

Multimessage Systems Limited

Dealer's stamp

PABX 1x5 Module

User Guide

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Model

M405

GUARANTEE

Multimessage Systems Ltd. guarantees this product for one year from the date of purchase provided that:

- The product has only been used for its intended purpose, and has not been subjected to misuse, or been wilfully or accidentally damaged.
- The product has been installed according to the maker's Installation Instructions.
- The product has not been tampered with or repaired by anyone other than Multimessage Systems Ltd. or its approved agents.

If a fault occurs in this product within twelve months of purchase you should return it to where you bought it, together with the sales receipt, and it will then be replaced or repaired free of charge.

This guarantee does not affect your statutory rights and is applicable to the United Kingdom only.

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INTRODUCTION

The PABX 1x5 Module (M405) is a small telephone system intended for use in the home, office or small business. It serves up to five internal telephone extensions from one exchange line. It provides both a high quality intercom between extensions, and access to the outside line from each extension with total privacy on all calls. It is one of the modules available to fit into the Multimessage Systems home communication system.

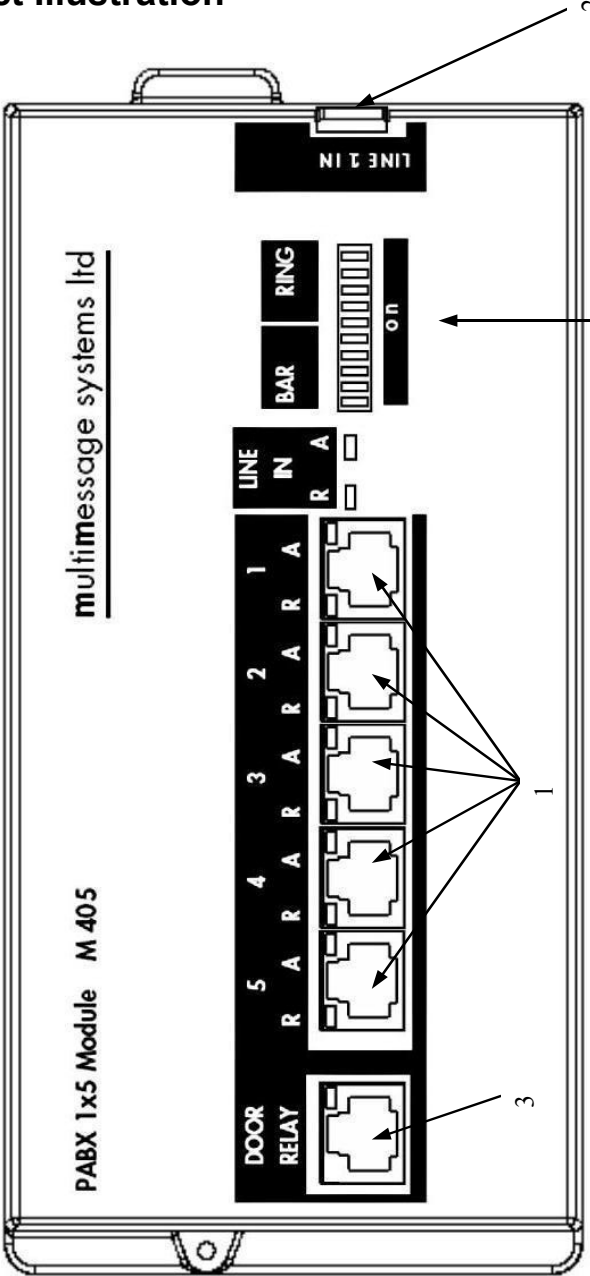
The M405 is simple to operate and easy to install using ordinary 2-wire telephone cable and master line adaptor. Extensions may be situated up to 200 metres from the M405.

Advanced microprocessor technology has enabled a number of special features, normally available in larger, expensive systems to be provided.

M405 features

- One external and two internal calls at the same time
- Private use of exchange lines
- Private intercom between extensions
- Incoming Call Intercept
- Call Hold, Enquiry and Transfer
- External Call Transfer to attended or unattended extension
- Do Not Disturb - Ringer off
- Call Barring
- Speed dial
- Distinctive ring
- Door phone / opener ports
- Direct line (no need to dial 9)
- Disconnect clear feed through (required for some answer phones)
- Power Fail Operation on Extension 1
- No Operator Required

Product Illustration



- 1. Extension line connectors
- 2. Exchange line connector
- 3. Door opener connector
- 4. Group switches for both exchange lines

TECHNICAL NOTES

INSTALLATION

The M405 should already be fitted into the M400's chassis by an installation engineer. If the M405 has not been installed please follow the installation guide supplied with the unit.

Installation of Exchange Lines

- For details of exchange line and system wiring see the technical notes on page 27 of this manual.

Installation of Telephones

- Plug the telephone line cord into one of the master line adaptor supplied, then plug the adaptor into the required wall socket.
- Note down the number of the wall socket.
- On the patch panel within the M400's home communications chassis, link the corresponding number socket on the patch side to one of the lines on the M405 using the appropriate coloured patch lead.
- The extension numbers of the telephones connected to the system are between 1 and 5.
- Extension 1 **must always** be wired and connected as this is the power fail telephone. Note - It is recommended that the power fail phone is capable of operating without mains power.

1. This equipment has been approved pursuant to Council Decision 98/482/EC [CTR 21] for pan-European single terminal connection to the Public Switched Telephone Network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN termination point. In the event of problems, you should contact your equipment supplier in the first instance.
2. The Multimessage Systems 5 Line Telephone System (M405) is suitable for connection to exchange lines which provide Multi-Frequency (MF) signalling. Multimessage Systems MULTI 5 can be used with Timed Break Recall (TBR).
3. Interconnection directly, or by way of other apparatus, of ports marked in accordance with BS 6301 or EN41003 with ports not so marked may produce hazardous conditions on the telephone network and that advice should be sought from a competent engineer before such a connection is made.
4. Interconnection circuits made to the door relay port should be such that the equipment continues to comply with the requirements of EN60950 2.3 for SELV circuits. (The voltages in a SELV circuit shall not exceed 42.4V peak or 60V dc.) Advice should be sought from a competent engineer before such a connection is made.
5. The system is not suitable for use as an extension to a payphone.
6. Refer all servicing to qualified personnel or to the Multimessage Systems Customer Servicing Department at the address given on the back page of this handbook.
7. **The line cords and power cable must be disconnected before removing the cover of the Multimessage Systems 5 Line Telephone System .**

Exchange Lines	MF REN of 3 (TNV3 circuit)
Extensions	MF REN of 2 (TNV3 circuit)
Door relay	30V @ 1A maximum switching capacity
Music on Hold Source	0db feed 600 Ohms
Dimensions	200mm x 95mm x 33mm
Weight	330g
Power Supply	24V AC 50 Hz
Power Consumption	500mA maximum
Temperature	0 to 40°C working
Relative Humidity	0 to 95% (non-condensing)

In Case Of Difficulty

These notes should be of assistance if you encounter any difficulty in using the M405.

Remember that an outside call cannot be made from a **call barred** extension (other than a 9 999 or 9 112 call) - make sure that the call barring settings are set to your requirements.

Be careful not to leave an outside call on hold by accident. If in doubt press **recall** to check. If public network dial tone is received, clear the system by replacing the handset.

Ensure that **do not disturb** has not been set accidentally. Cancel by lifting and replacing the handset at the relevant extension.

Replace the handset after an outside call even if the other party clears down first and you receive a dial tone.

Remember the timing features of the system:

When originating an outside call you must wait at least twenty seconds after dialling the last digit, before attempting to place a call on hold.

When an outside call is put on hold and the extension replaced, the outside call will remain on hold for up to two minutes. During this time the call can only be accessed from the original extension.

At the end of the preset time the line will be released and the system reset.

If, after investigating the above possibilities, you still cannot obtain an outside line, proceed as follows:

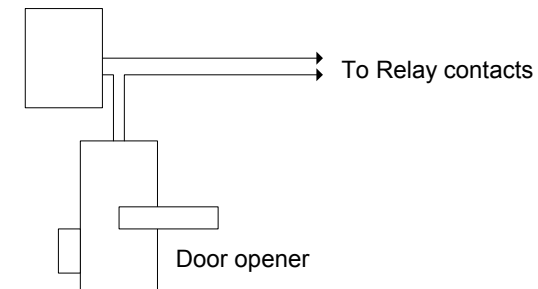
Switch off the mains power to the M405, and after waiting at least ten seconds switch on again. If the fault has not cleared, unplug the M405 from the exchange line socket, and plug in the extension 1 phone in its place.

If dial tone is still not obtained, try a second telephone. If this is unsuccessful then the line may be assumed to be faulty, and you should contact the telephone company e.g. BT.

Door opener

A typical installation is shown below. Please note that the power supply for the door opener should be approved to EN60950, and that the M405 relay contacts have a maximum rating of 30V d.c. @ 1A. (i.e. a 12 or 24V power supply & door opener should be used).

Power supply



Checking Out The System

- Ensure that all the phones are operative, set to Tone and Timed break recall (usually marked as T, TB, DTMF & TBR, MF & TBR). **Please note that the M405 does not support the use of phones which are PULSE, LOOP DISCONNECT (LD) or EARTH RECALL (E, ER).**
- Check there are no wiring mistakes and that all the extension phones are plugged in.
- Make an internal call from one extension to another.
- Ensure that the ringer works correctly and that the speech is clear and noise free. Repeat this procedure to check all the extensions.
- Switch the main power off to the home communications centre (M400s)
- Lift the handset at extension 1 - you should hear the public exchange dial tone. Now make an outside call to check the exchange line. Replace handset.
- Switch on the mains power again.
- Make another outside call from extension 1. This time dial **9** followed by the external number. Refer to "Using the M405" section of this handbook.

- If a fault is found during the checking procedure, switch off the mains power, remove the exchange line cord from its socket and check that the wiring is correct.
- **Under no circumstances must the cover of the M405 be removed.**

Please note :

The M405 uses master line adaptors for its extensions, not extension adaptors. The effect of using the latter is that the phones will not ring.

WARNING

Only the local telephone authority can install a Master Line Jack Socket to your external line. It is illegal for you to attempt to install or tamper with this Master Line Jack Socket.

Direct line

The direct line option allows extensions 2-5 to access the line as soon as the handset is picked up (no need to dial 9 first). This may be useful for pay phones etc. Internal calls can not be made, no programming functions can be accessed and the door phone ring will not function on the extension.

To allocate an extension for direct line option, do the following:

- Lift handset
- Dial 79 PPPP 6 X T

Where PPPP is the pass code (default = 0000)
 X is extension 2-5 (0 clears)
 T is 1 for direct line and 0 for normal

A confidence tone is returned if your entry was successful

Note: Extension 1 cannot be set to prevent the system being locked out from programming if all extensions were programmed with this option.

Disconnect clear

Disconnect clear (if your line has this facility) is a signal sent from the line when the caller has hung up. The M405 can detect this signal and can force the extension to hang up for two seconds. This may be useful for some answer phones which would otherwise carry on recording either silence or dial tone for five or six seconds.

To enable disconnect clear, do the following:

- Lift handset
- Dial 79 PPPP 7 X

Where PPPP is the pass code (default = 0000)
 X is 1 for on and 0 for off

Answering the door phone

When the door phone is activated (off hook) it causes the pre-programmed extensions to ring with the door phone ring.

To answer the door phone do the following :

- Lift handset
- Converse with the person at the door
- Replace handset

If you now wish to activate the door opener to let them in :

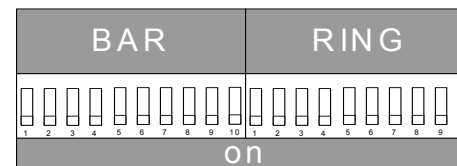
- Lift handset
- Dial *
- Listen for confirmation tone
- Replace handset

The door opener has now been activated for the programmed time.

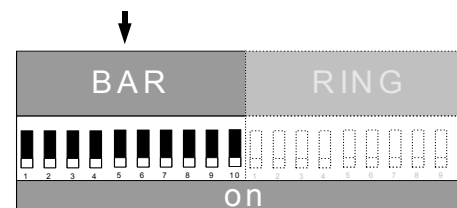
Note: You can activate the door opener at any time from any extension.

Programming Switches

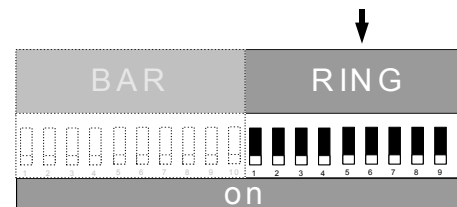
There is a bank of switches which is used to program line operation.



- Call Bar– this prevents any outgoing calls being made from the selected call bar phone. The only outgoing calls which the call bar will allow are to the emergency services (9 999 or 9 112)



- Turn off ring on incoming calls - if you do not require certain extensions to ring on incoming calls then the ring can be turned off via the program switches. You can override this program setting, refer to setting up and cancelling priority phone.



- The factory default setting is all switches allowing outgoing calls on all extensions and all extensions ringing on incoming calls.

- Please use a suitable instrument when setting the program switches e.g. a ballpoint pen.

USING THE M405

The M405 offers the user many powerful features not available when telephones are connected through ordinary parallel extensions. Furthermore, this has been achieved without sacrificing the incomparable economy and versatility offered by simple, standard telephones.

Because of this, your telephone keypad is called on to perform many more functions than the customer dialling of another subscriber's number. The telephone now has a second function as a control panel, putting options such as intercom / outside line and hold / transfer at your fingertips.

Fortunately, the M405 has been designed so that the control functions are simple to perform and easy to remember. Nevertheless, it is necessary to be a little more careful when using the M405 than when using a basic telephone. This is because wrongly or inadvertently dialled digits which normally are easily corrected merely by replacing the handset can program the M405 to an undesired mode.

For instance, if you should start to dial an outside number without first dialling 9, you may accidentally set priority or do not disturb. If you suspect that this has happened, you can quickly cancel these settings by raising your handset and dialling 70, as described on p17 of this guide.

Door Phone

A door entry phone may be connected to any extension between 2 and 5. When the door phone goes off hook it rings the designated extensions with a different ring. This can be answered and if required activate the door opener after talking to the person at the door phone.

To allocate an extension as a door phone or set the type, do the following:

- Lift handset
- Dial 79 PPPP 4 X

Where PPPP is the pass code (default = 0000)
X sets extension 2-5 (0 clears), or
X is 6 for a standard telephone type i.e. a reception phone
or 7 for the ITT door entry phone (generates disconnect clear)

A confidence tone is returned if your entry was successful.

Note: extension 1 cannot be set as this is the power fail extension.

To allocate which extensions are to be rung, do the following:

- Lift handset
- Dial 79 PPPP 5 X T

Where PPPP is the pass code (default = 0000)
X is extension 1-5 (0 = all)
T is 1 for ring and 0 for no ring

A confidence tone is returned if your entry was successful

To set the maximum time the phones will ring, do the following:

- Lift handset
- Dial 79 PPPP 9 X

Where PPPP is the pass code (default = 0000)
X is time 1-9 which sets 10-90 seconds (default 30 seconds)

A confidence tone is returned if your entry was successful.

The 'allow ring others if busy' option determines whether or not other extensions not set to receive alternate number calls can ring, if the extension is busy.

Note: The dip switch settings for ring only control the standard call ring. If you only want an extension to ring on the alternate number only, the standard ring must be turned off on the dip switch, otherwise the extension will ring for both types of calls.

Examples

To only set the 'Ring back when free' feed through, program the following:

79 0000 1 8 1 turns on the distinctive ring detection.

To set extension 5 for a fax machine on the alternate number, program the following:

79 0000 1 5 1 sets extension 5 to the alternate number.

79 0000 1 8 1 turns on the distinctive ring detection.

Set dip switch 10 to prevent ringing on the standard number.

To set extension 3 for children's bedroom on the alternate number, program the following:

79 0000 1 3 1 sets extension 3 to the alternate number.

79 0000 1 8 1 turns on the distinctive ring detection.

79 0000 1 6 1 allows priority (optional).

79 0000 1 7 1 ring others if busy (optional).

Set dip switch 8 to prevent ringing on the standard number.

Note: The call bar dip switch may also be set to prevent outgoing calls, recommended in this example.

Tones And Rings Used By The M405

When your telephone is connected through the M405 to the outside line, you will hear the usual public exchange tones for ringing, engaged (busy), and number unobtainable. However, to enable you to control the intercom and other facilities, the M405 generates the following tones of its own.

TONES	
Internal Dial Tone	
Internal Ringing Tone	
Engaged Tone	
Number Unobtainable & Error	
Confirmation Tone	
Door Phone Tone	

RINGS	
Incoming exchange call	
Internal call	
BT Ring Back	
Door Phone	

← 3 seconds →

	Dial Tone (high & low mixed)
	High Tone
	Low Tone
	Ring

Summary of M405 facilities

FACILITY	ACTION
Outgoing External Call	Dial 9 then external number
Outgoing External Call using speed dial	Dial 8 followed by the store number (0-9,*,#)
Internal Extension Call	Dial 1 to 5
Hold External Call	Press RECALL
Set Priority Phone	Dial 7 followed by own extension number.
Clear Priority Phone	Dial 70 from any extension.
Set 'Do Not Disturb'	Dial 0
Clear 'Do Not Disturb'	Lift handset and then replace
Enquiry Call to Third Party During an External Call	Press RECALL to hold external call dial extension - make enquiry
To Return to External call: a) After enquiry b) If extension busy c) If extension unobtainable	Press RECALL
Transfer External Call	Press RECALL to hold external call dial extension - make enquiry Replace handset
To Return to External Call : a) If extension busy b) If extension unobtainable	Press RECALL
Remote Transfer External Call	Press RECALL to hold external call Dial extension Listen for ring tone Press RECALL if extension busy to return to external call
Transfer will terminate after 2 minutes if no reply at extension	Otherwise replace handset Answer external call at remote extension
Activate Door opener	Lift handset then Dial *
Emergency Calls	Dial 9 999 or dial 9 112

Distinctive ring

Distinctive ring is a network service provided in the UK by BT, at present there are two types available, 'Ring back when free' and 'Call sign'.

Ring back when free is a service which when you make a call and the number is busy, you can dial 5, hang up and when the number becomes free you are called back with a different ring. The ring is three short bursts then a period of silence.

When distinctive ring detection is turned on, the same ring will be passed back to the M405 extensions (if they have been set to receive standard calls).

Call sign is a service that provides you with an alternate telephone number. When this number is called a different type of ring is sent to your line. The M405 distinguishes this ring from the standard one, then sends the call to a particular extension(s) as if it were a normal call without the other extensions ringing. This can have many uses, such as a separate number for your fax, business or children without disturbing the rest of the household or small business.

To program the distinctive ring options :

- Lift handset
- Dial 79 PPPP 1 X T

Where PPPP is the pass code (default = 0000)

X is 0-5 for setting which extension rings (0 = all)
6 for 'allow priority' option
7 for 'allow ring others if busy' option
8 for distinctive ring detection on/off

T is 1 for on
0 for off

A confidence tone is returned if your entry was successful.

The 'allow priority' option determines whether or not the priority function can intercept a call to the alternate number.

Speed dial

12 speed dial numbers can be stored by the M405 for use by all extensions. Each of these can be up to 32 digits long.

To store a speed dial number:

- Lift handset
- Dial 79 PPPP 8L XX.....XX
- Replace handset.

Where PPPP is the pass code (default = 0000).

L is the store number from 0 to 9

X is the speed dial number, up to 32 digits.

To clear a number, simply don't enter any digits for X.

The default is no numbers set.

e.g. 79 0000 80 01707644480

This places 01707 644480 into speed dial number 80.

Speed dial only call bar

When an extension is set for call bar via the dip switches, the extension can be set to allow numbers from the speed dial directory to be dialled.

To set this option, do the following :

- Lift handset
- Dial 79 PPPP 2 X T
- Replace handset.

Where PPPP is the pass code (default = 0000).

X is 0 for all extensions

1-5 for individual extensions

T is 1 for on and 0 for off (default = off).

e.g. 79 0000 2 4 1

This sets extension 4 to allow speed dial numbers to be dialled.

Making an exchange line call

- Lift handset.
- Listen for internal dial tone.
- Dial 9.
- Listen for external dial tone.
- Dial required number.
- At the end of the call, or if there is no answer, replace the handset.

Emergency calls can only be made from an extension that is a member of a line group. See page 13 for line group settings. Remember to dial 9, then 999, or 9, then 112 after hearing dial tone.

Making an exchange line call using speed dial

- Lift handset.
- Listen for internal dial tone.
- Dial 8 X (X = store number 0-9,* ,#)
- At the end of the call, or if there is no answer, replace the handset.

Note: If you get NU tone returned, the speed dial store is empty.

Making an internal call

- Lift handset.
- Listen for internal dial tone.
- Dial the required extension number. The extensions are numbered 1 to 5.
- Listen for ring tone.

If the called extension is busy you will hear the engaged tone.

At the end of the call, or if there is no answer, replace the handset.

Answering an internal call

A single ring repeated every three seconds indicates an internal call from another extension.

- Lift handset.
- Answer call.
- At end of call replace handset.

Answering an exchange line call

An incoming call from the exchange line causes all extensions to ring, unless reception (priority phone), do not disturb, or no incoming calls are set.

A double ring repeated every three seconds indicates an outside call.

If you can hear more than one extension, you will notice that the sounds do not coincide. The sequence is:

Extensions 1 and 3 ring together, then extensions 2 and 4 ring together, then extension 5.

However, each individual telephone gives a double ring every three seconds, exactly as if it were connected directly to the exchange line.

The ringing sequence continues until the call is answered or the caller abandons the call attempt.

Picking up any of the extension telephones which are ringing will answer the call. If your extension is not ringing then you can answer the call :

- Lift the handset.
- Listen for internal dial tone.
- Dial 6.

USER OPTIONS

Overview

The facilities that can be programmed are as follows:

- Change pass code
- Speed dial numbers
- Distinctive ring
- Door phone
- Direct line
- Disconnect clear

Changing the pass code

Any four digit combination can be used for access to the speed dial numbers and call barring options. It is recommended that if the default passcode is changed then the new number is recorded and held in a secure place. If you forget your passcode then contact your dealer.

To change the standard pass code:

- Lift the handset.
- Dial 79 P P P P 0 N N N N.
- Listen for confirmation tone.

Where P P P P is the old pass code and N N N N is the new pass code. A confidence tone is returned if your entry was successful.

The default setting is 0000.

Setting up and cancelling do not disturb

Any or all of extensions 2 to 4 may be set up to prevent ringing at that extension.

To set up Do Not Disturb:

- Lift handset at appropriate extension.
- Listen for internal dial tone.
- Dial 0.
- Listen for confirmation tone.
- Replace handset.

Ringing is now disabled at that extension for both internal and external calls.

To cancel Do Not Disturb:

- Lift handset at appropriate extension.
- Replace handset.

Call pick up

It is possible to pick up an external call ringing at a different extension in a group by:

- Lift handset.
- Listen for internal dial tone.
- Dial 6.

The call will now be connected to your extension.

Answering an exchange line call when all extensions are busy

When an incoming call arrives when all extensions are busy on an internal call, a warning tone will be heard on both extension 1 and the connected extension. The tone will stop as soon as another extension answers the call. If the call remains unanswered, either extension 1 or its connected extension should be used to answer it.

- Press hook switch once (to terminate call)
- Release hook switch
- Answer incoming call

Putting an external call on hold

An outside call, whether incoming or outgoing, can be held while an enquiry call is made or the call is transferred to another extension.

- To put the call on hold, press RECALL once.
- To cancel hold and return to the held caller, press RECALL.

If it is an outgoing call, i.e. you originated it yourself, you must wait 20 seconds after dialling the last digit before attempting to put the call on hold.

Making an enquiry call

- Press RECALL to hold the exchange line.
- Listen for internal dial tone.
- Dial the required extension.
- You will hear the ringing tone or engaged tone.
- When the extension answers, make the enquiry.
- Press RECALL to cancel hold and return to exchange line caller.
- If the enquiry extension is engaged or does not answer, return to the exchange line by pressing RECALL.

Transferring a call

An exchange line call can be transferred to another extension on the system.

- With the outside call established, press RECALL.
- Listen for internal dial tone.
- Dial the required extension number.
- When the extension answers, replace your handset.
- The transfer is now complete.

The extension to which the call has been transferred now has control of the call and can make an enquiry or transfer to a third extension. If the enquiry extension is engaged or does not answer, return to the call by pressing RECALL.

Making a remote transfer

When your extension is connected to an outside call, you can make a transfer to another extension (a remote extension), before the remote extension answers.

- With the outside call established, press RECALL.
- Dial the required extension number (1 to 5).
- Listen for ring tone.
- Replace your handset.

The dialled extension will now ring for up to two minutes after you replace your handset. If the remote extension answers within two minutes the outside call will automatically transfer to it.

If the call is not answered within two minutes then the call will "clear down" i.e. the outside caller will be cut off.

Setting up and cancelling priority phone

You can intercept all incoming calls from the public exchange at one extension by giving priority to that extension. All incoming calls will then ring the priority extension only. However, if the priority extension is engaged when an incoming call arrives, then all other extensions will ring in the normal way. This function will override the incoming ring setting and when cancelled, the default setting will be restored. If priority is set on the same phone where the ring has been turned off, priority phone overrides this programming option automatically.

To set priority phone

- Lift handset.
- Listen for internal dial tone.
- Dial 7 followed by own extension number.
- Listen for confirmation tone.
- Replace handset.
- Your extension is now the priority phone.

To cancel priority phone

- Lift handset of any extension.
- Listen for internal dial tone.
- Dial 70.
- Listen for confirmation tone.
- Replace handset.

Operating when mains power fails

In the event of a mains power failure, the telephone at extension 1 is connected directly to the exchange line. The line is then accessed from this extension without dialling 9. The other extensions will not function.