MASTERCALL

TELEPHONE CALL DIVERTER
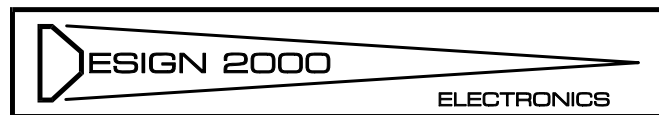
MODEL MC-4044 SERIES 5

INSTRUCTION AND INSTALLATION MANUAL

G/93040 EDITION 6

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AUSTEL PERMIT NUMBER A94/05/0234   ACA SUPPLIER'S CODE N468

DESIGNED AND MADE IN AUSTRALIA

DESIGN TWO THOUSAND PTY LTD

DESIGN TWO THOUSAND IS CERTIFIED TO AS 3901 / ISO 9001

MASTERCALL MC-4044

TELEPHONE CALL DIVERSION SYSTEM

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MASTERCALL TELEPHONE CALL DIVERSION SYSTEM

DESIGN TWO THOUSAND PTY LTD MELBOURNE AUSTRALIA

SECTION 1 - GENERAL DESCRIPTION OF THE MASTERCALL SYSTEM

The MASTERCALL Call Diverter manufactured by Design Two Thousand Pty Ltd diverts incoming calls on one line via a second line to any dial up telephone number. Incoming phone calls are redirected to the required number via the normal public switched telephone network (PSTN).

MASTERCALL MC4044 Series5 Telephone Call Diverter incorporates the following features and many more:

- Remote control with digitised voice prompts and responses
- Programmable diversion announcement
- Programmable identification announcement
- Programmable ID tone
- Diversion if no answer or auto turn on
- Screened call diversion
- Call counter
- Two to eight number try
- Programmable keypad enable/disable
- Voice frequency hybrid amplifier
- Call progress detectors
- Loop current detectors for calling party control and answer detect
- $12 \rightarrow 48$ volt dc (nom.) operation (12 V dc 750 mA power adaptor supplied)
- Alarm Input (Optional)
- Inbuilt battery stand-by (24 hr stand-by) (OPTIONAL)

SECTION 2 - INSTALLATION INSTRUCTIONS

Two telephone lines and a mains power point are required for Mastercall to operate. When power is applied to the call diverter, the optional inbuilt battery will automatically switch on. The battery is NOT required to retain data in memory nor to retain personalised announcements but to keep MASTERCALL operating during power failures.

Several software facilities need to be programmed, including entering the diversion number and selecting the required Recorded Voice Announcements (RVA). These are described in Section 3. All programming operations can be performed using the inbuilt Keypad or by Remote Control over the telephone.

Diverter Connection

The diverter is connected to the telephone lines using the line cords provided. To check the connection, a telephone should get dial tone when plugged into either telephone socket.

The12V power adaptor is connected to the diverter power socket at the rear of the unit and to a mains power point at which time the 'POWER' LED will light up.

Once installed, the Call Diverter is capable of diverting calls that come in on either line.

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SECTION 3 - PROGRAMMING INSTRUCTIONS

AT THE KEYPAD

The operation of the diverter at the keypad is detailed in this section. As the diverter is normally 'asleep, ie. the microprocessor is not running, the first key should be pressed for approximately half a second to ensure correct function. The 'awake' state is indicated by the decimal point on the 7 segment display.

MASTERCALL Activate/Deactivate

By pressing 1, the MASTERCALL divert state is toggled. The activated state is indicated by the green 'Divert' LED on the front panel. When this LED is on, the activated state is selected and all incoming calls will be diverted to the pre-programmed number.

Keypad Enable/Disable

The keypad can be disabled and enabled via the entry of a special code. When enabled the keypad is used to perform all functions detailed here. When the keypad is disabled, the only keys that work are the 1 key to turn the diverter on and off, and the following code to enable the keypad.

The sequence to enable/disable the keypad is as follows.
To enable: Press * 3333 #
To disable: Press # 3333 #

Diversion Number

The number that the diverter dials is programmed via the keypad. To enter a new diversion number you enter:
2 nnnn nnnn #, where nnnn nnnn is the required diversion number (up to 20 digits).

Second Diversion Number

If the first number is unanswered or engaged, a second number can be tried. To enter a new second diversion number you enter:
5 nnnn nnnn #, where nnnn nnnn is the second number if required (up to 20 digits).

Identification Tone

When a diverted call is answered, MASTERCALL can send a string of DTMF digits. These tones can be decoded at the receiving end in order to identify which diverter is calling. This feature is useful for live answering and paging services.

To activate and enter the DTMF identification tones, press:
83 nnnn nnnn #, where nnnn nnnn are the required DTMF digits (up to 20 digits).
To deactivate the ID tone, press 80.

Notes
1.   If no second diversion number is required, you MUST enter '0' as the second number.
2.   A dialling pause can be entered by pressing * #.
3.   A star (*) can be entered by pressing * *.
4.   A hash (#) can be entered by pressing # #.
5.   To check the diversion number(s) press 2 # or 5 #.
6.   To check the Identification digits, press 83 #.

Call Counter

Press 3 and MASTERCALL will display the number of successful diversions (0-999).
Press 3 then * if you wish to reset (clear) the counter.

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Diversion If No Answer

MASTERCALL can be programmed to divert after a preset delay. When MASTERCALL is in the deactivated state and there is an incoming call which is not answered after the delay, MASTERCALL will process the call and then resume the deactivated state after the call.

The delay before diversion is entered as a 3 digit number which is the delay in seconds.

1. * 6705 #
2. * 25 xxx * #, where xxx is the delay in seconds
•   To disable delayed diversion, program xxx as 000.

Please Note: Diversion If No Answer is not compatible with Auto Turn On. Auto Turn On, if set, will override Diversion If No Answer.

Auto Turn On

MASTERCALL can be programmed to automatically turn on and divert a call after a preset delay. When MASTERCALL is in the de-activated state, and the incoming telephone rings, MASTERCALL will activate and process the diversion request and remain activated after the call. The delay before auto turn on is entered as a 3 digit number which is the turn on delay in seconds.

1. * 6705 #
2. * 24 xxx * #, where xxx is the delay in seconds
•   To disable auto turn on, program xxx as 000.

Remote Control Personal Identification Number (PIN)

Access .to remote programming is protected by a PIN which is stored via the keypad. This four digit number is programmed by pressing the following keys.

1. * # xxxx #, where xxxx is the 4 digit code
•   This number cannot be recalled, so if it is forgotten, a new number must be stored.

REMOTE CONTROL OPERATION

MASTERCALL can also be programmed remotely from another telephone. Operation is summarised here. Please note that ALL programming operations can be performed by Remote Control. So after having accessed Remote Control, simply program by phone as you would at the Keypad.

To Access Remote Control

1. Dial the line 2 telephone number.
2. Listen for one ring tone then hang up.
3. Wait a few seconds then redial the line 2 telephone number.
4. Wait for approximately 2 rings and your call will be answered by MASTERCALL.
5. After the message has finished, enter the PIN number using a DTMF dialling telephone or a portable DTMF encoder.

Activate/deactivate MASTERCALL

You will be prompted by the digitised voice.
1. To change the divert status between on/off, press 1.

Confirmation of diversion number(s)

1. Press 2 then #.
2. The diversion number will be replayed.

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Change the diversion number

1. Press 2 (or 5 to change the second diversion number)
2. After the prompt has finished, enter the required number
3. Press #
4. The new number will then be replayed.

The programming can be done in any sequence. Once programming is completed, replace the receiver and MASTERCALL will hang up in 5-20 seconds. Do not test the diverter until 20 seconds have elapsed.

RECORDED VOICE ANNOUNCEMENTS (RVA)

MASTERCALL can play a digitally recorded announcement to the caller while the call is being re-directed to another number. MASTERCALL can also announce the origin of the diverted call to the party receiving calls. The Digital Voice Announcer represents the latest in digital EPROM and EEPROM based voice announcements.

The Recorded Voice Announcements are grouped as follows:

Standard Diversion Announcement

A standard announcement, "*Please hold the line...ring ring...*", is played to the caller while the call is being re-directed to the pre-programmed diversion number.

To Enable The Standard Diversion Announcement (from the Keypad):
1. Press 71.
2. The display reads 'on'.

To Disable The Standard Diversion Announcement (from the Keypad):
1. Press 70
2. The display reads 'off'.

Personalised Diversion Announcement (Optional)

A personally recorded announcement up to 16 seconds in length (recordable from any telephone)is played to the caller while the call is being re-directed to the pre-programmed diversion number. This feature will only work if MASTERCALL is fitted with the PRVA daughter board.

To Record The Personalised Diversion Announcement (by Remote Control):

1. Call line 2 of MASTERCALL, listen for one ring, hang up and wait a few seconds.
2. Redial line 2 and wait for greeting "*Hello, this is MASTERCALL, please enter PIN*".
3. Enter your four digit PIN.
4. Press 75
5. Listen for "*Record Announcement*".
6. Dictate your announcement clearly then press #. The announcement will be replayed. Repeat steps 4 - 6 if necessary. The announcement is automatically enabled.
7. To replay the announcement you can press 74.
8. Enter other programming changes or hang up.

Summary: Enter PIN, 75...record announcement...#, hang up.

To Enable The Personalised Diversion Announcement (from the Keypad):
1. Press 72.
2. The display reads 'on'.

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To Disable The Personalised Diversion Announcement (from the Keypad):
1. Press 70
2. The display reads 'off'.

Standard Identification Announcement

A standard announcement "*Hello this MASTERCALL*" is played to the receiving party on answering a diverted call.

To Enable The Standard Identification Announcement (from the Keypad):
1. Press 81.
2. The display reads 'on'.

To Disable The Standard Identification Announcement (from the Keypad):
1. Press 80.
2. The display reads 'off'.

Personalised Identification Announcement (Optional)

A personally recorded announcement (recordable from any telephone),announcing from where the diverted call has originated, is played to the receiving party when they first answer a diverted call. For example: "*Melbourne Office*". This feature will only work if MASTERCALL is fitted with the PRVA daughter board.

To Record The Personalised Identification Announcement (by Remote Control):

1. Call line 2 of MASTERCALL, listen for one ring, hang up and wait a few seconds.
2. Redial line 2 and wait for greeting "*Hello, this is MASTERCALL, please enter PIN*".
3. Enter your four digit PIN.
4. Press 85.
5. Listen for "*Record Announcement*".
6. Dictate your announcement clearly then press #. The announcement will be replayed. Repeat steps 4 - 6 if necessary. The announcement is automatically enabled.
7. To replay the announcement you can press 84.
8. Enter other programming changes or hang up.

Summary: Enter PIN, 85...record announcement...#, hang up.

To Enable The Personalised Identification Announcement (from the Keypad):
1. Press 82.
2. The display reads 'on'.

To Disable The Personalised Identification Announcement (from the Keypad):
1. Press 80.
2. The display reads 'off'.

Notes:

The Diversion Announcement and the Identification Announcement can be independently enabled or disabled from the Keypad or by Remote Control from any remote telephone. Recording the announcements can only be done by Remote Control.

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SYSTEM CONFIGURATION CODES

Using either the MASTERCALL Keypad or by Remote Control, enter System access code * 67 03 #, listen for "*Please enter command*"

COMMANDS
* nn   where nn is option code number
n   =   entry
=   scroll down to next option number
* * =   abandon (do not save any changes)
* # =   store (save any changes)

After either storing or abandoning program changes you can continue to make other programming changes, press # # to end, or simply hang up.

OPTION	CODE	ENTRY	RESPONSE
EITHER LINE DIVERSION	* 60		"*60 is n, please enter command*"
Both lines		1	1
Line 1 only		2	2
Line 2 only		3	3
TYPE OF DIALLING	* 61		"*61 is n, please enter command*"
Tone/Pulse Auto		1	1
Tone (DTMF)		2	2
Pulse (DEC)		3	3
TELEPHONE LINES	* 62		"*62 is n, please enter command*"
Direct exchange lines L1 & L2		1	1
'O pause' PABX extensions L1 & L2		2	2
Exch L1, PABX L2		3	3
PABX L1, exch L2		4	4
DELAY BEFORE RVA START ON L1	* 63		"*63 is n, please enter command*"
n x 3 secs (eg. 2 x 3 = 6 secs)		2	2 (In increments of 3 s up to 27 s)
SILENCE DISCONNECT	* 64		"*64 is n, please enter command*"
n x 20 secs (eg. 8 x 20 = 160 secs)		8	8 (In increments of 20 s up to 180 s))
0 = unlimited (4 hrs)		0	0
CALL TIME LIMIT	* 65		"*65 is n, please enter command*"
n x 5 mins(eg. 8 x 5 = 45 mins)		8	3 (In increments of 5 mins up to 45 mins)
0 = unlimited (4 hrs)		0	0
DECADIC (PULSE) DETECTION	* 66		"*66 is n, please enter command*"
No		1	1
Yes		2	2
SPARE	* 67		"*67 is n, please enter command*"
Not currently used		0	0
ANSWER DETECT MODE FOR			
CALL CONNECTION	* 68		"*68 is n, please enter command*"
Connect on speech or cessation of valid ring tone		1	1
Only connect on cessation of valid ring tone		2	2
Auto-answer, dial and connect		3	3

See also Option * 76.

Feature	Command	Value	Response
AUTO REDIAL	* 69		"*69 is n, please enter command*"
<u>Redial if diversion number is busy</u>		1	1
Connect if diversion number is busy		2	2
DIAL TONE DETECT	* 70		"*70 is n, please enter command*"
<u>5 sec wait for dial tone</u>			
<u>and re-loop if none</u>		1	1
3 sec wait for dial tone (blind dial)		2	2
Band width limited dial tone detect		3	3
CONTINUOUS TONE DISCONNECT	* 71		"*71 is n, please enter command*"
<u>Keep connection on continuous tone</u>		1	1
Disconnect on continuous tone		2	2
LINE TEST FOR DISCONNECTION	* 72		"*72 is n, please enter command*"
Loop break every 10 seconds of silence		1	1
<u>No loop break</u>		2	2
TIME BETWEEN TRIES (2 No TRY)	* 73		"*73 is n, please enter command*"
n x 6 secs (eg. <u>4</u> x 6 = 24 secs)		4	4 (In increments of 6 s up to 54 s)
SPARE	* 74		"*74 is n, please enter command*"
Not currently used		0	0
CALL PROGRESS TEST NUMBERS	* 75		"*75 is n, please enter command*"
<u>Off</u>		1	1
On		2	2
CPC (LOOP CURRENT LOSS/LINE REVERSAL DETECT) * 76			"*76 is n, please enter command*"
Yes - for connect and disconnect		1	1
No		2	2
<u>Yes</u> - for disconnect only		3	3
Yes - for connect only		4	4
Yes - hang up on any CPC, L1 or L2		5	5
ROA mandatory detect for call connection		6	6
ERROR MESSAGE NUMBERS	* 77		"*77 is n, please enter command*"
<u>Off</u>		1	1
On		2	2
PHASE LOCK LOOP DECODER	* 78		"*78 is n, please enter command*"
On		1	1
<u>Off</u>		2	2
BUSY COUNT FOR DISCONNECTION	* 79		"*79 is n, please enter command*"
1-8 bursts		7	7
MAX. RING VOLTAGE OFF TIME	* 80		"*80 is n, please enter command*"
1-8 Seconds		4	4
RANDOM BUSY DETECT	* 81		"*81 is n, please enter command*"
<u>Yes</u>		1	1
No		2	2
HOOK FLASH	* 82		"*82 is n, please enter command*"
<u>100 ms</u>		1	1
250 ms		2	2
500 ms		3	3
1000 ms		4	4

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SCREENED CALL DIVERSION	* 83		"*83 is n, please enter command*"
<u>Off</u>		1	1
On		2	2

Notes:

- Factory defaults are underlined. These can and should be changed to suit particular applications.

- *67709600#sets all options to the factory default, the MASTERCALL responds "*Thank you, please enter command*". Take care not to unintentionally enter this command!!!

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TONE DETECTION AND AMPLIFIER CODES

Using either the MASTERCALL Keypad or by Remote Control, enter Tone Detection access code * 67 05 #, listen for "*Please enter command*"

COMMANDS

* nn	where nn is tone parameter code number
nnn =	entry
# =	scroll down to next tone parameter
* * =	abandon (do not save any changes)
* # =	store (save any changes)

After either storing or abandoning program changes you can continue to make other programming changes, press # # to end, or simply hang up.

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TONE PARAMETER	CODE	DEFAULT VALUE Entry	PERIOD (ms) Actual	Nominal	RESPONSE
BUSY OFF MIN	* 00	007	224	225	"*00 is nnn, enter command*"
BUSY OFF MAX	* 01	017	544	550	"*01 is nnn, enter command*"
BUSY ON MIN	* 02	007	224	225	"*02 is nnn, enter command*"
BUSY ON MAX	* 03	017	544	550	"*03 is nnn, enter command*"
NU OFF MIN	* 04	012	384	400	"*04 is nnn, enter command*"
NU OFF MAX	* 05	018	576	600	"*05 is nnn, enter command*"
NU ON MIN	* 06	062	1984	2000	"*06 is nnn, enter command*"
NU ON MAX	* 07	094	3008	3000	"*07 is nnn, enter command*"
RING 1 OFF MIN	* 08	004	128	130	"*08 is nnn, enter command*"
RING 1 OFF MAX	* 09	008	256	260	"*09 is nnn, enter command*"
RING 1 ON MIN	* 10	008	256	260	"*10 is nnn, enter command*"
RING 1 ON MAX	* 11	015	480	480	"*11 is nnn, enter command*"
RING 2 OFF MIN	* 12	050	1600	1600	"*12 is nnn, enter command*"
RING 2 OFF MAX	* 13	075	2400	2400	"*13 is nnn, enter command*"
RING 2 ON MIN	* 14	008	256	260	"*14 is nnn, enter command*"
RING 2 ON MAX	* 15	015	480	480	"*15 is nnn, enter command*"

Notes:
- Entry = tone length in milliseconds divided by thirty two unless otherwise noted
- There are eight values for RING TONE, thus allowing two OFF times and two ON times. Where only one OFF and/or ON time is required, set values for both RING 1 and RING 2 to the same. always set the RING 1 values to the shorter values when two tone lengths are involved.

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AMPLIFIER

PARAMETER	CODE	DEFAULT VALUE Entry	RESPONSE

WAIT FOR DIAL TONE IN SECONDS

| | * 16 | 005 (seconds) | "*16 is nnn, enter command*" |

DTMF Tx LEVEL

| | * 17 | 000 (flat) | "*17 is nnn, enter command*" |

SPEECH CONNECT SENSITIVITY - Transitions prior to valid ring tone

| | * 18 | 005 (transitions) | "*18 is nnn, enter command*" |

SPEECH CONNECT SENSITIVITY - Accumulated signal length of transitions in ms/32

| | * 19 | 018 (ms/32) | "*19 is nnn, enter command*" |

SPEECH CONNECT SENSITIVITY - Transitions during valid ring tone

| | * 20 | 006 (transitions) | "*20 is nnn, enter command*" |

DISCONNECT CODE

| | * 21 | 0-9, 11-18 (Consult factory) | "*21 is nnn, enter command*" |

TONE DETECTOR SENSITIVITY (range 20 - 60) (Increasing value **de**creases sensitivity)

| | * 22 | 030 | "*22 is nnn, enter command*" |

BACKGROUND NOISE REJECTION (range 20 - 60) (Increasing value increases rejection, decrease for fax/data)

| | * 23 | 050 | "*23 is nnn, enter command*" |

TOTAL DIAL ATTEMPTS

| | * 26 | 008 | "*26 is nnn, enter command*" |

OUTPUT LEVEL LINE 2 ('OUT') (range 034 - 063) (Increasing value increases output level)

| | * 27 | 048 | "*27 is nnn, enter command*" |

OUTPUT LEVEL LINE 1 ('IN') (range 034 - 063) (Increasing value increases output level)

| | * 28 | 048 | "*28 is nnn, enter command*" |

DUPLEX GAIN (range 20 - 36) (Increasing value increases duplex gain)

| | * 29 | 038 | "*29 is nnn, enter command*" |

AGC OUTPUT LEVEL (000 = off, range 060 - 100) (Increasing value increases automatic gain control)

| | * 30 | 000 | "*30 is nnn, enter command*" |

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SECTION 4 - DESCRIPTION OF OPERATION

MASTERCALL is a call redirection unit capable of dialling out a preset number. Tone and line current detection is provided in software to determine when a call has been answered. MASTERCALL then connects the incoming call to the answering party. The lines are released when both parties hang up.

Diversion of Incoming Call

The operational sequence for an incoming phone call on line 1 is:

1. Dial out number on line 2.
2. When answered, send ID announcement.
3. Answer line 1 incoming call and connect through to line 2.
4. Disconnect call on receipt of line lockout or the disconnect signal from the exchange (or DTMF # 59 # forced disconnection).

Activity Codes on Display

0. = Silence.
1. = Busy tone.
2. = Modulated dial tone.
3. = Number Unobtainable (NU).
4. = Speech.
5. = Steady tone.
6. = No progress or 'random' busy tone detected.
7. = Ring tone.
8. = Connecting caller to diverted number.
9. = Waiting for call back on line 2.

SECTION 5 - TESTING

After installation, there are several facets that need to be tested. These include the connection to the phone lines and dialling operation of the diverter.

Diversion of incoming call

1. Dial either line from another telephone.
2. Check the diverter for correct out-dialling and connection of call.
3. Terminate call and check that the call diverter disconnects.

Line current detection

If the call diverter is specially wired in Mode 3 to the phone line (in series, like a facsimile machine):
1. Set diverter to off mode (diversion deactivated).
2. Lift up a handset on either line in turn.
3. Check that the decimal point is illuminated.
4. Hang up handset and check the point goes out.

NOTES

1. If the mains power fails and the Call Diverter is operating on the internal battery power, the 'Power' LED will go out but all other indicators will continue to operate.

2. When 'shipping' or storing the unit, the battery must be turned off by unplugging the power and pressing # 2288 #.

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SECTION 6 - GENERAL

PROGRAMMING SUMMARY

Divert activate/deactivate	1
Check first diversion number	2 #
Check second diversion number	5 #
Change first diversion number	2 nnnn nnnn #
Change second diversion number	5 nnnn nnnn #
Enter hash (#)	# #
Enter star (*)	* *
Enter dialling pause	* #
Check call counter	3
Reset call counter	3 *
Check second call counter	6
Reset second call counter	6 *
Deactivate diversion announcement to caller	70
Activate diversion announcement to caller	71
Activate personalised announcement	72
Confirm announcement status (review)	74 (By remote only)
Record personalised announcement	75 ... # (By remote only)
Deactivate ID announcement/tone	80
Activate ID announcement	81
Activate personalised ID announcement	82
Activate and enter ID tone	83 nnn...#
Check ID tone	83 #
Confirm ID status (review)	84 (By remote only)
Record personalised ID announcement	85 …# (By remote only)
Check third diversion number	0 #
Change third diversion number	0 nnnn nnnn #
Transfer Call	92 #

Eight Number Models

Check first diversion number	21 #
Check second diversion number	22 #
Check third number	23 #
Check fourth diversion number	24 #
Check fifth diversion number	25 #
Check sixth diversion number	26 #
Check seventh diversion number	27 #
Check eighth diversion number	28 #
Change first diversion number	21 nnnn nnnn #
Change second diversion number	22 nnnn nnnn #
Change third diversion number	23 nnnn nnnn #
Change fourth diversion number	24 nnnn nnnn #
Change fifth diversion number	25 nnnn nnnn #
Change sixth diversion number	26 nnnn nnnn #
Change seventh diversion number	27 nnnn nnnn #
Change eighth diversion number	28 nnnn nnnn #

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Select first number	41
Select second number	42
Select third number	43
Select fourth number	44
Select fifth number	45
Select sixth number	46
Select seventh number	47
Select eighth number	48
Battery off	Disconnect power then # 2288 #
EPROM version number	* 48 #
Forced disconnection	# 59 #
Amp down	# 66 #
Amp up	* 66 #
Enable keypad	* 3333 #
Disable keypad	# 3333 #
Store or change PIN	* # pppp #
Access to system options	* 67 03 #
Access to tone detect parameters	* 67 05 #
Access to factory options	* 67 7096 50 #
Master Reset Australia	* 67 7096 00 # (CAUTION)
Master Reset Eaglefone	* 67 7096 01 # (CAUTION)
Master Reset Belgium	* 67 7096 02 #(CAUTION)
Master Reset South Africa	* 67 7096 03 #(CAUTION)
Master Reset Indonesia	* 67 7096 04 #(CAUTION)
Master Reset Suffix Selection	* 67 7096 05 #(CAUTION)
Master Reset Germany	* 67 7096 06 #(CAUTION)
Master Reset Spain	* 67 7096 07 #(CAUTION)
End	# #

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SPECIFICATIONS

AMPLIFIER

Frequency Range	300 Hz to 3.4 kHz (-3dB).
Input - Output Impedance	220 ohm + (120 nF // 820 ohm) (complex).
Return Loss	> 17 dB, 300 Hz to 3400 Hz.
Insertion Gain	20 dB +/- 2 dB maximum.
Output Level	-10 dBm $\rightarrow$ 0 dBm programmable.
Noise	< -50 dBm unweighted, 300 Hz to 3.4 kHz.
Method of operation	Software controlled AGC with noise discrimination.

CONTROL LOGIC

Processor	Motorola 6809.
Random Access Memory	8K static.
Program Memory	64K byte EPROM.
Interface	8 bit latched data.
Number, Status & Option Storage	Electrically Erasable Programmable Read Only Memory (EEPROM).
Dialling Pulse (Decadic)	Electronic, controlled by processor.
	10 pps. 34/66 Mark/Space ratio.
Tone (DTMF)	Electronic, controlled by processor.
	70 ms on, 70 ms off.
Number Storage	1 $\rightarrow$ 8 phone numbers of up to 20 digits each (local, STD or IDD calls), programmable from Keypad or remotely by telephone.
Displays	Single digit 14mm 7 segment LED.
	Power On LED (Red).
	Divert On LED (Green).
Controls	12 button keyboard.
Firmware Storage Medium	EPROM
System Number	V5841
Speech Number	V2.05

RECORDED VOICE ANNOUNCEMENTS

Standard Voice Announcements
Storage medium	EPROM.
Recording method	32K bit/sec ADPCM.

Personalised Voice Announcements (Optional)
Storage medium	Linear EEPROM.
Recording method	Analogue, time sampled at 8 kHz.
Record time	Up to 32 seconds.

DETECTORS

Activity detector
Sensitivity	Software adjustable.

DTMF detector
Sensitivity	> -40 dB.
Detect time	> 50 ms.

Dial Tone detector
Frequency range	380 Hz - 550 Hz.
Sensitivity	> 50 mV.

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GENERAL

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Power Input		12 → 48 V dc (nom.) (12 V 750 mA power adaptor supplied.
Power Consumption	Stand-by	30mA (350 mW) @ 12 V
	Operating	typically 450 mA (5W) @ 12 V.
Remote Control		'Touch Tone' DTMF telephone or encoder, with Talk-back.
Telecom Connection		Mode 1 (parallel) or mode 3.
Enclosure	Desk Top Powder coated, metal enclosure.	
	Dimensions	W350mm x D240mm x H25 - 60mm.
Enclosure	Rack Mount Powder coated, metal enclosure, acrylic front	
	Dimensions	W 19" x D250mm x H44mm (1 U high).
Packed Weight		3 kg.
AUSTEL Permit Number		A94/05/0234
ACA Supplier's Code		N 468

Please note: specifications are subject to change.

MASTERCALL MC-4044 SERIES 5

DESIGNED AND MANUFACTURED BY

DESIGN TWO THOUSAND PTY LTD
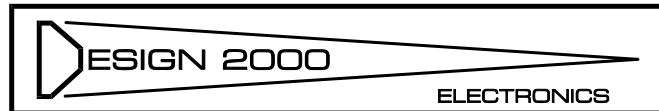
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MADE IN AUSTRALIA

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FACTORY OPTION CODES

Using either the MASTERCALL Keypad or by Remote Control, enter Factor y master access code * 67 7096 50 #, listen for "*Please enter command*"

COMMANDS
* nn		where nn is option code number
n	=	entry
#	=	scroll down to next option number
* *	=	abandon (do not save any changes)
* #	=	store (save any changes)

After either storing or abandoning program changes you can continue to make other programming changes, press # # to end, or simply hang up.

OPTION	CODE	ENTRY	RESPONSE
NUMBER STORAGE	* 80		"*80 is n, please enter command*
Range 1 → 8 Numbers		2	2
NUMBER SELECT	* 81		"*81 is n, please enter command*"
Fixed		1	1
Selectable		2	2
NUMBER TRY	* 82		"*82 is n, please enter command*"
Multi		1	1
Single		2	2
IN LINE NUMBER SELECT	* 83		"*83 is n, please enter command*"
Same number dialled on both lines		1	1
In line select		2	2 (Incoming line selects the number to be dialled)
REMOTE CONTROL	* 84		"*84 is n, please enter command*"
No remote access		1	1
Remote control access		2	2
CONFERENCE FACILITY	* 85		"*85 is n, please enter command*"
No conference		1	1
Conference		2	2
CALL COUNTERS	* 86		"*86 is n, please enter command*"
Up to 99 x 2 counters		1	1
Up to 9999		2	2
PROCESSOR POWER MODE	* 87		"*87 is n, please enter command*"
Sleep between calls and programming		1	1
Powered continuously		2	2
MODEL	* 88		"*88 is n, please enter command*"
Australia		00	00
Eaglefone		01	01
Belgium		02	02
South Africa		03	03
Indonesia		04	04
Suffix Selection		05	05
Germany		06	06
PABX 'EXTENDER'	* 89		"*88 is n, please enter command*"
Off		1	1
Extender		2	2
Extender with Call Back		3	3
DSI-5 Extender Interface		4	4

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SCREENED CALL DIVERSION

DESCRIPTION

The 'Screened' Call Diversion feature allows callers to hang up during or after the Recorded Voice Announcement should their call not be of an urgent nature. In this case, Mastercall hangs up and does not complete the diversion.

When activated, Mastercall receives an incoming call, plays the Recorded Voice Announcement and then monitors the incoming line for busy tone or a break in loop current. If busy tone or a break in loop current is detected, Mastercall hangs up. If no busy tone or break in loop current is detected, Mastercall dials the pre-programmed diversion number in the normal manner.

PROGRAMMING

1. Enter * 6703 #.
2. Enter * 83
• Press 1 to turn Screened diversion OFF
• Press 2 to turn Screened diversion ON
3. Enter * # to save programming change.

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MASTERCALL MC-4044 SERIES 5

SUFFIX SELECTION - AUTO ATTENDANT

Mastercall greets callers with your own announcement (up to 32 seconds) requesting a digit1 to 8. When the caller makes a selection by dialling a digit (1 to 8), Mastercall dials the corresponding number and establishes the connection. Mastercall keeps up the connection (supervises) until either party (typically the caller) hangs up, at which time the lines are released. If the caller does not make a selection within ten seconds after the announcement, Mastercall dials the first (default) number if the caller is still holding the line.

EIGHT NUMBERS

Check first diversion number	21 #
Check second diversion number	22 #
Check third number	23 #
Check fourth diversion number	24 #
Check fifth diversion number	25 #
Check sixth diversion number	26 #
Check seventh diversion number	27 #
Check eighth diversion number	28 #

Change first diversion number	21 nn nnnn nnnn #
Change second diversion number	22 nn nnnn nnnn #
Change third diversion number	23 nn nnnn nnnn #
Change fourth diversion number	24 nn nnnn nnnn #
Change fifth diversion number	25 nn nnnn nnnn #
Change sixth diversion number	26 nn nnnn nnnn #
Change seventh diversion number	27 nn nnnn nnnn #
Change eighth diversion number	28 nn nnnn nnnn #

To cancel number	2x 0 #

SYSTEM RESET

If Mastercall ever requires a complete reset, enter the following:

1. * 67709610 #

2. * 6705 #
    * 18 001
    * 19 001
    * 20 001

3. * #

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EIGHT NUMBER TRY

Check first diversion number	21 #
Check second diversion number	22 #
Check third number	23 #
Check fourth diversion number	24 #
Check fifth diversion number	25 #
Check sixth diversion number	26 #
Check seventh diversion number	27 #
Check eighth diversion number	28 #
Change first diversion number	21 nn nnnn nnnn #
Change second diversion number	22 nn nnnn nnnn #
Change third diversion number	23 nn nnnn nnnn #
Change fourth diversion number	24 nn nnnn nnnn #
Change fifth diversion number	25 nn nnnn nnnn #
Change sixth diversion number	26 nn nnnn nnnn #
Change seventh diversion number	27 nn nnnn nnnn #
Change eighth diversion number	28 nn nnnn nnnn #
To cancel number	2x 0 #

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EIGHT NUMBER SELECT

FUNCTION	COMMAND
Check first diversion number	21 #
Check second diversion number	22 #
Check third number	23 #
Check fourth diversion number	24 #
Check fifth diversion number	25 #
Check sixth diversion number	26 #
Check seventh diversion number	27 #
Check eighth diversion number	28 #
Change first diversion number	21 nnnn nnnn... #
Change second diversion number	22 nnnn nnnn... #
Change third diversion number	23 nnnn nnnn... #
Change fourth diversion number	24 nnnn nnnn... #
Change fifth diversion number	25 nnnn nnnn... #
Change sixth diversion number	26 nnnn nnnn... #
Change seventh diversion number	27 nnnn nnnn... #
Change eighth diversion number	28 nnnn nnnn... #
Select first diversion number	41
Select second diversion number	42
Select third number	43
Select fourth diversion number	44
Select fifth diversion number	45
Select sixth diversion number	46
Select seventh diversion number	47
Select eighth diversion number	48

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TONE DETECTION CODES

Using either the MASTERCALL keypad or by Remote Control, enter Tone Detection access code * 67 05 #, listen for "*Please enter command*"

COMMANDS

* nn	where nn is tone parameter code number
nnn =	entry
# =	scroll down to next tone parameter
* * =	abandon (do not save any changes)
* # =	store (save any changes)

After either storing or abandoning program changes you can continue to make other programming changes, press # # to end, or simply hang up.

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TONE PARAMETER	CODE	VALUE	RESPONSE
DISCONNECT CODE			
	* 21	0-9, 11-18 (See below)	"*21 is nnn, enter command*"

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Disconnect Codes

001	Busy tone
002	Dial tone
003	Number Unobtainable tone
005	Continuous tone
006	Random busy tone
007	Ring tone
008	Not Used
009	Not Used
000	Silence
011	Random busy tone
012	Stop Task
013	Loop current loss / line reversal detect
014	Forced disconnect (# 59 # from user)
015	Silence
016	Continuous tone
017	In band tone (350 - 500 Hz)
018	Total time limit exceeded
255	Don't know

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MASTERCALL ™ **REMOTE RADIO STATION MONITOR**

Description

The *Mastercall* Remote Radio Station Monitor provides media market observers with remote access to radio station broadcasts for monitoring purposes.

Standard telephone dial-up access is used to establish a connection to the radio station broadcast audio.

Connection

- Line 2 of Mastercall is connected to the telephone line.
- Audio out ('line' level, 600 mV RMS nom.) from the radio is connected to the RCA connector.
- 12 Vdc is connected to the 2.1 mm concentric power input connector.

PIN Number Access

A PIN number may be programmed to prevent unauthorised access. Whenever line 2 of Mastercall is called, Mastercall responds with "*Hello this is Mastercall, please enter PIN*". If a valid PIN is received, the telephone line is connected to the isolated radio audio source.

From the Mastercall keypad:

1. Press * # pppp #, where pppp = the required PIN.
- If no PIN is required, press * # 9999 #.

Forced Disconnect

To force Mastercall to release the telephone line, simply press # on the telephone dial pad and hang up. For automatic disconnection, the telephone line connected to Mastercall must be programmed for line category 'Reversal on Idle' (ROI).

Master Reset

If the Mastercall RRSM ever requires a complete system reset for this application, the following procedure from the inbuilt keypad is required:

```
*67709600#
*67709650#
    *89 2
    *#
*6705#
    *27 042
    *28 020
    *29 020
    *#
*6703#
    *65 2
    *#
```

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MASTERCALL MC-4044 SERIES 5

ALARM DIALER

Mastercall can be configured to operate as an intelligent Alarm Dialer.

A normally open (NO) voltage-free relay contact closure is used to trigger Mastercall to dial up to eight different telephone numbers until one is answered. When answered, Mastercall plays the personal recorded message to the called party.

A latched contact closure from an alarm system causes Mastercall to start dialing the first of up to eight pre-programmed telephone numbers. If, when answered, Mastercall detects a DTMF 9 from the called party, the dialing sequence stops. If no DTMF 9 is detected, either during or within ten seconds after the announcement, the dialing sequence continues.

TO PROGRAM THE EIGHT TELEPHONE NUMBERS

Check first diversion number	21 #
Check second diversion number	22 #
Check third number	23 #
Check fourth diversion number	24 #
Check fifth diversion number	25 #
Check sixth diversion number	26 #
Check seventh diversion number	27 #
Check eighth diversion number	28 #
Change first diversion number	21 nn nnnn nnnn #
Change second diversion number	22 nn nnnn nnnn #
Change third diversion number	23 nn nnnn nnnn #
Change fourth diversion number	24 nn nnnn nnnn #
Change fifth diversion number	25 nn nnnn nnnn #
Change sixth diversion number	26 nn nnnn nnnn #
Change seventh diversion number	27 nn nnnn nnnn #
Change eighth diversion number	28 nn nnnn nnnn #
To cancel number	2x 0 #, where x = 1 $\rightarrow$ 8.

TO RECORD THE PERSONAL IDENTIFICATION ANNOUNCEMENT

A personally recorded announcement (recordable from any telephone), announcing the nature of the alarm (and how to stop dialing), is played to the receiving party when they first answer an alarm call. For example: "*Melbourne office cabinet temperature high alarm, your attendance is required, please press 9 to acknowledge*".

To Record the Personalised Identification Announcement (by Remote Control):

1. Call line 2 of MASTERCALL, listen for one ring, hang up and wait a few seconds.
2. Redial line 2 and wait for greeting "*Hello, this is MASTERCALL, please enter PIN*".
3. Enter your four digit PIN (preset to 1234).
4. Press 85.
5. Listen for "*Record Announcement*".
6. Dictate your announcement clearly then press #. The announcement will be replayed. Repeat steps 4 - 6 if necessary. The announcement is automatically enabled.
7. To replay the announcement you can press 84.
8. Enter other programming changes or hang up.

Summary: Enter PIN, 85...record announcement...#, hang up.

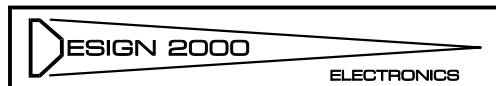# MASTERCALL MC-4044 SERIES 5

DIVERTING FACSIMILE CALLS

Mastercall can be configured to divert fax calls.

The following changes from the default settings are required:

*6703#
*81 2
* #

*6705#
*01 020
*03 020
*23 020
*27 042
*28 042
*29 038
*#

For further information, contact Design Two Thousand Pty Ltd

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