2000 SERIES DIAGNOSTIC ALARM CONTROL SYSTEM

PROGRAMMING MANUAL

MODELS: 2300
2500
2700

Applicable to Master Keypad systems fitted software 4.1 (or later) and to Gateway systems fitted software 7.1 (or later)

For details of Installation and Wiring of these products, refer to '2000 Series Wiring Manual'

Bona fide alarm engineers may obtain technical support for this product from Castle Care-Tech Ltd. on

Section	Contents	Page
1.	**Introduction**	**5**
1.1.	User Instructions	5
1.2.	Warranty	5
2.	**The System**	**6**
3.	**Anti False Alarm Management**	**6**
3.1.	Double Knock	6
3.2.	Dual Trip	6
3.3.	Misoperation (Abort) Signalling	7
3.4.	Sequential Confirmation Signalling	7
3.5.	Entry Pre-Alarm Timer	7
3.6.	Delay Bell	7
3.7.	Engineer Reset Time	7
4.	**End Station and Keypad Addressing**	**8**
4.1.	End Stations	8
4.1.1.	Address Switches (2500 and 2700 systems)	8
4.1.2.	Mode Switch (2300 and 2700 Systems)	8
4.2.	Slave Keypads	8
4.3.	Engineer Keypad	8
5.	**Printing from the System**	**9**
5.1.	Printing from Multiple End Station systems	9
6.	**Use with Communicators and STUs**	**9**
6.1.	Digital Communicator or RedCare 'STU'	9
6.2.	Multiple End Station Systems	9
6.3.	Communicator Pin / Channel Assignments	10
7.	**Power Up**	**11**
7.1.	Initial Power Up	11
7.1.1.	Clean Start	11
7.1.2.	Subsequent Start	12
7.2.	Fault Finding	12
8.	**Engineering Menu**	**13**
8.1.	Engineering Menu Options	13
8.2.	Clean Start	15
9.	**Programming the System**	**16**
9.1.	Change Zones	16
9.1.1.	Zone Types	16
9.1.1.1.	Programming Shunt Zones	18
9.1.1.2.	Push to Set Zones (2500 ONLY)	18
9.1.2.	Area Assigned	19
9.1.3.	Zone Attributes	19
9.1.3.1.	The 'Chime' attribute	20
9.1.3.2.	The 'Soak' Attribute	20
9.1.3.3.	The 'Dual Trip' attribute	20
9.1.3.4.	The 'Special Logged' attribute	21
9.1.3.5.	The 'Anti-Mask' attribute	21
9.1.4.	Assign Name to Zone	21

Section	Contents	Page
	9.2. Change Timers	22
	9.3. Set Date and Time	23
	9.3.1. Clock Adjustment	23
	9.4. Change Exit Modes	24
		24
	9.6. Alarm Response	25
	9.6.1. System Tamper Response	25
	9.7. Assigning Outputs	25
	9.7.1. Output Types	26
	9.7.2. Change Standard O/P 1 through 4	34
	9.7.3. Change Digicom Outputs	35
	9.7.4. Network Output Modules	36
	9.8. Site Options	37
	9.8.1. Engineer Reset	37
	9.8.2. Eng. Reset Time	38
	9.8.3. Dual Trip Fires Confirm	38
	9.8.4. Digi-Reply	38
	9.8.5. Enter Site Code	38
	9.8.6. Silent Set Menu	38
	9.8.7. Omit Zones Menu	38
	9.8.8. Areas Selected Menu	38
	9.8.9. Common Lobby	39
	9.8.10 XDF Filter	39
	9.9. Redefine Sign On Message	39
	9.10. Change Codes	40
10.	**Engineer Tests and Diagnostics**	**41**
	10.1. Engineer Tests	41
	10.1.1. Bell Test	41
	10.1.2. Strobe Test	41
	10.1.3. Sounder Test	41
	10.1.4. Test Out 1	41
	10.1.5. Test Digi-Comm	42
	10.1.6. Test Inputs	42
	10.1.7. Walk Test	43
	10.2. Engineer Diagnostics	44
	10.2.1. Multiple End Station Systems	44
	10.2.2. Zone Condition (2300 and 2700)	44
	10.2.3. iD Point Condition (2500 only)	45
	10.2.4. Line Diagnostics (2500 only)	45
	10.2.5. Display Current and Voltage	46
	10.2.6. End Station Faults	46
	10.2.7. Earth Leakage (2700 only)	46
	10.2.8. Print Diagnostics	47
	10.2.9. Print Circuit Conditions	48
	10.2.10 Print System Parameters	49

Section	Contents	Page
	10.3. Log Review	50
	10.3.1. Print Logs	51
	10.3.2. Clear Logs	51
	10.5. Exit Engineer Menu	52
	11. Multi-End Station Systems (2500 and 2700)	**53**
	11.1. Overview	53
	11.2. Detection Circuits	53
	11.3. Programming	53
	11.3.1. Program Valid End Stations	53
	11.3.2. Set Up Communications	54
	11.3.3. Powering up the Multiple End Station System	54
	11.3.4. Faults other than detection circuits	54
	11.3.5. RS-485 Failures	54
	11.4. Programming the system from a PC	54
	12. DOWNLOADING SYSTEMS	**55**
	12.1. The DC58M Digi-Modem	55
	12.1.1. Indications	55
	12.1.2. Functions NOT Supported	55
	12.2. Setting Up at the Control Panel End	56
	12.3. Additional Programming Options	58
	13. Notes For Guidance	**59**
	13.1. Panel Type and Version	59
	13.2. System Measurements	59
	13.2.1. System Voltage	59
	13.2.2. Current Drain	59
	13.2.3. Fuses	59
	13.3. Diagnostic Logs	60
	13.4. RS-485 Failure	60
	13.5. Watchdog	61
	13.6. System Memory	61
	13.7. Volume Control	61
	13.8. BABT Approval	61
	13.9. System Paperwork	61
	14. System Operation	**62**
	14.1. Basic Operation	62
	14.1.1. Setting the System	62
	14.1.2. Setting the System with the Engineer Code	62
	14.1.3. What to do if there is a Fault on Exit	63
	14.1.4. Unsetting the System	63
	14.1.5. How to Cancel an Alarm	63
	14.2. Code Guessing Alarm	63
	14.3. Duress Codes	64
	14.4. Keypad Displays	64
	Quick Check Summary	**64**
	Programming Options Appendix	**Loose**

SPECIAL NOTES

Upgrading to 4.0 (or later) Master keypad or 7.0 (or later) Gateway software issues from older issues:

Power the system down, **remove NVM**, open BBR switch and replace system PROM (all in Master Keypad or Gateway).
Power up, cancel any alarm (with code 1234), enter engineering mode (using default code, 1111), and select '***CLEAN START?***'
Replace NVM, **using 2465 type** and **ensuring correct polarity.**
Enter code '2000.'
Reprogram the system completely, and exit Engineer mode **by pressing 'YES' at 'Exit Engineer Menu.'** (ie do **not** exit with 'A' or 'C' keys).
NOTE: systems logs will NOT be retained when this is done.
The 'BBR' facility is ***not*** required, as logs are now stored in NVM.

End Stations

Two different real time clock facilities are available to match End Station pcbs prior to and from End Station software issue 6.0. Please refer to 9.3.1 to ensure programming is correct.
It is **NOT** possible to upgrade existing End Stations to issue 6.0 software

Keypads

If Slave keypads of different software issues are mixed on the system, certain functions (eg 2-key PA) may not be available at all keypads. Keypads of issues prior to 2.3 should ***not*** be mixed with those of later issues.

Changing NVMs

If it should ever be necessary to change NVMs on a working system, it is essential that the logs are cleared to prevent corruption.

1 Introduction

This manual provides information required to program and test 2300, 2500 and 2700 systems.

Information concerning the installation and wiring of the Castle 2000 Series controls is shown in the separate 'Wiring Manual.'

Castle Care-Tech Ltd. reserves the right to adjust the specifications of this system, in the interests of product improvement.

1.1 User Instructions

Because of the almost infinite combination of options available within the 2000 series, it is impossible for the User manual to cover all conceivable circumstances.

It is important therefore that the user be properly instructed in the use of the system, and in correctly responding to the displayed messages, rather than memorising set key entry patterns.

1.2

The product should operate successfully for many years, if installed correctly. However, should a fault develop within 18 months of purchase, Castle Care-Tech Ltd. undertake to repair, or replace, the product at our discretion, free of all charges. Such items should be returned to the factory for attention.

Should investigation show that the fault was caused by operating the system outside of its specification, by physical damage, or by unauthorised modifications, we reserve the right to raise an appropriate charge.

Outside of the warranty period, goods returned for repair will be charged at the rate shown in the current price list.

Products returned for repair should be suitably packed to prevent damage (including damage from electrostatic discharges), and be accompanied by full details of the fault, and of any additional work required.

2 The System

The Care-Tech 2000 Series consists of an 'End Station' with blank lid, controlled from Remote Keypads (up to five) or optional remote keyswitch. Differences between the three members of the 2000 Series concern the number of detection zones, and detection technology, as follows:

	2300		2700		2500
Technology	D. Pole	EoL	D. Pole	EoL	iD
No. of zones (basic)	4	8	8	16	30
1 expander	8	16	12	24	-
2 expanders	-	-	16	32	-
Multiple End Stations	No		-	Up to 4	Up to 4

The keypad includes 10 numeric digits used for entering codes, etc.

The ABCD keys are used in 'Area setting' the system.

The * (NO) and # (YES) keys are used in selecting choices whilst programming, and in confirming code entry.

Some keypads may not show the 'NO' and 'YES' legends. These functions are available on '*" and '#' keys respectively.

The keyswitch (if fitted) provides alternative means to set and unset the control. It is possible to set the control from keypad and unset with keyswitch, and vice versa.

Down loading of the system is possible, in conjunction with 'In-Site PC software.

3 Anti False Alarm Management

A number of features of the 2000 Series are specifically designed to minimise the risk of false alarms. When using these features, take care that security levels are not compromised. These include

3.1 Double Knock

This attribute may be applied to individual zones to reduce the risk of false alarms. The zone trigger will only be accepted by the control if it lasts in excess of 10 seconds, or is repeated within that time.

For further information refer 9.1.3

3.2 Dual Trip

This attribute may be applied to pairs of zones, such that an alarm will only be generated if both zones are in fault condition simultaneously.

For further information refer 9.1.3

3.3 Misoperation (Abort) Signalling

A dedicated 'abort' output is available, and may be programmed to ANY of the digi-comm channels. This output will fire whenever a valid user code is entered following the generation of an 'Intruder' output signal to the Alarm Receiving Centre. The output will reset at the next code entry.

Abort may also be signalled by the 'restore' of the 'Intruder' signal, which will take place whenever a valid user code is entered following the generation of an 'Intruder' output signal to the Alarm Receiving Centre. This method is also available using 'Area Alarm' signals for 'split' systems.

See also 'Entry Pre-Alarm Timer' and 'Engineer Reset Time' below.

3.4 Sequential Confirmation Signalling

A Sequential Confirmation Output is available, and can be programmed to ANY digi-comm channel. This output functions as follows:

a. The output is inhibited for 180 seconds after the system is set, and after the generation of an alarm on entry

b. The output will trigger when a further zone* goes into fault condition following the end of the inhibit period.

c. The output will trigger at the **second** zone* trigger following a rearm.

d. The output will reset at next code entry.

* - applicable to 'Intruder,' '24 Hour Tamper,' and 'Walk Through' Zone types only, except that a 'Walk Through' zone will NOT trigger a confirmation signal if an 'Entry Exit' zone has been triggered.

It is essential that the system installation complies with the requirements of DD243 (NACP14) if this facility is to be used. The 2000 Series cannot be programmed to signal 'confirmation' from individually selected zones only.

3.5 Entry Pre-Alarm Timer

This facility permits the programming of a delay before the 'intruder' signal is triggered in the event of an alarm being generated by entry time-out, or deviation from entry.

3.6 Delay Bell

Any programmed bell delay will NOT be valid for the first 180 seconds after the system is set. Nor will it be valid in the event of an alarm triggered by entry time-out, or deviation from entry.
This ensures that the user will be aware of any alarm triggered in time to be able to unset, and thus generate the 'abort' signal to avoid police attendance.

3.7 Engineer Reset Time

This enables a delay to be programmed to avoid the need for Engineer Reset when an alarm has been 'aborted' without being policed.
For further information refer 9.8.2

This facility is not required to comply with DD243 (NACP14), and should NOT be used such that engineer reset is not valid in the event of police attending site.

4 End Station and Keypad Addressing

Before powering up and programming, a check should be made to ensure that all coding selections are correctly made:

4.1 End Stations

4.1.1 Address Switches (2500 and 2700 systems)

Address	Switch A1	Switch A2	
SINGLE ES system	Closed	Closed	
A	Closed	Closed	these addresses must NOT be duplicated
B	Open	Closed	
C	Closed	Open	
D	Open	Open	

4.1.2 Mode Switch (2300 and 2700 Systems)

This selection must be made **BEFORE** powering up.

For use with Double Pole mode, the 'EoL' switch should be CLOSED
For use with End of Line mode, the 'EoL' switch should be OPEN.

In the event of this switch setting being changed after power up, it will be necessary to power the system down and up again, 'clean start' the NVM and reprogram.

4.2 Slave Keypads

SLAVE keypads enable additional control points to be added to the system. These provide the same facilities as the Master keypad.
Slave Keypads must be correctly coded BEFORE the system is powered up, setting the 'dip' switches as per the following table:

Address	Switch A	Switch B	
0	Closed	Closed	These addresses must NOT be duplicated.
1	Closed	Open	
2	Open	Closed	
3	Open	Open	
4	For use with 'Gateway' systems only, special '5th Slave' software (CT.2110) may be used in a master or slave keypad.		

4.3 Engineer Keypad

Provision is made for a keypad to be plugged onto the End Station to provide a temporary control point whilst programming, testing, etc. This must be a SLAVE keypad, coded to address 3 (provided that address 3 is not already in use). **This may be connected and disconnected as required whilst working on the system, without the need to power down or re-start.**

5 Printing from the System

The printer, of standard IBM PC-compatible 'Centronics' parallel type (eg Epson P40, Seiko DPU40, Datec DP1014.0400K, etc.), should be connected to the 'PRINTER' port at the left hand edge of the End Station pcb, using the correct cable (CT5400 or CT5500). The loom should be connected with the BROWN wire to pin 1 of the pcb connector - ie the **bottom** of the pcb.
The loom should **NOT** be left in place when the printer is 'OFF LINE' or disconnected.
Due to the wide variety of software driving requirements, it is NOT possible for the 2000 Series to correctly drive all types of printer, or for Castle Care-Tech to advice on correct printer 'Dip-switch' settings.

5.1 Printing from Multiple End Station systems

As each ES is supplied with a parallel printer port, the multi- ES system can intelligently locate the printer if it is connected to any ES. Log printouts can be made from any ES and the keypad display will show you, before printing, where it has found the printer connected.

Diagnostic printouts must be made from each ES individually, for the information relevant to that ES. This means that all of the diagnostic features of the 2000 System are available on the entire system.

6 Use with Communicators and STUs

6.1 Digital Communicator or RedCare 'STU'

The system is compatible with any 'industry-standard' plug-on communicator, or may be used with 'stand-alone' devices via an interface.

All signalling outputs are fully programmable
Ensure that the communicator PROM is programmed correctly for the signalling polarity as well as required channels.

A STU PROM must be programmed as CODE 3 for ALL channels. If a 'stand-alone' EURO-STU is used via a carrier pcb, the STU PROM must be programmed as CODE 1 for all channels EXCEPT channel 4 which must be programmed as CODE 3

For use with Digi-Com 'Tell-Back' / Red Care 'Reset' facility, refer 9.8.4

Responses toTelecom line faults harmonise with NACOSS directive NAD1, see 'Operating Instructions' for full details.

6.2 Multiple End Station Systems

The plug-on communicator outputs are live on END STATION 'A' ONLY.

6.3 Communicator Pin / Channel Assignments

Discounting the two reserved pins at the top of the left hand connector, the pins are numbered top to bottom, 1 to 8 on left hand connector, and 9 to 16 on right hand connector. The outputs are completely programmable (see 9.7.3), the factory default assignments are as follows:

Output No. (see 15.7)	PIN No.	Default Assignment	Channel	
			Digi	STU
1	1	Aux/Fire	1	1
2	2	PA	2	2
3	3	Intruder	3	3
4	4	Open/Close	4	4
5	5	Trouble	5	5 or 7
	6	Tell Back I/P	-	-
	7	Comm Fail I/P	-	-
7	8	Low Volts	Lo Bat	Lo Bat-
	9	+12v	-	-
	10	0v	-	-
	11	Not Used	-	-
	12	+5v	-	-
6	13	Abort (Mis-Operation)	6	-
8	14	Confirmation	7	6
	15	Line Fail I/P	-	-
	16	Digicom Reset	8	8

All output channels are 0v changing to **+5v** in alarm condition.
All inputs trigger with the application of **+5v** signal.

In the event of the End Station losing communication with the Master Keypad (or Gateway) whilst set, *channels 3 and 5 will self activate.*

Low volts is automatically reported.

For further information concerning Abort (Misoperation) signalling, and Sequential Confirmation, refer 3.3 and 3.4

7 Power Up

7.1 Initial Power Up

Power should be applied from the Mains first. The system must have a standby battery connected during use (7 AHr is recommended).

Slave keypads MUST be connected to the system before powering up, or they will not be recognised by the system.

On powering up, the Master Keypad will progressively display:

CASTLE CARE-TECH Ltd.
2500 System v 4.1 (as appropriate)

iD mode (as appropriate)

System Ready

Slave Keypads will display:

CASTLE CARE-TECH Ltd.
2000 Slave v2.7

Awaiting COMS
Slave Addr.x 'x' reflects the address coding (see 4.2)

System Ready

A 'System Tamper' or 'RS-485' alarm initiated at power up may be cancelled with any valid code (including engineer code)

7.1.1 Clean Start

It is essential that a 'CLEAN START' is performed at initial power up to ensure that the NV memory is initialised correctly. If the NVM chip is ever removed, it MUST be replaced in the Master Keypad (or Gateway) BEFORE commencing programming. To ensure you have a CLEAN START, follow this procedure:

With the display showing "***CLEAN START?***" in the Engineering menu, key in "YES" followed by the number 2000, and the factory-set programme defaults will load in the system memory. When completed, the display will show "***Initialised***" and move to the next programming item.

Remember, the OLD programme is still stored in the NV Memory chip until you leave the Engineer menu. At the point of exiting that menu, the message ***"Updating NV Memory"*** will appear, confirming that the new program parameters are resident in the NV Memory chip. Therefore, NEVER power down whilst in Engineering mode.

If it is necessary to perform a 'Clean Start' with the NVM removed, after powering up, enter engineering mode and select 'CLEAN START.' Insert the NVM at this point, then enter code 2000, and proceed as above.

> If a replacement NVM is being fitted, it is essential that the LOGS are CLEARED before leaving Engineer mode.

7.1.2 Subsequent Start

Powering up a 2000 series system fitted with a programmed NVM will automatically load the system parameters from the NVM.

When adding slave keypads to the system, power should be removed first, or they will not be recognised by the system. "Restarting" the Master keypad (or Gateway) (by briefly shorting the 'R' and 'S' pins) will also cause it to search for additional slaves, or correct for any removed.

7.2 Fault Finding

Power - Up Problems

1. Power down and check the component parts of the system:
   a. Master Keypad - identified by the NV Memory chip.
   b. End Station - correctly coded.
   c. Slave Keypads - coded to different addresses.
2. Check Wiring between a, b and c above is correct.
3. Power up on mains and check that there is 13v or more at the End Station COMMS power supply terminals for the keypads.
4. Supply voltage at keypads, at power up must be at least 12v.
5. If keypad displays are blank - check their supply voltage.
6. If keypad keys do not respond, check coding is correct, and keypad tamper switch is closed correctly.

RS-485 Failure

If this message is displayed on the Master Keypad, there is a fault on the communication link between the various keypads and the End Station.

a. Check voltage at keypads

b. If Slave Keypads are present do they display 'RS-485 Failure' as well? If YES then the fault is almost certainly at the End Station.

c. If Slave keypads display 'Awaiting Comms', then the fault may lie with a Slave keypad. Disconnect all slaves and see if the system responds correctly with just the Master keypad. Replace slaves one at a time, reinitialising the system each time, until the fault is discovered.

d. If the End Station loudspeaker emits a 'beep - pause - beep' tone, with only the Master Keypad connected, then the fault will lie with the wiring, or the Master Keypad.

e. Sometimes problems induced by an engineer shorting wires etc can be overcome by shorting the RESTART pins on the End Station and on the Master Keypad (or Gateway). This will totally reset the system and re-load the system parameters from the NV Memory.

f. If using multi-core cable between Keypads and End Station, whilst it is advisable to common up multiple cores for the SUPPLY (+ and -) connections, the COMMUNICATIONS LINK should have only one core connected to each connection (T and R). Doubling up on these connections is not necessary, and can cause 'ringing' resulting in data corruption.
DOUBLE UP SUPPLY CONNECTIONS ONLY.

8 Engineering Menu

Programming of the system parameters may be carried out from any keypad.

The ENGINEER CODE permits access to the Engineer Menu to use the programming and diagnostic features of the system. The code may also be used from the 'System Ready' prompt to set and unset the system whilst testing and commissioning, to avoid the engineer having to know a Manager or User code. The Engineer code will NOT unset the system if it has been set using a Manager or User code, nor is it possible to perform sequences of area set and unset operations.
The default code is 1111, this may be changed as described at 9.10

A loose programming chart is provided to assist in establishing the required system parameters, before programming the system.

Ensure that the system is NOT in Engineering mode before powering down, or newly programmed information will not be saved, and, in some circumstances, memory corruption may occur.

8.1 Engineering Menu Options

The ENGINEERS menu is entered through the MANAGER menu. :

Manager Menu ?	(1234)
Engineer Menu ?	(YES key)
Enter Code :	(1 1 1 1 is default code)
CLEAN START ?	(first option)

Alternatively, the Engineer Code may be entered directly at the ***'Manager Menu?*** display

The full range of Engineering Options that appear on the display is detailed below, these are accessed by scrolling forwards with the * key, or backwards with the 'B' key.

CHANGE ZONES ?
CHANGE TIMERS ?
SET TIME AND DATE ?
CHANGE EXIT MODES ?
SOUNDER OPTIONS
ALARM RESPONSE MENU
ASSIGN OUTPUTS
SITE OPTIONS
REDEFINE SIGN-ON MESSAGE
CHANGE CODES
ENGINEER TESTS
ENGINEER DIAGNOSTICS
LOG REVIEW
PRINT LOGS
CLEAR LOGS
PRINT SYSTEM PARAMETERS
EXIT ENGINEER MODE

Other options are available on systems fitted with Gateway Module.
To cycle through the Engineer menu again, press 'NO' five times.

Some engineering options have further choices, for example :

CHANGE ZONES ?
- ***Zone Type***
- ***Assign Areas ?***
- ***Assign Attributes?***
- ***Assign Name to Zone ?***

(Quick exit from option: enter zone no.[99] #)

CHANGE TIMERS ?
- ***Exit Route***
- ***Entry Route***
- ***Bell Duration***
- ***Bell Delay***
- ***Re-Arm Number***
- ***Deterrent Time***
- ***Entry Pre-Alarm***

SET DATE & TIME

CHANGE EXIT MODES
- ***Area Set ABCD***

SOUNDER OPTIONS
- ***Strobe Confirms Exit***
- ***Sounder Continue after Bells***
- ***Chime Option***
- ***Deterrent***
- ***Volume Settings***

ALARM RESPONSE MENU
- ***ABCD***

ASSIGN OUTPUTS
- ***Change Standard O/P 1 to 4***
- ***Change Digicom Outputs***
- ***Change Output Module***

SITE OPTIONS
- ***Engineer Reset***
- ***Engr. Reset Time***
- ***Dual Trip Fires Confirm***
- ***Digi-Reply***
- ***Enter Site Code***
- ***Silent Set Menu***
- ***Omit Zones Menu***
- ***Select Areas Menu***
- ***Common Lobby***

REDEFINE SIGN-ON MESSAGE

CHANGE CODES
- ***Change Engineer Code***
- ***Change Operator Codes***

(Quick exit from option : enter code no [99] #)

ENGINEER TESTS

Bell. Strobe. Sounder.
Outputs 1 - 4.
Test Digi-com
Test Inputs
Walk Test. Print Walk Test.
Inputs Test.

ENGINEER DIAGNOSTICS

Display iD Point Condition ?
Line Diagnostics
Display Current and Voltage?
Display End Station Faults ?
Print Diagnostics ?
Print Circuit Conditions ?

(These diagnostic print routines cannot be aborted and include several delays while current tests are performed.)

LOG REVIEW

Alarm.
Activations.
Trouble.

(Scroll events forward with 'A' key, backward with 'C" key)

PRINT LOGS

Alarm.
Activations.
Trouble

(To abort printing : Hold NO key down until 'Beep' is heard).

CLEAR LOGS ?

PRINT SYSTEM PARAMETERS ?

EXIT ENGINEER MODE
(Press 'NO' key 5 times to go around menu again)

8.2 Clean Start

It is essential that a 'CLEAN START' is performed at initial power up to ensure that the NV memory is initialised correctly. If the NVM chip is ever removed, it MUST be replaced in the Master Keypad (or Gateway) **THE CORRECT WAY ROUND** *BEFORE* commencing programming. To ensure you have a CLEAN START, follow this procedure:

With the display showing "***CLEAN START?***" in the Engineering menu, key in "YES" followed by the number 2000, and the factory-set programme defaults will load in the system memory. The display will then show "***Initialised***" and move to the next programming item.

Remember, the OLD programme is still stored in the NVM chip until you leave the Engineer menu. On leaving that menu, the message ***"Updating NV Memory"*** will appear, confirming that the new program parameters are loaded in the NVM chip.
Following a 'Clean Start' do NOT exit with 'A' or 'C' keys, scroll to 'Exit Engineer Menu' and press 'YES.'

9 Programming the System

9.1 Change Zones

To select the zone to be programmed:

Select Zone No: [01]	Use 'YES' key to select Zone 1, or 'NO' key to scroll to number required. Alternatively, enter required zone number from numeric keypad, and select with 'YES'

This option allows the customising of the messages that are displayed as well as tailoring the performance of the actual alarm system itself, eg

Change Zones ?	(YES key)
Select Zone Number [01]	(NO to increment the number, or press the digits of the zone number - eg 1 and 3 for zone 13) and YES. NB : selecting a number higher than the highest zone available will exit this menu.
Zone [13] Type :- Isolated	(NO scrolls round the available zone types. Press YES when correct type is displayed to continue - or, using the numeric keypad, simply press the digit that corresponds to the zone type shown at 9.1.1 eg - 4 = Intruder)
Zone [13] Type :- Silent P.A.	(Press YES key when the correct type is displayed)
Assign to Area ?	(YES / NO, see 9.1.2)
Assign Attributes ?	(YES / NO, see 9.1.3)
Assign a Name ?	(YES, see 9.1.4)

To exit from this item, select a number higher than the highest possible zone number on the system (eg. 99 for a standard 2500 system) and press YES
A printout of all zone programming information is available as part of the 'System Parameters' printout (see 10.6)

9.1.1 Zone Types

0. Fire	= When activated triggers communicator output. (Aux/Fire Signal), and provides a (pulsing) warning tone on speaker and bell outputs. After Bell time, the internal sounder will continue until a code is entered. NOTE: The 2000 series are NOT designed to meet Fire Alarm standards, but regulations relevant to the selection and siting of fire detectors MUST be followed.
1. PA	= Personal Attack. Usually push button devices. Produces a full alarm at any time when pressed, generating a PA communicator output (PA Signal).
2. Silent PA	= Personal Attack alarm, generating a communicator (PA Signal) output without audible alarm.

3. 24Hr Tamper	= A security wiring feature, gives a local alarm, and communicator (Trouble Signal) output, if wiring is broken or shorted, whilst the system is unset, in addition to the normal intruder response if set.
4. Intruder	= This is the usual designation for an alarm system zone. Activating an alarm output and communicator (Intruder Signal) output when the system is armed.
5. Final exit/entry	= The last detector on the entry/exit route. Typically the front door.
6. WT-E/E in Area	= A 'Walk Through' zone (as type A below). If the system is partially set only, this zone behaves as final exit/ entry zones.
7. Deterrent	= 24Hr monitoring that will trip a unique output (outputs 1 to 4) that may be used to deter intruders at the site perimeter, but not trip any form of system alarm condition. See 'Assigning Outputs'at 9.7
8. Auxiliary	= An independent zone tripping a unique output for things such as water, gas detectors etc. See 'Assigning Outputs.' Also triggers communicator output (Aux/Fire Signal) and system sounder. Auxiliary zone trips will be logged whether the system is set or not.
9. Isolated	= Circuit/Zone Non-Active
A. Walk Through	= A detector on the exit/entry route that is before the final exit/entry door, typically a PIR mounted in the hallway. This may be 'walked through' during entry providing the final exit/entry door is opened first. These zones function as 'Walk Though' in all set modes.
B. E/E-WT in area	= A detector on the exit/entry route that will start entry time when triggered, if the system is fully set. This zone will function as a 'Walk through' zone in area set modes.
C. Shunt	= A switch, which, when closed, will shunt out of operation a zone, or group of zones, allocated to the associated 'shunt list'. See 9.1.1.1
D. Push to Set	= **2500 ONLY;** Provision for mounting a push button outside the building to complete exit procedure, as an alternative to the use of Input 1. (see 9.1.1.2).

The zone type may be selected either by scrolling to the type required with the NO key, and selecting with YES, or by entering the type number (or letter) from the keypad, followed by YES.

NOTE: If a 'Walk through' zone is triggered whilst the system is set, an alarm will NOT be generated instantly. The system will store this trigger for 5 seconds. If a 'Final Exit/Entry' zone is triggered during this time, ENTRY TIME will start, otherwise an alarm will be generated.

9.1.1.1 Programming Shunt Zones

On defining a 'Shunt' zone, as above, the display will show

```
'Shunt List xx
 -- -- -- -- '
 ^              = cursor pointing to first dash
```

Enter the first zone number (2 digits) which it is required to add to the list, followed by YES. This will appear beside the dash, thus

```
'Shunt List 15
 -- 21 -- -- '
 ^
```

Continue to add zone numbers as required (any number may be entered).

To delete a zone from the shunt list, move the cursor to the zone number (using 'B' key to move left, and 'D' key to move right), and press the 'NO' key.

Press 'YES' to complete programming and move to next option.

> Zones may **NOT** be assigned to more than one shunt list.
>
> Isolated zones cannot be entered on a shunt list.
>
> Any zone present on a shunt list which is subsequently isolated will automatically be deleted from the shunt list.

A shunt list may be cleared completely by reassigning the zone as an alternative zone type, and then reprogramming the zone as a shunt zone again.

In use, whenever a shunt zone is CLOSED, (eg by closing a keyswitch wired to the zone input, the zones assigned to it will be shunted (ie inactive). When the shunt zone is opened, the relevant zones will be live after a 10 second check period. If, during that period, a fault exists on a shunted zone, the shunt will remain in force to prevent an alarm from being generated.

'Zones Shunted,' 'Shunt Fault' and 'Zone Unshunting' outputs are available for use in conjunction with shunt zones (see 9.7)

9.1.1.2 Push to Set Zones (2500 ONLY)

A zone programmed as 'Push to Set' will accept a standard normally open push button, and will function in the same way as a push button wired into Input 1. A 'door bell' facility will also be available via this zone

Selecting this zone type does **not** permit the programming of any attributes or area assignments.

9.1.2 Area Assigned

ABCD	= Zones assigned to ABC or D will be active whenever that specific area is armed.

To adjust the areas for which the zone is assigned, press the appropriate key(s) for the zones required.

To select as 'COMMON LOBBY' area, press any of the ABCD keys ***twice***. The display will show areas selected as ***'COMM'*** for 'Common Lobby.'

For further information concerning Common Lobby operation, refer section 9.8.9

Note: The Deterrent circuit option is valuable to warn of approach to a 'set' area. The deterrent tone and a visual warning sign such as 'Alarm Active' (driven by an output) may be utilised.

9.1.3 Zone Attributes

Non Omit	= The zone cannot be manually omitted during the setting procedure.
Chime	= The zone will CHIME if it is activated while the system is DISARMED. The volume and rate of chime is adjustable under software control. See 9.1.3.1
Soak	= The zone will indicate a fault without generating an alarm, see 9.1.3.2. Applicable to 'Intruder' and 'Tamper' zones only.
Double Knock	= Any alarm activation will be signalled if it lasts for over 10 secs, or if two activations occur within 10 secs.
Dual Trip	= Two adjacent zones (eg. 5 and 6) are paired. An alarm condition will be generated if both zones are in alarm condition together, see 9.1.3.3
Special Log	= Every opening and every closing of a zone with this attribute will be entered in the 'Trouble Log' whether or not an alarm was initiated, see 9.1.3.4
Anti-Mask	= The zone will be checked before the system sets, and interrupt the setting procedure if it has not been activated since the system was last unset, see 9.1.3.5

NOTE :

These choices ([YES] or [NO]) are scrolled through by accepting them with the YES key. The NO key will change the choice. For example :

NON - OMIT [YES]	(NO changes the choice)
NON - OMIT [NO]	(NO changes the choice)
NON - OMIT [YES]	(YES accepts the choice and moves to the next option)
CHIME [NO]	etc ....

9.1.3.1 The 'Chime' attribute

If zones have been configured to 'CHIME' whilst the system is unset (eg shop front door, garage or shed door), the following message will show, along with the Chime tone, indicating that a door has been opened:

ATTENTION!	The tone may be silenced using the 'YES'
ZONE 1	key.

See separate option (9.5) to select chime as 'single' or 'follow'

All indications will clear by scrolling around the TOP MENU with the 'NO' key. Any indications remaining show that the particular fault remains current.

Please note that the CHIME attribute is designed to be used only with the following zone types:
INTRUDER, ENTRY-EXIT, WALK-THROUGH, DETERRENT

Whilst the system will accept an attempt to select this attribute for other types of zone (PA, SILENT PA, FIRE, 24-HOUR, AUXILIARY), this will result in the system refusing to accept the entry of an operator code to cancel an alarm triggered by such a zone until the fault has been cleared / reset.

The chime facility may be disabled / enabled by toggling the 'C' key whilst the 'System Ready' prompt is displayed, at any keypad, as follows

Single press	Small 'c'	System chimes only
Second press	Capital 'C'	System chimes and Displays zone triggered.
Third press	-	Chime off

9.1.3.2 The 'Soak' Attribute

A zone programmed with this attribute will NOT trigger an alarm condition, but function as follows:

In fault when setting	A fault will indicate, preventing the system from setting.
Activated whilst system set	No alarm will be generated. At unset, the display will show '***Soak Failed***.' Activation will be recorded in 'Trouble log'

9.1.3.3 The 'Dual Trip' attribute

This option must be selected for two adjacent zones (eg zones 5 and 6). The software searches either side of each zone and signals an alarm if two adjacent zones are open **together**. If more than one pair is being used, a "gap" should be left between pairs, or, for example if 5, 6, 7 and 8 were programmed as if two pairs, 6 and 7 would also act as a pair.

During setting procedures any ONE zone in alarm will indicate a fault in the usual way. When set, if only one zone of a pair is triggered, it will NOT trigger an alarm, but will display as '***Dual Trip [ ]***' when unsetting, and record similarly in the Trouble log.
An option is available to permit a 'dual trip' pairing to directly trigger the 'Confirmation' signal to the communicator in addition to 'Intruder.' (see 9.8.3)

9.1.3.4 The 'Special Logged' attribute

Every opening and every closing of a zone with this attribute will be recorded in the 'Trouble Log' whether or not an alarm was initiated. The entry in the Trouble Log shows 'MONITOR ON/OFF' and identifies zone number. See 9.7 for corresponding output configuration.

Dual-Trip or Double-Knock zones assigned the 'Special Logged' attribute will log WHENEVER a zone is activated, not just if an alarm is generated.

9.1.3.5 The 'Anti-Mask' attribute

The zone will be checked before the system sets, and interrupt the setting procedure if it has not been activated since the system was last unset. The display will then show '***Not tested***' and identify the zone(s) affected.

Activating these zones will cause them to disappear from the display, and the setting procedure will continue when the 'YES' key is pressed. Pressing the 'NO' key will return the system to 'day' mode for checks to be completed..

Alternatively, pressing 'YES' will abort the check and permit the system to set. In this event, any untested zones will be recorded as '***Masked Zone [ ]***' in the Trouble log.

9.1.4 Assign Name to Zone

It is possible to assign a name to each zone on the system to make it more 'customer friendly'. This allows you to type in your own text for each zone.

Assign a Name to zone (Press YES)

Zone [13] Text:
>

Text characters are entered one at a time, using 2-digit codes from the following table.

A	33	N	46	a	65	n	78	0	16	Space	00
B	34	O	47	b	66	o	79	1	17	,	12
C	35	P	48	c	67	p	80	2	18	-	13
D	36	Q	49	d	68	q	81	3	19	.	14
E	37	R	50	e	69	r	82	4	20	/	15
F	38	S	51	f	70	s	83	5	21	"	02
G	39	T	52	g	71	t	84	6	22	&	06
H	40	U	53	h	72	u	85	7	23	(	08
I	41	V	54	i	73	v	86	8	24	)	09
J	42	W	55	j	74	w	87	9	25	*	10
K	43	X	56	k	75	x	88			+	11
L	44	Y	57	l	76	y	89			!	01
M	45	Z	58	m	77	z	90			#	03

After entering each code, the cursor will move to the next position. The 'D' key may be used to move the cursor position to the right, and the 'B' key to move it to the left.

Alternatively, text may be entered by using the 'A' and 'C' keys to scroll through the available characters, and the 'B' and 'D' keys to move left and right.

Press the 'YES' key to terminate the text string.

9.2 Change Timers

Exit	= Time allowed to exit the building (with all zones clear) before the system sets. If a detector is open the timer is held up until it is closed.
Entry	= Time allowed to enter the building, via the correct route, and switch off the system.
Bell	= Time elapsing before the bell will stop ringing during an alarm condition.
Bell Delay	= Time elapsing after an activation before the bell will start to ring (to allow police to arrive and apprehend an intruder). This programmed delay does NOT become operative until 180 seconds after the setting procedure is completed. NOT to be used unless a communicator is fitted.
Re-arm	= The number of times the system will re-arm itself at the end of bell time. If the alarm was not confirmed, a qualifying repeat alarm will initiate a 'confirmation' signal. A repeat 'intruder' signal will NOT be generated after a re-arm. Triggering of an 'Entry-Exit' zone will start normal entry time.
Deterrent	= The number of seconds the deterrent output (output 1 to 4) is active when the deterrent zone is in alarm.
Entry Pre-Alarm	= A delay applied to the communicator output in the event of an alarm caused by deviation from entry route; during which the system audible warning devices only will function, thus providing the user with the opportunity to cancel the accidental alarm. (Not required by ACPO / NACP14)

9.3 Set Date and Time

Setting the Real Time Clock time and Date ensures that all events will be stamped with the correct date and time. Select the option as follows:

	Set Date and Time ?	(YES key)
Year :	***Enter Year : [90]*** 1996)	(press the digits for the year, eg 9 and 6 for
	Enter Year : [96]	(YES when correct)
	Enter Month: [Jan]	(Scroll with the NO key until the correct month is displayed, then press YES)
	Enter Date : [01]	(Press the digits of the date, eg 2 and 4 for the 24th, then press YES)
	Enter Time : [0938]	(Enter the time by pressing the digits, expressed in 24 hour format, then YES)

9.3.1 Clock Adjustment

After entering the date and time, an option permits the clock to be adjusted by a number of seconds per day to compensate for component tolerances

Clock [Loses] NO toggles to
Secs/day [_ _ _]

Clock [Gains]
Secs/day [_ _ _]

If the system is fitted with END STATION software issue 6.0 or later, this should NOT be used . The clock will be synchronised with mains frequency, and needs no adjustment. In Multi-ES systems, the 'A' ES must be fitted with 6.0 software for this to function correctly.

If used with earlier End Station software, establish what adjustment is required, and enter this, as, for example

Clock [Loses] Press YES to confirm
Secs/day [054]

If this function has previously been set, the display will show the existing information, eg

Clock [Gains]
Secs/day [143]

This setting should be adjusted if required - eg if the above system is now losing 33 seconds per day, the setting should NOT be changed to a 'Loses' setting, but be adjusted to

Clock [Gains]
Secs/day [110]

The clock adjust facility should ONLY be used when the system End Station is fitted with software issues prior to 6.0.

It is NOT possible to upgrade such End Stations to Issue 6.0.

9.4 Change Exit Modes

Lock Set = The system will **only** set when the lock on the final door is secured. Lock contact should be wired to a biscuit programmed as 'Final Entry Exit.' Reopening the lock will start entry time.

Push - Set = The system will **only** set if the push button at the final door is pressed (normally sited outside)

Timed = The time allowed for exit before the system sets.

Quick Set = System set occurs within 5 secs (for use where Areas ABCD are used independently within one building).

Press the NO key to change the selection. The YES key accepts the choice and moves you on to the next option.

> AREA SETTING
>
> If different areas are programmed to different exit modes, the system will require the HIGHEST priority to be used when multiple areas are set, in the order shown above.

9.5 Sounder Options

Strobe Confirm Exit = At final set the strobe output will be live for 5 secs to confirm 'system set'.

Sounder Continue after Bells = After Bell cut-off time expires, the internal speaker(s) will continue to sound.

Chime Option

- Follow =The tone follows the opening of the door (Door Open = bip bip bip bip. . . . Closed = silent).
- Single = The tone sounds once when the door is opened

Deterrent

- Follow = The programmed output follows the opening of the door (see 9.1.1) (Door Open = live. Closed = off).
- Timed = The output latches once the door is opened and resets when the timer expires (see 9.2)

Volume Settings = Each different sound signal may be programmed to 'Low,' 'Medium' or 'High' volume levels.

9.6 Alarm Response

This option allows the engineer to specify the type of alarm response that is required in each area when an activation occurs. The choices for each of the areas A,B,C and D are :

Keypad Bleepers	
Internal Sound	
Local Alarm	(Bell, Strobe and Sounders)
Full Alarm	(Communicator and Local Alarm)

NOTES :
Press the NO key to change the selection. The YES key accepts the choice and moves on to the next option.

If the FULL ALARM response has been selected for any area, any BELL DELAY programmed into the system will be applied to an alarm created within that area, even if the system is area set only.

For details of 'Abort' and 'Confirmation' signalling, refer Section 3

9.6.1 System Tamper Response

If the system is AREA SET, a system tamper (ie Keypad or SAB tamper, or Code Guessing alarm) will generate an alarm corresponding to the highest level for any area set at the time of the alarm.

9.7 Assigning Outputs

The 2000 Series has the following outputs available, each of which can be programmed to signal any one of the configurations outlined at 9.7.1

Digi-comm pins - 8 outputs

End Station Outputs 1 - 4 (2300 has 1 and 2 only)

In addition, further outputs are available at modules wired to the system as follows:

Network Output Modules	- up to 8, with 8 outputs each - see 9.7.4 (Multiple End Station systems can accept up to 16 modules)

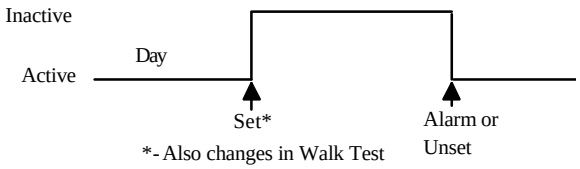
These outputs switch as follows:

Digi-comm outputs	= 0v, switching to **+5v** when active LOGIC LEVELS ONLY available - no current may be drawn.
End Station output 1	= +12v, switching to 0v when active. A maximum of 65mA may be drawn at either polarity
End Station O/P 2 - 4	= +12v, switching to 0v when active. A maximum of 65mA may be drawn WHEN ACTIVE ONLY.

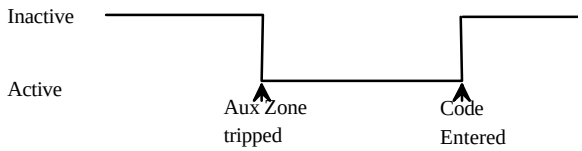
Network O/P Modules	
Outputs 1 and 2	= +12v, switching to 0v when active. A maximum of 500 mA may be drawn WHEN ACTIVE ONLY When used as sounder outputs, volume level is adjustable on module.
Outputs 3 and 4	= +12v, switching to 0v when active. A maximum of 65mA may be drawn WHEN ACTIVE ONLY
Outputs 5 to 8	= Changeover voltage free relay contacts. Contacts rated at 1 amp 24v DC/120v AC.

9.7.1 Output Types

PIR Latch 1

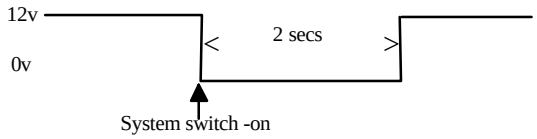


AUX



NOTE: Opening an Auxiliary Zone will also trigger an output programmed as 'Fire/Aux Signal'

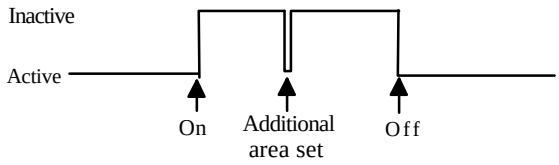
Viper 12v Reset



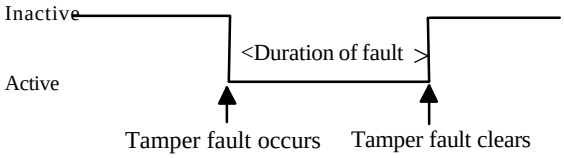
This configuration is shown as if programmed to End Station OUTPUT 1. If programmed to any other output (other than Network Output Module relay outputs) an external relay must be used to switch the current required at 12v.

This is designed to provide the 'power off' reset required by early VIPER, and certain other detectors. It re-triggers every time any part of the system is set, hence under area setting conditions, the reset signal can cause false alarms. The preferred reset for VIPER + and VIPER 3 detectors (Viper 'Display Reset' or 'Set/Unset' terminal) should be used when area setting:

Viper Set/Unset

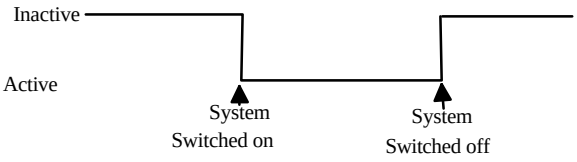


24 Hour Tamper

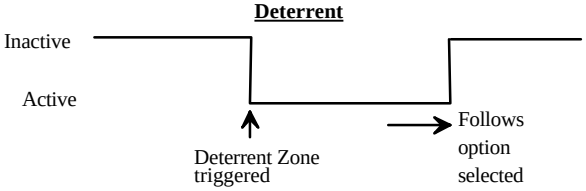


This output is live when a zone programmed as '24 Hour' is triggered - NOT for system tamper faults, etc.

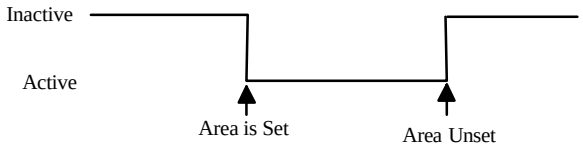
Switch-On Indication



Deterrent

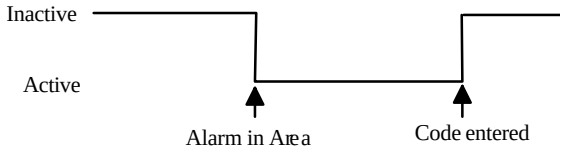


Area Set: Area A, B, C or D



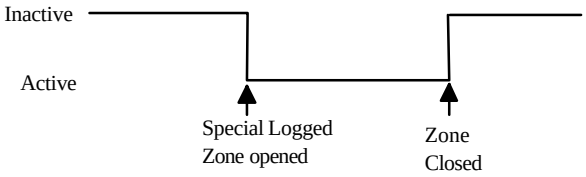
NOTE: The Area Set output will be generated whenever that area is set, including when other areas are already set.

Area Alarm: Area A, B, C or D

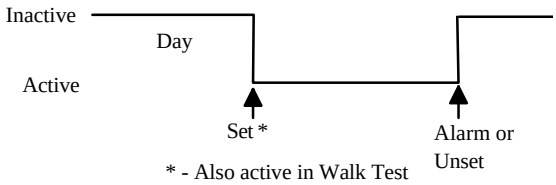


NOTE: The Area Alarm output will be generated whenever an alarm is generated within that area, whether other areas are set or not.

Special Logged

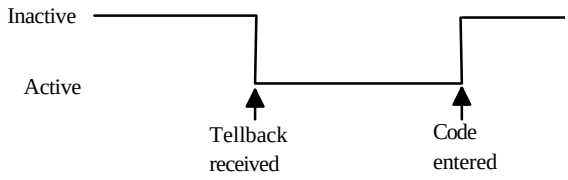


PIR Latch 2



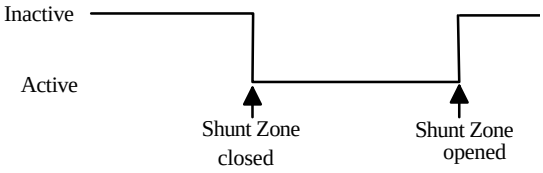
* - Also active in Walk Test

Tellback Received



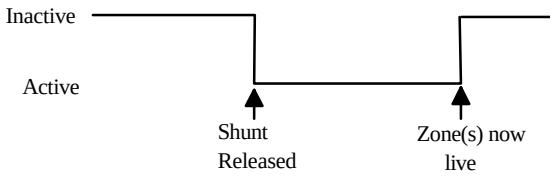
NOTE: This output is only operative if 'Digi Reply' is programmed as 'Tellback' - see 9.8.4

Zones Shunted



NOTE: This output will be live when ANY shunt zone is operated, enabling an indication to be provided to that effect.

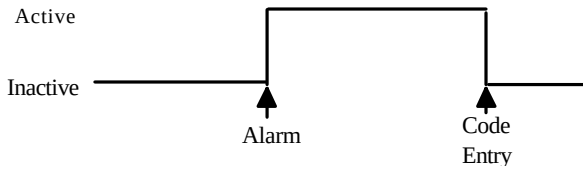
Shunt Fault



This output will be steady, as shown, if all shunted zones are closed at the moment that the shunt is released, and will clear after approx. 10 seconds, at which point the zone(s) become live.
If any zone is in fault condition during that time, the output will PULSE until cleared, or the shunt is reapplied.
This provides a warning that shunted zones will not be restored to live status until correctly cleared.

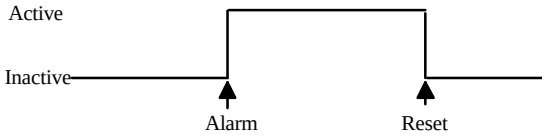
An alternative output - 'Zone Unshunting' - provides the same facility for an individual zone.

Aux/ Fire Signal



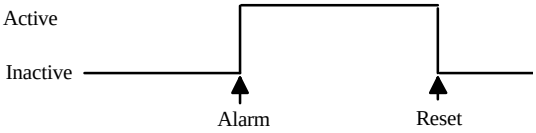
NOTES: This is the default configuration of Digicom Output No. 1
This output will also trigger if an Auxiliary zone is triggered.

PA Signal



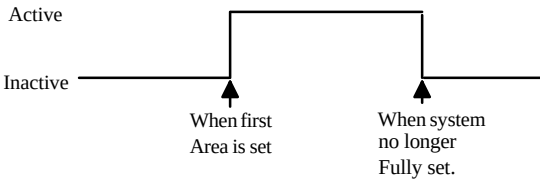
NOTE: This is the default configuration for Digi-com Output No. 2

Intruder Signal



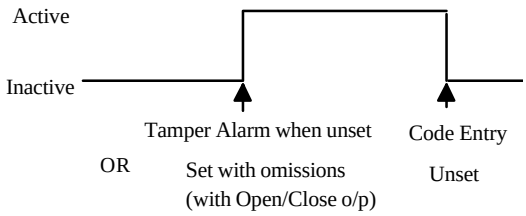
NOTE: This is the default configuration for Digi-com Output No. 3

Open / Close Signal



NOTE: This is the default configuration for Digi-com Output No. 4

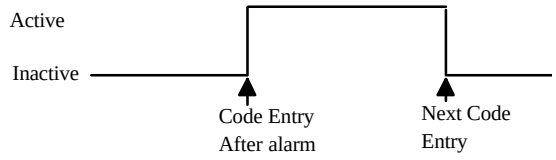
Trouble Signal



ALSO active whilst system in Engineering mode
AND during Low Volts fault

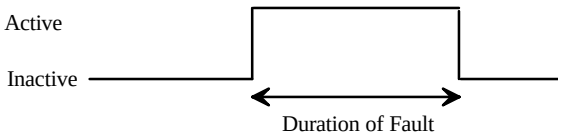
NOTE: This is the default configuration for Digi-com Output No. 5

Abort (Mis-Operation) Signal



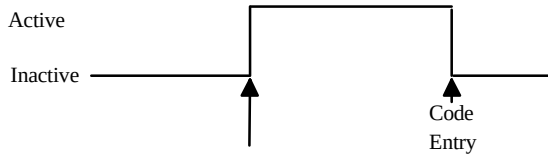
NOTE: This is the default configuration for Digi-com Output No. 6

Low Volts Signal



NOTE: This is the default configuration for Digi-com Output No. 7
This fault will also trigger the 'TROUBLE' output (if programmed).

Confirmation Signal

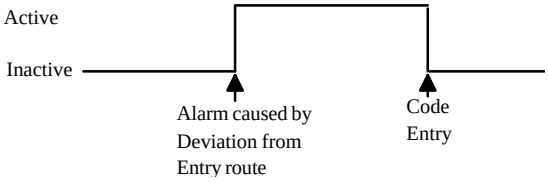


At next zone tripped after 'Intruder' o/p
OR
At SECOND zone tripped after ReArm

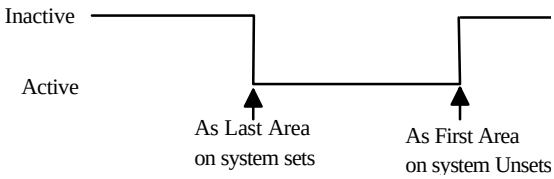
Output is inhibited for 90 seconds after set, and after creation of an alarm on entry

NOTE: This is the default configuration for Digi-com Output No. 8

Entry Deviation

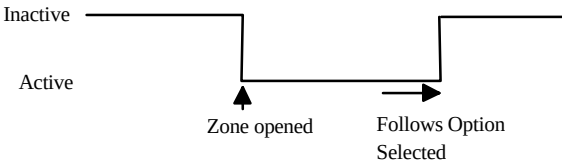


Common Lobby ON



NOTE: This output is only live if 'Common Lobby' option is programmed as 'ON'

Follow Zone



This output permits an indication to be provided as to the state of any individual zone on the system. When this configuration is selected, the following additional information is requested:

Output State [Follow]	Press YES to have output clear as zone closes, or NO to change to
[Timed]	Press YES to have output live for programmed time; or NO again to change to
[Latched]	Press YES to have output live until another zone is triggered, and nominate which zone is to reset the latch

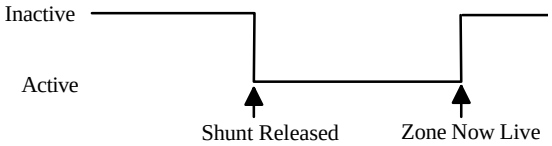
Once this selection has been made, the display will request

Select Zone to follow [01]	Insert zone number required to follow

If the output was selected as 'Timed,' the required time is then programmed

Output on for Secs [000]	Insert the time required, MAXIMUM setting is 255 seconds.

Zone Unshunting

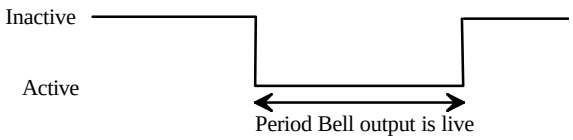


When this configuration is selected, the following additional information is requested:

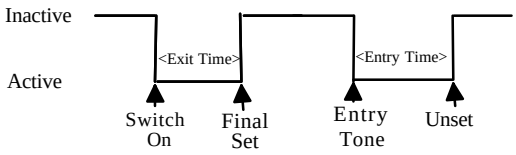
Select Zone to follow [01]	Insert zone number required to follow

This output will be steady, as shown, if the shunted zone is closed at the moment that the shunt is released, and will clear after approx. 10 seconds, at which point the zone will become live.
If the zone is in fault condition during that time, the output will PULSE until cleared, or the shunt is reapplied.
This provides a warning that the shunted zone will not be restored to live status until correctly cleared.

Follow Bell



Courtesy Lights



9.7.2 Change Standard O/P 1 through 4

This enables the programming of the End Station outputs 1 through 4.

Select with YES and the display with show

Standard O/P 1
VIPER 12v Reset

Pressing the NO key will scroll through the available options (see 9.7.1), and the YES key will select and move to the next output. The B key will scroll through the available options backwards.

9.7.3 Change Digicom Outputs

This permits the plug-on communicator outputs to be reprogrammed to suit any individual site requirement.

On Multiple End Station systems, these outputs are live **ONLY** on End Station 'A'

The default settings are:

Output No.	PIN No.	Default Assignment	Channel	
			Digi	STU
1	1	Aux/Fire	1	1
2	2	PA	2	2
3	3	Intruder	3	3
4	4	Open/Close	4	4
5	5	Trouble	5	5 or 7
	6	Tell Back I/P	-	-
	7	Comm Fail I/P	-	-
7	8	Low Volts	Lo Bat	Lo Bat
	9	+12v	-	-
	10	0v	-	-
	11	Not Used	-	-
	12	+5v	-	-
6	13	Abort (Mis-Operation)	6	-
8	14	Confirmation	7	6
	15	Line Fail I/P	-	-
	16	Digicom Reset	8	8

These may be reprogrammed as follows

Change Digicom Outputs	Press 'YES'
Digicom o/p 1 Aux/Fire Signal	Press 'NO' to scroll forwards through available types, or 'B' to scroll backwards
Digicom O/P 1 Area A Alarm	Press 'YES' to accept and move to next output
Digicom O/P 2 P.A. Signal	etc. A final 'YES' will return to
Change Digicom Outputs	Press 'NO' to continue

NOTE: In the event of an RS.485 failure whilst the system is set, the End Station will activate, and trigger outputs on channels 3 and 5 (pins 3 and 5). If the system is unset, it will activate channel 5 (pin 5) output only.
This will be true regardless of how these output channels are programmed.

9.7.4 Network Output Modules

To enable additional outputs to be configured, additional modules may be connected to the RS-485 (Keypad) bus (at any convenient location) to provide additional outputs

Address Coding

The three address switches provided enable different output configurations to be used - providing addresses 0 to 7, simply **open** switches to add up to the number required. Addresses 8 to 15 (Multiple End Station systems only) are obtained by using the same addresses with alternative software (version number endorsed 'Address Offset 8') on the output module. Any address configuration may be repeated as required on additional modules to provide the same outputs at a different location.

Address locations 0 and 1 select pre-set output configurations, outputs at addresses 2 to 15 are fully programmable. The same address may be repeated to provide the same configuration at different locations.

PRE-SET OUTPUT CONFIGURATIONS

Address 0 (basic software, all address switches closed)

Output	1	Sound	Sounder outputs provide loudspeaker drive duplicating that on the 2000 Series End Station. Volume control available on module is NOT under software control.
	2	Sound	
	3	not used	
	4	not used	
	5	Area A Control	Area Control outputs enable the sounder outputs to be routed through the appropriate Area Control relay to provide sound only in the relevant area. For example, if output 1 were routed via the relay of output 5 to a loudspeaker located in area A, then exit time when area A is being set (for example) would sound in area A, whilst loudspeakers in other areas, wired via the other relays, would remain silent.
	6	Area B Control	
	7	Area C Control	
	8	Area D Control	

Address 1 (basic software, address switch A1 open)

Output	1	Area A Set	These outputs repeat those available on the 2000 Series End Station
	2	Area B Set	
	3	Area C Set	
	4	Area D Set	
	5	Area A Alarm	
	6	Area B Alarm	
	7	Area C Alarm	
	8	Area D Alarm	

PROGRAMMING MODULES ADDRESS 2 AND UPWARDS

Change Output Module	Press 'YES'
Module [-] Chan [-]	Insert address of module to be programmed (eg 2)
Module [2] Chan [-]	Insert output channel on that module (eg 1)
Module [2] Chan [1] No output	Press 'NO' to scroll forwards through available types, or 'B' to scroll backwards
Module [2] Chan [1] Area B Set	Press 'YES' to accept and move to next output
Module [-] Chan [-]	Inserting a module number higher than the maximum (ie 8 for standard system, 16 for multi-End Station systems) will return to
Change Output Module	Press 'NO' to continue

9.8 Site Options

9.8.1 Engineer Reset

Engineer Reset of PA?	Press 'YES' to select
Engineer Reset of Intruder?	Press 'YES' to select
Engineer Reset by:	
Eng. only *Eng. + Rem*	The 'NO' key will toggle between the options, which are selected using 'YES'

If 'Engineer Reset' is enabled, once an alarm has been generated, the system is 'locked out' until reset. The attendance of an engineer on site is required to reset the system to its full working state, by entering the engineer code.

If 'Eng. + Rem' has been set, a random 5-digit 'anticode' will be generated by the system following an alarm, which will be displayed on the keypads. This code may be referenced to a *'Psion Organiser II'* or *'PC'* programme to generate a Remote Reset code which may be entered to perform the reset operation as an alternative to the attendance of an engineer. The code should be entered whilst the 'Engineer Reset' message is displayed.

NOTE: Engineer reset is required after an alarm only if the system was 'fully set' at the time of the alarm, ***or*** if any part of the alarm which is set has "Full Alarm" response valid.

For engineer reset (including Remote reset) to be performed, the area in which the alarm was created MUST be unset, though other areas may remain set.

9.8.2 Eng. Reset Time

A timer is provided so that the normal 'Engineer Reset' response may be cancelled if the alarm is aborted within the filtering period at the Alarm Receiving Centre.

Engr. Reset Time
Secs [000]

Adjust the number of seconds required (max 255), and press YES to confirm.

NOTE: This facility should NOT be used in such a way that Police attendance could be possible without Engineer Reset being in force.

9.8.3 Dual Trip Fires Confirm

If this option is selected 'ON', a CONFIRMATION signal will be generated simultaneously with the intruder signal, if the alarm is generated by a pair of 'Dual Trip' zones.

NOTES: The detection configuration of the zone pairing MUST comply with NACP14 for this option to be used.

This option does NOT appear on the 'System Parameters' printout.

9.8.4 Digi-Reply

Enables signals from communicators to be used:

a) Not Used: Default - use 'NO' key to scroll through alternatives, and 'YES' to select

b) Tell-back Received: Records (in Trouble Log) acknowledgement from Central Station of receipt of message from standard Digicom. Also triggers output (if programmed)

c) RED CARE Reset: Accepts signal from Red Care Central Processor to perform Engineer Reset of control. Recorded in Trouble Log

9.8.5 Enter Site Code

A code, or description (up to 15 characters) may be entered using the text editor (see 9.1.4), which will appear on all printouts to distinguish between sites.

9.8.6 Silent Set Menu

If selected, a user, on setting the system, will be presented with the option to select 'silent set' - in which case it will set without sounding the exit tone.

9.8.7 Omit Zones Menu

If selected, a user, on setting the system, will be presented with the option to omit individual zones programmed to permit omission.

9.8.8 Areas Selected Menu

If selected, a user, on setting the system, will be presented with the option to select individual areas, or combinations of areas, whilst setting the system.

9.8.9 Common Lobby

If this option is selected as ON, then, when the last programmed area is set, the system will automatically switch on the 'Common Lobby' area, adding an extra level of security to those areas already armed.

The first user to unset an area automatically switches off the additional protection (the Common Lobby) and the system reverts to being area set.

Zones to be allocated to the 'Common Lobby' area should be programmed with the area assigned as 'COMM' - simply press any of the area keys ***twice***.

The system automatically knows which areas are in use from the zone programming, so that if, for example, only areas A,B and C are used, the Common Lobby area will automatically set with the third of these areas.

Care must therefore be taken that all zones of the following types have any unused areas deleted from their allocation:

24 Hr Tamper
Intruder
Entry Exit (including EE/WT)
Walk Through (including WT/EE)

NOTE: An alarm generated within a 'Common Lobby' area will NOT trigger any of the 'Area Alarm' outputs.

9.8.10 XDF Filter

This defaults to 'Dynamic' and should NOT be changed unless advised by Castle Care-Tech Technical Support department.

9.9 Redefine Sign On Message

This function permits the 'System Ready' prompt on the keypad display to be reprogrammed to show any alternative message required.

REDEFINE SIGN ON MESSAGE	Press YES
Define Sign on:	Programme new text required
>System Ready	(up to 15 characters) as described at 9.1.4, and press YES.

9.10 Change Codes

Selecting this option from the menu allows the engineer to set up the codes that are used by the customer to control the system.

Change Engineer Code	(YES allows the Engineer code to be changed)
Change Operator Codes	
Enter User No :- [01]	(Enter the number of the code to be entered)
Enter User No :- [08]	(YES to continue)
User Designator [User]	(Scroll between User, Manager and Duress by pressing the NO key)
[Manager]	(YES to continue)
Manager Code [08]= [- - - -]*	(Press the 4 digit code and YES to confirm or NO to enter it again, or 'D' to DELETE an existing code)
Select Areas: [ABCD]	Press A,B,C,D to Select areas required, or to de-select areas previously selected.

To exit, select code number 99, and press YES.

NOTES: Code No.1 is fixed as a MANAGER code, and cannot be deleted.
* - If the display shows #### than a code is already programmed, which may be changed, or deleted.
A 'Duress' code may be used to unset the system in the normal way, but will simultaneously generate a SILENT alarm output.
A 2-key 'PA' facility is permanently available by pressing the '1' and '7' keys simultaneously. This facility will NOT be available at **Slave** Keypads fitted software earlier than 2.6

The Engineer code may be used to set and unset the system for test purposes - see 14.1.2. It cannot be used to unset the system after being set by a Manager or User code. It is not capable of being used for a sequence of area set or unset operations.

9.11 Remaining Engineer Facilities

are described in section 10 - Engineer Tests and Diagnostics.

10 Engineer Tests and Diagnostics

In engineer mode there are two menus devoted to checking the parameters and functions of the alarm system.

10.1 Engineer Tests

All the outputs from the end station may be tested by simply selecting the Engineer Tests option from the menu and then switching on the outputs one at a time as the menu option allows.

ENGINEER TESTS ?	(YES key)
TEST BELL	

10.1.1 Bell Test

TEST BELL	(YES key)
TEST Bell ***0.5 Amps 13.75v***	(NO key ends the test)
TEST BELL	(NO key moves to next test)

10.1.2 Strobe Test

TEST STROBE	(YES key)
TEST STROBE ***0.4 Amps 13.75v***	(NO key ends the test)
TEST STROBE	(NO key moves to next test)

10.1.3 Sounder Test

TEST SOUNDER	(YES key)
TEST SOUNDER ***0.6 Amps 13.50V***	(Select '1' key)
TEST SOUNDER 1 ***0.6Amps 13.50V***	Level reduces to 'Low'

Repeat as required, using '2' key for Medium, and '3' key for High levels to check, and adjust individual sounder levels.

TEST SOUNDER 2 ***0.6 Amps 13.50V***	(NO key moves to next test)

10.1.4 Test Out 1

Each of the four End Station outputs (2300 two only) can be tested, simply by selecting the appropriate test option.

TEST OUT 1	(YES key)
TEST OUT 1 0.4 Amps 13.75 Amps	(NO key ends the test)
TEST OUT 1	(NO key moves to next test)

Repeat for Outputs 2, 3 and 4

10.1.5 Test Digi-Comm

This enables the engineer to test each of the outputs to a Digital Communicator individually:

TEST DIGI-COMM	Press YES key
TEST DIGI-COMM	Press '1' key to initiate test on channel 1
TEST DIGI-COMM 1 ***Aux/Fire Signal***	Note that display shows channel selected and programmed output type

Channels (1 to 8) may be selected, as required, in any order

TEST DIGI-COMM 8 ***Confirm Signal***	Press 'NO' key to move to next test menu selection

The tests may be conducted with a communicator test pcb (CT5200) fitted, or with a 'live' communicator.

10.1.6 Test Inputs

Inputs 1, 2 and 3(*) and the communicator inputs may be tested when this option is selected. Inputs 1, 2 and 3 (*) need to be pulled to 0v to activate. Communicator inputs can be tripped by pressing the appropriate button on a 2000D test PCB.

(*) - Input 3 is present ONLY on 2700.

Any inputs operated will trigger the internal sounder and be displayed on the keypad LCD.

TEST INPUTS	(YES key)

Each of the inputs may then be operated. Each successful test will cause the system to 'chime,' and the inputs will be identified on the keypad, thus:

TEST INPUTS
1 2 Tell CF LF

Press NO to cancel test, and NO again to move to next test.

10.1.7 Walk Test

All the detectors on the system may be tested fully in Walk Test without having to set the system.

WALK TEST	Press 'YES'
OMITTED: - -	Insert the number of a zone to be omitted from the test, eg 01. The relevant zone text will be displayed, and await further entries.
OMITTED: - - ***Main Stores***	All omitted zones will scroll Key in the zone number again to remove it from the omitted list. Press 'YES' to commence test
WALK TEST 01 ***Front Entrance***	The display will scroll through all testable zones on the system As each zone is triggered, the system will 'chime' and the zone will be removed from the list scrolling, until
All Circuits Tested	Press NO Alternatively, the test may be aborted at any time by pressing the 'NO' key

The option is now available to print a report of the Walk Test

Print Walk Test Report	Press 'YES' to select, or 'NO' to move on
WALK TEST Printing	
ENGINEER TESTS	Press 'NO' to continue

The printout will show the following information:

```
CASTLE CARE-TECH 2500  v4.1
SITE CODE: J0467-SMITH
DATE: 15/1/00  TIME:  14:37
============================
      WALK TEST REPORT
============================
Failed Walk Test:
CCT 013   -> Stores
CCT 029 - > Rear Fire Door
OMITTED: 001->Main Entrance
OMITTED: 002->Reception
----------------------------
   ***  END OF REPORT  ***
============================
```

10.2 Engineer Diagnostics

2000 Series Controls are unique in their ability to display voltage, current and resistance readings. The diagnostic facilities are available as reports displayed on the keypad LCDs or as collated printouts that give a total system diagnostic report. These diagnostics are designed to improve confidence in the system, and to simplify faultfinding. They do NOT replace the commissioning readings required by BS4737.
The diagnostic information available obviously differs according to detection technology in use.

10.2.1 Multiple End Station Systems

The diagnostic capability is fully available on the multi- ES versions. In the various test modes, eg Bell Test, Strobe Test the panel will display the current consumption and the voltage during the test. These facilities are available for each End Station individually.

Simply press the A, B, C or D key (as appropriate) during an active test and the area LED will update showing which ES is being communicated with, and the readings on the display are from that ES.

10.2.2 Zone Condition (2300 and 2700)

Individual circuit information can be displayed on the keypad LCD by selecting this option.

Display Circuit Condition ? (YES key)

The initial display shows the current state of all 16 (2300) or 32 (2700) zones on the system, in the form of a single character per zone, as follows;

x	=	Closed circuit
O	=	Open circuit
F	=	Circuit fault (tamper open)
h	=	High (incorrect) cable resistance

The display will update in real time as zones are triggered, and will respond whether or not the zones are programmed.

Multiple End Station systems, press A,B,C,D keys to cycle the display between the End Station - the keypad LEDs indicate which is current.

Press YES or NO to move to next menu.

Enter Desired Circuit :[01] (Press the NO key to scroll through the circuit numbers, or press the digits - eg 1 and 3 for circuit 13 and press the YES key)

CCT [13] Voltage 4.39v CC <900 ohms (Press 'YES' key to step directly to next circuit, or 'NO' key to return to '***Enter Desired Circuit***' option.)

Key:	CC	Closed Circuit
	OC	Open Circuit
	CF	Circuit Fault
	HR	High (incorrect) resistance

Scroll to end, or select '99' (ie a zone number higher than the maximum possible) and YES to exit.

10.2.3 iD Point Condition (2500 only)

Individual circuit information can be displayed on the keypad LCD by selecting this option.

Display iD Point Condition ?	(YES key)

The initial display shows the current state of all 30 zones on the system, in the form of a single character per zone, as follows;

x	=	Closed circuit
O	=	Open circuit
F	=	Circuit fault (tamper open)
h	=	Twin device (tamper)

The display will update in real time as zones are triggered, and will respond whether or not the zones are programmed.

Multiple End Station systems, press A,B,C,D keys to cycle the display between the End Station - the keypad LEDs indicate which is current.

Press YES or NO to move to next menu.

Enter Desired Circuit : [01]	(Press the NO key to scroll through the biscuit numbers or press the digits - eg 1 and 3 for circuit 13 and press the YES key)
iD Point 13 14mA CC	(Press 'YES' key to step directly to next biscuit, or 'NO' key to return to 'Enter Desired Circuit' option.)

Key:		
	CC	Closed Circuit
	OC	Open Circuit
	CF	Circuit Fault
	TD	Twin device

Typical current reading will be between 12 and 16mA

Scroll to end, or select '99' (ie a zone number higher than the maximum possible) and YES to exit

10.2.4 Line Diagnostics (2500 only)

This permits an overall check of the iD line to be made:

Line Diagnostics [iD Slow Scan]	Press YES to activate (see Wiring manual) or NO to move to
Line Diagnostics [Line Current]	Press Yes to read- eg ***'iD Point Line 55mA'*** or press NO to move to
Line Diagnostics [Exit]	Press YES to move to next option.

The iD 'Slow Scan Voltages' should be:
Low 2.85; Mid 6.50; and High 11.0

The iD 'Line Current' should be approximately 1.8 mA **per device** - it is NOT the sum of the individual biscuit currents displayed at 10.2.3.

10.2.5 Display Current and Voltage

This option, allows the engineer to perform measurements on the system voltage and current consumption of the alarm system.

The first display shows the voltage and quiescent current taken by the system when NO alarm is in operation and no outputs are active.

Display Current
and Voltage? (YES key)

Current Volts
0.4 A 13.75V

Pressing the '0' key will toggle the system between quiescent and alarm modes, so that the alarm current can be noted:

Current Volts
0.9 A 13.25V

NOTE: Whenever using the system diagnostics to measure current, the measurement will include any keypad plugged into the engineer keypad socket. Unplug the engineers keypad to accurately measure the true value.

NOTE: The display will show 'OVERLOAD' in the event of the total system load exceeding 1.5 amps. If the Voltage shown alongside the Alarm Current is significantly lower than shown with Standby Current (eg if reading is lower than 12.5 volts), it may indicate that the system is so seriously overloaded that the system voltage is being pulled down - steps should be taken to check and correct this condition, as malfunctions may subsequently occur.

Pressing NO will terminate the option.

10.2.6 End Station Faults

This option provides indication of faults in the system Power Supply (Chg.) and Battery (Bat.) in the following format:

Display End
Station Faults ? (YES key)

End Stn Faults :-
[Chg. Bat.] (NO key to exit)

Display End (NO key moves to next menu
Station Faults ? option)

10.2.7 Earth Leakage (2700 only)

The 2700 only will also show earth leakage faults (including polarity) in the 'End Station Faults' display. This will indicate that a leakage below 1 mega-ohm exists, whilst the End Station 'Gd' terminal is connected to mains earth.

This fault indication should be ignored if a communicator, or other piece of equipment, with a direct earth connection, is linked to the system.

10.2.8 Print Diagnostics

Selecting this option from the engineer menu will print out the main system parameters;

Print
Diagnostics ? (YES key)

after printing,

Print
Diagnostics ? (NO key moves to next option)

The printout will show the following information:

```
CASTLE CARE-TECH 2500  v4.1
SITE CODE: J0467-SMITH
DATE: 15/1/00  TIME:  14:45
2500 EndStation Software Version 6.0


MAINS                ON
CHARGER/FUSE         ON
BATTERY/FUSE         ON
BATTERY HEALTH     13.25 VOLTS
SUPPLY VOLTAGE     13.75 VOLTS
QUIESCENT CURRENT   300mA
ALARM CURRENT       0.8 Amps @ 13.50V
From these Current readings
the calculated minimum
Battery Size is 5.6 Amp Hrs
---------------------------------
       ***  END OF REPORT  ***
=================================
```

Battery health is checked by disconnecting the AC supply and running the system under load on the battery. Should the battery voltage be below 11.25v the test will abort and indicate 'Fail'.

When measuring current, the keypad backlights will be extinguished to indicate standby current during mains failure, so producing lower readings than those displayed.

10.2.9 Print Circuit Conditions

This option will print out the condition of the circuit inputs on the system. This is best done with all circuits closed.

Print Circuit Conditions ? (YES key)

Circuit Conditions Printing . . .

The format for this is:

```
CASTLE CARE-TECH 2500  v4.1
SITE CODE: J0467-SMITH
DATE: 15/1/00  TIME:  14:51
     *  LINE CONDITION REPORT  *
CCT  I(mA)                      COND
-----------------------------------
  01   12   OK - IN SPEC          CC
  02   13   OK - IN SPEC          CC
  03   12    OK - IN SPEC         OC
  04   26   TWIN DEVICE           TD
             etc. to
  30   00    MISSING              CF
LINE CURRENT (typ 1.8mA/device)35mA
-----------------------------------
       ***  END OF REPORT  ***
===================================
```

Or the equivalent for Double Pole / End of Line connections for 2300 and 2700.

The abbreviations used for Circuit Condition are

CCT	*COND*	2300 / 2700	*COND*	2500
01	*CC*	Closed Cct	*CC*	Closed Cct
02	***HR***	Incorrect resistance	***TD***	Twin Device
03	*CF*	Circuit Fault	*CF*	Circuit Fault
04	*OC*	Open Cct	*OC*	Open Cct.

10.2.10 Print System Parameters

Selecting this option causes the main system parameters to be printed. It takes the form of :

```
CASTLE CARE-TECH 2500  v4.1
SITE CODE: J0467-SMITH
DATE:15/1/00 TIME:15.21
====================
** SYSTEM PARAMETERS **
---------------------
CHIME: Single  ON
SYSTEM TIMERS:
Exit Time (secs):    040
Entry Time (secs):   045
                  etc.
EXIT MODES:
Area Set A :  Lock Set
Area Set B :  Timed
                  etc.
SOUNDER OPTIONS:
Strobe Confirm Exit:  No
Sounder Continues
after Bell Time:     No
                etc.
VOLUMES:
Chime:      Low
Fire:       High
                etc.
ALARM RESPONSE:
Area A : Full Alarm
Area B : Local Alarm
                etc.
STANDARD OUTPUTS:
1  VIPER 12v Reset
2  PIR Latch 1
                etc.
DIGICOM OUTPUTS:
1  Aux/Fire Signal
2  P.A. Signal
                  etc.
iD OUTPUT MODULE:
Output 1 Area A set
                etc.
OUTPUT MODULES:
Module  2  Output  1
Courtesy Lights
Module 2 Output 2 Follow
Zone  01
                etc.
SITE OPTIONS:
Engineer Reset PA:  OFF
Engineer Reset Int:  ON
                etc.
USER CODES:
01  Manager  ABCD
02  User     AB
03  User     A  C
98  Duress   ABCD
ZONE CONFIGURATION:
CCT 01 : Main Entrance
TYPE: Final Ext/Entry
CCT 02 : Reception
TYPE: Walk Through  A
CCT 02: Sales Office
TYPE: Intruder  B
                etc.
---------------------
  *** END OF REPORT ***
=====================
```

10.3 Log Review

Selecting this option allows the logs to be reviewed on the keypads.

LOG REVIEW?	YES key
Alarm Log	NO key scrolls to next log YES key scrolls contents of log on LCD
Activation Log	NO key scrolls again ....
Trouble Log	NO key exits from option

To view the logs, simply scroll up and down through the events by pressing the A and C cursor keys.

Where Zone numbers have been replaced by text names, it is the text name that will be displayed on the LCD.

The log information will be displayed in the following format:

Alarm log:

23/06 23:17:05 →
LOUNGE PIR

This indicates that an alarm was generated by the zone designated 'Lounge PIR' at 12.17 (and 5 seconds) pm on 23rd June. In this case the additional information accessed by the 'D' key will show the wiring circuit, or iD biscuit number - eg

Circuit: 4

Activation log:

23/06 17:24:12 →
ABCD on Key [04]

This indicates that all four areas were set by codeholder number 4 at 5.24 (and 12 seconds) pm on 23rd June. The arrow at top right indicates that additional information is available by pressing the 'D' key. In this case, it will itemise any omitted zones.

Printed logs show the YEAR in addition to the information shown above.

10.3.1 Print Logs

Selecting this option allows the logs to be printed out, selectively by type, or date, as follows:

Print Logs	YES to select
Print [ALARM] Log	Press YES to select, or NO to scroll through alternatives: ***ALARM*** ***ACTIVATION*** ***TROUBLE*** ***ALL*** ***NONE*** then YES to select
Print {selected} Log(s) [Whole]	Press YES to commence printing entire selected log(s), or NO to select alternative: ***DATE*** ***TO*** ***FROM*** ***EXIT*** - then YES to select
Print {selected} Log(s){choice}[_ _ _ _]	Insert date required using numeric keys, in the format 'ddmm' (eg 2605 = 26th May), then YES to commence printing of selected logs. If 'DATE' is selected, the log(s) will print for that date only, if 'TO' or 'FROM' is selected, the log(s) will print INCLUSIVE of that date.

NOTE: This option is also available from the Manager Menu.
Zone names and numbers will BOTH be printed.

10.3.2 Clear Logs

Simply key in the number 2000 to clear all events from the log.

NOTE: This should be performed **ONLY** after ensuring that all log information is no longer required.

It is essential that the logs are cleared before exiting Engineer menu after the system NVM has been replaced.

10.4 Exit Engineer Menu

Press 'YES' to return to day mode, or 'NO' five times to scroll around the menu again (this is designed to prevent overshooting the end of the menu if holding down the 'NO' key to 'auto-repeat').

At any main menu item (ie with CAPITAL LETTERS), the 'B' key ,may be used to move backwards through the menus.

The programme information is written to NV memory when the 'Exit Engineer' option is selected. **It is therefore vital that the system is NOT powered down before this has been completed** (ie until 'SYSTEM READY' prompt displayed, or programmed information will be lost, and existing contents of memory may be corrupted.

As the system returns to 'day' mode, the message 'Updating NV Memory' will be displayed, along with an indication of the steps (1 to 6). If these steps are not displayed correctly, information has not been correctly updated.

If no NVM is present, the system will continue to function, but will display 'NVM Fault.'

Fast Exit from Engineer Menu

It is possible to exit the Engineer menu at any main menu item. This may be done by pressing the 'A' key to exit WITHOUT saving any parameters (eg if only diagnostic features have been used), or the 'C' to exit and SAVE TO NVM.

Any programming changes made will still reside in system memory if the 'A' key is used, but will NOT be saved to NVM, and hence will be lost if the system is powered down or re-started.

Tamper Faults on exit from Engineer Menu

If a tamper fault exists at the point of returning to 'day' mode, then, after updating the NVM, an intermittent tone will sound and the display will identify the fault. Pressing the 'NO' key without clearing the fault will result in a tamper alarm. Pressing the 'YES' key will return the system to the Engineer Menu.

The term 'SYSTEM TAMPER' may refer to a BOX tamper, or SAB tamper fault.

Do NOT power the system down whilst in Engineering mode.

This will result in failure to save programmed information, and possible corruption of data.

11 Multi-End Station Systems (2500 and 2700)

11.1 Overview

To cater for the larger site, requiring more zones than the standard system can monitor, additional End Stations may be added, up to a total of four.
The heart of the system is the **Gateway M odule**, which contains special networking software to control all functions of the system. The NVM fitted must be of type 2465. The Gateway Module plugs directly onto End Station B, C or D . The four operating areas (A,B,C,D) which the system may be divided into should NOT be confused with the End Stations. Zones may be assigned to operating areas in any configuration required, regardless of the End Station used.

Each End Station must be coded to different communication addresses, by setting the blue 'dip' switches before powering the system (see 4.1.1). The number of End Stations in use on the system must be programmed in software - refer Section 11.3.1

11.2 Detection Circuits

The available zone (or biscuit) numbers are repeated at each End Station, and are automatically allocated to the following zone numbers:

End Station	2500		2700	
	iD biscuits	Zone numbers	Wiring Cct	Zone numbers
'A'	1 - 30	1 - 30	1 - 32	1 - 32
'B'	1 - 30	31 - 60	1 - 32	33 - 64
'C'	1 - 30	61 - 90	1 - 32	65 - 96
'D'	1 - 30	91 - 120	1 - 32	97 - 128

11.3 Programming

All programming functions are exactly as for the corresponding single ES control, EXCEPT:

11.3.1 Program Valid End Stations

This is the first option available to the Engineer, after 'Clean Start', and enables the number of End Stations in use to be programmed into the system, thus:

PROGRAM VALID END STATIONS?	Press YES (#)
Valid End Stns [ABCD]	Use keys to enter End Stations which ARE fitted to system, eg A and B
Valid End Stns [AB]	Press Yes to confirm, and return to
PROGRAM VALID END STATIONS?	Press No to continue to next program item.

Upgrading by a further ES simply requires this programming to be adjusted.

11.3.2 Set Up Communications

The system is ready for connection to a Digi-modem for Downloading, or to a PC for programming purposes, see 11.4. If these are not used, the 'Comms Uses' option should be left at 'None.'

The alternative settings ('Modem' and 'Direct') are for use when connected to an 'In-Site' system, full details are shown in the 'In-Site' instruction manual.

11.3.3 Powering up the Multiple End Station System

It is important that the End Station to which the Gateway module is connected be the last item to power up, or some keypads on the system may not initialise correctly.

If this is impractical, the Gateway module should be restarted (by shorting momentarily the R and S pins on the module) after the remainder of the system is powered.

11.3.4 Faults other than detection circuits

In the event of a fault specific to an ES, (including SAB tamper alarms), the originating ES (A, B, C or D) will be identified on the display when the system is silenced, and in the Trouble log.

11.3.5 RS-485 Failures

The failure of one of the ESs will produce a response equivalent to a tamper fault. The display will identify the failed ES when the alarm is silenced. Note that the system will indicate, and log, from the point of view of the Gateway module.

11.4 Programming the system from a PC

The system may be programmed through the Gateway module from a PC fitted with 'In-Site' software

A plug-on RS-232 assembly (CT5056) should be connected to the Gateway module. This then connects to a Serial port on the PC.

Setting up the communications from the Engineer menu, and programming from the PC is described in the 'In-Site' manual.

12 DOWNLOADING SYSTEMS

The 2000 Series Controls are compatible with the Castle Care-Tech 'In-Site' Downloading system. Systems for use in this way should be fitted with special 'Gateway' units combined with 'digi-modems. This enables both communication with an Alarm Receiving Centre (via the digi-com) and a host PC (via the modem).

Alternatively, a RedCare 'STU' may be used in the normal way for signalling to the ARC. To facilitate the connection of the STU on single End Station systems, the Gateway/Digi-modem unit may be ordered in 'stand-alone' format to separately housed, whilst the digi-com pins on the End Station are used for the STU. In the case of multi-End Station systems, the STU should be connected at End Station 'A' - the controlling Gateway/ digi-modem unit may be plugged onto any other End Station.

The entire system is programmed from the PC, for full details refer to the 'In-Site' manual. The following information is relevant to the setting up of the system at the control panel prior to establishing communications with the PC.

12.1 The Digi-Modem (COM 100 or DC58M)

This combines the functions of a Digital Communicator and Modem in a single package, and communicates with the Gateway unit by an RS.232 link.

12.1.1 Indications

An LED is provided on the digi-modem, giving the following indications:

COM100:	Flashing	Normal condition	Except when dialling
DC58M:	OFF *	Normal condition	Digicom NVM has at least one number programmed and system is ready for use.
		* - In practice this may be lit very dimly, and pulse off occasionally.	
	Flashing approx. 2 per second	Digicom NVM is not programmed	Normal condition if only the modem section is in use.
	Flashing approx. 4 per second	Modem section is dialling out	Keypad display will show 'phone' with bouncing handset for same period
	Steady	Digicom section is dialling out	Keypad display will show 'phone with stationary handset for same period.

12.1.2 Functions NOT Supported

The following Digi-modem function is ***NOT*** currently supported in Castle 'In-Site' systems:

Point ID Extended Format

'Three-way Calling' is supported ONLY when using the DC58M

12.2 Setting Up at the Control Panel End

12.2.1 Multiple End Station Systems

1	Power up on BATTERY first. In the case of a multi-ES system, the ES with Gateway fitted must be powered up last of all. Then add mains power.	If the system has previously been powered, remove NVM from Gateway unit before powering up.
2	Wait for system to initialise, and enter Engineer menu	
3	With ***'Clean Start'*** on the display, insert NVM and press YES	Enter code '2000' when requested.
4	Scroll with 'NO' to ***'Valid End Stations [ABCD]'***	Adjust to show combination in use, eg [ABC] and press 'YES'
5	Scroll with 'NO' to ***'Set Up Communications'***	Press 'YES'. Display will change to ***'Comms Uses [none]'***
6	Use 'NO' to change to ***'Comms Uses [modem]'*** and press 'YES.' (Use [Direct] option if setting up for direct RS.232 link to PC)	Display shows ***'Downloading Options'*** - press 'NO'
7	Press 'NO' display shows '***Change Modem Options***' and press 'YES'	
	Scroll with 'NO' to ***'Change PC Host Details***' and press 'YES'	
8	Enter the 'PC Telephone Number' (ie PC end modem) when requested	
	Use 'YES' to scroll to ***'Set Up Communications'*** then 'NO' to scroll to ***'EXIT ENGINEER MODE***' and 'YES' to return to ***'System Ready'***	Wait for NVM to complete updating
9	Check that PC is set up, with 'Wait for Customer' selected and correct customer database identified.	
10	Press '5555' to initiate call to PC (or '6666' if second PC being used).	
	The download of the programmed database will be initiated from the PC end.	When this is completed, the system will again Update NVM and show 'System Ready'
11	Adjust Manager options as required (see 12.3) and test system.	

12.2.2 Single End Station Systems

1	Power up on BATTERY first, then add mains power	If the system has been powered before, first remove NVM from Gateway unit.
2	Wait for system to initialise, and enter Engineer menu	
3	Display will show '***Change Panel Options***'	Select with YES
4	With ' ***Clean Start*** on the display, insert NVM, and press YES	Enter code '2000' when requested
5	Scroll with 'NO' to '***Change Modem Options***'	Select with YES
6	Scroll with NO to '***Change PC Host Details***'	Select with YES
7	Enter the 'PC Telephone number' (ie PC end modem) when requested.	
8	Use 'YES' and 'NO' to answer options offered whilst scrolling to '***Exit Engineer Menu***'	Select with YES ands wait for NVM to complete updating, and system return to '***System Ready***'
9	Enter Manager Menu and adjust options as required (see 12.3)	
10	Check that PC is set up with 'Wait for Customer' selected and correct customer database identified.	
11	Press '5555' to initiate call to PC	(use '6666' if second PC is used)
	The download of programmed information will be initiated by the PC.	When this is completed, the system returns to '***System Ready***' after updating the NVM.
12	Test system, and make any final adjustments to Manager menu options (see 12.3)	

12.3 Signalling to the ARC from the Digi-Modem

Programming of the Digi-Com section is done in the same way.

NOTE: If only one ARC telephone and account number are being programmed, these should **NOT** be repeated in the 'second' location.

12.4 Additional Programming Options

The following options are available in the MANAGER menu to safeguard the security of the site. They are NOT accessible via the Engineer menu, or the PC programme.

Option	Response if selected as 'yes'
Download in Engineer only	System must be in Engineer mode before Download from PC can be initiated
Remote Reset Option	Engineer reset may be performed from PC
Isolate Zones Option	Zones may be downloaded from PC as 'Isolated'
Put CCTS on test	Zones attribute 'Soak' may be downloaded
Change User Codes	User Codes may be downloaded from PC
Activate Outputs	System outputs may be activated remotely from PC diagnostic test routines
Remote Keypad Option	PC may access the system via a simulated keypad, using standard panel codes
Clear Logs	The logs may be cleared by action from the PC
View PC Tel Nos.	The PC modem telephone number(s) are accessible from the PC
Adjust Clock	Clock adjustment may be made from the PC
Dial In Mode	The Dial In mode may be adjusted from the PC end.

If these options are selected as 'NO' the facility is blocked at the control, and access to the PC will be denied or changes ignored as appropriate.

To access these options, enter the **MANAGER** menu

Scroll with 'NO' to ***'Modem Options'***	Press 'YES'
Display shows ***'Hang Up Call'***	Press 'NO'
Display shows ***'Change Modem Site Options'***	Press 'YES', and scroll through the options. 'NO' key changes selection for each item, 'YES' confirms selection and moves to next item.
On completion, select 'YES' to ***'EXIT MANAGER MENU'***	Wait for NVM to update.

NOTE: This information is **NOT** included in the 2000 Series User Manual

13 Notes For Guidance

13.1 Panel Type and Version

Pressing the 'A' key whilst 'System Ready' is shown on the display will cause the system to display the panel type (2300, 2500 or 2700) and software issue fitted.

13.2 System Measurements

13.2.1 System Voltage

Should be set to 13.75v DC to allow the standby batteries to charge at 13.5v DC. If set too low the 'charger fault' warning will show. If an adjustment is necessary to the system voltage, the following steps should be observed:

a) Ensure that quiescent load only is present on the system power supply.
b) **Disconnect the system battery.**
c) Adjust the control (labelled PSV) very slowly and carefully, measuring at the battery connections, using a calibrated Digital voltmeter.
d) Reconnect the system battery

It is vital that the battery is disconnected whilst this is being done.

Battery fault indication means the battery is disconnected or discharged at least 3v below system voltage (or fuse fail)

Charger fault indication means the system voltage is below 12v, or the voltage regulator has failed (or fuse failed)

13.2.2 Current Drain

Typical values for current drain for the 2000 series are:

		Mains On	Mains Fail	Alarm
End Station plus Master Keypad				
	2300	210 mA	140 mA	200 mA
	2500	210 mA	140 mA	200 mA
	2700	210 mA	160 mA	230 mA
Slave Keypad	ADD	140 mA	70 mA	140 mA
Remote speaker (16 ohm)	ADD	-	-	250mA

13.2.3 Fuses

Mains	250mA	20mm Slow blow	
Regulator	1.5A	20mm Quick blow	
Battery	1.5A	20mm Quick blow	
Hold Off	800mA	20mm Quick blow	
Speaker	800mA	20mm Quick blow	
12v Outlets	800mA	20mm Quick blow	
iD Line	160mA	20mm Quick blow	2500 only

13.3 Diagnostic Logs

By reading the system logs of historical events it is possible to diagnose problems simply. All log entries are date and time stamped.

The ALARM LOG records all system full alarms when SET and PA/Fire Alarms when UNSET. This will include details of the code used to generate a Keypad Duress Alarm in the form:

DURESS CODE [no]

The ACTIVATIONS LOG indicates which code holder set or unset the system and records any Zone omissions.

The TROUBLE LOG contains a comprehensive history of other events, including

Mains Fail
Mains Restored
Power Supply and Battery Problems
Earth Faults
Daytime Tampers (Format : *Cct Tamper [no.*])
Engineer Mode Accessed
Telecom Line Fail/Restored
Communicator Fail to Transmit
Code changed
Code deleted
Monitor ON/OFF (Format: *Monitor On [no.*])
Manager Access
SAB Tamper
Tell Back Rec'd
RED CARE Reset
RS-485 Fail / Recovered
Set Clock to .....
Set Clock from .....
Zone Shunted / Unshunted
Zone Omitted / Readmitted
Soak zone failed [ ]
Masked zone [ ]
Clear Logs

The total number of log entries available within the system memory is 500 events, distributed as follows:

Activation log: 250 events, Alarm log: 100 events, Trouble log: 150 events

13.4 RS-485 Failure

If communications between the master keypad (or Gateway) and end station are lost (due to cable failure, massive data corruption or insufficient voltage) then the following indications will occur:

In Day mode the end station will emit intermittent 'bips' and the keypad will show 'End Station Failure'.

In Armed mode the End Station will signal full alarm.
NOTE the End Station will do this according to factory default communicator channel information - ***ie channels 3 and 5 will be triggered.***

When communication is restored the system will then function as normal.

13.5 Watchdog

Both the end station and keypads have watchdog circuitry to re-start the system in the event of data corruption or programme failure.

13.6 System Memory

There are two memory provisions in the 2000 control system, both held in the Master Keypad (or Gateway if used).

One is an E^2PROM chip ('NVM') that holds all the major system parameters and logs. At power up, re-start, or watchdog activation these parameters are reinstalled in the system memory.

The RAM is used during operation, and does not store any information. The 'BBR' function is NOT now used.

The message 'NVM Fault' refers to the E^2PROM not being present in its socket and thus not storing the system parameters.

13.7 Volume Control

			2300	2500	2700
HIGH	=	Full volume (no adjustment)			
MEDIUM	=	Adjustable, using control on pcb labelled:	2	2	1
LOW	=	Medium level further adjusted by control labelled:	1	1	2

To simplify the adjustment of Low and Medium volume levels, the 'TEST SOUNDERS' facility may be used - see 10.1.3

13.8 BABT Approval

2000 Series systems are approved for "indirect" connection to a public telecommunications system (ie via an approved communicating device) .

Quote Apparatus Approval Number: **NS/G/23/J/10000**

13.9 System Paperwork

System paperwork must NOT be left loose in the housing in such a way that it could constitute a fire hazard.

14 System Operation

Full details of the operation of the system are provided in the '2000 Series Diagnostic Alarm Control System Operating Instructions'

14.1 Basic Operation

14.1.1 Setting the System

Check that the display shows 'System Ready.' If a fault message is shown, use the 'NO' key to scroll till 'System Ready' shows.

Key in the full code (eg 1234):
The display will show;

Leave by Exit Route

The exit tone will commence and, if programmed for Timed exit, the exit time will display and count down.

If the facility to 'Select Areas' has been programmed, the display will show:

SELECT AREAS [ABCD]*

To change the areas being set, use the 'A,B,C,D' keys to change the status shown on the display, then press 'YES'
Once 'YES' key is pressed, the system will commence exit time as above, or move to next menu, if selected.

SILENT SET?	(YES key if you do not require an exit tone)
OMIT ZONES?	(YES key if you wish to omit a zone)
Leave by Exit Route	(The exit tone will sound)

Exit the building by the permitted route.

IF A 'PUSH TO SET' BUTTON IS FITTED TO THE SYSTEM, THIS **MUST** BE PRESSED ONCE THE FINAL DOOR IS CLOSED. FAILURE TO DO SO WILL RESULT IN THE SYSTEM NOT SETTING.

SYSTEM READY

When the system is armed the keypad display backlight switches off.

* display will show the maximum areas authorised to be set by the code which has been entered.

14.1.2 Setting the System with the Engineer Code

The above procedure may be followed using the Engineer code instead of the user code. In this case, an additional option is presented:

Engineer Force Arm Test

If selected with YES (#), the system will ignore any zones currently in fault condition and set. Should any such zone then clear, it will automatically be admitted to the system. If NO (*) is pressed, the system will set normally.

The engineer code can only unset the system if set by that code.

14.1.3 What to do if there is a Fault on Exit

If the 'Force Arm Test' is not used, an open detector will result in the exit tone becoming interrupted and the display showing the fault - eg:

Cannot Set [02]
HALLWAY

If the fault is part of the exit route (eg hallway PIR detector, or front door), proceed with the exit procedure, closing all necessary doors on the way out.

The presence of a detector open will automatically extend any programmed exit time, and prevent the system from setting. When the final door is closed, the tone will be continuous. Complete the setting procedure, eg pressing a 'Push to Set' button. The tone will stop. An interrupted tone continuing means that the system has not set. Re-enter the building, key in the code, and correct the problem.

14.1.4 Unsetting the System

Enter via the authorised entry route, go to the keypad and enter the following commands whilst the ENTRY TONE continues to sound:

Enter User Code	(Key in the full code - eg 1234)
Unset Areas [ABCD]	(YES key)
SYSTEM READY	Alarm system is UNSET.

If the alarm system is PART ARMED when you enter the building:

Enter User Code	(Key in your full code - eg 1234)
UNSET SYSTEM?	(YES key) Pressing the NO key will provide the option to set additional areas.
UNSET AREAS: ***[ABCD]***	(Press 'YES' key, or key in areas you wish to UNSET - ie what is shown on the display is what you will unset.)
SYSTEM READY	Alarm system is UNSET

14.1.5 How to Cancel an Alarm

If an alarm occurs during the day (due to wiring failure/ personal attack switch operated/ fire), go to the nearest keypad and key in the code as requested:

Enter User Code: - - - -	(Key in the full code - eg 1234)
First Alarm [xx] FIRE	

If the system alarms whilst the system is set, it will automatically silence as the system is unset (as above). Should an alarm occur whilst the system is fully set, it may be silenced by ANY code valid for the system. If the code is not valid for use with that area, it will remain set, and able to generate a further alarm. If partially set, the code must be valid for the area in which the alarm occurred.

14.2 Code Guessing Alarm

A Tamper alarm will be generated after thirty keypresses without entering the correct code.

14.3 Duress Codes

If a valid 'Duress' code is entered, a SILENT PA alarm will be generated via the Digital Communicator (if fitted). If this is done during the unsetting process, the output will take the form of a pulse; if during the set procedure, the output will remain live until the system is unset.

Additionally, a '2-key PA facility is permanently available at the keypad, by pressing the '1' and '7' keys simultaneously. This will generate a full 'PA' alarm. It is NOT possible to programme this facility as 'Silent.' This facility is NOT available at Slave keypads fitted software prior to issue 2.7

14.4 Keypad Displays

When any keypad on the system is in use, all others will show "***SYSTEM IN USE***" and cannot be used. This will clear 10 seconds after the last key entry, or when the system is returned to 'System Ready'
Unless the mains fails the LCD display backlight will be on all the time that the panel is in day mode, and during exit and entry time. In the event of mains failure it will only light during exit/entry and if a key on the keypad is pressed. When 'Area Set' the light will illuminate immediately any key is pressed, remaining lit until approx. 10 seconds after the last keypress.

QUICK CHECK SUMMARY

COMMUNICATORS
Ensure correct POLARITY is programmed as well as correct channels.

POWERING UP
Power up on mains first (except for Down Loading systems)
Always remove power when connecting communicator or other additional equipment
Ensure adequate standby battery is correctly connected.

ENGINEERING MODE AND PROGRAMMING
Clean Start before commencing programming
Move forwards with 'NO' ('*') and backwards with 'B'
Allocate Walk Through Zone iD biscuit number next higher than associated Final Entry Exit zone
Exit with 'A' - with NO save to NVM,
or 'C' - WITH save to NVM

Do NOT power down whilst in Engineer mode.

INSTRUCT-50
Issue 3a