M
Exchange Lines	1	2
Intercom Lines	1	1
Keystations	5	8
Door Stations	1	1
Paging Zones	1	1
Access Barring Classes	2	2

System Specifications

Electrical

AC input to Power Supply	240 VAC 50 Hz
Power Consumption	25 Watts
Output Voltage	50 DC Nominal
Bus Cable Length (Twisted Pair)	500 metres of .5mm dia. cable

Environmental

Operating Temperature	10 C to 55 C
Humidity (Relative)	45 to 75%
Storage Temperature	7oc

External Music- On-Hold

Nominal Input Level	6 Vu

Dialling

DTMF (Tone) Dialling

Frequency Deviation	1.5%
Duration	100ms
Interdigit pause	100ms

Pulse (Decadic) Dialling

Pulse Dialling rate	10pps
Break Make Ratio	66/33 (2:1)
PABX Pause	3 seconds
PABX Recall	100±40 ms

Dimensions and Weight

Equipment	Weight	Height	Width	Depth
Keystation	0.9kg	&mm	185mm	235mm
Power Termination Unit	0.5kg	162mm	185mm	60mm
Door Station	0.2kg	160mm	110mm	37mm

Appendix B
Parts Serial Item and Code list

Appendix B
Parts Serial Item and Code list

Central Equipment — Serial 546

ITEM & CODE	DESCRIPTION	REMARKS
1 PTU-E	Power and Terminating Unit	Includes plug power-pack; provides termination point for incoming lines, system bus, power-fail telephone, external music source and Door Station. Houses the optional facilities board PBA (if required).
5 OFB-E	Optional Facilities Board	Optional PBA, housed in the PTU. Provides Door Station interface, external music-on-hold, background music and earth recall facilities.

Keystations — Serial 546

ITEM & CODE	DESCRIPTION	REMARKS
209 TS-E105+-M	One-line Keystation Master	One-line Keystation. Contains the system hold and ring detect board (HRDB-E), system user guide, (item 62), keystation user guide (item 60) and keystation label card.
210 TS-E208+-M	Two-line Keystation Master	Two-line Keystation. Contains the system hold and ring detect board (HRDB-E), system user guide (item 62), keystation user guide (item 60) and keystation label card.
212 TS-E208+-S	Two-line Keystation Standard	Two-line keystation. Contains the keystation user guide (item 60) and keystation label card.
13 DSE	Door Station	Four-wire Door Station. Terminates on OFB-E in PTU.

Miscellaneous Items

ITEM & CODE	DESCRIPTION	REMARKS
5461221 WMK-E+	Wall Mounting Kit	For wall-mounting a Commander Et keystation. Includes a handset securing piece, a 30cm line cord and a mounting instruction card.
268/1 25 SMK-(6x6)-CON	Krone	WE type, six-wire socket.

Maintenance Parts Serial 546

ITEM & CODE	DESCRIPTION	REMARKS
32 LC-E-6W	Line Cord, Six-Wire	Six-conductor line cord terminated with modular plugs on each end. Maintenance part for all keystations (items 9-12).
233 HS-EP	Handset With Cord	Handset with integral handset cord. Maintenance part for all keystations (items 9-12).
234 SLP-EP	Station Label Pack	Pack of ten keystation label cards. Each card contains three adhesive keystation directory labels for all keystations (item 9-12).
35 PP-E	Power-Pack	System plug power pack. Maintenance part for system PTU (item 1).
36 HRDB-E	Hold and Ring Detect Board	PBA housed in master keystation to provide ring detect and music-on-hold. Maintenance part for master keystations (items 9 and 10).

Documents Serial 546

ITEM & CODE	DESCRIPTION	REMARKS
200	Centel/Easycall Quick Reference Card	
203	System Order Form	
260 DOC-EP-UG	Keystation User Guide	A quick reference card, included with all keystations (items 9-12). NOTE: Item 60 consists of a box of 50
261 DOC-EP-IM	Installation and Maintenance Manual	Complete installation and maintenance procedures for the Commander E105/208+ small business system.
262 DOC-EP-SG	System User Guide	Complete system user guide. One provided per system, included with the system Master Keystation.
263	Product Sales Reference Manual	
265	Customer Record Card	
264	Sales Brochure	

Appendix C
System User Guide

Telstra Commander@ **E105/208+** System- User Guide

Serial Item 546/262

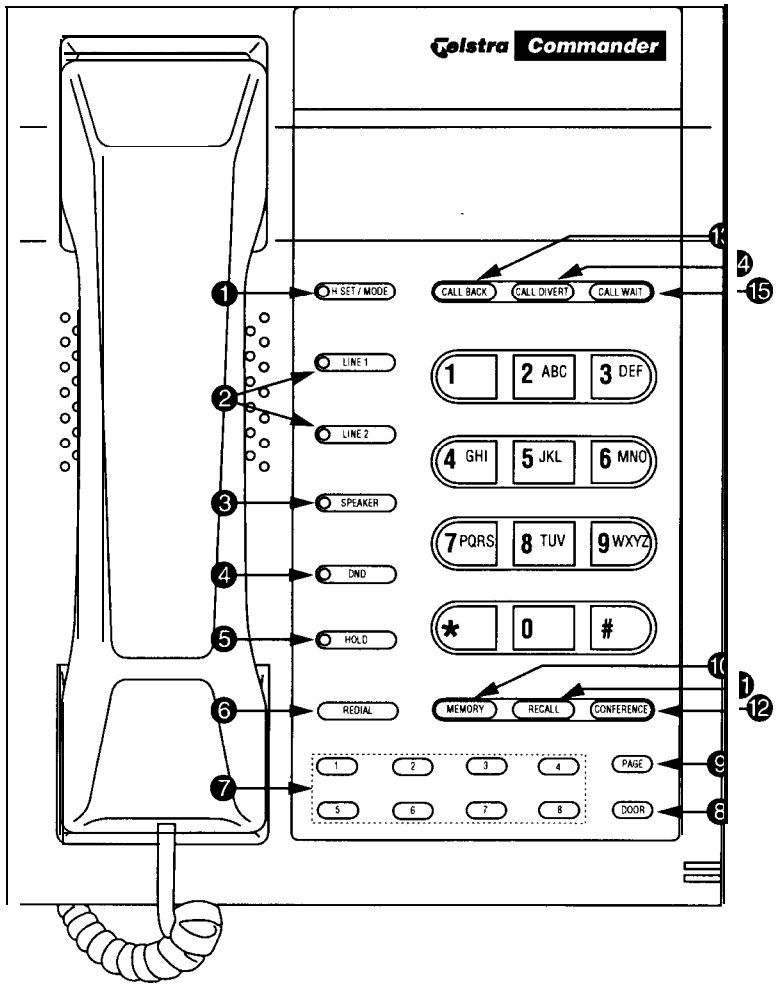
Issue 1

Telstra

Table of Contents

1. Getting to Know Your Commander

Keystation Diagram



Key Description

1 HSET/MODE Key
a) Headset Mode Activation
b) Dialling Mode Change
Change from decadic to tone signalling after a call is established.

2 LINE Key
To access outside line.

3 SPEAKER Key
To activate the speaker - calls can be initiated without lifting handset,

4 DND Key
(Do Not Disturb) To block all audible signals from incoming calls.

5 HOLD Key & INTERCOM Lamp
a) To place calls on hold.
b) To indicate intercom status.

6 REDIAL Key
To automatically redial the last number dialled.

@DIRECT ACCESS Keys
These keys have two functions:
a) Direct Station Selection (DSS)
When the handset is lifted, or the station is in 'off-hook' mode, these keys are used to make intercom calls to other stations.
b) Speed Dial
When the handset is lifted or the station is in 'off-hook' mode, and the exchange line is also selected, these keys are used to select pre-programmed speed dial numbers.

8 DOOR Key
a) To monitor the door station or answer calls from the door station.
b) Call Transfer - Exchange calls
To control the Centel®/Easycall™ transfer function.

@PAGE Key
a) To establish an all station page.
b) Call Conference - Exchange Calls
To control the Centel/Easycall conference function.

@MEMORY Key
To program speed dial and abbreviated dial memory locations.

@RECALL Key
a) If your system is a PABX extension: to allow access to the host PABX facilities.
b) To control Easycall/Centel functions.

12 CONFERENCE Key
To establish multi station conferences on the exchange line.

@CALL BACK Key
To control the Centel/Easycall call back function.

14 CALL DIVERT Key
To control the Centel/Easycall call diversion functions.

15 CALL WAITING Key
To control the Centel/Easycall call waiting function.

Visual Sianals

LAMP	LAMP STATUS	MEANING
[LINE]	Off Steady glow Slow flash Medium flash Rapid flash	Line free Line busy Line on hold Line ringing Conference in progress
Intercom (located in the [HOLD] key)	Off Steady glow Slow flash	Intercom link free Intercom link busy Incoming intercom call
[DND]	Steady glow	Do Not Disturb activated
[SPKR]	Steady glow	On-hook dialling activated
[HSET/MODE]	Off Steady glow	Handset Mode off Headset Mode activated

Audible Signals

SIGNAL	MEANING
Normal ring	Outside call
Continuous short ring	Intercom call
Short beep followed by voice	Intercom voice call
Two long beeps	All-station page
Double chime	Door Station call
Two short bursts of ring repeated at 90 seconds intervals	Hold recall

Service Tone

TONE	MEANING
Continuous short tone	Intercom ring
Slow repeating tone	Busy
Long repeating tone	Error

Access Barring

During installation each station will be allocated one of two modes of call barring:

- **Unrestricted mode**
- **Restricted mode**

  Numbers dialled are compared to an exception table. If a match is found the call is allowed.

  This table consists of two areas:

  A programmable area consisting of eight entries of four digits each, and;

  A non-programmable area with fixed emergency numbers, etc.

Centel Features

The Commander E105/208+ is compatible with Centel/Easycall facilities provided the system has been programmed to meet the following conditions:

- DTMF Dialling
- Stations must have Unrestricted access.

Subject to Centel connection the Commander E105/208+ has five preprogrammed keys which control the Centel/Easycall functions:

- Call Back
- Call Diversion
- Call Waiting
- Call Transfer
- Call Conference

Details of each function are covered in Section 6 - Centel Features.

For further information on operation and programming of Centel facilities refer to Centel/Easycall User Guide.

2. Answering Calls

Intercom Calls

Ringing at Your Station

To Answer Intercom Calls Ringing at Your Station:

- Hear the intercom ring signal

  The intercom lamp flashes slowly at your station.

- Lift the handset.

Ringing at Another Station

To Answer Intercom Calls Ringing at Another Station:

- Hear the intercom ring signal at another station

  The intercom lamp glows steadily at your station.

- Lift the handset at your station

- [illegible]

Outside Calls

To Answer Outside Calls:

- Hear the normal ring signal
- Lift the handset
- Press the appropriate medium flashing [LINE].

During installation, stations can be programmed to have no audible signal, if required. However, calls can still be answered by pressing the appropriate [LINE].

If Automatic Exchange line Answer is Programmed:

- Hear the normal ring signal
- Lift the handset - the call is answered.

  (If more than one call is ringing, the call ringing the longest is answered.)

If more than one call is ringing, a particular call may be answered first by pressing the [LINE] key and then lifting the handset.

Door Station Calls

To Answer Calls From the Door Station:

- Hear the Door Station chime
- Lift the handset
- Press [DOOR].

  The intercom lamp glows steadily at all stations.

A call from the Door Station cannot be answered from a station if the intercom link is already in use.

Door Station calls will only chime at stations programmed to receive paging.

3. Making Calls

Intercom Calls

Intercom Signal Call

To Make an Intercom Call that will Ring at the Called Station:

- Ensure that the intercom lamp is extinguished
- Lift the handset
- Press required DSS key [1-8]

  *The intercom **lamp** glows steadily at all other stations.*
- Hear the intercom ring tone
- Speak when called party answers.

If the called station is busy or in Do Not Disturb mode, you hear a busy tone.

Intercom Voice Call

To Make an Intercom Call in which your Voice Sounds Through the Called Station's Speaker:

- Ensure that the intercom lamp is extinguished
- Lift the handset
- Press required DSS key [1-8]

  The intercom lamp glows steadily at all other stations.
- Press DSS key again [1-8]
- Hear a short beep
- Page the called party.

Outside Calls

Off-hook Dialling

To Make an Outside Call with the Handset Off-hook:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Hear the dial tone
- Dial the required number
- Speak when the called party answers.

On-hook Dialling

To Initiate an Outside Call Using the On-hook Facility:

- Press a free [LINE] without lifting the handset

  The [SPKR] lamp glows steadily at your station.
  The selected [LINE] lamp glows steadily at all stations.
- Hear the dial tone through the station speaker
- Dial the required number
- Lift the handset to speak when the called party answers.

  The [SPKR] lamp extinguishes.

To Cancel an Outside Call Made with the On-hook Facility if the Called Party is Busy or Does Not Answer:

- Press [SPKR].

  The [SPKR] lamp extinguishes.
  The selected [LINE] lamp extinguishes.

last Number Redial

To Initiate Automatic Redialling of the last Number **Dialled** with the Handset Off-hook:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Hear the dial tone
- Press [REDIAL].

  The last number dialled is automatically redialled.

Last number redial calls can also be initiated using the on-hook facility.

Speed Dialling

This facility allows each station to access eight speed dial numbers previously stored in that station.

For speed dial number storing procedures, see page 7-2

To Dial a Stored Number:

- Lift the handset
- Press a free [LINE]

  The [LINE] lump glows steadily at all stations.
- Hear the dial tone
- Press required speed dial key [1-8].

  The stored number is dialled automatically.

You can also initiate speed dialling using the on-hook facility.

Abbreviated Dialling

This facility allows each station to access two abbreviated dial numbers previously stored in that station.

For abbreviated dial number storing procedures, see page 7-3.

To Dial a Stored Number:

- Lift the handset
- Press a free [LINE]

  The [LINE] lump glows steadily at all stations.
- Hear the dial tone
- Press [MEMORY]
- Press required abbreviated dial key [0 or 9].

  The stored number is dialled automatically.

You can also initiate abbreviated dialling using the on-hook facility.

Door Station Calls

To Call the Door Station:

- Ensure that the intercom lamp is extinguished
- Lift the handset
- Press [DOOR].

  The intercom lamp glows steadily at all stations.

4. Holding and Transferring Calls

Holding Calls

To Place an Outside Call on Hold:

- Ask the outside party to wait
- Press [HOLD]

  The [LINE] lamp flashes slowly at all stations.
  The outside party hears music. (If programmed.)
- The handset can be replaced.

To Retrieve a Held Call from Any Station:

- Lift the handset
- Press the appropriate slowly flashing [LINE].

If a call on hold is not retrieved within 90 seconds, the hold recall signal rings. This signal will repeat at 90 second intervals until the call is retrieved.

To Make an Inquiry Call while a Call is on Hold:

- Ask the outside party to wait
- Press [HOLD]

  The [LINE] lamp flashes slowly at all stations.
  The outside party hears music.
- Press required DSS key [1-8] or make an outside call on the other line if equipped
- Make your inquiry
- Press the appropriate slowly flashing [LINE] to return to the held call.

Transferring Calls

Any outside call can be transferred to another station.

To Transfer a Call:

- Ask the outside party to wait
- Press [HOLD]

  The [LINE] lamp flashes slowly at all stations.
  The outside party is placed on hold and hears music.
- Ensure that the intercom lamp is extinguished
- Press the required DSS key [1-8]

  The intercom lamp glows steadily at all other stations.
- Announce the transfer
- Replace the handset.

  The call is answered at the called station by pressing the appropriate slowly flashing [LINE].

5. Paging and Conference Calls

Paging

Announcements can be made through the speakers of all idle stations in the pre-programmed paging zone.

All-Station Page

To Make a General Announcement to all Stations in the Paging Zone:

- Ensure that the intercom lamp is extinguished
- Lift the handset
- Press [PAGE]

  The intercom lamp glows steadily at all stations.
  *Two beeps are heard through the speakers **of** all idle and page included stations.*
- Make the announcement
- Replace the handset.

Meet-Me Page

To Request a Specific Person to Contact the Originator of a Page Immediately After an Announcement:

- Ensure that the intercom lamp is extinguished
- Lift the handset
- Press [PAGE]

  The intercom lamp glows steadily at all stations.
  *Two beeps are heard through the speakers **of** all idle stations.*
- Make an announcement, requesting that the person contact you
- Leave the handset off-hook.

  The paged person presses [PAGE] to automatically connect to your station.

Conference Calls

Conference calls can be conducted between an outside party and two stations, or between three stations.

Conference with an Outside Party

To Set Up a Conference Call with an Outside Party:

- Ask the outside party to wait
- Press [CONF]
- Press required DSS key [1-8]

  The [LINE] lamp flashes slowly.
  The intercom lamp glows steadily at all other stations.
  The outside party is placed on hold and hears music. (If programmed.)
- Ask the new party to wait
- Press [CONF].

  The [LINE] lamp flashes rapidly.
  All parties are connected to the conference call.
  The intercom lamp extinguishes.

If the person at the station is busy, does not answer or does not wish to join the conference, you can return to the outside party by pressing the flashing [LINE].

Press [CONFERENCE] again and press another DSS key to try another station.

If one of the stations leaves the conference, the [LINE] lamp will change to a steady glow.

Intercom Conference

To Set Up an Intercom Conference Call:

- Ensure that the intercom lamp is extinguished
- Lift the handset
- Press required DSS key [1-8]

  The intercom lamp glows steadily at all other stations.
- Ask the party to wait
- Press [CONF]
- Press the second DSS key [1-8].

  When the call is answered, the conference call is automatically connected.

6. Centel Features

Call Back

Refer to Centel User Guide for a complete description of this feature.

To Set Call Back:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Hear the dial tone
- Dial the required number or press the appropriate speed dial key [1-8]
- If you hear busy tone press [CALL BACK]

  *The dial sequence *37# is automatically sent to line.*
- Replace the handset.

To Cancel Call Back:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Press [CALL BACK]

  The dial sequence #37# is automatically sent to line.
- Replace the handset.

The E105/208+ will not ring with the distinctive Centel call back cadence. Call back calls are presented as normal calls.

Call Diversion

Refer to Centel User Guide for a complete description of this feature.

Call Diversion - Immediate

To Store Call Diversion - Immediate:

- Press [CALL DIVERT]
- Press [1]
- Lift and replace the handset.

The divert immediate code is now stored under the [CALL DIVERT] key.

To Set Call Diversion - Immediate:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Press [CALL DIVERT]
- Dial number to which calls are to be diverted or press speed dial key

  *The dial sequence *21 is sent to line automatically before the telephone number:*
- Press [CALL DIVERT]

  The dial sequence # is sent to line.
- Replace the handset.

To Clear Call Diversion - Immediate:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Press [CALL DIVERT] twice

  The dial sequence #21# is sent to line.
- Replace the handset.

Call Diversion - Busy

To Store Call Diversion - Busy:

- Press [CALL DIVERT]
- Press [2]
- Lift and replace the handset.

The divert on busy code is now stored under the [CALL DIVERT] key.

To Set Call Diversion - Busy:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Press [CALL DIVERT]
- Dial number to which calls are to be diverted or speed dial key

  *The dial sequence *24 is sent to line automatically before the telephone number:*

- Press [CALL DIVERT]

  The dial sequence # is sent to line.
- Replace the handset.

To Clear Call Diversion - Busy:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Press [CALL DIVERT] twice

  The dial sequence #24# is sent to line.
- Replace the handset.

Call Diversion - No Answer

To Store Call Diversion - No Answer:

- Press [CALL DIVERT]
- Press [3]
- Lift and replace the handset.

The divert on no answer code is now stored under the [CALL DIVERT] key.

To Set Call Diversion - No Answer:

- Lift the handset
- Press a free [LINE]

  The selected [LINE] lamp glows steadily at all stations.
- Press [CALL DIVERT]
- Dial number to which calls are to be diverted or speed dial key

  *The dial sequence *61 is sent to line automatically before the telephone number*
- Press [CALL DIVERT]

  The dial sequence # is sent to line.
- Replace the handset.

To Clear Call Diversion - No Answer:

- Lift the handset
- Press a free [LINE]

  The *selected [LINE] lamp glows steadily at all stations.*
- Press [CALL DIVERT] twice

  The dial sequence #61# is sent to line.
- Replace the handset.

Call Waiting

Refer to Centel User Guide for a complete description of this feature.

To Hold the Original Call and Answer the Waiting Call:

- Press [CALL WAIT].

  The dial sequence 'recall 2' is sent to line.

The original call is placed on hold and the waiting call is answered.

To Return to the Original Call:

- Press [CALL WAIT].

  The dial sequence 'recall 2' is sent to line.

The second call is placed on hold and the original call is reconnected.

To Alternate Between Calls:

- Press [CALL WAIT].

  The dial sequence 'recall 2' is sent to line.

This process can be repeated indefinitely to alternate between the two calls as required.

To Release Current Call and Reconnect the Waiting Call:

- Press [RECALL]
- Press [I]

The current call is released and the waiting call reconnected.

Call Transfer

Refer to Centel User Guide for a complete description of this feature.

To Transfer Exchange Call:

- Press [RECALL]
- Dial number to which the call is to be transferred
- Speak to the called party
- Press [DOOR]

  The dial sequence 'recall 4' is sent to line.
- Replace the handset.

To Cancel Exchange Call Transfer if Called Party Does Not Answer:

- Press [RECALL]
- Press [1].

The call transfer feature may only be used in conjunction with other system call handling functions, on stations programmed as 'unrestricted'. If used in conjunction with other call handling functions on restricted stations, the access barring system will not allow dialling to the transfer number.

Call Conference

Refer to Centel User Guide for a complete description of this feature.

To Establish Conference Call While on an Exchange Call:

- Press [RECALL]
- Dial the second number which is to be included in the conference call, or press speed dial
- Press [PAGE].

  The dial sequence 'recall 3' is sent to line.

Conversation in now possible between all three parties.

The call conference feature may only be used in conjunction with other system call handling functions, on stations programmed as 'unrestricted'. If used in conjunction with other call handling functions on restricted stations, the access barring system will not allow dialling to the wanted conference number.

7. Other Facilities

Storing Speed Dial Numbers

You can programme and store up to eight speed dial numbers in each station which can be used only at that station. You can access each of these numbers by pressing the appropriate speed dial key.

For speed dialling procedures, see page 3-4.

To Store a Speed Dial Number in a Station's Memory:

- Lift the handset
- Press [MEMORY]
- Press a speed dial key [1-8]
- Dial the telephone number to be stored.

A maximum of 19 digits can be programmed for each telephone number. It is not possible to store [RECALL] as part of a speed dial number.
If a station has been designated as a PABX extension, a three-second pause is automatically inserted after the first digit. The pause can also be inserted in a speed dial number by pressing [REDIAL] while storing the number.

To Add Further Speed Dial Numbers:

- Press [MEMORY] again
- Press another speed dial key [1-8]
- Dial the next telephone number to be stored
- Continue this sequential procedure until you have stored all required numbers.

When you have finished entering numbers:

- Replace the handset.

Storing Abbreviated Dial Numbers

You can programme and store two abbreviated dial numbers in each station which can be used only at that station You can access these two numbers by dialling the appropriate one-digit memory code.

For abbreviated dialling procedures, see page 3-5.

To Store an Abbreviated Dial Number in a Station's Memory:

- Lift the handset
- Press [MEMORY]
- Press dial key [0] or [9]
- Dial the telephone number to be stored.

A maximum of 19 digits can be programmed for each telephone number. It is not possible to store [RECALL] as part of an abbreviated number.

If a station has been designated as a PABX extension, a three-second pause is automatically inserted after the first digit. The pause can also be inserted in an abbreviated dial number by pressing [REDIAL] while storing the number.

Confidence Tone

You can programme your station to emit a low-level tone indicating when a key has been pressed.

To Activate or Cancel the Confidence Tone:

- Press [*] without lifting the handset.

Decadic to Tone Signalling

If your system is programmed for decadic signalling, you can change to tone signalling to access services such as telephone banking and personal remote paging.

To Activate Tone Signalling:

- Access the desired service
- Press [HSET/MODE] to change from decadic to tone signalling
- Dial the numbers required by the service
- Complete your transaction
- Replace the handset.

  Decadic signalling automatically resumes on the next call.

Background Music

If your system has access to music from an external source, this music can be played through your station speaker when your station is idle.

To Activate the Background Music:

- Press [#] twice within one second without lifting the handset.

To Cancel the Background Music:

- Press [#] once without lifting the handset.

Background music is temporarily disabled if the handset is lifted, a call is received, or any station uses the intercom link.

Do Not Disturb

This facility allows you to programme your station to block all audible signals from incoming calls.

To Activate Do Not Disturb:

- Press [DND] without lifting the handset.

  The [DND] lamp glows steadily at your station.
  All audible signals from incoming calls are blocked at your station.
  Stations trying to call your station hear a busy tone.

Outside calls can still be answered in the normal manner while Do Not Disturb is activated.

To Cancel Do Not Disturb:

- Press [DND] without lifting the handset.

  The [DND] lamp extinguishes.
  Audible signals from incoming calls will be heard at your station.

PABX Recall

If your system is an extension of a PABX, you can transfer calls to other stations on the PABX. or access other PABX facilities.

To Contact the Host PABX while Connected to a line:

- Press [RECALL]
- Hear the PABX dial tone
- Follow the instructions in your PABX User Guide.

Headset Mode

A keystation handset may be replaced by a suitable Austel permitted headset. When connected and activated, the [SPKR] key is used to perform the off-hook function. Headset mode is protected against accidental activation and de-activation by a two-key activation sequence.

To Activate Headset Mode:

With the handset on-hook:

- Press and hold [HSET/MODE]
- Press and release [SPKR].

To De-Activate Headset Mode

With the handset on-hook:

- Press and hold [HSET/MODE]
- Press and release [SPKR].

To Select Headset Mode Once Activated:

- Press [HSET/MODE].

  The [HSET/MODE] key will glow.

To De-Select Headset Mode Once Activated:

- Press [HSET/MODE].

  The [HSET/MODE] key will go out.

When Headset mode is selected, the handset function is controlled by pressing the [SPKR] key.

When in Headset mode the station cannot be operated in off-hook mode.

8 General Information

Care of Your Commander

Commander telephone systems are manufactured to meet the highest quality standards.

Follow these common-sense guidelines to help maintain trouble-free service:

- Handle your keystation with care. Avoid dropping or knocking it.
- Avoid subjecting the equipment to temperature extremes or damp, steamy or greasy conditions.
- Never immerse the equipment in water. Clean the surface with a slightly damp cloth. Do not use detergents, polishes or commercial cleaners.
- Do not tamper with your Commander in any way. Interference with its sensitive electrical components could render it unsafe to use.

Service Problems

Power Failure

To prevent loss of service during power failure, an optional facility is available which will automatically connect the first outside line to a specially provided single-line telephone.

If this special telephone is not provided, calls cannot be received or made under power failure conditions.

In the event of a power failure, the system will retain all programmed data for a minimum of 24 hours.

Other Difficulties

If operating difficulties occur, first determine if power is available. If difficulties persist, and your equipment is covered by a Telstra Maintenance Agreement, call Service Difficulties (13 2999).

System Enhancement

If you require additional key stations or a larger system, please contact your local Telstra Representative or call the nearest Telstra Business Office listed in the information pages of the telephone directory.