Compact Dialer

Installation & Programming Guide

CE

MITEL

8346-382-115-BA
Issue 3, November 2000

Notice

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Regulatory Notice for EC Users

DECLARATION OF CONFORMITY

We, Mitel Telecom Ltd.

Of, Mitel Business Park
Portskewett
Monmouthshire
NP26 5YR
UK

Declare that for the hereinafter mentioned product the presumption of conformity with the applicable essential requirements of

DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT (RTTE Directive) AND OF THE COUNCIL

is given.

Mitel Telecom/UK Compact/8346-001-RES3XA, 8346-001-RES3XB, 8346-RES3XC, 8346-001-RES3XM, 8346-001-RES3XS and 8346-001-RES3XX.

Any unauthorized modification of the product voids this Declaration.

For a copy of the original signed Declaration of Conformity (in full conformance with EN45014), please contact the Regulatory Approvals Manager at the above address.

Note: This product meets EN60950, EN55022 and EN55024.

Regulatory Label

The regulatory label shown below is located on the back of the Compact. This label contains the part number, serial number, revision levels and the necessary approval marks required.

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Section

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Compact Dialer Register Index

Compact Dialer Register Index

Section
2

Glossary of Terms

✓	Indicates the Default for the register.
♪	Represents a burst of 400 Hertz tone transmitted over the phone to the subscriber.
Absorbed Digits	Absorbed digits are digits that are “absorbed” by the Compact Dialer via the Search Tables. The digits that are “absorbed” are copied to a special buffer, which can hold a maximum of 8 digits. The absorbed digits can be totally removed from the destination number or appended to, via the respective Dialing Rule token.
Centrex	A business telephone service provided by the PSTN that gives the subscriber unique telephone features, similar to the features provided by a PABX.
Destination Number	The destination number is the number that is dialled to reach the called party.
Exchange Line	The physical connection between a telephone service subscriber and the PSTN that provides the telephone service.
Hz	Hertz.
mA	milliamperes.
MF4 Dialling	MF4 tone dialling.
ms	milliseconds.
PABX	Private Automatic Branch Exchange.
pps	pulses per second.
PSTN	Public Switched Telephone Network.
Rotary Dialling	Pulse dialling.
Route	A Route is a set of preprogrammed dialling rules that can include access codes to be used to place a telephone call over a particular service or carrier. A Route is chosen by matching dialled digits with a template in the Search Tables.
Search Tables	The Search Tables consist of two buffers, Buffer A and Buffer B, in which the user’s dialled digits are screened for the purpose of assigned a pre-defined set of instructions. It is here in the Search Tables where calls can be barred or sent to a select carrier via a Dialling Rule.
sec	second.

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Section

3

Hardware Installation

Description

The Compact Dialer package consists of:

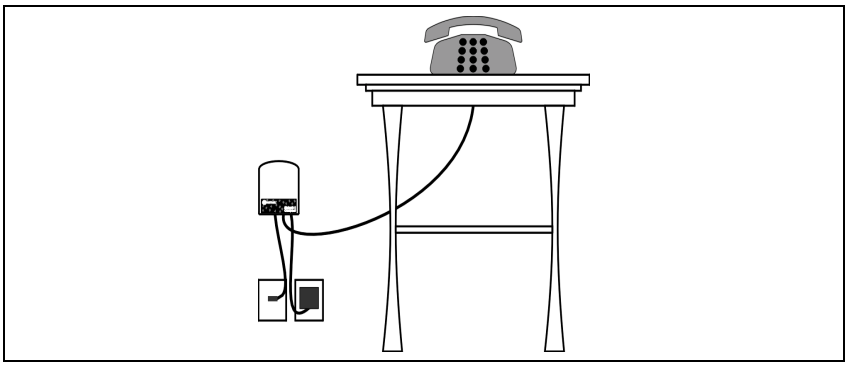
- 1 Unit
- 1 Safety Instructional Sheet
- 2 Line Cords (one for the network and one for the telephone).

Mounting

The Compact can be placed on a desk or any other flat surface or mounted vertically using self tapping screws. Avoid placing the Compact in areas where severe temperature exists, such as direct air flow from a heating duct, radiator or direct sunlight. This product is not intended for outdoor use.

The installer, resident, may use the supplied template (refer to page 39) as a guide to drill holes in the wall with a 3mm drill. Before mounting the Compact to a wall, the installer can supply two 18mm #6 pan-head screws and place them into pre-made holes in the wall.

When attaching the Compact to a plaster wall, insert the nylon anchors into the pre-made holes applying the 18mm #6 pan-head screws. The illustration below shows the positioning of the Compact.



Connecting the Compact to your phone line

- Verify that the two cables supplied with your Compact are connected. If they are not connected, please refer to the section titled, *Installing the Compact Connection Leads.*
- Unplug your telephone from the BT Wall Socket.
  Note: If you have multiple extensions plugged into the Master BT Socket, then route all of them through the Compact. You will be able to make calls from any of the connected extensions, and they will be routed correctly. Extensions hard-wired into the back of the BT socket will NOT be routed through the Compact.
- Plug the lead from the Compact Dialer with the BT plug connected into your BT wall socket.
- Connect your telephone(s) to the lead with the BT telephone socket on the Compact.
- Pick up the telephone handset, and verify whether you have dial tone.
- Replace the handset.

Hardware Installation

Checking whether the Compact will work on your line

- Pick up the telephone handset and dial **0002**.
- If you hear a continuous tone you may hang up. The Compact will now call the management centre for programming. Please wait 10 minutes before using your telephone.
- If you do NOT hear a tone or you get a BT recorded message, you will need to contact your maintainer to obtain a power supply.

Connecting a Power Supply

- Connect the power supply to the power supply jack.
- Plug the power supply into a power outlet, and verify that the Mains switch is on.
- Lift the telephone handset, and check for dial tone.
- Repeat the installation process with the power supply connected.
- If you experience problems, please call your maintainer.

Note: Before disconnecting the power supply, in installations requiring a power supply, disconnect the telephone network connections first.

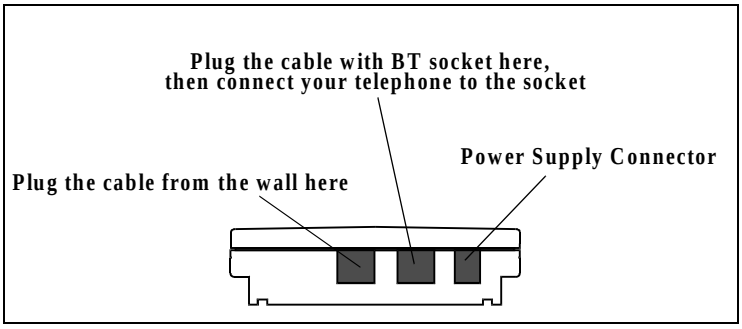
Power Failure

If a power failure occurs while the optional power supply is being used, the user's telephone equipment will be connected directly to the Exchange line. The user will still have access to the telephone network, but the Compact will not screen or route calls. This statement does not apply to the installations that do not require the optional power supply.

Installing the Compact Connection Leads

There are two cables supplied with the Compact. One cable has a BT plug on one end; the other end, a BT socket. Using these two cables, follow the listed steps to install your Compact.

- Looking at the Compact, you will see three connectors; two of which are used to connect the supplied cables.
- Connect the cable with the BT socket to the middle connector on the Compact. This connector is identified on the back of the unit as, "*To Telephones*".
- Connect the cable with the BT plug to the end connector on the Compact. This connector is identified on the back of the unit as, "*To Phone Socket*".
- Unplug your telephone from the BT wall socket.
- Plug your telephone into the cable on the Compact with the BT socket.
- Plug the Compact BT plug into your BT wall socket.



General Notes

Optional power supply

The Compact Dialer operates from a nominal 230 +/- 10% VAC supply. The power supply unit used with this apparatus must be fully compliant with the EEC Low Voltage Directive (73/23/EEC).

Connectivity

The Compact is intended to be placed in between the telephone wall outlet and the user's telephone. There are two telecom cables, an RJ11 to BS6312 (BT) type plug for connection to the Exchange and an RJ11 to BS6312 (BT) type socket for connection to the resident's telephone or answering machine, that are used to connect the unit.

Hardware Installation

Basic Hardware Description

Mechanical Description

The Compact consists of a plastic case, enclosed circuitry and an optional outboard power supply.

MECHANICAL
Weight: Main Unit - 250g Power Supply - 150g
Dimensions: Main Unit - 30 x 90 x 130mm Power Supply - 50 x 55 x 65mm
Mounting: Flush wall mount or desk mount

Electrical Description

The electrical characteristics are provided in the table below.

ELECTRICAL
Power: 12 Volts @ 50 mA
Connections: Standard RJ11 and power connector

Safety Instructions

INSTRUCTIONS

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Failure to follow all instructions may result in improper equipment operation and/or the risk of electrical shock.

1. All installation personnel should consult the following information before attempting to install this product.
2. Read all instructions before attempting to install or use this product.
3. Install and configure this product with only the assemblies specified in this guide.
4. Never install telephone wiring during a lightning storm.
5. Never install telephone jacks in wet locations.
6. Never touch telephone wires of terminals unless the telephone line has been disconnected at the network interface.
7. Use caution when installing or modifying the telephone lines.
8. The AC power socket/outlet should be installed near the equipment and should be easily accessible.

Hardware Specifications

Ringer Impedance	15k min
Ringing Sensitivity (25 Hz):	25 VAC min
Off-hook Current	17.5 mA min, 50 mA max
Battery Feed	
Open Circuit	12 VDC nominal
Constant Current	13 mA min, 13.5 mA max
Short Circuit Current	13.5 mA max
MF4 Receiver	
Level	-22 dBm min, +3 max composite
Twist	-6 min + 6 max composite dB
Time between tones	40 ms min
Rotary Receiver (Rate)	8 min, 12 max (pps)
MF4 Sender	
Levels dBV(ZR)	VF_L = -13 dBm +/- 2.5 dB VF_H = -11 dBm +/- 2.5 dB
Duration (programmable)	70 ms min
Rotary Sender	10 pps, 33/66 ms
AC Operating Range	
AC Line	230/240 VAC, +/- 10%, 50 Hz, 50 mA Max
Temperature	0º to 45 º C
Humidity	0% to 85%, non condensing
Holdover	20 ms typical
Jacks	
DC Power	2.5 mm
Equipment	142646501RC S/C Cable 6P Plug to BT Type Socket 142647501RC S/C Cable 6P Plug to BT Type Plug
Regulatory Conformity	
Safety	EN60950
Emissions	EN55022, Class B
Immunity	EN50082-1
Network	NTR3

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Section

4

General Notes on Programming

Acknowledgment Tones for Local Programming

While programming the Dialer with an MF4 telephone, you will hear tones that indicate correct entries, incorrect entries and programming time-outs. In general, after each correct entry, the Dialer will respond with two tones.

If You Hear ♪

♪ means that the command you have entered has been recognized as being valid (correct), i.e. you entered **#345✳**.

If You Hear ♪♪

♪♪ means that the entry you have made has been accepted. This occurs after a parameter has received all the digits it needs to complete programming, or if you have entered D on a variable length parameter. For example: if you dial **03** you will hear ♪, if you then dial 6 you will hear ♪♪.

If You Hear ♪♪♪♪

♪♪♪♪ means you have made an incorrect programming entry.

Notes: In the event of an invalid entry, wait for the four tones to stop and then retry the entry. No data will be accepted by the Dialer for an incorrect programming entry.

If you remain inactive for twenty-five seconds while in programming mode, the unit will exit from programming mode and revert to the previous program.

Acknowledgment Tones for Remote Programming

While remotely programming the Dialer with an MF4 telephone, you will hear tones that indicate correct entries, incorrect entries and programming time-outs. In general, after each correct entry, the Dialer will respond with an MF4 “D”.

If You Hear “A”

A means that the command you have entered has been recognized as being valid (correct), i.e. you entered **29**.

If You Hear “D”

D means that the entry you have made has been accepted. This occurs after a parameter has received all the digits it needs to complete programming, or if you have entered D on a variable length parameter. For example: if you dial **03** you will hear **A**, if you then dial 6 you will hear **D.**

If You Hear “C”

C means you have made an incorrect programming entry.

If you remain inactive for twenty-five seconds while in programming mode, the unit will exit from programming mode, without saving any changes that were made.

Terminating Variable Length Entries

To terminate a variable length entry (Search Tables, Dialing Rules, Route Digit Strings and Digit Strings) use an MF4 **D**.

General Notes on Programming

Local Programming With a Fourth Column MF4 Telephone

MF4 tones can be used to program the Compact Dialer. The default local programming code is **#345✻**. To exit programming mode and save data, wait for long tone to end, then dial **98** and hang-up (go on-hook).

To program the Compact Dialer locally:

- Go off-hook
- Enter #345✻ (Contents of Register **32** by default)
- The Compact Dialer will respond with a long period of 400 Hz tone followed by ♪
- Once the beep is heard, local programming mode is entered.

Notes:

Each time that the line cord is disconnected from the Dialer's BT socket, labeled "To Phone Socket", and then reapplied, the dialer will attempt to call the management system by using the number stored in register **72** (refer to page 18) for programming.

Because of the fact that variable length registers need to be terminated with the MF4 digit D, Mitel recommends that the Compact Dialer be programmed with a 4th column telephone (A phone with a key pad including the buttons A, B, C and D).

Remote Programming With a Fourth Column MF4 Telephone

The Compact Dialer can be programmed remotely by using MF4 tones. The default remote programming code is **#124✻**. To exit programming mode and save data, dial **98** and hang up the remote telephone.

Note:

Because of the fact that variable length registers need to be terminated with the MF4 digit D, Mitel recommends that the Compact Dialer be programmed with a 4th column telephone (A phone with a key pad including the buttons A, B, C and D).

Call Home on Installation

One minute after the Compact is installed, the unit will call the carrier's Call Home Well Management Center (CHWMC), using the following process. The unit will go off-hook and dial the phone number (refer to Register **72** on page 18) to the CHWMC. The unit will then wait for a response from the CHWMC for a period of twenty-five seconds.

If no response is received from the CHWMC, the unit will go on-hook and re-attempt to Call Home after one minute. The unit will then wait for a response from the CHWMC for a period of twenty-five seconds.

If no response is received after the second attempt, the Dialer will wait for one hour before re-attempting to Call Home. The unit will then wait for a response from the CHWMC for a period of twenty-five seconds.

If the third attempt is unsuccessful, the Dialer will Call Home every 24 hours, until the Dialer receives a response from the CHWMC. If the unit receives a password within the twenty-five second period, it will respond by sending an MF4 D tone to the CHWMC. If the unit receives an invalid password, it will disconnect. Otherwise, the unit will then remain in view mode, where it will be ready to echo programming information or be ready to be changed to program mode.

If a telephone goes off-hook during the Call Home process, the unit will stop the Call Home process. The line will be reset, and dial tone will be returned to the user, allowing the user to process a call. The Call Home process may take from two to three minutes, depending on the size of the program. If anyone enters program mode and then exits from program mode using the command **98**, the Call Home process will be cleared. The process will not begin again, unless the Call Home Well Time feature is programmed. Call Home may be defeated by not programming a Call Home number.

Initialisation

Initialisation is a procedure that is used for re-loading the factory defaults into the Compact. This procedure will not affect the Call Home number that is stored in register **72**.

To initialise a Compact that is connected to an Exchange line:

- With the telephone device on-hook, press and hold the ✻ key located on the device
- While continuing to hold the ✻ key, take the telephone device off-hook
- Continue to hold the ✻ key for 10 seconds
- Release the ✻ key and listen for a 400 HZ tone followed by a ♪
- Dial **93** and listen for a ♪
- Dial **98** and listen for a 400 HZ tone followed by a "click" sound; hang up.

Call Home Well

Call Home Well will occur when the programmed time and date stored in Register **74** (Alarm register for Call Home) is reached. The unit will go off-hook and dial the phone number (refer to Register **72** on page 18) to the CHWMC. The unit will then wait for a response from the CHWMC for a period of twenty-five seconds.

If no response is received from the CHWMC, the unit will go on-hook and re-attempt to Call Home after one minute. The unit will then wait for a response from the CHWMC for a period of twenty-five seconds.

If no response is received after the second attempt, the Dialer will wait for one hour before re-attempting to Call Home. The unit will then wait for a response from the CHWMC for a period of twenty-five seconds.

If the third attempt is unsuccessful, the Dialer will Call Home every 24 hours, until the Dialer receives a response from the CHWMC. If the unit receives a password within the twenty-five second period, it will respond by sending an MF4 D tone to the CHWMC. If the unit receives an invalid password, it will disconnect. Otherwise, the unit will then remain in view mode, where it will be ready to echo programming information or be ready to be changed to program mode.

If a telephone goes off-hook during the Call Home process, the unit will stop the Call Home process. The line will be reset, and dial tone will be returned to the user, allowing the user to process a call. The Call Home process may take from two to three minutes, depending on the size of the program. If anyone enters program mode and then exits from program mode using the command **98**, the Call Home process will be cleared. The process will not begin again, unless the Call Home Well feature is programmed.

Forced Call Home

Forced Call Home is accomplished by a technician going off-hook and dialling **0001**. After this number is dialled, the unit will begin processing the Call Home, while returning a 400 Hz tone to the user. The intention of this tone is to advise the user to hang up. The unit will then wait for a response from the CHWMC for a period of twenty-five seconds. If the attempt to Call Home is unsuccessful, the Dialer will not re-attempt to Call Home. If the unit receives a password within the twenty-five second period, it will respond by sending an MF4 D tone to the CHWMC. The unit will then remain in view mode, where it will be ready to echo programming information or be ready to be changed to program mode.

If a telephone goes off-hook during the Call Home process, the unit will stop the Call Home process. The line will be reset, and dial tone will be returned to the user, allowing the user to process a call. The Call Home process may take from two to three minutes, depending on the size of the program. If anyone enters program mode and then exits from program mode using the command **98**, the Call Home process will be cleared. The process will not begin again, unless the Call Home Well feature is programmed.

System String 2

The user of the Compact Dialer may program a number in System String 2 without having to enter into master programming mode by entering the code ✱#✱#. After this code is entered, the user will hear a single beep. The dialer will then expect a 10 digit Personal Identification Number. Once this number is entered, the dialer will respond with one beep, and hang up. The user may then replace the handset. Please refer to page 28.

Features

These features are used for the Call Home feature. You must be in the programming mode to use these commands.

Commands	Definition
72	Program Call Home Number
73	Set Date/Time
74	Set Call Home date/time (8 digits)

General Notes on Programming

Commands

Special Function Commands allow access to specific data in the Compact Dialer. You must be in the programming mode to use these commands.

Commands	Definition
75	Clear Search Tables
76	Clear default Route string (20-33)
81	Display software revision
82	Display Serial Number
83	Display Call Home Number
85	Display Search Tables
88	Drop from Program Mode
92	Enter Verify Mode
93	Re-load Defaults
95	Reset Statistics
96	Display Statistics
97	Exit Verify Mode
98	Exit Programming Mode

Program Call Home Number—72

When the command **72** is entered, a ♪ will be heard. The Compact Dialer will then expect a Call Home number, up to 30 digits, to be entered. An MF4 **D** must then be entered in order for the entry to be accepted. The Compact Dialer will return ♪♪, indicating that the entry was accepted. This feature is not affected by the commands **93**, **88** or **98**.

For example, to use the phone number 01291431181 as the Call Home Number, the entry would appear in the following format:

7201291431181D.

Call Home can be disabled by entering an MF4 **D** after the command **72**. The entry would appear in the following format:

72D.

Set Date/Time—73

When the command **73** is entered, a ♪ will be heard. The Compact Dialer will then expect a desired time in a twenty-four hour format and date to be entered in the following format:

MM(Month)**DD**(Day)**HH**(Hour)**mm**(Minute).

Following the minute digits (**mm**), the Compact Dialer will return ♪♪, indicating that the entry was accepted. The data is saved upon entry. This feature is not affected by the commands **93**, **88** or **98**.

For example, to set the time/date to July 21 at 10:35 PM, the entry would appear in the following format:

7307212235.

Call Home Date/Time—74

When the command **74** is entered, a ♪ will be heard. The Compact Dialer will then expect a desired Call Home time and date to be entered in the following format:

MM(Month)**DD**(Day)**HH**(Hour)**mm**(Minute).

Following the minute digits (**mm**), the Compact Dialer will return ♪♪, indicating that the entry was accepted. The data is saved upon entry. This feature is not affected by the commands **93**, **88** or **98**.

For example, to set the Call Home time/date to August 8 at 4:00 PM, the entry would appear in the following format:

7408081600.

Clear Search Tables—75

When the command **75** is entered, a ♪♪ will be heard, indicating that the Search Tables are cleared.

Clear Default Route Strings—76

When the command **76** is entered, a ♪♪ will be heard, indicating that the Default Route Strings (**20** - **33**) have been erased, and that the factory default for Register **24** (20) has been re-loaded.

Display Software Revision—81

When the command **81** is entered, a ♪ will be echoed to the PSTN side, and the Compact Dialer will echo the software revision of the unit being accessed in the following format:

04519945.

Display Serial Number—82

When the command **82** is entered, a ♪ will be echoed to the PSTN side, and the Compact Dialer will echo the eight-digit serial number of the unit being accessed in the following format:

A12345678D.

Display Call Home Number—83

When the command **83** is entered remotely, a ♪ will be echoed to the remote end, and the Compact Dialer will echo the call home number of the unit being accessed in the following format:

08000123456.

Display Search Tables—85

When the command **85** is entered, a ♪♪ will be heard, and the contents of the Search Tables, if any exist, will be echoed in the format of the following example:

0612345600000000021100000000000.

The first digit represents table A (0) or B (1). The second digit represents the number of digits to screen (1 through F, representing 1 through 15†). The next sixteen digits represent the digits to screen. The next seven digits represent action codes. The last seven digits are reserved for future use. Refer to page 31 for more information on the Search Tables.

† 1=1, 2=2, 3=3, 4=4, 5=5, 6=6, 7=7, 8=8, 9=9, ✻=10, #=11, A=12, B=13, C=14, D=15 (Where A, B, C, & D are Fourth Column tones)

General Notes on Programming

Drop from Program Mode—88

When the command **88** is entered, a ♪♪ will be heard, followed by a click sound. The Compact Dialer will then connect the user with the subscriber side without saving any changes that were made to the program during the current programming session. This command does not affect registers **72**, **73**, or **74**.

Enter Verify Mode—92

When the command **92** is entered, a ♪ will be echoed to the remote end, and the Compact Dialer will echo the contents of any register that is entered.

Re-load Defaults—93

When the command **93** is entered, a ♪ will be heard followed by ♪♪. The Compact Dialer will re-load the factory defaults after the first ♪ and remain in programming mode after the second ♪♪.

The series of ♪ may be heard as three consecutive tones, depending on the length of time that the dialer takes to load the factory defaults.

Reset Statistics—95

When the command **95** is entered either, a ♪♪ will be heard. The Compact Dialer will then reset the statistical counters to a value of 00000000000000000000.

Display Statistics—96

When the command **96** is entered, a ♪ will be echoed to the remote end, and the Compact Dialer will echo, in Hex, any statistical information that has been logged, in the following twenty-digit format:

00010002000300041000.

The first four digits represent Route 1. The next four digits represent Route 2. The next four digits represent Route 3. The next four digits represent Route 4. The last four digits are reserved for future use.

For example, if the first four digits are 20A1, then this number would represent 8353 calls. If the next four digits are 0020, then this number would represent 32 calls.

Exit Verify Mode—97

When the command **97** is entered, a ♪ will be echoed to the remote end, and the Compact Dialer will exit verify mode and enter into programming mode.

Exit Programming Mode—98

When the command **98** is entered locally, a long ♪ is heard, followed by a click sound; remotely, a ♪♪ will be heard, followed by a click sound. **The user must wait until the Dialer clicks before hanging up the telephone device. The click should be heard within ten seconds.** The Compact Dialer will then cut through the subscriber side to the Exchange side, saving any changes that were made to the program during the current programming session.

Section
5

System and Trunk Registers

General

You may want to change System Wide Data if the Default data does not meet your requirements.

On-hook Timing

An on-hook is determined by the absence of loop current on the line from the Exchange, for the specified amount of time.

Register	T =	
01 T	0 for none	6 for 600 ms
	1 for 100 ms	7 for 700 ms
	2 for 200 ms	8 for 800 ms
	3 for 300 ms ✓	9 for 900 ms
	4 for 400 ms	✻ for 1000 ms
	5 for 500 ms	# for 1100 ms

Rotary Inter-digit Pause

This register controls the amount of time that the Dialer inserts between each rotary digit it dials.

Register	T =	
02 T	0 for none	6 for 600 ms
	1 for 100 ms	7 for 700 ms
	2 for 200 ms	8 for 800 ms ✓
	3 for 300 ms	9 for 900 ms
	4 for 400 ms	✻ for 1000 ms
	5 for 500 ms	# for 1100 ms

Inter-digit Time-out

This register controls the amount of time that the Dialer will wait in between digits dialled by the customer before timing-out.

Register	T =	
03 T	0 for none	6 for 6 seconds
	1 for 1 second	7 for 7 seconds
	2 for 2 seconds	8 for 8 seconds
	3 for 3 seconds	9 for 9 seconds
	4 for 4 seconds ✓	✻ for 10 seconds
	5 for 5 seconds	# for 11 seconds

MF4 Rate

This register controls the amount of on and off time that the Dialer will dial MF4 digits.

Register	T =	
04 T	4 for 80 ms ✓ 5 for 100 ms 6 for 120 ms 7 for 140 ms 8 for 160 ms 9 for 180 ms	✻ for 200 ms # for 220 ms A for 240 ms B for 260 ms C for 280 ms D for 300 ms

Exchange Type

This register determines whether the Dialer will dial in MF4 or rotary. If **05** = **0**, the Dialer will automatically detect the type of which the subscriber equipment is dialling. Once the type has been established, then the Dialer will use that type to dial.

Register	T =
05 T	0 for automatically detect Exchange type ✓ 1 for MF4 lines 2 for Rotary

Note: When **05** = **0**, the unit will dial out with the same dialing type it receives from the subscriber's telephone equipment, unless a power supply is not used. In this case, the unit will only dial out in MF4.

Subscriber Type

This register determines whether the telephone being used with the Dialer is an MF4 or rotary device.

Register	T =
06 T	0 for automatically detect Subscriber type ✓ 1 for MF4 telephone 2 for Rotary telephone

Off-hook Beep

This register determines whether the user will hear a short tone burst before hearing dial tone.

Register	T =
08 T	0 for enabled ✓ 1 for disabled

Centrex Digit

This register determines whether the user will first dial a centrex digit before dialling the destination number. Typically, the centrex service will require a 9 to be dialled before dialling a destination number. When a 9 is not dialled, the destination number can be treated as an extension number.

After the pre-determined centrex digit is dialled, it is stored in a buffer (refer to token **25** on page 27). The buffer can then be referenced at any time during the Dialing Rules sequence.

Register	T =	
09 T	0 for 0	8 for 8
	1 for 1	9 for 9
	2 for 2	✻ for Centrex off
	3 for 3	# for Centrex off
	4 for 4	A for Centrex off
	5 for 5	B for Centrex off
	6 for 6	C for Centrex off
	7 for 7	D for Centrex off ✓

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Section

6

Route Registers

General Information

Route Strings

The route strings are used to store numbers, such as access numbers, personal identification numbers, etc.

Each string entry must be terminated with an MF4 "D".

Digit Strings

A digit string is used to dial a string of digits based on the route selected. The route token **24** can be used in any Dialling Rule (refer to page 27) to dial out these digits, based on the respective route chosen.

To use Route 3, for example, to dial 121 when the **24** token is executed in the Route 3 Dialling Rule Register **26**, the entry would be:

22121D.

Each string entry must be terminated with an MF4 "D".

Dialing Rule and String Relationships

The following table shows the relationship between each route and its related string register.

Route	Dialling Rule	Digit String
1	24	20
2	25	21
3	26	22
4	27	23

Route 1 Digit String

The number stored in this register will be dialled out when the Dialling Rule token **24** is executed in Route 1.

Register	S =
20 S	Route Digit String for Route 1, up to 30 digits in length (Blank ✓)

Route Registers

Route 2 Digit String

The number stored in this register will be dialled out when the Dialling Rule token **24** is executed in Route 2.

Register	S =
21 S	Route Digit String for Route 2, up to 30 digits in length (Blank ✓)

Route 3 Digit String

The number stored in this register will be dialled out when the Dialling Rule token **24** is executed in Route 3.

Register	S =
22 S	Route Digit String for Route 3, up to 30 digits in length (Blank ✓)

Route 4 Digit String

The number stored in this register will be dialled out when the Dialling Rule token **24** is executed in Route 4.

Register	S =
23 S	Route Digit String for Route 4, up to 30 digits in length (Blank ✓)

Dialling Rules

The dialling rules are a set of tokens that are used by the Compact Dialer to control activity, such as dialling access numbers, to the Exchange. Once a match is found in the search tables that contains a routing command, the dialling rules begin execution. There are a total of four dialling rules available.

Register	S =
24 S † **25 S** † **26 S** † **27 S** †	00 for dial a 0 01 for dial a 1 02 for dial a 2 03 for dial a 3 04 for dial a 4 05 for dial a 5 06 for dial a 6 07 for dial a 7 08 for dial an 8 09 for dial a 9 0✻ for dial a ✻ 0# for dial a # 20 for dial buffer A digits 21 for dial buffer A absorbed digits (A maximum of 8 digits) 22 for dial buffer B digits 23 for dial buffer B absorbed digits (A maximum of 8 digits) 24 for dial respective digit string (Register 20 - 23) 25 for dial Centrex digit (Register 09††) 26 for switch to MF4 31 for dial system string 1 (Register 28) 32 for dial system string 2 (Register 29) 33 for dial system string 3 (Register 30) 34 for dial system string 4 (Register 31) 5N for delay Nx100 ms, i.e. 500 ms = 55 6N for delay Nx1 second, i.e. 3 seconds = 63
† Refer to page 5 for the defaults of these registers. †† Refer to page 23 for valid entries.	

Example

If Route 4 (Dialing Rule 27) is programmed to dial the destination number found in Buffer A and connect the call, then the Dialling Rule would look like:

2720.

If dialing rule 27 must be programmed to dial the destination number found in Buffer A and connect the call, then programmer would:

1. Enter **27**.
2. Hear ♪.
3. Enter **20D**.
4. Hear ♪♪.

Route Registers

System String 1

The number stored in this register will be dialled out when the Dialling Rule token **31** (refer to page 27) is executed.

Register	S =
28 S	System String 1, up to 30 digits in length (Blank ✓)

System String 2

The number stored in this register will be dialled out when the Dialling Rule token **32** (refer to page 27) is executed.

Register	S =
29 S	System String 2, up to 30 digits in length (Blank ✓)

Note: The user of the Compact Dialer may program a number in this register without having to enter into master programming mode by entering the code ✱#✱#. After this code is entered, the user will hear a single beep. The dialer will then expect a 10 digit Personal Identification Number. Once this number is entered, the dialer will respond with one beep, and hang up. The user may then replace the handset.

System String 3

The number stored in this register will be dialled out when the Dialling Rule token **33** (refer to page 27) is executed.

Register	S =
30 S	System String 3, up to 30 digits in length (Blank ✓)

System String 4

The number stored in this register will be dialled out when the Dialling Rule token **34** (refer to page 27) is executed.

Register	S =
31 S	System String 4, up to 30 digits in length (Blank ✓)

Section
7

Programming Access Registers

General

For your convenience, several methods of programming the Compact Dialer are available. This device can be programmed locally or remotely.

Each string entry must be terminated with an MF4 "D".

Local MF4 Password

The password defined by this register must be entered before entering into local MF4 programming mode. After the password is entered via the MF4 telephone equipment, a burst of 400 Hz may be heard by the user, followed by two short beeps. After these tones are heard, the user will remain in verify mode.

Register	T =
32 T	Local MF4 password, 8 digits maximum (#345✳) ✓

Remote MF4 Password

The password defined by this register must be entered before entering into remote MF4 programming mode.

Once the Call Home Management Center answers a call home, it should send the dialer the password found in this register. When the dialer receives the password, it will respond with an MF4 D.

Register	T =
33 T	Remote MF4 password, 8 digits maximum (#124✳)✓

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Section

8

Search Tables

General

The Search Tables consist of two buffers, Buffer A and Buffer B, in which the user's dialled digits are screened for the purpose of assigned a pre-defined set of instructions. It is here in the Search Tables where calls can be barred or sent to a select carrier via a Dialling Rule.

One of the following codes must be entered before each Search Table entry:

- **50** enter programming
- **51** delete programming.

The format of the Search Tables is **X-N-D-R-L-E-A-C-S-T**:

X	Search Table Buffer
N	Number of Digits in the Destination Number
D	Digits that must be matched
R	Route Codes
L	Lock Codes
E	Execute Codes
A	Absorb Codes
C	Discard Codes
S	Search Codes
T	Tone Codes.

An MF4 **D** must be entered after the Tone Code (**T**) in each Search Table entry to terminate the string. It is possible to enter the MF4 **D** after entering the Route Code (**R**). The Compact Dialer will automatically insert the value **0** for the codes that follow the Route Code (**L-E-A-C-S-T**).

Examples

The following examples explain how the Search Tables might be used. The actual number to match will be shown bolded.

Example 1

When the user dials the number 18 followed by the digit 2 or 9 followed by any two digits, the Compact Dialer, using Table A, will; route the call to Route 4; lock the route; execute the Dialing Rule tokens; discard the digits 18; screen the remaining digits in Buffer B; and finally, provide two tones. The following example explains where tones would be heard if programming the Dialer via MF4 tones:

50 ♪ 05 ♪♪ **18BCC**4110212D♪♪.

Example 2

When the user dials the number 2 or 9 followed by any two digits, the Compact Dialer, using Table A, will: not change routes; not lock the route; not begin executing the route; not absorb any digits; not discard any digits; screen the remaining digits in Buffer B; and finally, provide two tones.The following example explains where tones would be heard if programming the Dialer via MF4:

50 ♪ 03 ♪♪ **BCC**0000012D♪♪.

Example 3

When the user dials the number 147, the Compact Dialer, using Table A, will: not change routes; not lock the route; not begin executing the route; not absorb any digits; not discard any digits; not screen; and finally, not provide tones.The following example explains where tones would be heard if programming the Dialer via MF4:

50 ♪ 03 ♪♪ **147**0D♪♪.

Note that in this example, the **D** terminating character was entered after the Route Code. In this case, the Compact Dialer will place **0** for the remaining code values.

Example 4

When the user dials the number 0 followed by any four digits, the Compact Dialer, using Table B, will: route the call to Route 1; lock the route; begin executing the route; not absorb any digits; not discard any digits; not screen; and finally, not provide tones.The following example explains where tones would be heard if programming the Dialer via MF4:

50 ♪ 15 ♪♪ **0CCCC**111D♪♪.

Note that in this example, the **D** terminating character was entered after the Execute Code. In this case, the Compact Dialer will place **0** for the remaining code values.

Example 5

When the user dials the number 0331, the Compact Dialer, using Table B, will: route the call to Route 2; lock the route; begin executing the route; not absorb any digits; not discard any digits; not screen; and finally, not provide tones.The following example explains where tones would be heard if programming the Dialer via MF4:

50 ♪ 14 ♪♪ **0331**211D♪♪.

Note that in this example, the **D** terminating character was entered after the Execute Code. In this case, the Compact Dialer will place **0** for the remaining code values.

Example 6

When the user dials the number 0 followed by any ten digits, the Compact Dialer, using Table B, will: not change routes; not lock the route; not begin executing the route; not absorb any digits; not discard any digits; quit searching; and finally, not provide tones.The following example explains where tones would be heard if programming the Dialer via MF4:

50 ♪ 1# ♪♪ **0CCCCCCCCCC**000002D♪♪.

Note that in this example, the **D** terminating character was entered after the Search Code. In this case, the Compact Dialer will place **0** for the remaining code value.

Search Table Buffers (X)

There are two Search Table buffers, Buffer A and Buffer B. Either buffer can screen up to 15 digits. Collectively, they can screen a 30 digit number. The Search Tables are designed to analyzed the digits dialled by the user based on a pre-programmed set of instructions, the call is processed accordingly. The call may be routed or even denied.

Buffer A is the first Search Table that is accessed. Buffer B is only accessed if the respective action code is executed. Refer to *Search Codes (S)* on page 34.

Number of Digits in the Destination Number (N)

This number represents the total number of digits of the destination number. For example, if the digits that must be matched are 436562, then this number would be 6.

Digits That Must Be Matched (D)

These digits represent the digits that the Compact Dialer must screen. The digits include literal digits and wildcard entries. For example, the digits that must be matched may be 12148441234. Assuming that all calls beginning with 1214 are desired to be routed to Route 1, the entry 1214CCCCCCC could be used to accomplish this task, rather than programming every possible entry.

Route Codes (R)

When a match of digits is found, the Compact Dialer will execute the command defined by this code. These codes are responsible for routing calls, barring calls and dialling calls directly to the Exchange.

Note: Call barring can be overridden. For example, if the number 001 is barred, a customer may dial 00 and wait for the inter-digit timer to expire. After the timer is expired, the customer may continue to dial out without any restrictions, providing that the digits 00 were previously routed.

Lock Codes (L)

When a match of digits is found, and the Route Code has been executed, the Compact Dialer will execute the command defined by this code. If the value is **1**, then the route cannot be changed, even if a command to do so is later encountered. If the value is **0**, then the route can be changed if a command to do so is later encountered.

Execute Codes (E)

When a match of digits is found, and the Route and Lock Codes have been executed, the Compact Dialer will execute the command defined by this code. If the value is **0**, then no changes will take place. If the value is **1**, then the desired Dialling Rule will begin execution. Once this action has taken place, the call cannot be re-routed.

Absorb Codes (A)

When a match of digits is found, and the Route, Lock and Execute Codes have been executed, the Compact Dialer will execute the command defined by this code. If the value is **0**, then no digits will be absorbed. If the value is any digit from **1** through **8** (Dialling Rule Code **21**, refer to page 27), then the number of digits defined by this code will be absorbed. For example, if the digits 3938000 are matched, and this value is **3**, then the digits 393 will be absorbed. The remaining digits will continue to be screened.

Because the absorbed digits are saved, they can be re-dialled by using the access codes **21** or **23**.

Search Tables

Discard Codes (C)

When a match of digits is found, and the Route, Lock, Execute and Absorb Codes have been executed, the Compact Dialer will execute the command defined by this code. If the value is **0**, then no digits will be discarded. If the value is any digit from **1** through **D**, then the number of digits defined by this code will be discarded. For example, if the digits 3938000 are matched, and this value is **3**, then the digits 393 will be discarded. The remaining digits will continue to be screened.

Search Codes (S)

When a match of digits is found, and the Route, Lock, Execute, Absorb and Discard Codes have been executed, the Compact Dialer will execute the command defined by this code. If the value is **0**, then no action is taken. If the value is **1**, then the remaining digits will be screened in Buffer B, unless the current buffer is B, in which case the Dialer will quit searching. If the value is **2**, then all searching will be stopped, whether the current Search Table is Buffer A or Buffer B. If the value is **3**, then all searching will be stopped after the inter-digit timer has expired, whether the current Search Table is Buffer A or Buffer B.

Tone Codes (T)

When a match of digits is found, and the Route, Lock, Execute, Absorb, Discard and Search Codes have been executed, the Compact Dialer will execute the command defined by this code. If the value is **0**, then no action is taken. If the value is **1** through **6**, the Compact Dialer will return a tone relative the number entered, to the user. For example, if the value is **4**, then four tones will be heard by the user.

Description of Search Tables Format

X-N-D-R-L-E-A-D-C-S-T	
X	*SEARCH TABLE BUFFER, EACH TABLE CONTAINING 15 TABLE SETS* 0 = Buffer A 1 = Buffer B
N	*NUMBER OF DIGITS IN THE DESTINATION NUMBER (**D**)* 1 = 1 digit 2 = 2 digits 3 = 3 digits 4 = 4 digits 5 = 5 digits 6 = 6 digits 7 = 7 digits 8 = 8 digits 9 = 9 digits ✻ = 10 digits # = 11 digits A = 12 digits B = 13 digits C = 14 digits D = 15 digits
D	*DIGITS THAT MUST BE MATCHED* 0 = match the digit 0 1 = match the digit 1 2 = match the digit 2 3 = match the digit 3 4 = match the digit 4 5 = match the digit 5 6 = match the digit 6 7 = match the digit 7 8 = match the digit 8 9 = match the digit 9 ✻ = match the digit ✻ # = match the digit # A = match the digits 0 or 1 B = match the digits 2 or 9 C = match any digits
R	*ROUTE CODES* 0 = No change 1 = Route 1 2 = Route 2 3 = Route 3 4 = Route 4 5 = Direct dial the destination number (*Buffer A only*) ✻ = Deny call (Call Barring)
L	*LOCK CODES* 0 = No change 1 = Lock Route
E	*EXECUTE CODES* 0 = No change 1 = Start/Continue Execution
A	*ABSORB CODES* 0 = No change 1 = Absorb the first digit 2 = Absorb the first two digits 3 = Absorb the first three digits 4 = Absorb the first four digits 5 = Absorb the first five digits 6 = Absorb the first six digits 7 = Absorb the first seven digits 8 = Absorb the first eight digits
C	*DISCARD CODES* 0 = No change 1 = Discard the first digit 2 = Discard the first two digits 3 = Discard the first three digits 4 = Discard the first four digits 5 = Discard the first five digits 6 = Discard the first six digits 7 = Discard the first seven digits 8 = Discard the first eight digits 9 = Discard the first nine digits ✻ = Discard the first ten digits # = Discard the first eleven digits A = Discard the first twelve digits B = Discard the first thirteen digits C = Discard the first fourteen digits
S	*SEARCH CODES* 0 = No Action 1 = Go to Buffer B (Quit searching if current Buffer is Buffer B) 2 = Quit searching 3 = Quit searching after next inter-digit time-out
T	*TONE CODES* 0 = No action 1 = one tone 2 = two tones 3 = three tones 4 = four tones 5 = five tones 6 = six tones

Search Table Matrix

Add Table	Tables A or B		Digits to screen	Route	Lock	Execute	Absorb	Discard	Search	Tone
	0X	1X								
50	2		BC	2	1	1				
50	3		100	1	1	1	0	0	2	
50	3		144	1	1	1	0	0	2	
50	3		123	1	1	1	0	0	2	
50	3		15C	1	1	1	0	0	2	
50	3		19C	1	1	1	0	0	2	
50	4		0321	1	1	1				
50	4		0345	1	1	1				
50	4		0500	1	1	1				
50	4		0541	1	1	1				
50	4		0632	1	1	1				
50	4		0640	1	1	1				
50	4		0645	1	1	1				
50	4		0800	1	1	1				
50	4		0845	1	1	1				
50	4		0870	1	1	1				
50	4		0910	1	1	1				
50	4		0918	1	1	1				
50	4		0990	1	1	1				
50	4		00CC	4	1	1				
50	5		0CCCC	3	1	1				
50	6		BCCCCC	0	0	0	0	0	2	
50	#		0CCCCCCCCCC	0	0	0	0	0	2	
50	#		00CCCCCCCCC	0	0	1				
	X	**N**	**D**	**R**	**L**	**E**	**A**	**C**	**S**	**T**

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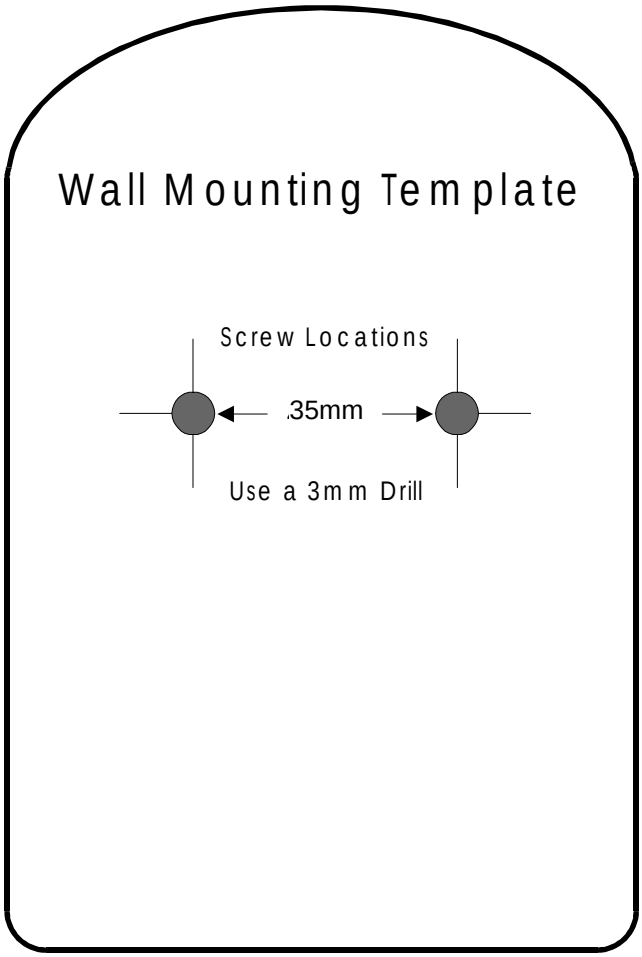
Wall Mounting Template



Wall Mounting Template

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