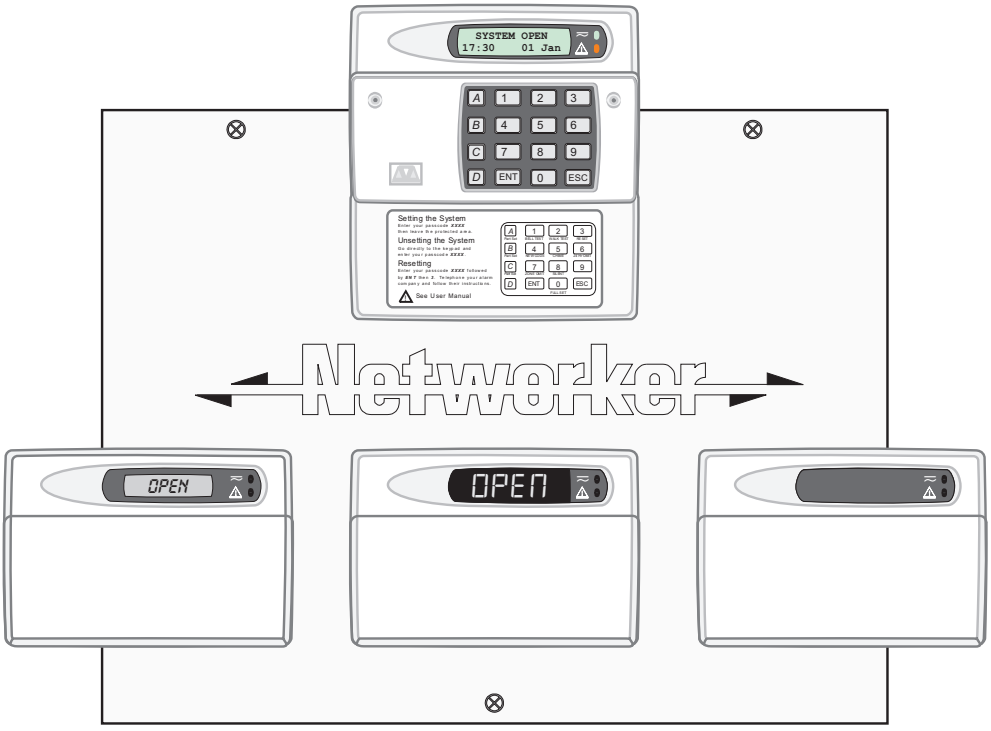
MENVIER SECURITY

TS2500

1040 Zone Intruder Alarm Control System



Installation & Programming Manual

COOPER Menvier

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System Overview

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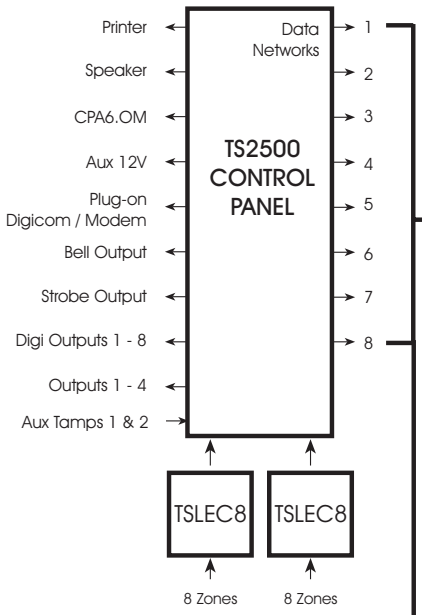
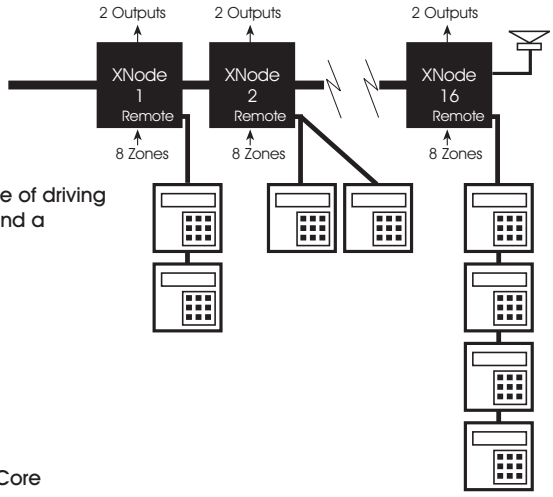


NOTE:
Only one wiring method can be used on any one Network

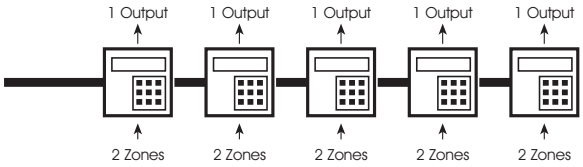
Wiring Option 1
XNode



The XNode is capable of driving 4 Remote Keypads and a Loudspeaker

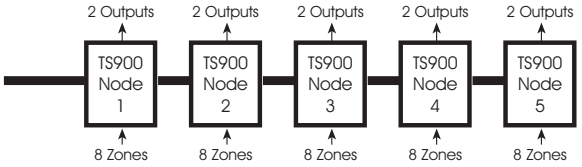
Network Wiring = 4 Core

Wiring Option 2
Remote Keypads or LEC's



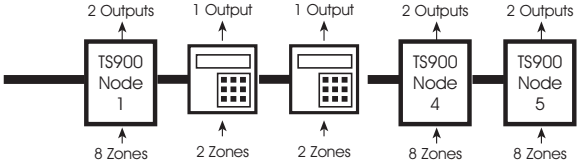
Network Wiring = 6 Core (Remotes) or 4 Core (LECs)

Wiring Option 3
Using TS900 Node



Network Wiring = 4 Core

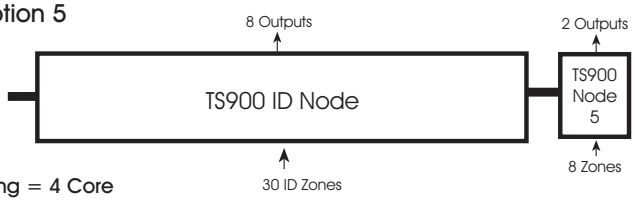
Wiring Option 4



TS900 Nodes and Keypads can be connected on the same Network
BUT NO 2 DEVICES SHOULD HAVE THE SAME ADDRESS.

Network Wiring = 6 Core

Wiring Option 5



Network Wiring = 4 Core

Introduction

The TS2500 intruder alarm control system has been designed to suit medium to large installation sites. The TS2500 system can be expanded up to 1040 zones. The system is capable of "up" and "down" line loading, allowing remote programming and interrogation via the telephone line and a P.C.

Complex site requirements such as multi-ward setting can be achieved, as the system is capable of being broken down into 16 separately controlled areas (Wards) so that the premises or parts of the premises can be controlled independently.

The TS2500 system is a true multi-tasking system, which allows up to maximum of eight users operating the system simultaneously.

Control Panel

The control panel is the controlling unit for the system, it has a power supply and connections for a standby battery. It has the following facilities:

- 8 networks for connecting remote keypads and Nodes
- Connections for two 8 zone local expansion cards (TSLEC8)
- Two auxiliary tamper zones
- Bell and strobe outputs
- 4 programmable outputs (1 x Voltage free contacts and 3 high current transistorised)
- 8 programmable digicom/RedCARE outputs
- A connector for a Menvier plug-on digicom or digi-modem
- A connector for a printer via the MPA or DCI printer adaptor
- A connector for mimic modules (CPA6.OM)
- Extension loudspeaker output
- All system program information and the 4000 event log is stored in two removable non-volatile memory (NVM) devices

Remote Keypads

Up to 5 remote keypads can be connected when directly wired to the network. The XNode also provides the facility to connect up to 4 remote keypads giving a system total of 512 remote keypads. Each remote keypad has two detection circuits and a single switched -ve output. The four types are:

32 Character LCD (NETLCD)

The NETLCD remote keypad has a back-lit 32 character super-twist Liquid Crystal Display (LCD) and a back-lit tactile rubber keypad. All system programming must be carried out from a NETLCD remote keypad.

8 Character Starburst (NETSTAR)

The NETSTAR remote keypad has a back-lit 8 character starburst display (LCD) and a back-lit tactile rubber keypad. This type of remote keypad is limited to setting and unsetting only, and cannot be used to program the system.

☞ *The display will always show the system time.*

4 Character LED (NETLED)

The NETLED remote keypad has a 4 character 7-segment LED display and back-lit tactile rubber keypad. This type of remote keypad is limited to setting and unsetting, and cannot be used to program the system.

☞ *The display will always show the system time.*

Remote Arming Station (NETARM)

The Remote Arming Station only allows setting and unsetting of the system. The unit has two indicator LED's, the "Power LED" and a programmable "Function LED" (the "Function LED" may be programmed as "Fault" or "Area Set" etc.).

Expansion Devices

There are several options for expanding the system:

TS700 LEC

The Local Expansion Card (LEC) provides two programmable detection circuits and one programmable switched -ve output. Up to 5 TS700 LECs can be connected on any one network.

TS900 Node

The TS900 Node provides eight programmable detection circuits and two programmable outputs (one switched +ve and one switched -ve). Up to 5 TS900 Nodes can be connected on any one network.

XNode
The XNode provides eight programmable detection circuits, two programmable outputs (one switched +ve and one switched -ve) and a loudspeaker output for driving a 16 Ohm loudspeaker. Each XNode can also drive up to 4 remote keypads. Up to 16 XNodes can be connected on any one network.

TSLEC8
The TSLEC8 Local Expansion Card (LEC) is designed to be fitted inside the control panel it provides 8 programmable detection circuits. The control panel will accept two TSLEC8s.

TS900 ID Node
The TS900 ID Node can be used as an alternative to the standard TS900 Node. It provides a single ID Detector Loop for connection to 30 ID devices and 8 programmable outputs. Several configuration options allow it to be used on its own or with existing TS900 Nodes.

Other Devices

Printer
A DATAC printer or any standard RS232 printer can be connected to the control panel to obtain system and log print-outs.

CPA6.OM Output Module
Each output module provides eight switched -ve outputs, the output modules can be daisy-chained together to provide multiples of eight outputs. The outputs can be used to indicate ward status information and/or circuit alarm/mimic indications.

DC54/58/58M Digicom and Digi-modem
A 4-channel DC54 or 8-channel DC58 digital communicator can be plugged onto the control panel to allow alarm status information to be transferred to a dedicated Alarm Receiving Centre. The 8 channel DC58M digi-modem can be plugged onto the control panel, which functions as a digital communicator and V21 modem. The modem facility is required when using the up/down loading feature.

TSNIB Networker Interface Board
A driver and receiver board that allows Nodes or remotes to be driven up to 3 Km.

Technical Specifications

Control Panel

Part No:	TS2500
Input Supply:	230V ±10% 50Hz
Current:	220mA (normal) 300mA (alarm) with speaker
Power Supply:	1.5A
Standby Battery:	2 x 7.0Ah or 1 x 17Ah
Zones	2 to 1040
Panel Outputs:	1 = voltage free changeover 2 = Switched -ve @500mA 3 = Switched +ve @500mA 4 = Switched +ve @500mA
Digi Outputs 1-8:	+ve removed Source 5mA in 12V condition Sink 100mA in 0V condition
Speaker Output:	16 Ohms
Bell Trigger:	Switched -ve @500mA
Strobe Trigger:	Switched -ve @500mA
Dimensions:	384(W) x 312(H) x 95(D) mm
Material:	1.2mm mild steel
Weight:	4.9 Kg
Environment:	-10 to 55°C

LCD Remote Keypad

Part No:	NETLCD
Display:	32 Character Liquid Crystal
Current:	50mA (normal) 60mA (alarm)
Zones:	2
Output:	Switched -ve @100mA
Dimensions:	150(W) x 104(H) x 30(D) mm
Material:	3mm Polycarbonate
Weight:	282g
Environment:	-10 to 55°C

Starburst Remote Keypad

Part No:	NETSTAR
Display:	8 Character Liquid Crystal
Current:	50mA (normal) 60mA (alarm)
Zones:	2
Output:	Switched -ve @100mA
Dimensions:	150(W) x 104(H) x 30(D) mm
Material:	3mm Polycarbonate
Weight:	263g
Environment:	-10 to 55°C

LED Remote Keypad

Part No:	NETLED
Display:	4 character seven segment
Current:	60mA (normal) 70mA (alarm)
Zones:	2
Output:	Switched -ve @100mA
Dimensions:	150(W) x 104(H) x 30(D) mm
Material:	3mm Polycarbonate
Weight:	254g
Environment:	-10 to 55°C

Arming Station

Part No:	NETARM
Display:	Power LED Programmable function LED
Current:	30mA (normal) 40mA (alarm)
Zones:	2
Output:	Switched -ve @100mA
Dimensions:	150(W) x 104(H) x 30(D) mm
Material:	3mm Polycarbonate
Weight:	254g
Environment:	-10 to 55°C

TS700 LEC

Part No:	TS700.LEC
Current:	30mA (normal) 40mA (alarm)
Zones:	2
Output:	Switched -ve @100mA
Dimensions:	142(W) x 82(H) x 36(D) mm
Material:	3mm Polycarbonate
Weight:	213g
Environment:	-10 to 55°C

TSXNode

Part No:	TSXNODE
Current:	60mA (normal) 60mA (alarm)
Zones:	8
Outputs:	A = Switched +ve @100mA B = Switched -ve @100mA
Speaker Output:	16Ohms
Dimensions:	128(W) x 182(H) x 34(D) mm
Material:	3mm Polycarbonate
Weight:	370g
Environment:	-10 to 55°C

TS900 Node

Part No:	TS900.NODE
Current:	60mA (normal) 60mA (alarm)
Zones:	8
Outputs:	A = Switched +ve @100mA B = Switched -ve @100mA
Dimensions:	128(W) x 182(H) x 34(D) mm
Material:	3mm Polycarbonate
Weight:	370g
Environment:	-10 to 55°C

TS900 ID Node

Part No:	TS900.IDNODE
Current:	80mA (with 1 device) 160mA (with 30 devices)
Zones:	30 (ID)
Outputs:	A = Switched +ve @100mA B = Switched +ve @100mA C = Switched +ve @100mA D = Switched +ve @100mA E = Switched -ve @100mA F = Switched -ve @100mA G = Switched -ve @100mA H = Switched -ve @100mA
Dimensions:	128(W) x 182(H) x 34(D) mm
Material:	3mm Polycarbonate
Weight:	370g
Environment:	-10 to 55°C

TSLEC8

Part No:	TSLEC8
Current:	20mA (normal) 20mA (alarm)
Zones:	8
Dimensions:	89(W) x 71(H) x 15(D) mm
Weight:	69g
Environment:	-10 to 55°C

System Design

System Wiring

The TS2500 system uses standard 7/0.2 un-screened alarm cable to inter-connect devices within the system. The number of cores will vary depending on the device being connected.

Cable Segregation

All cables for the alarm system should be segregated from any other cables and wiring services like mains supply cables, telephone cables, computer network cables and R.F. cables. In addition to this the network and detection circuit cables should be kept clear of cables supplying sounders or extension loudspeakers. It is also advisable to avoid running more than one network down a single multi-core cable.

Calculating Voltage Drop

In order for the system work correctly the voltage at each device must NOT drop below 10.5V even when running on the standby battery. Standard 7/0.2 alarm cable has a resistance of 8 Ohms per 100 metres per core. The voltage drop is calculated using the following formula:

V Drop = Current drawn x cable length x 0.08 x 2

The table below shows the expected voltage drop against the current drawn and cable length:

Current Drawn	Cable Length (Standard 7/0.2 alarm cable)									
	10m	20m	30m	40m	50m	60m	70m	80m	90m	100m
60mA	0.10V	0.19V	0.29V	0.38V	0.48V	0.58V	0.67V	0.77V	0.86V	0.96V
80mA	0.13V	0.26V	0.38V	0.51V	0.64V	0.79V	0.90V	1.02V	1.15V	1.28V
100mA	0.16V	0.32V	0.48V	0.64V	0.80V	0.96V	1.12V	1.28V	1.44V	1.60V
120mA	0.19V	0.38V	0.58V	0.79V	0.96V	1.15V	1.34V	1.54V	1.74V	1.92V
140mA	0.22V	0.45V	0.67V	0.90V	1.12V	1.34V	1.57V	1.79V	2.02V	2.24V
160mA	0.26V	0.51V	0.77V	1.02V	1.28V	1.54V	1.79V	2.05V	2.30V	2.56V
180mA	0.29V	0.58V	0.86V	1.15V	1.44V	1.73V	2.02V	2.30V	2.59V	2.88V
200mA	0.32V	0.64V	0.96V	1.28V	1.60V	1.92V	2.24V	2.56V	2.88V	3.20V
220mA	0.35V	0.70V	1.06V	1.41V	1.76V	2.11V	2.46V	2.82V	3.17V	3.52V
240mA	0.38V	0.79V	1.15V	1.54V	1.92V	2.30V	2.69V	3.07V	3.46V	3.84V
260mA	0.42V	0.83V	1.25V	1.66V	2.08V	2.50V	2.91V	3.33V	3.74V	4.16V
280mA	0.45V	0.90V	1.34V	1.79V	2.24V	2.69V	3.14V	3.58V	4.03V	4.48V
300mA	0.48V	0.96V	1.44V	1.92V	2.40V	2.88V	3.36V	3.84V	4.32V	4.80V
320mA	0.51V	1.02V	1.55V	2.05V	2.56V	3.07V	3.58V	4.10V	4.61V	5.12V
340mA	0.54V	1.09V	1.63V	2.18V	2.72V	3.26V	3.81V	4.35V	4.90V	5.44V
360mA	0.58V	1.15V	1.73V	2.30V	2.88V	3.46V	4.03V	4.61V	5.18V	5.76V
380mA	0.61V	1.22V	1.82V	2.43V	3.04V	3.65V	4.26V	4.86V	5.47V	6.08V
400mA	0.64V	1.28V	1.92V	2.56V	3.20V	3.84V	4.48V	5.12V	5.76V	6.40V
420mA	0.67V	1.34V	2.02V	2.69V	3.36V	4.03V	4.70V	5.38V	6.05V	6.72V
440mA	0.70V	1.41V	2.11V	2.82V	3.52V	4.22V	4.93V	5.63V	6.34V	7.04V
460mA	0.74V	1.47V	2.21V	2.94V	3.68V	4.42V	5.15V	5.89V	6.62V	7.36V
480mA	0.79V	1.54V	2.30V	3.07V	3.84V	4.61V	5.38V	6.14V	6.91V	7.68V
500mA	0.80V	1.60V	2.40V	3.20V	4.00V	4.80V	5.60V	6.40V	7.20V	8.00V
520mA	0.83V	1.66V	2.50V	3.33V	4.16V	4.99V	5.82V	6.66V	7.49V	8.32V
540mA	0.86V	1.73V	2.59V	3.46V	4.32V	5.18V	6.05V	6.92V	7.78V	8.64V
560mA	0.90V	1.79V	2.69V	3.58V	4.48V	5.38V	6.27V	7.17V	8.06V	8.96V
580mA	0.93V	1.86V	2.78V	3.71V	4.64V	5.57V	6.50V	7.42V	8.35V	9.28V
600mA	0.96V	1.92V	2.88V	3.84V	4.80V	5.76V	6.72V	7.68V	8.64V	9.60V

Voltage Drop Table

Voltage Drop Example 1

Example 1 in the figure below shows two Nodes connected to the control panel, the first Node is 20 metres from the panel and has 120mA being taken from its auxiliary supply to power detectors. The second Node is 20 metres from the first and also has 120mA being taken from its auxiliary supply to power detectors.

The voltage at each Node is calculated as follows:

1. The total current being drawn at the first Node = 180mA + 180mA = 360mA.
2. Voltage drop to the first Node = 360mA @ 20m = 1.15V (see table).
3. Voltage at first Node = control panel voltage - voltage drop = 13.60 -1.15 = **12.45V**.
4. The total current being drawn at the second Node = 180mA.
5. Voltage drop to the second Node = 180mA @ 20m = 0.58 (see table).
6. Voltage at second Node = first Node voltage - voltage drop = 12.45 - 0.58 = **11.87V**.

The example clearly demonstrates that the voltage levels at both Nodes is acceptable.

Voltage Drop Example 2

The second example shows what happens when a third Node is connected 20 metres from the second Node.

The voltage at each Node is calculated as follows:

1. The total current being drawn at the first Node = 180mA + 180mA +180mA = 540mA.
2. Voltage drop to the first Node = 540mA @ 20m = 1.73V (see table).
3. Voltage at first Node = control panel voltage - voltage drop = 13.60 -1.73 = **11.87V**.
4. The total current being drawn at the second Node = 180mA + 180mA = 360mA.
5. Voltage drop to the second Node = 360mA @ 20m = 1.15V (see table).
6. Voltage at second Node = first Node voltage - voltage drop = 11.87 - 1.15 = **10.77V**.
7. The total current being drawn at the third Node = 180mA.
8. Voltage drop to the third Node = 180mA @ 20m = 0.58V (see table 1).
9. Voltage at third Node = second Node voltage - voltage drop = 10.77 - 0.58 = **10.19V**.

The second example demonstrates that when the third Node is added to the network the current drawn at each device is increased and therefore the voltage drop at each device is increased. The voltage level at the third Node is now below the 10.5V threshold and may cause problems.

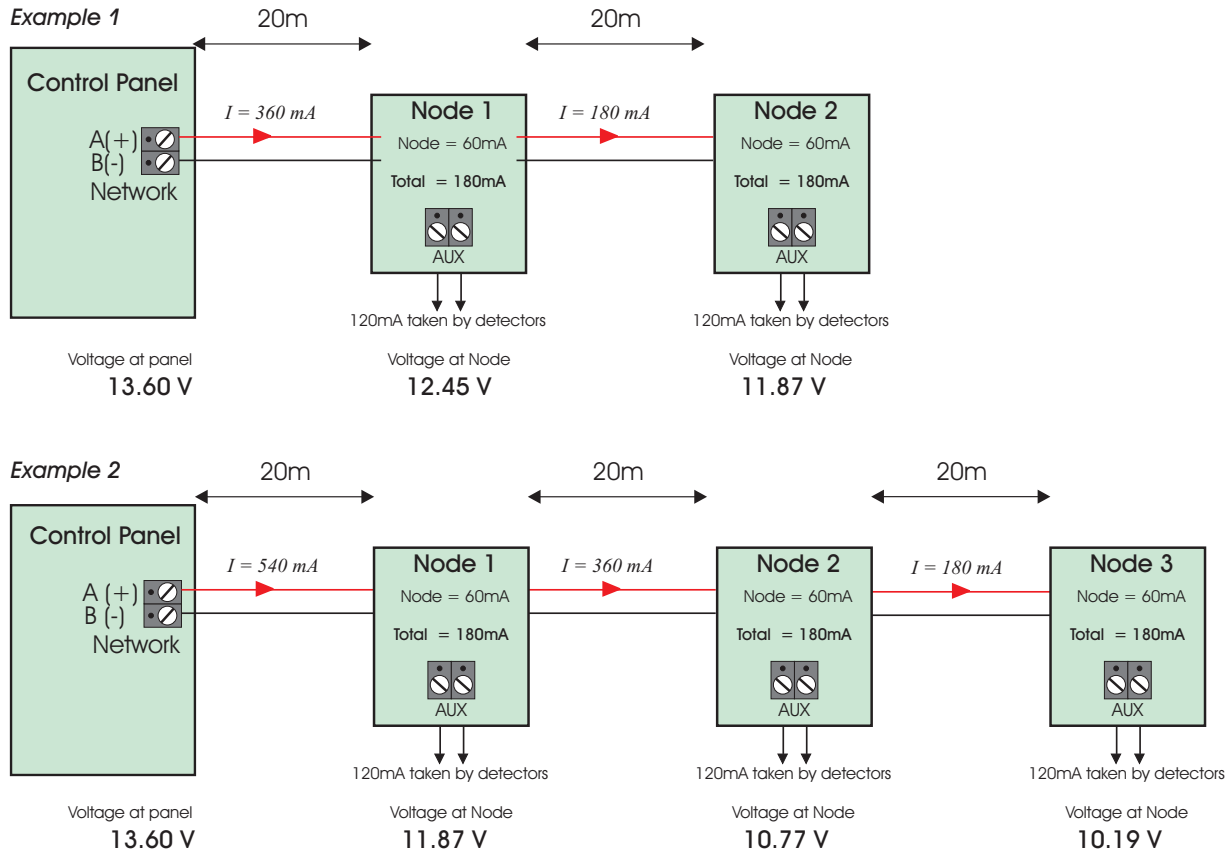


Figure 1. Voltage Drop Examples 1 & 2

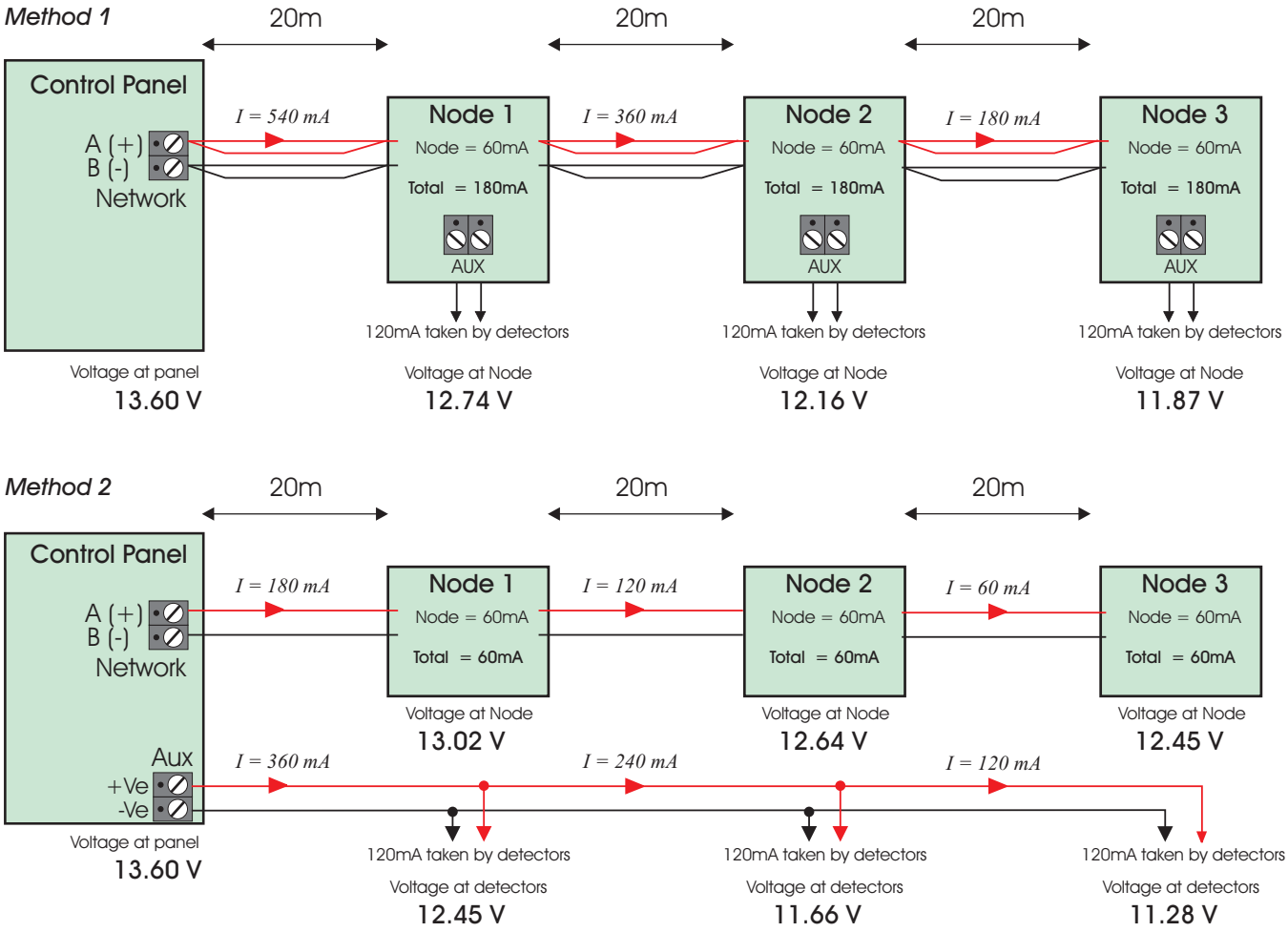


Figure 2. Reducing Voltage Drop - Methods 1 & 2

Reducing Voltage Drop - Method 1

The simplest way to reduce voltage drop is to double up the supply connections (A & B), this will half the resistance on each core, which will half the voltage drop. When using the voltage drop table to calculate the expected voltage drop, simply divide the voltage drop by two. Figure 2 above shows the same 3 Nodes used in the previous example. The A and B network connections have been doubled up, in order to do so the network cable must have 2 spare cores. This method clearly shows that voltage levels at all Nodes is at a sufficient level.

Reducing Voltage Drop - Method 2

The second way to reduce voltage drop is to supply the detection devices from separate cores. This is the preferred method of reducing voltage drop as detectors generally operate at lower voltages (9.5V). When using this method the network cable must have 2 spare cores. This method clearly shows that voltage levels at all Nodes is at a sufficient level.

Remote Power Supplies

When voltage drops cannot be overcome by using the two methods previously described or the demand on the control panel power supply is going to be exceeded (1.5A max.), one or more remote power supplies will need to be installed. It is recommended that the Menvier 519XB is used in these instances as it can be monitored using the 519FM. When installing a remote power supply it should be installed close to the equipment it is powering.

Figure 3 shows two methods of installing a remote power supply. When connected as shown in method 1, only the last two Nodes have sufficient voltage levels. If the power supply is repositioned so that it is next to Node 3 the voltage levels at each Node is increased because the current being drawn is split into two separate paths and therefore the voltage drop in each path is reduced. Method 2 is the preferred connection method.

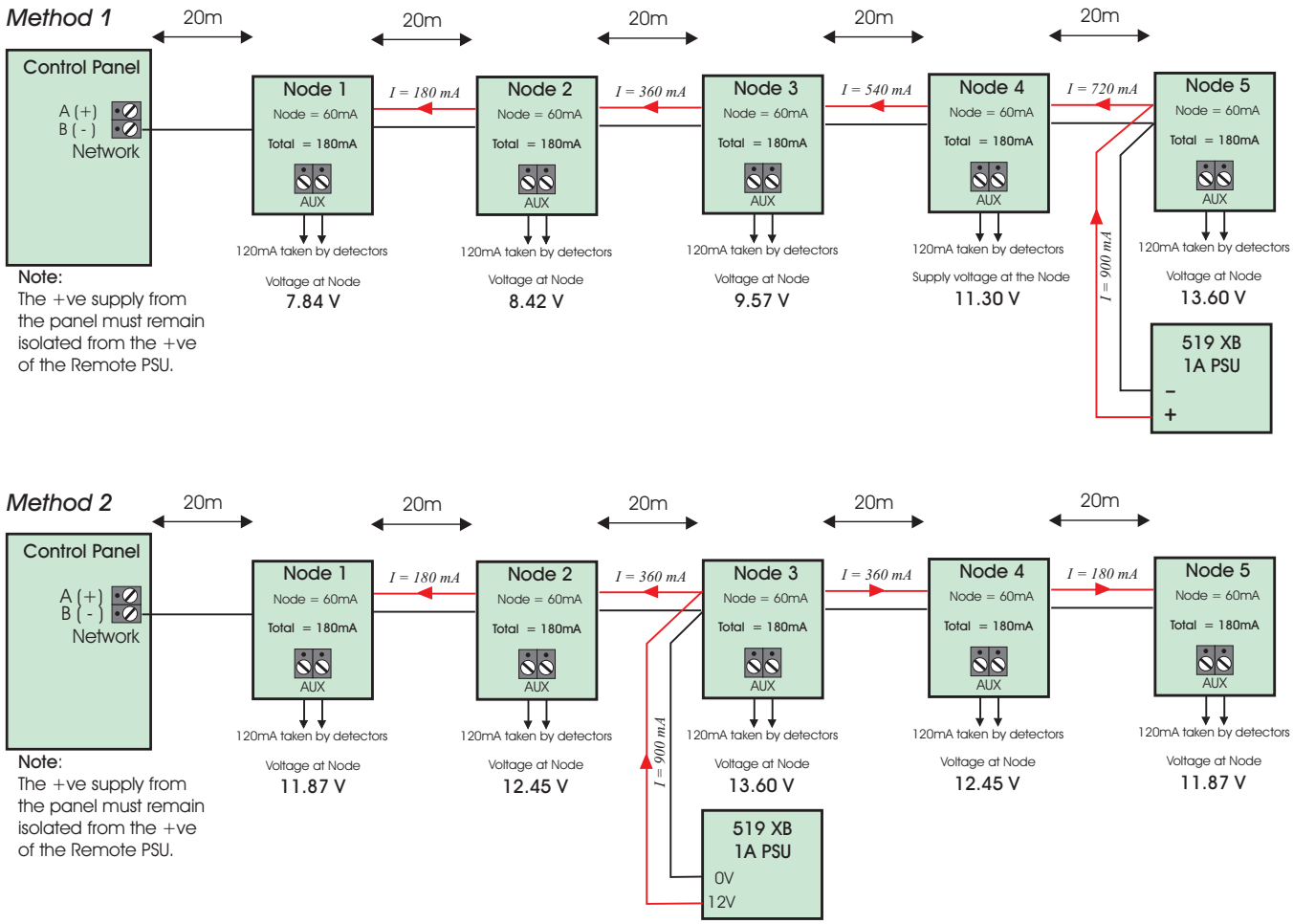


Figure 3. Connecting Remote Power Supply Units

Screened Cable

Screened cable may prove necessary if the installation site has equipment that produces high levels of R.F. (Radio Frequencies), e.g. heavy industrial plant like welding equipment etc. If screen cable is required you should adhere to the following guidelines:

1. The screen on the cable should only be connected to **mains earth** at the control panel.
2. The continuity of the cable screen is most important and screening MUST be continuous along the full length of the network.
3. If the network cable enters any metal enclosures, make sure the screen remains isolated from the case.

Electromagnetic Compatibility

When used as intended this product complies with EMC Directive (89 /336 /EEC) by meeting the limits set by the standards BS4737, EN50082-1 1992 and EN50130-4 1993. The following installation guidelines must be followed.

1. External cables must be connected using cable entries or knockouts provided.
2. When routing external cables inside the product they must be:
   (a) Kept as short as possible.
   (b) Routed close to the housing.
   (c) Kept as far as possible from the electronics.
3. Any modifications other than those stated in this manual, or any other use of this product may cause interference and it is the responsibility of the installer to comply with the EMC and Low Voltage Directives.

XNode Wiring

The XNode requires a 4 core cable for interconnection, and up to 16 may be connected in a "daisy-chain" or "star" configuration. The distance between each XNode must not exceed 100 metres. The total distance to last XNode must not exceed 1000 metres. Power for detectors is provided by the Aux. +/- terminals.

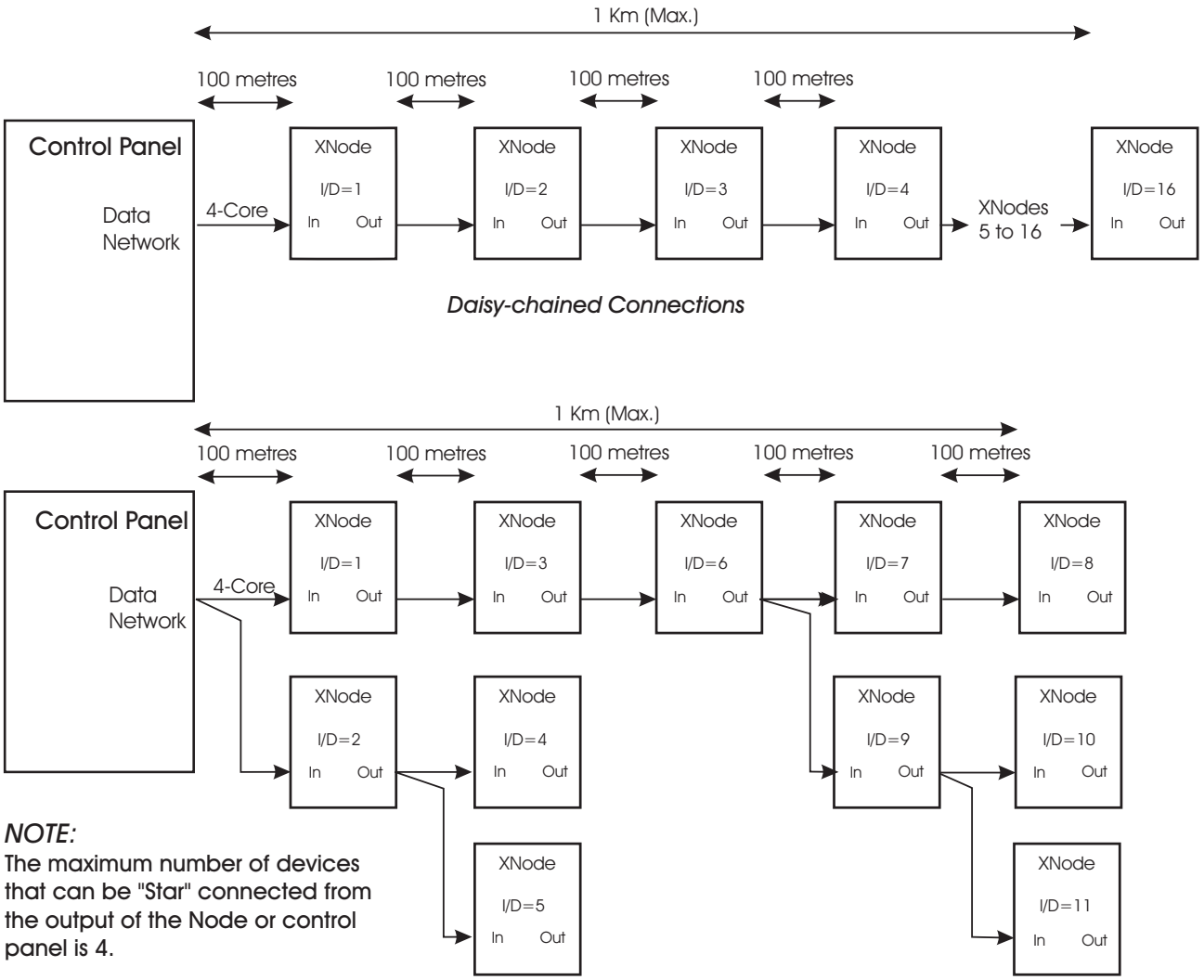


Figure 4. XNode Connection Methods

Wiring Remote keypads to an XNode

Up to four remote keypads can be connected to each XNode, they can be connected in either a "star" or "daisy-chain" configuration. The distance to the furthest remote keypad from the XNode must not exceed 100 metres. Power for detectors are provided by the A(+) and B(-) terminals.

The detection circuits in the XNode can either be mapped to the XNode or to the remote keypads by setting the 4-way "Remote Zone Enable" switch as shown in the table below:

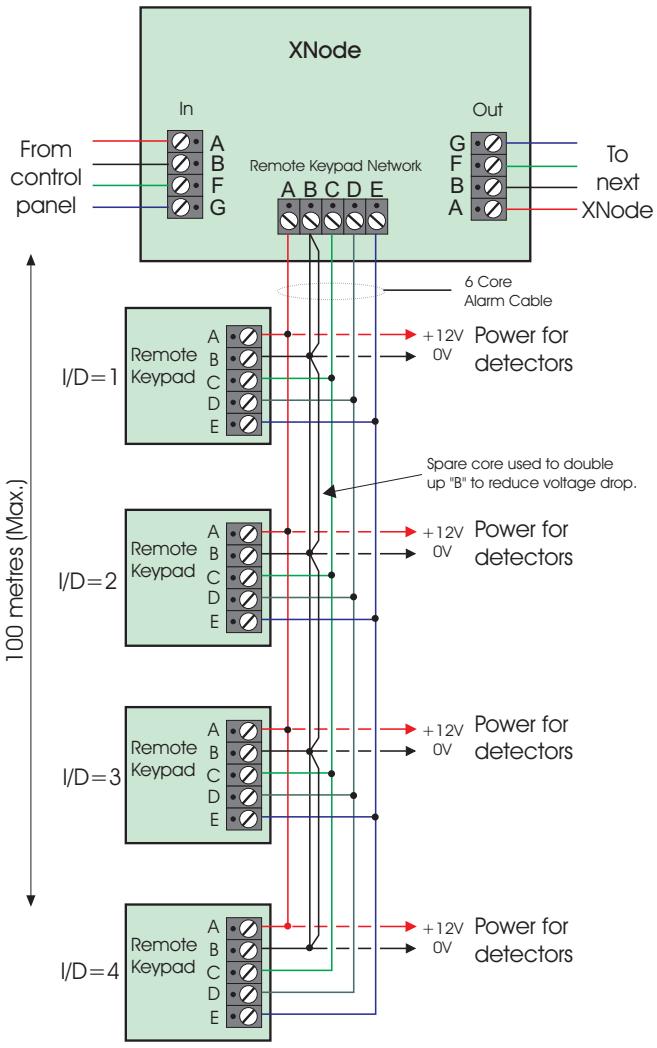
Switch	OFF	ON
1	XNode circuits A & B enabled	Remote keypad 1 circuits A & B enabled
2	XNode circuits C & D enabled	Remote keypad 2 circuits A & B enabled
3	XNode circuits E & F enabled	Remote keypad 3 circuits A & B enabled
4	XNode circuits G & H enabled	Remote keypad 4 circuits A & B enabled

☞ *Remote keypads cannot be multi-tasked between each other when connected to the XNode, i.e. if remote keypad 1 is in operation, remote keypads 2, 3 and 4 are locked-out and will show "SYSTEM IS BUSY PLEASE WAIT.".*

☞ *The remote keypads follow the ward assignment of the XNode, i.e. if the XNode is assigned to ward A then remote keypads 1-4 connected to that XNode are also assigned to ward A.*

☞ *The loudspeaker and remote keypad sounders will follow the ward assignment of the XNode.*

☞ *The programmable output on the remote keypads are mapped as follows: Remote keypads 1 and 3 follow XNode output A and remote keypads 2 and 4 follow XNode output B.*



Fiigure 5. Wiring Remote Keypads to an XNode

Wiring a Loudspeaker to an XNode

The XNode has set of terminals for connecting up to two 16Ω extension loudspeakers. It is recommended that a remote power supply is connected to the XNode to provide the additional power for the loudspeaker.

Wiring an Output Module to an XNode

The XNode has a connector for a CPA6 Output Module, this can be used to provide eight switched -ve outputs to drive LED's, relays etc. The outputs will mimic the operation of the detection circuits, i.e. circuit [A] active = output 1 active, circuit [A] healthy = output 1 inactive.

Programmable Outputs on the XNode

The XNode has two programmable outputs, each rated at 100mA, output [A+] is a switched +ve output and output [B-] is a switched -ve. The outputs can be used to drive sounders or relays etc.

TS900 Node Wiring

TS900 Nodes require a 4 core cable for interconnection, and up to 5 may be connected in a "daisy-chain" or "star" configuration to any one network. The distance between each Node must not exceed 100 metres and the total distance to last Node must not exceed 500 metres. Power for detectors is provided by the Aux. +/- terminals.

The TS900 Node has two programmable outputs, each rated at 100mA, output [A+] is a switched +ve output and output [B-] is a switched -ve. The outputs can be used to drive sounders or relays etc.

☞ *No two devices should have the same address (I/D).*

☞ *The maximum number of devices is five.*

☞ *TS900 Nodes and XNodes cannot be connected on the same network.*

Wiring Nodes and Remote Keypads

The TS900 Node and remote keypads can be connected on the same network. The network must be wired in 6-core cable to allow the remote keypad internal sounders to operate.

☞ *No two devices should have the same address (I/D).*

☞ *This method of connection is designed for networks 1 and 2. Although it can be used on other networks, the "D" connection for the remote keypads will have to be taken from networks 1 or 2.*

☞ *The sounder on the remote keypads will follow the control panel sounder.*

☞ *Remote keypads cannot be multi-tasked between each other on the same network when using this method of connection.*

☞ *The maximum number of devices is five.*

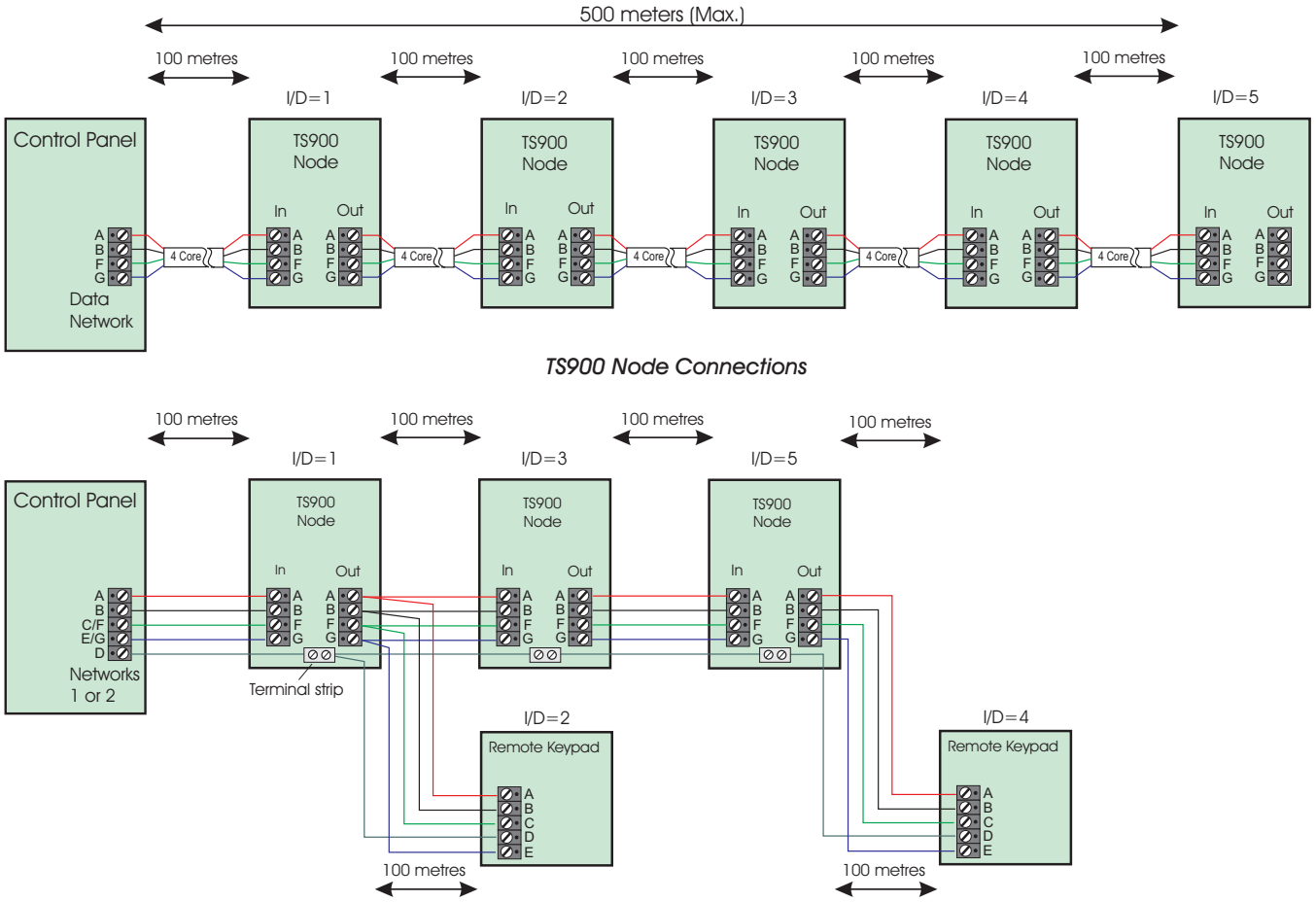


Figure 6. TS900 Node Wiring Options

Remote Keypads and TS700.LECs

Up to 5 remote keypads or TS700.LECs can be connected on any one network. The devices may be wired in a "daisy-chain" or "star" configuration. When using remote keypads the network must be wired in 6-core cable. If all devices on the network are TS700.LECs the network can be wired in 4-core as the "D" connection is not required.

☞ *No two devices should have the same address (I/D).*

☞ *This method of connection is designed for networks 1 and 2. Although it can be used on other networks, the "D" connection for the remote keypads will have to be taken from networks 1 or 2.*

☞ *The sounder on the remote keypads will follow the control panel sounder.*

☞ *Remote keypads cannot be multi-tasked between each other on the same network when using this method of connection.*

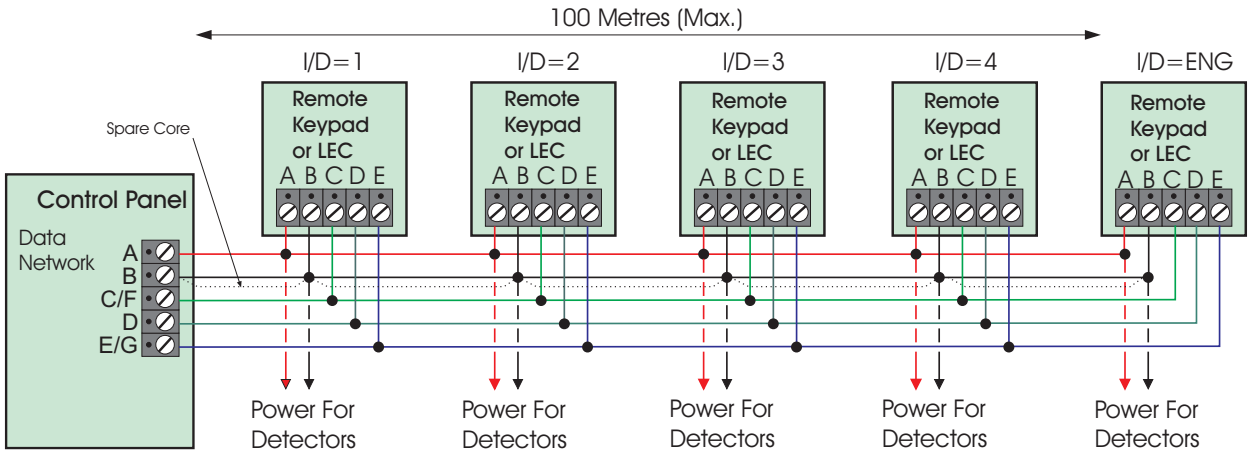


Figure 7. Wiring Remote Keypads or TS700.LECs

TSLEC8

Up to two TSLEC8s can be installed inside the control panel. Each LEC provides an additional 8 detection circuits. The LEC is supplied with its own connector lead which simply plugs onto the control panel PCB.

Detection Circuits

All detection circuits can be wired either in "Double Pole" or "End of Line". When using the "Double Pole" method, 4-core cable is required for non powered devices such as magnetic contacts and 6-core is required for powered devices such as movement sensors. When using the "End of Line" method, 4-core cable can be used for both non powered and powered devices.

Battery

The control panel must be fitted with an adequate battery in order for the system to function for eight hours in the event of a mains failure. 17Ah capacity can be provided from one single 17Ah battery or 14Ah capacity can be provided by fitting two 7Ah batteries connected in parallel.

If the mains power to the control panel fails, the standby battery will take over and maintain the system. In order to safeguard the battery from full discharge the control panel automatically isolates the standby battery when its voltage falls below 9.5V. When the mains power is restored the system will power-up and reconnect the battery, then continue to recharge.

Mains Supply

The mains supply is connected to a 3 way "Euro Type" fused terminal block, which is fitted with a 315mA fuse. To comply with BS4737 the supply should be fed from an un-switched fused spur fitted with a 3A fuse. All mains electrical connections should be carried out by a qualified electrician and must comply with the current IEE regulations.

Panel Outputs

The control panel has four programmable outputs, output [1] is a set of voltage free changeover contacts, output [2-] is a switched -ve @500mA and outputs [3+] & [4+] are switched +ve @500mA. The outputs can be used to drive relays etc.

Extension loudspeakers

Extension loudspeakers can be connected to the control panel or any XNode (not TS900 Node). The speaker output is designed to drive up to two 16Ω loudspeakers, however it is recommended that when using two speakers that they are wired in series to reduce current draw. Each loudspeaker output can also be programmed to one or more wards so that the sounder only operates under the relevant conditions.

☞ *Extension loudspeaker MUST NOT be wired in the same multi-core as network or detection circuit cabling.*

External Sounders

The control panel has one external sounder output to drive standard SAB or SCB modules, additional external sounders can be driven from Nodes using a relay interface RM3A. When using a Node to drive an external sounder it is recommended that a remote power supply is fitted next to the Node to provide the power for the external sounder. The tamper for the external sounder can be monitored using one of the Node detection circuits.

Plug-on Digital Communicator

The DC54 (4 channel) or DC58 (8 channel) can be plugged onto the control panel so that alarm status information can be transferred to an Alarm Receiving Centre (ARC). The DC58 also offers the additional facility of reporting separate account numbers per ward. All data for the digital communicator can be programmed via the control panel.

Plug-on Digi-modem

The DC58M is a combined 8 channel digital communicator and V21 modem. The digital communicator also offers the additional facility of reporting separate account numbers per ward. If required the digicom can be disabled so that only the modem facilities are provided. The V21 modem is required to allow uploading and downloading of system data via a PC using Menvier Lineload software.

RedCARE or Stand-alone Digicom

Eight programmable switched -ve @100mA outputs are provided on the control panel to allow connection to a stand-alone RedCARE unit such as the Versus 3GSTU or DA BlueSTU. The STU can be mounted inside the control panel underneath the main PCB.

Printer

A DATAC printer or any serial RS232 printer can be connected to the control panel via a MPA or DCI (printer adaptor). The printer can be used to obtain a full printout of the system programming or event log. It can also be left connected and used as an on-line printer, i.e., all system events are printed as and when they occur.

Output Modules

An output module (CPA6.OM) provides eight switched -ve outputs @ 100mA, which can be used to drive LED's or relays. The control panel has a connector which allows one or more output modules to be daisy-chained together. The output modules can then be programmed to give ward status information and/or circuit alarm/mimic indications.

The XNode also has a connector for a single output module, but the outputs will only mimic the eight detection circuits of the XNode.

Networker Interface Boards

The Networker Interface Boards (NIBs) can be used when cable runs between Nodes or remote keypads exceed 100 metres. The NIBs are supplied as a driver unit and receiver unit. The driver unit connects to the output of the control panel or Node and the receiver unit can be connected up to 3 kilometres away. A separate remote power supply unit will be required to power the receiver unit and the remainder of equipment on the network.

System Installation

TS2500 Control Panel

Installation Procedure

1. Open the control panel by removing three screws from the front cover. Remove the cover and disconnect the earth bonding cable from the spade connection on on the transformer.
2. Note the position of the cable entries as follows:
   (a) Ten 20mm cable entries for detection, alarm and remote keypad cables.
   (b) A 20mm cable entry for mains (230V) below the mains input terminal block.

   ☞ *The mains cable must enter the control panel through its own cable entry and must not be mixed with other cables.*
3. Hold the control panel back box in the required position and mark the centre of the middle fixing position. Remove the back box, drill and plug the hole.
4. Screw a No 10 screw into the plugged hole. Re-position the back box and mark the remaining two securing holes. Remove the back box, drill and plug the holes.
5. Re-position the back box and pass all cables into the base via the appropriate cable entries, remembering to fit grommeyts where necessary.
6. Secure the back box using not less than 30mm x No 10 screws through the three securing holes.
7. If required install and connect the following:
   (a) Stand alone digicom or RedCARE STU or other signalling device.
   (b) Plug-on digicom type DC54, DC58 or DC58M.
   (c) Output modules type CPA6.OM.
   (d) Printer type DATAC or serial RS232 via a printer adaptor (DCI/MPA).
   (e) Relay module type RM3A.

☞ *When replacing the cover, always ensure that the earth bonding lead is connected to the spade connection on the transformer.*

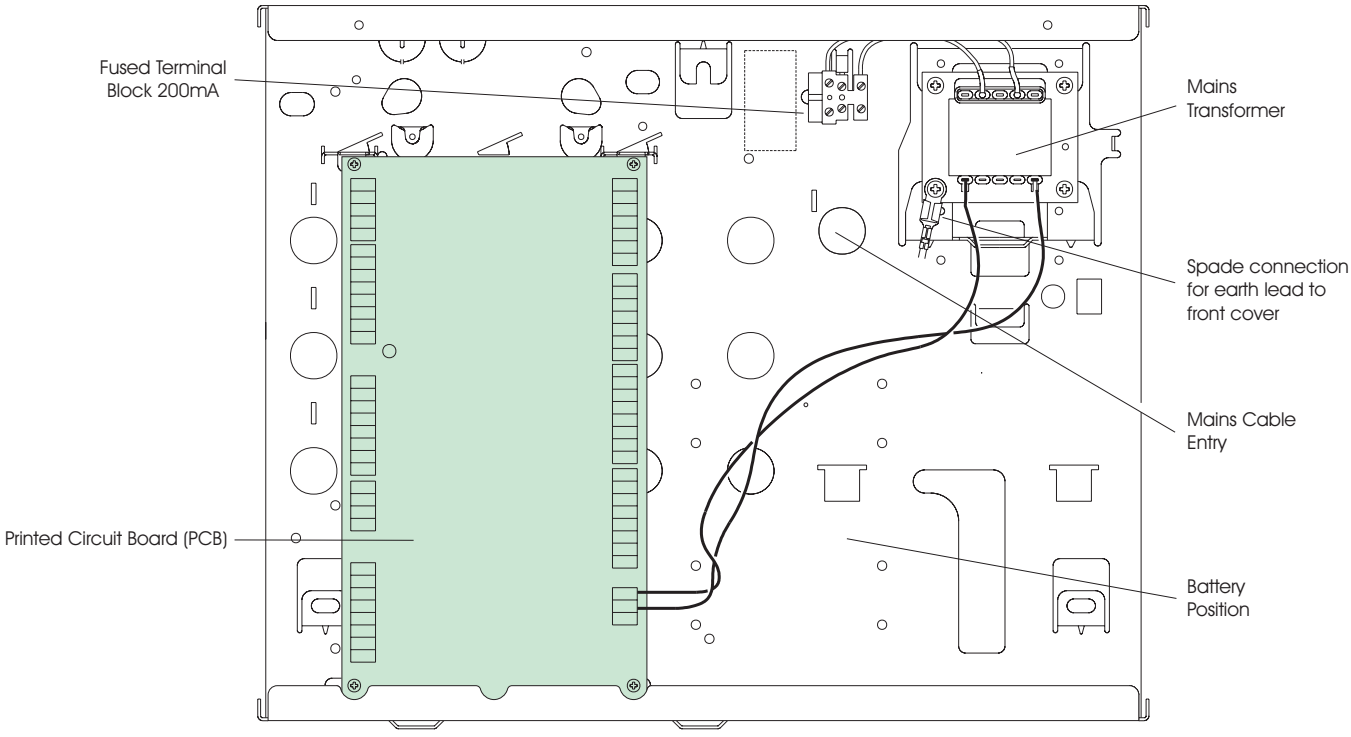


Figure 8. TS2500 Control Panel Layout

Mains Connection

The mains supply is connected to a 3 way "Euro Type" fused terminal block,which is fitted with a 315mA fuse.

☞ *All electrical connections should be carried out by a qualified electrician and must comply with the current IEE regulations.*

☞ *To comply with European regulations the supply should be fed from a readily accessible disconnect device, e.g. un-switched fused spur.*

☞ *When making mains connections it should be ensured that if the cable slips in such a way as to place a strain on the conductors, the protective earthing conductor will be the last to take the strain.*

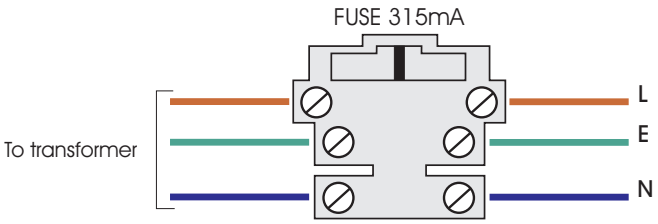


Figure 9. Mains Supply Connections

Battery Connections

A single 17Ah battery or two 7Ah batteries can be installed inside the control panel to provide continuous system operation in the event of a mains failure. A set of battery leads are provided in the spares pack to allow connection between the battery and control panel.

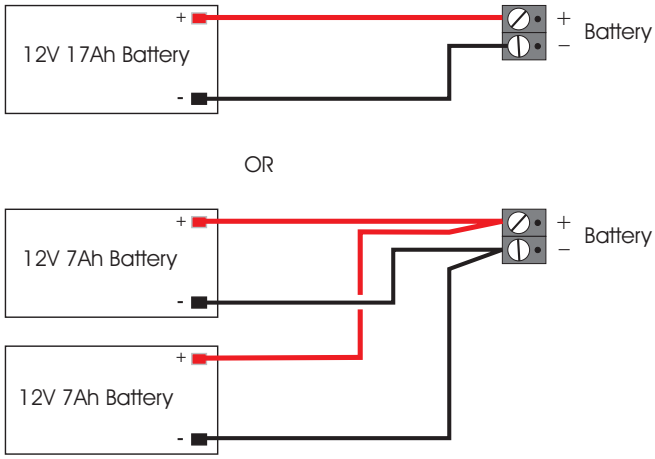


Figure 10. Battery Connections

If the mains power to the control panel fails, the standby battery will take over and maintain the system. In order to safeguard the battery from full discharge the control panel automatically isolates the standby battery when its voltage falls below 9.5V. When the mains power is restored the system will power-up and the reconnect the battery, then continue to recharge. If the system is to be tested using only the battery (no mains supply available) then the "Kick Start" pins must be momentarily shorted to enable the battery.

Main PCB Layout

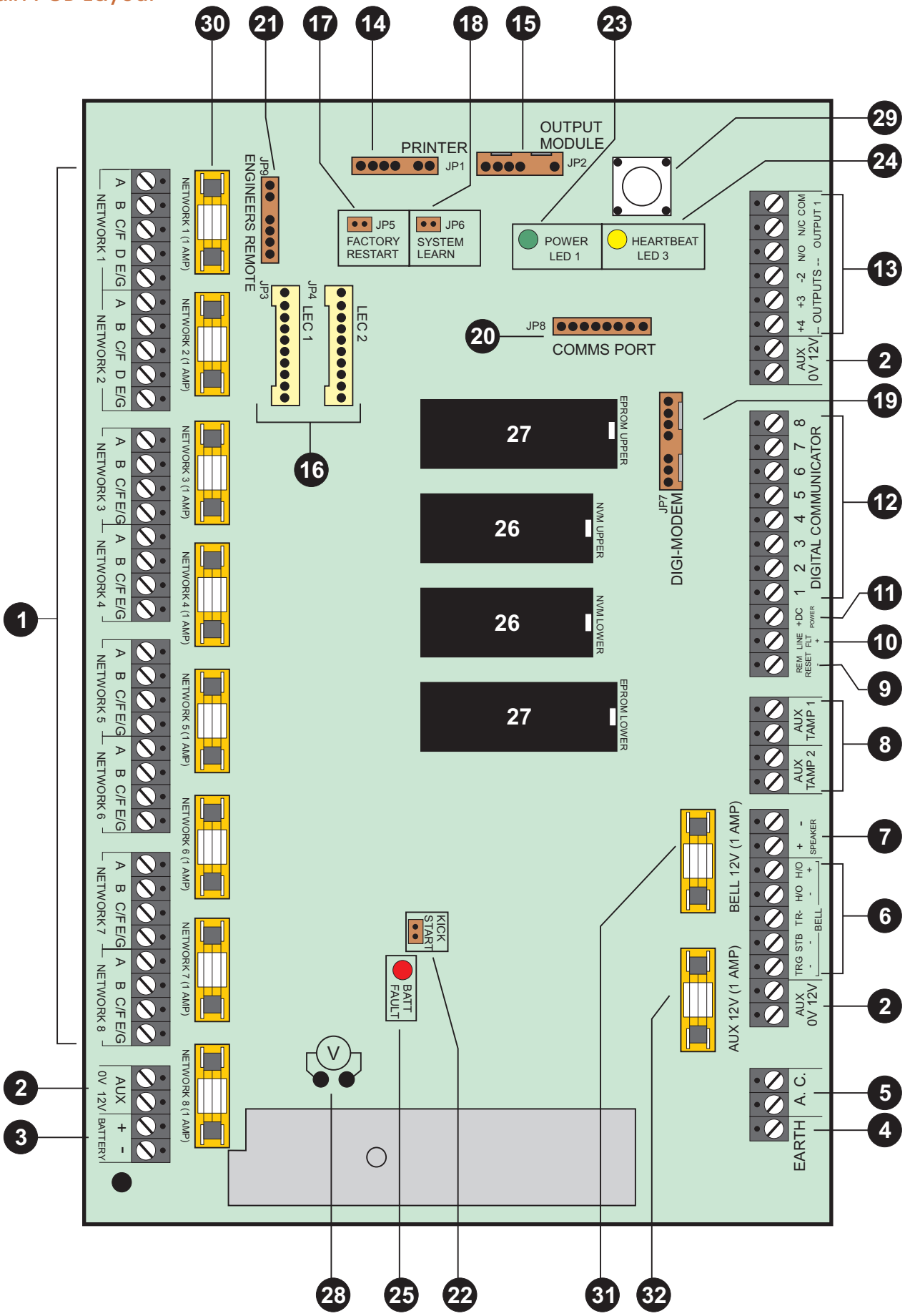


Figure 11. Main PCB Layout

Connection Terminals, Plugs & Indicators

The main PCB has the following connectors etc.

1 **Networks 1-8**
Data networks for connecting nodes, remote keypads and LECs. Each network is protected by its respective fuse (30), the fuse is in-line with the [A] connection of the network

2 **Auxiliary 12V**
Three sets of auxiliary 12V terminals are provided on the main PCB, each set provides dc power for detectors etc. These outputs are protected by a 1A fuse (32).

3 **Battery Terminals**
Connection terminals for the red and black battery leads supplied inside the spares pack.

4 **Earth Terminal**
Connection to mains earth.

5 **AC Input Terminals**
The output from the mains transformer is connected into these two terminals.

6 **External Sounder Terminals**
This group of terminals are used for connection to an external sounder, for full details of their function see page 26.

7 **Speaker Terminals**
Up to two 16Ω extension loudspeakers can be connected across these two terminals. The volume is controlled via a programming option, *see "Set Volume Level" on page 83.*

8 **Auxiliary Tampers 1 & 2**
These terminals provide tamper protection to auxiliary devices such as remote power supplies, extension loudspeakers etc. If they are not used they must be linked out.

9 **Remote Reset Input**
After a full alarm the system will require resetting, normally this is done by the engineer or via coded remote reset. By applying a -ve to this input terminal it will cause the system to reset after a full alarm. This input could be connected to the "Control" output on a RedCARE STU so that the central station can provide a "Remote Reset" facility.

10 **Line Fault Input**
When this input is applied with a +ve signal the system will generate a "Line Fault" condition. In the unset condition the system will generate a "Chime" tone every minute. In the set condition any programmed bell delay is cancelled.

11 **+DC Power**
This terminal provides the +12V power to the stand-alone digital communicator or RedCARE STU. This output is un-fused and therefore must only be used if the device is fitted inside the control panel housing.

12 **Digicom Outputs 1 to 8**
These are programmable outputs and are normally connected to the input channels on a stand-alone digital communicator or RedCARE STU. The outputs are normally at +12V and switch to 0V when active. The outputs can be inverted so that they switch from 0V to +12V when active, *see "Configuration" on page 46.* Each output will source 5mA in the +12V condition and sink 100mA in the 0V condition.

13 **Panel Outputs 1 to 4**
These are programmable outputs that can be used to drive relays and auxiliary equipment. Output [1] is a set of voltage free change over contact rated at 1Amp. Output [-2] is a switched negative output rated at 500mA. Outputs [+3] and [+4] are switched positive outputs rated at 500mA.

14 **Printer Output Port (JP1)**
This 6-pin plug is used for connecting to either a CPA6 printer or a standard RS232 printer via the DCI/MPA printer adaptor.

15 **Output Module (JP2)**
Output modules type CPA6.OM can be connected to this 5-pin plug, and are used to provide switched -ve outputs to LED's/relays etc. The outputs can be programmed such that they give ward status information and/or circuit mimic/alarm indications.

16 **LEC 1 (JP3) / LEC 2 (JP4)**
Two TSLEC8 PCBs can be connected via an interface lead to these connectors. The interface lead is provided with the TSLEC8.

17 **Factory Restart (JP5)**
If these pins are shorted during power-up all system parameters are reset to their factory default settings. If the engineer's passcode is lost or forgotten it can be reset to 1234 without losing any other program data as follows:

(a) Ensure that the system is fully unset and a master user passcode is available.

(b) Remove the cover from the control panel, this will cause a panel lid tamper alarm.

(c) Enter the master user passcode to silence the alarm.

(d) Place the blade of a small screwdriver between the "FACTORY RESTART" pins. A multi-tone sound indicates that the engineer's passcode has been reset. This action will be recorded in the system log.

18 System Learn (JP6)
If these pins are shorted whilst the system is powered, the control panel will re-learn all devices on all eight networks. If after a system learn the number of devices or device types have changed the display will show "RELEARN REQUIRED". In order to clear this message you must confirm the number of network device using the "Confirm Network Devices" option, *see page 69.*

19 Digi-Modem Plug (JP7)
A plug-on digicom or digi-Modem may be connected to this 7-pin plug to allow panel alarm information to be transferred to an alarm receiving centre. The digi-Modem is used for remote communication and programming via a P.C. A PCI/DCI lead also is also available which connects to this plug when using a P.C. with Lineload software for direct communication with the control panel.

20 Comms Port (JP8)
High speed serial communications port COM1 (for future use).

21 Engineer's Remote Keypad Plug (JP9)
Normally all system programming will be carried out from one of the installed remote keypads. However, an engineers remote keypad can be temporarily connected to this 6-pin plug to allow programming and testing to be carried out at the control panel. This feature can only be used if Network 1 does not have any XNodes connected to it, any keypads addressed as 'ENG' or LECs addressed as 'NULL'.

22 Kick Start (JP10)
If the system is to be powered only from the battery (no mains supply available) then the "Kick Start" pins must be momentarily shorted to enable the battery.

23 Power LED
This LED indicates that the system power (mains or battery) is healthy.

24 Heartbeat LED
When the system is functioning correctly this LED will continually flash on and off. If a fault occurs on the main PCB this LED will stop flashing.

25 Battery Fault
If the system battery is incorrectly connected to the control panel the "Battery Fault" LED will illuminate. The fault LED will only extinguish when the battery has been correctly connected or replaced.

26 NVM Upper & Lower
Two removable non-volatile memory (NVM) devices that store all system program parameters and the 4000 log events.

27 EPROM Upper & Lower
Two removable memory devices that store the operating software for the TS2500 system.

28 System Current Measurement (V)
The system current consumption can be calculated by measuring the voltage across this test point on the main PCB. Using a Voltmeter set to a low Voltage range measure the Voltage across the test point and multiply the reading by 10 to give the Total system current consumption i.e., a reading of 70mV = 700mA.

29 Tamper Switch
The lid tamper protection for the control panel.

30 Network Fuses 1 to 8
The supply voltage across [A] and [B] terminals each network is protected by its own fuse (1Amp).

31 Bell Fuse
The supply voltage across the [H/O+] and [H/O-] terminals that supply the external sounder is protected by this 1 Amp fuse.

32 Aux 12V Fuse
The supply voltage across the auxiliary 12V terminals are protected by this 1 Amp fuse.

Remote Keypads

Four types of remote keypads are available:

NETLCD Remote Keypad

The NETLCD remote keypad has a 32 character back-lit Liquid Crystal Display (LCD). The system must have at least one NETLCD remote keypad fitted in order for system programming to be carried out.

NETSTAR Remote Keypad

The NETSTAR remote keypad has a 8 character back-lit starburst Liquid Crystal Display (LCD).

The NETSTAR remote keypad is limited to setting, unsetting and part-setting, and cannot be used for system programming. The display will always show the system time.

NETLED Remote Keypad

The NETLED remote keypad has a 4 character LED display.

The NETLED remote keypad is limited to setting, unsetting and part-setting, and cannot be used for system programming. The display will always show the system time.

NETARM Remote Arming Station

The NETARM remote arming station only has two indicator LED's, a power LED and a programmable function LED which follows the programmable output.

The NETARM remote arming station is limited to setting, unsetting and part-setting, and cannot be used for system programming.

PCB Layouts & Connections

❶ **Detection Circuits.**
Each remote keypad has two programmable detection circuits.

❷ **Loudspeaker Volume.**
For adjusting the volume of a speaker wired to the remote keypad (NETLCD only).

❸ **LED Mimic.**
If this jumper link is set to the "enabled" position, the red (⚠) LED on the keypad will be "ON" when the keypad output is active.

❹ **Remote I/D.**
Used to select the remote keypads address. (ENG = Engineer).

❺ **Ward Sounder Control.**
If this jumper link is set to the "disabled" position, the remote keypad sounder will follow the control panel speaker output. If this link is set to "enabled", the remote keypad sounder will only activate when the panel speaker and the output on the remote keypad are active at the same time.

❻ **Loudspeaker Output.**
This terminal can be connected to a single 16 Ω Loudspeaker (NETLCD only).

❼ **Network Connections & O/P.**
Terminals A to E are used to connect the remote keypad to the control panel network. The O/P terminal is the programmable output.

❽ **Tamper Switch.**
Remote Keypad case tamper

❾ **ENT Key Disable.**
If the "ENT" key is enabled the remote keypad can be used to set/unset and access all user menus. If the "ENT" key is disabled the remote keypad can only be used to set and unset the system.

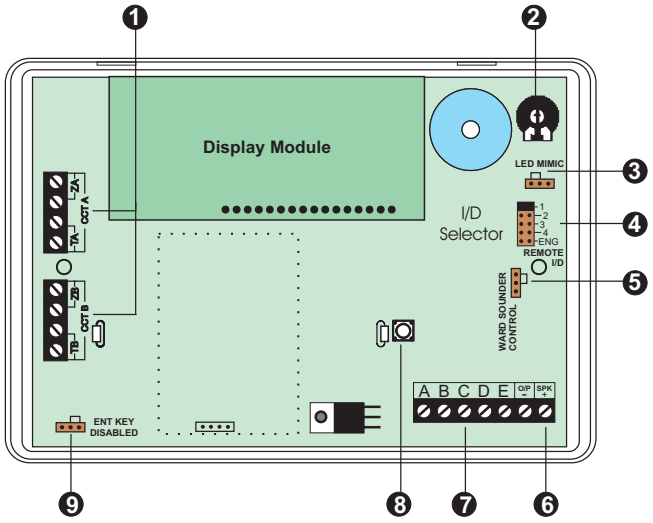


Figure 12. NETLCD, NETLED & NETARM PCB Layout

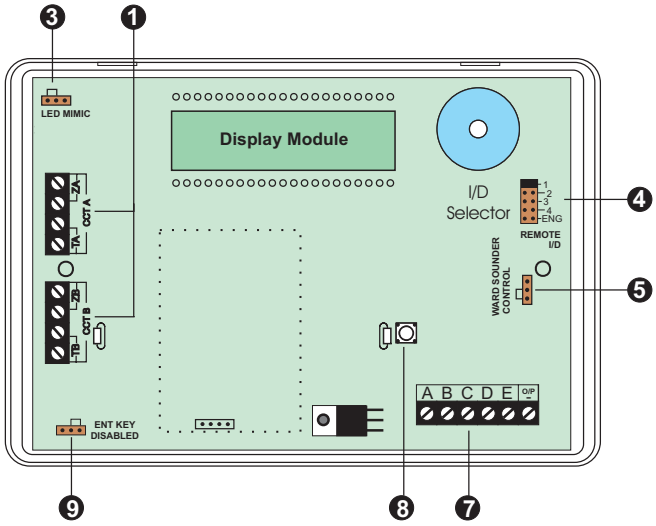


Figure 13. NETSTAR PCB Layout

Installing a Remote Keypad on the XNode

1. Separate the cover and base by using a flat blade screwdriver to gently prise the two halves apart. Then lift the cover assembly away from the base, noting that the PCB is connected to the under side of the cover.
2. Hold the base in position (keyhole to the top) and mark the appropriate securing holes, drill and plug the wall as required. Pass all cables into the base via the cable entry points as appropriate and secure the base to the wall.
3. Connect the network cables to the appropriate terminals.
4. Set the I/D jumper link to the required position, see table below, ensuring no two remote keypads on the same Node have the same I/D.
5. Set the "Remote Zone Enable" switch on the XNode to enable zones in the remote keypads as required.
6. If installing the NETSTAR, NETLED or NETARM it is recommended that the "ENT Key Disable" jumper is set to the disabled position. This will ensure that the keypad functions are limited to setting and unsetting.
7. Finally clip the remote keypad cover onto the base being careful not to trap any cables or to obstruct the tamper switch.

Remote Keypads connected to XNodes			
I/D	Circuit A	Circuit B	Output
1	Node Circuit A	Node Circuit B	Node Output A
2	Node Circuit C	Node Circuit D	Node Output B
3	Node Circuit E	Node Circuit F	Node Output A
4	Node Circuit G	Node Circuit H	Node Output B
ENG	N/A	N/A	N/A

Installing a Keypad on to the Network

1. Separate the cover and base by using a flat blade screwdriver to gently prise the two halves apart. Then lift the cover assembly away from the base, noting that the PCB is connected to the under side of the cover.
2. Hold the base in position (keyhole to the top) and mark the appropriate securing holes, drill and plug the wall as required. Pass all cables into the base via the cable entry points as appropriate and secure the base to the wall.
3. Connect the cables to the appropriate terminals.
4. Set the I/D selector jumper link to the required position, see table below, ensuring no two remote keypads, LECs or nodes have the same I/D.
5. Finally clip the remote keypad cover onto the base being careful not to trap any cables or to obstruct the tamper switch.

Remote Keypads connected to the Network			
I/D	Circuit A	Circuit B	Output
1	N001	N002	N01A
2	N009	N010	N02A
3	N017	N018	N03A
4	N025	N026	N04A
ENG	N033	N034	N05A

N = Network Number (1 - 8)

XNode

The XNode is very similar to that of TS900 Node in that it provides the facility to add an extra eight programmable detection circuits and two programmable outputs. However, the XNode can also drive extension loudspeakers, up to 4 remote keypads and an output module. The maximum number of XNodes that can be connected to any one network is 16.

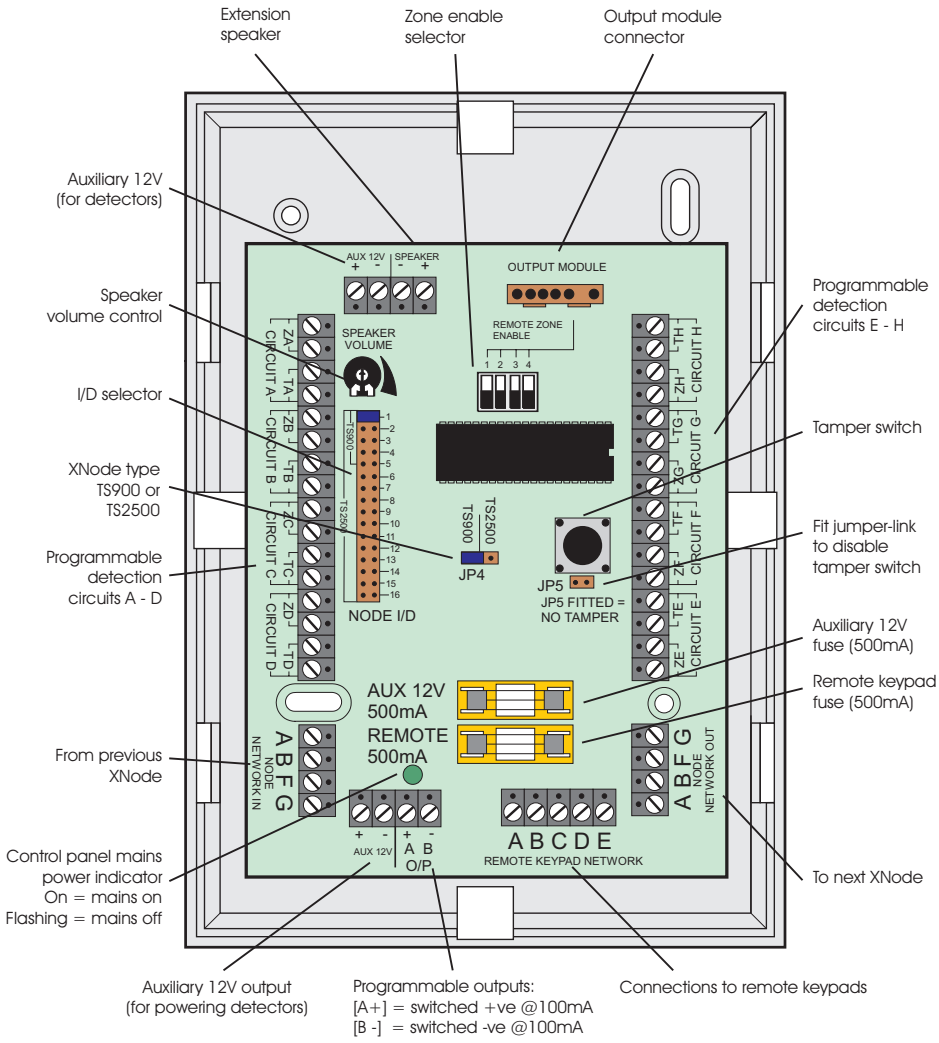


Figure 14. XNode Layout

I/D	Detection Circuits								Node Outputs	
	A	B	C	D	E	F	G	H	A+	B-
1	N001	N002	N003	N004	N005	N006	N007	N008	N01A	N01B
2	N009	N010	N011	N012	N013	N014	N015	N016	N02A	N02B
3	N017	N018	N019	N020	N021	N022	N023	N024	N03A	N03B
4	N025	N026	N027	N028	N029	N030	N031	N032	N04A	N04B
5	N033	N034	N035	N036	N037	N038	N039	N040	N05A	N05B
6	N041	N042	N043	N044	N045	N046	N047	N048	N06A	N06B
7	N049	N050	N051	N052	N053	N054	N055	N056	N07A	N07B
8	N057	N058	N059	N060	N061	N062	N063	N064	N08A	N08B
9	N065	N066	N067	N068	N069	N070	N071	N072	N09A	N09B
10	N073	N074	N075	N076	N077	N078	N079	N080	N10A	N10B
11	N081	N082	N083	N084	N085	N086	N087	N088	N11A	N11B
12	N089	N090	N091	N092	N093	N094	N095	N096	N12A	N12B
13	N097	N098	N099	N100	N101	N102	N103	N104	N13A	N13B
14	N105	N106	N107	N108	N109	N110	N111	N112	N14A	N14B
15	N113	N114	N115	N116	N117	N118	N119	N120	N15A	N15B
16	N121	N122	N123	N124	N125	N126	N127	N128	N16A	N16B

N = Network number (1 - 8)

Installing an XNode

1. Separate the cover and base by using a screwdriver to push 2 of the clips (left or right) inward from the base indents, then lift the cover clear.
2. If the XNode is being fitted inside the control panel you may remove the XNode PCB from its base and secure it to the base of the control panel using self adhesive feet. If required, the tamper switch can be disabled by fitting the jumper link across JP5, *see Figure 14.*
3. If the XNode is being fitted outside the control panel, hold the base in position and mark the four securing holes. Drill and plug the wall as required, then pass all cables into the base via the cable entry points as appropriate. Secure the base to the wall using the appropriate fixing screws.
4. Connect the network data cables to the appropriate terminals.
5. If required, connect the remote keypad network cables to the appropriate terminals.
6. If required, connect the extension loudspeaker to the appropriate terminals. The volume of the speaker is controlled by the speaker volume control, *see Figure 14.*
7. Set the I/D selector jumper link to the required position, see the table below, ensuring no two XNodes on the same network have the same I/D.
8. Set the "Remote Zone Enable" switch on the XNode to enable or disable the zones in the remote keypads as required.
9. Set JP4 to the TS2500 position.
10. Finally clip the XNode cover onto the base being careful not to trap any cables or to obstruct the tamper switch.

TS900 Node

The TS900 Node allows the facility to add an extra eight programmable detection circuits and two programmable outputs. Up to five can be connected to any one network.

☞ *TS900 Nodes and XNodes cannot be connected on the same network.*

Installing a TS900 Node

1. Separate the cover and base of the Node by using a screwdriver to push 2 of the clips (left or right) inward from the base indents, then lift the cover clear.
2. If the Node is being fitted inside the control panel you may remove the Node PCB from its base and secure it to base of the control panel using self adhesive feet. If required, the tamper switch can be disabled by fitting the jumper link across JP2, *see Figure 15.*
3. If the Node is being fitted outside the control panel, hold the base in position and mark the four securing holes. Drill and plug the wall as required, then pass all cables into the base via the cable entry points as appropriate. Secure the base to the wall using the appropriate fixing screws.
4. Connect the network data cables to the appropriate terminals.
5. Set the I/D selector jumper link to the required position, see the table below, ensuring no two nodes, remote keypads or LEC's on the same network have the same I/D.
6. Finally clip the Node cover onto the base being careful not to trap any cables or to obstruct the tamper switch.

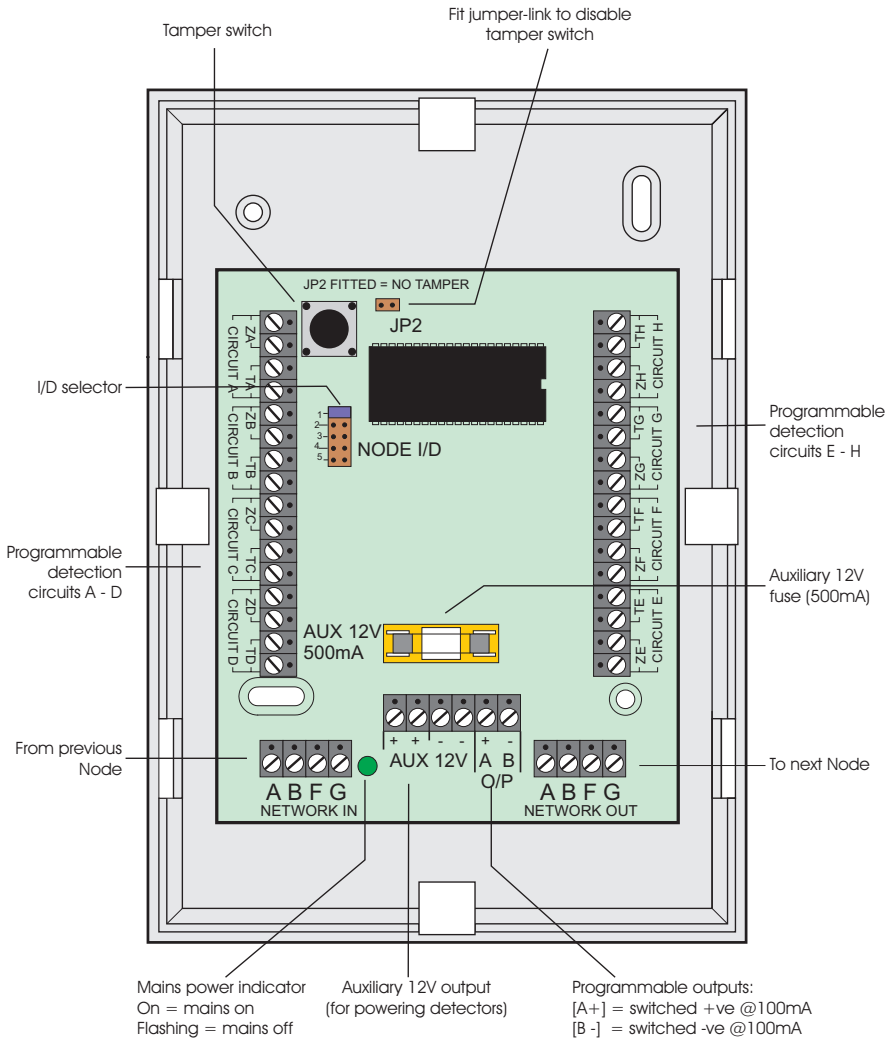


Figure 15. TS900 Node Layout

I/D	Detection Circuits								Node Outputs	
	A	B	C	D	E	F	G	H	A+	B-
1	N001	N002	N003	N004	N005	N006	N007	N008	N01A	N01B
2	N009	N010	N011	N012	N013	N014	N015	N016	N02A	N02B
3	N017	N018	N019	N020	N021	N022	N023	N024	N03A	N03B
4	N025	N026	N027	N028	N029	N030	N031	N032	N04A	N04B
5	N033	N034	N035	N036	N037	N038	N039	N040	N05A	N05B

N = Network number (1 - 8)

TS900 ID NODE

The TS900 ID Node can be used as an alternative to the standard TS900 or XNODE. The ID Node provides a single ID Detector Loop that allows you to connect up to 30 ID devices. Several configuration options allow you to use the TS900 ID Node on its own or with existing TS900 Nodes or XNodes. You can connect a maximum of two ID Nodes to one network.

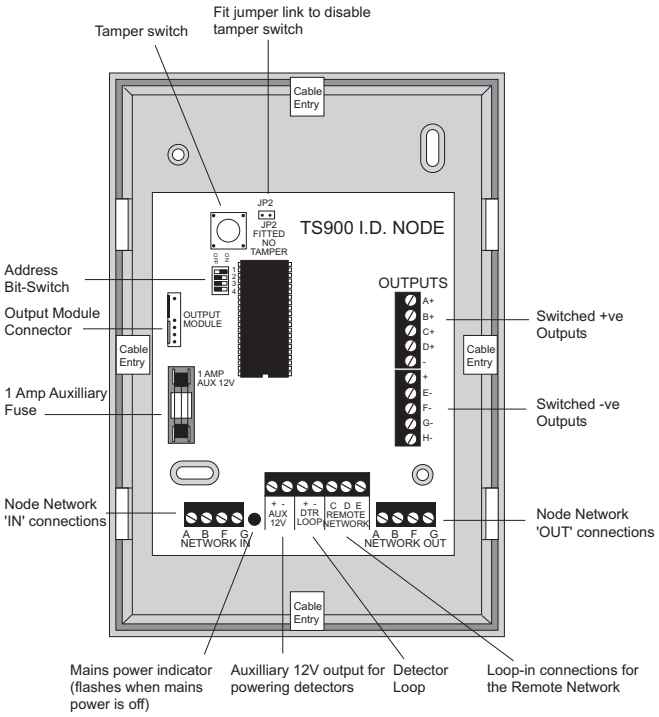


Figure 16. TS900 ID NODE PCB Layout

Installing a TS900 ID NODE

You can site the ID Node either inside the control panel or remotely. If you site the ID Node remotely the maximum cable length is 100m. Note that the supply voltage at the ID Node MUST be capable of supplying power for all the detection devices connected to the node. If there is not enough power then you will need to fit a remote power supply to the node.

1. Separate the cover. Use a screwdriver to push two of the clips (left or right) inwards from the base indents and lift the cover clear.

2. To fit an ID Node inside the control panel remove the ID Node PCB from its base and secure it inside the control panel using self-adhesive feet. Disable the ID Node tamper switch, if necessary, by fitting the jumper link across JP2 (see Figure 6).

3. To fit an ID Node remotely, hold the base in position and mark the four securing holes. Drill and plug the wall as required. Pass all cables into the base through the cable entry points as necessary. Secure the base to the wall using the appropriate fixing screws.

4. Connect "Node Network" cables to the appropriate terminals (see Figure 6).

5. Connect the ID Detection Loop to the + and - DTR Loop terminals. Take power for the detectors from the + and - AUX 12V terminals (see Figure 6).

Set the Address Bit-Switch to the required position (see table below).

For more information see "TS900 ID Node Installation Instructions" part number 18981.

1	2	3	4	Nodes Simulated	Biscuits Addressed	Node Outputs
ON	off	off	off	1, 2, 3 & 4	1 to 30	1-8 (A-H)
off	ON	off	off	5	1 to 8	9-10 (A-B)
ON	off	off	ON	1, 2 & 3	1 to 24	1-6 (A-F)
off	ON	off	ON	4 & 5	1 to 16	7-10 (A-D)

Address Bit Switch Options

TS700 LEC

The TS700 LEC allows the facility to add an extra two programmable detection circuits and one programmable output. Up to five can be connected to a network. The TS700 LEC would normally be used when upgrading existing systems that have two zone expansion devices, such as the CPA6 MKII.

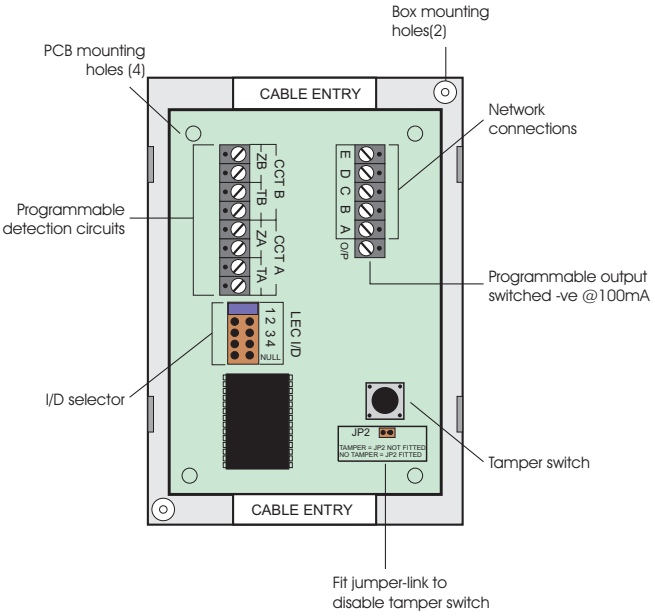


Figure 17. TS700 LEC Layout

Installing a TS700 LEC

1. Separate the cover and base of the LEC by using a screwdriver to push 2 of the clips (left or right) inward from the base indents, then lift the cover clear.
2. If the LEC is being fitted inside the control panel remove the LEC PCB from its base and secure it to the base of the control panel using self adhesive feet. If required, the tamper switch can be disabled by fitting the jumper link across JP2, *see Figure 17.*
3. If the LEC is being fitted outside the control panel, hold the base in position and mark the two securing holes. Drill and plug the wall, then pass all cables into the base via the cable entry points. Secure the base to the wall using the appropriate fixing screws.
4. Connect network data cables to the appropriate terminals.
5. Connect detection circuit cables to the appropriate terminals.
6. Set the I/D selector jumper link to the required position, see the table below, ensuring no two nodes, remote keypads or LEC's on the same network have the same I/D.
7. Fit the PCB into the base being careful not to trap cables or to obstruct the tamper switch.

TS700 LECs connected to the Network			
I/D	Circuit A	Circuit B	Output
1	N001	N002	N01A
2	N009	N010	N02A
3	N017	N018	N03A
4	N025	N026	N04A
Null	N033	N034	N05A

N = Network Number (1 - 8)

TSLEC8

The TSLEC8s are designed to fit inside the control panel, each LEC allows the facility to add an extra eight programmable detection circuits to the system. Mounting space and holes have been provided inside the control panel to allow two TSLEC8s to be fitted. The TSLEC8s are assigned to "Network 0".

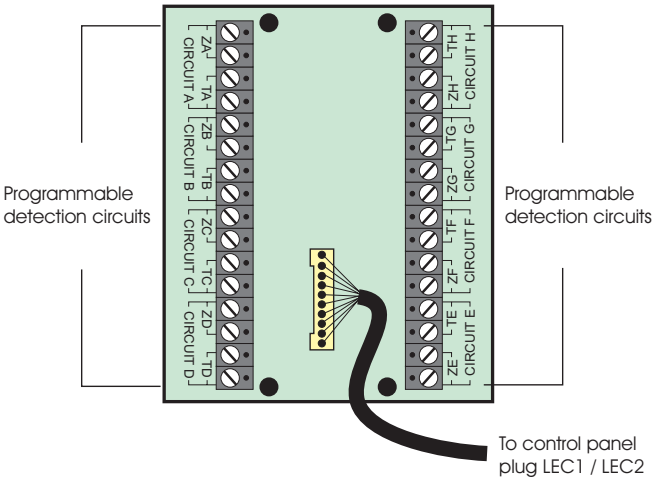


Figure 18. TSLEC8 Layout

Installing the TSLEC8

1. Insert the four mounting pillars provided into the four holes in the TSLEC8 and secure in the base of the control panel.
2. Connect one end of the interface lead into the TSLEC8 and the other into the control panel connector LEC 1 (detection circuits 0001 to 0008) or LEC 2 (detection circuits 0009 to 0016).
3. Connect detection circuit wiring to the appropriate terminals.

Detection Circuit Wiring

All detection circuits may be wired as "End Of Line" (EOL) or "Double Pole" (DP). Both methods can be used on the same equipment.

Double Pole

The DP method requires the following:

- The detector alarm and tamper contacts are connected to the zone and tamper terminals respectively.
- The combined alarm and tamper loop resistance must be less than 100 Ohms.
- The maximum number of detection devices allowed in a circuit is ten.
- Normally open devices such as exit terminator buttons are connected across the zone terminals and then must be programmed with the "Invert" attribute.
- If the detection circuit is not used links can be fitted across the zone and tamper loops or programmed as "Not Used".

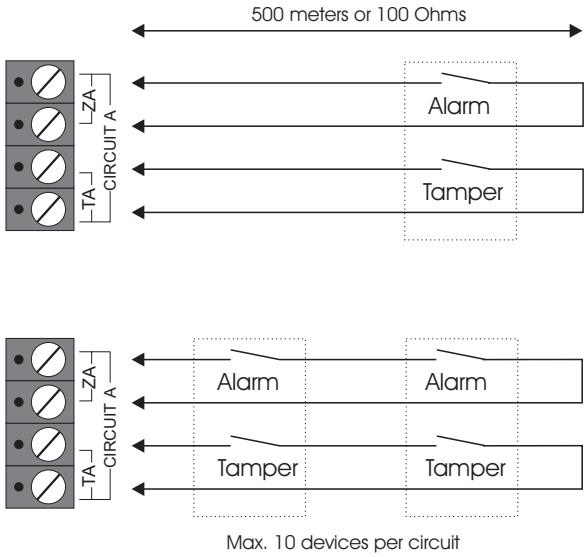


Figure 19. Double Pole Wiring

End Of Line

The EOL method requires the following:

- The detector alarm contacts must have a 4K7 shunt resistor fitted.
- A 2K2 End of Line (EOL) resistor must be fitted at the point in the circuit furthest from the control panel.
- Loop resistance with the EOL resistor shorted must be less than 100 Ohms.
- The maximum number of detection devices allowed in a circuit is ten.
- Normally open devices such as exit terminator buttons are connected in the same way as normally closed devices and then must be programmed with the "Invert" attribute.
- If the detection circuit is not used links can be fitted across the zone and tamper loops or programmed as Not Used.

External Sounders

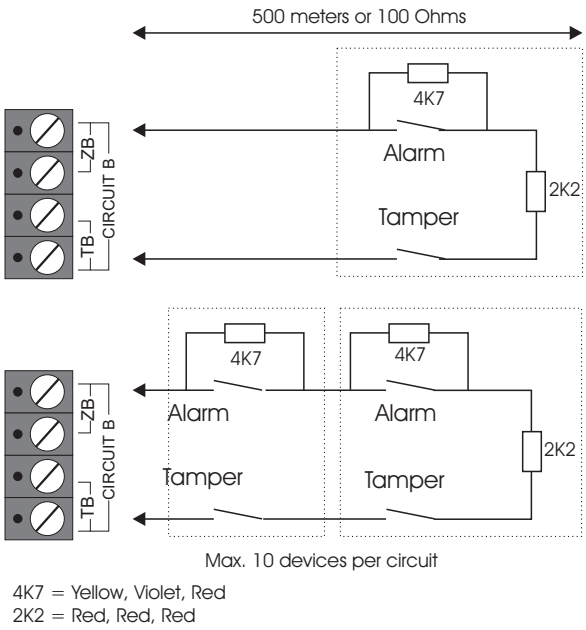


Figure 20. End Of Line Wiring

Control Panel Sounder Connections

The following terminals have been provided to allow connections to an external sounder:

H/O+ This is used to provide a permanent +ve hold off to external sounders, strobes etc. It is protected by a 1A fuse (Bell 12V).

H/O - This is used to provide a permanent -ve hold off to external sounders, strobes etc.

TR - This is the negative tamper return connection from the external sounder unit.

STB - This is the strobe trigger output which switches to 0V on alarm and is rated at 500mA. Normally this output is connected to the strobe -ve , the strobe +ve is connected to [H/O+].

TRG - This is the bell trigger output which switches to 0V on alarm and is rated at 500mA. This output can be programmed for SAB or SCB operation, and operates as follows:
SAB - Switches to 0V on alarm and provides a maximum of 500mA.
SCB - Provides a negative hold off (500mA), which is removed on alarm.

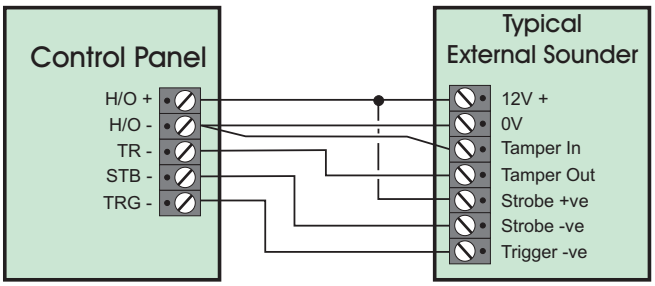


Figure 21. External Sounder Connections

Installing an External Sounder from a Node

Both the TS900 Node and XNode have two programmable outputs, these can be utilised to drive an external sounder. However, it is recommended that a remote power supply is fitted next to the Node in order to provide sufficient power for the external sounder. A relay module such as the Menvier RM3A is also required to drive the external sounder. The figure below shows the connection details.

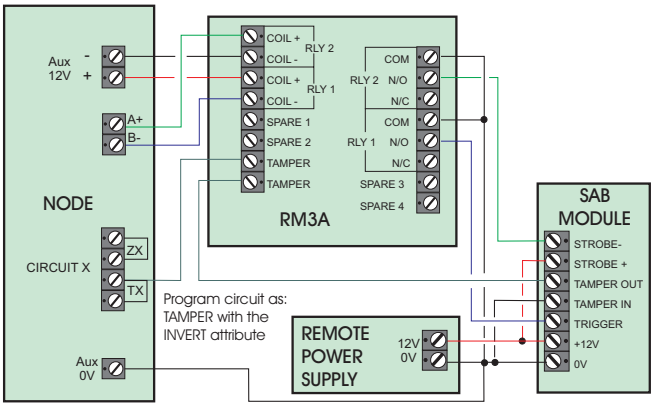


Figure 22. External Sounder Connections - Node

Extension Loudspeakers

Control Panel Connections

Up to two extension loudspeakers can be connected across the [+] and [-] SPEAKER terminals on the control panel PCB. The volume for the loudspeaker is controlled via a programming option, *see "Set Volume Level" on page 83.* The control panel loudspeaker can also be assigned to one or more wards so that it only operates under relevant conditions.

XNode Connections

Up to two extension loudspeakers can be connected across the [+] and [-] SPEAKER terminals on the XNode PCB. The volume for the loudspeaker is controlled via the "SPEAKER VOLUME." control. The XNode loudspeaker can also be assigned to one or more wards so that it only operates under relevant conditions.

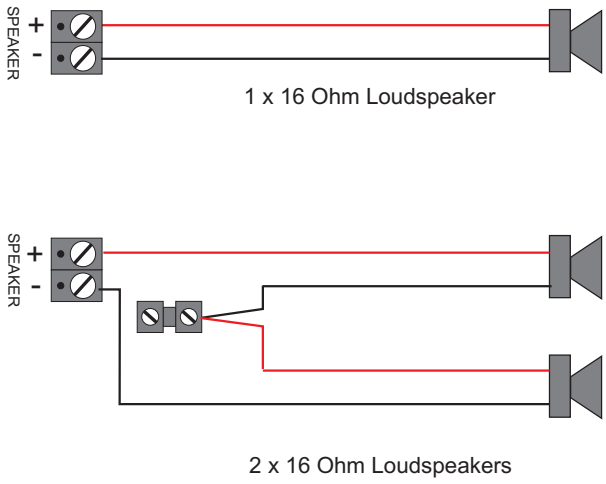


Figure 23. Loudspeaker Connections

RedCARE or Stand-alone Digicom

A stand-alone digital communicator, RedCARE STU or Paknet interface card can be connected to the system to transfer panel status information to a dedicated Alarm Receiving Centre.

The control panel has the following outputs for connection to a digicom/RedCARE:

Digicom Outputs 1 to 8

These are the programmable digicom/RedCARE output connections. They are normally at +12V and switch to 0V when active. The outputs can be inverted so that they switch from 0V to +12V when active, *see "Configuration" on page 46.* Each output will source 5mA in the +12V condition and sink 100mA in the 0V condition.

+DC POWER

This provides the +12V power to the digicom/RedCARE. This output is un-fused and therefore must only be used if the device is fitted inside the control panel. The 0V supply for the digicom/STU can be picked up from any of the auxiliary 0V terminals.

LINE FLT

When this input is switched to +12V, a "Line Fault" condition is generated. A "Line Fault" condition in the unset mode will cause a "Chime" type tone to be generated every minute, which can be silenced by entering any valid passcode. A "Line Fault" condition in the set mode will cancel the "Bell Delay".

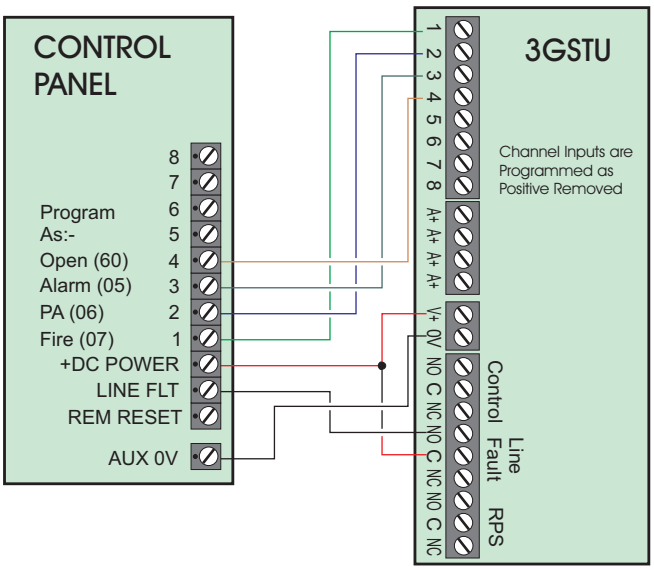


Figure 24. 3GSTU RedCARE Connections

DC54/DC58 Plug-on Digicoms

A plug-on digital communicator DC54 or DC58 can be fitted inside the control panel to allow alarm status information to be transferred to a dedicated Alarm Receiving Centre. The unit should be fitted in accordance with the installation instructions supplied with it and connected to the control panel plug DIGI-MODEM (JP7) using the lead provided with the unit. The NVM within the digicom can be programmed via the control panel, *see "Digi/Modem options" on page 73.*

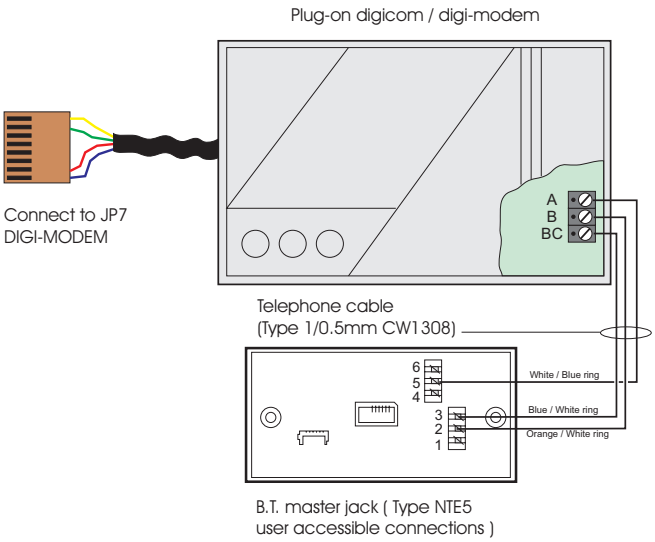


Figure 25. DC54/DC58 Connections

DC58M Plug-on Digi-modem

A plug-on digi-modem DC58M can be fitted inside the control panel to allow remote interrogation and programming via a personal computer (PC). It will also function as a standard digicom (if required). The unit should be fitted in accordance with the installation instructions supplied with it and connected to the control panel plug DIGI-MODEM using the lead provided with the DC58M. The NVM within the digi-modem can be programmed via the control panel, *see "Digi/Modem options" on page 73.* The modem data is also programmed via the control panel.

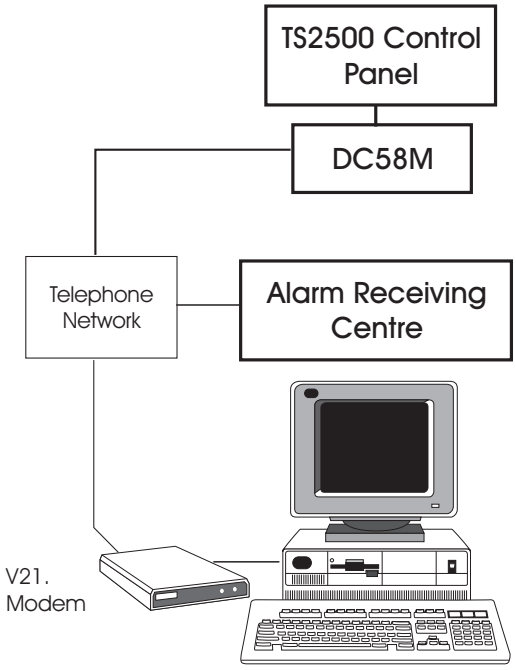


Figure 26. DC58M Digi-modem Schematic

Output Modules

The Output Module provides eight switched -ve outputs each rated at 100mA. They can be used to drive LED's or relays etc. Each module is supplied with an interface lead which allows it to be connected to the control panel or XNode. Output modules are normally fitted inside the equipment they are controlling and can be positioned up to 100 metres away.

Control Panel Connections

When connected to the control panel the output modules can be programmed to give ward status indications and/or circuit mimic/alarm indications.

XNode Connections

When connected to the XNode, the output module will provide circuit mimic indications for the eight detection circuits of the XNode.

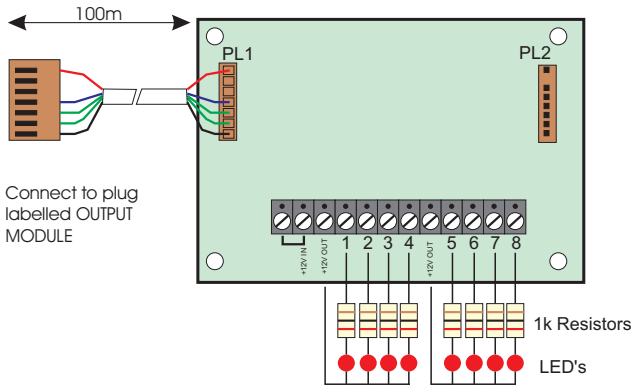


Figure 27. Output Module Connections

Connecting a Printer

The TS2500 supports two type of printers, the CPA6 printer (no longer available) and any standard RS232 printer. When using an RS232 printer a DCI/MPA printer adaptor will be required. Menvier Security supply a DATAC printer kit which consists of a portable RS232 printer, charger unit and DCI/MPA adaptor.

Using the CPA6 Printer

1. Plug the CPA6 printer directly on to the PRINTER plug (JP1) on the main control panel PCB.
2. The printer will printout a header, when finished the system program details and event log can be printed.
3. When finished unplug the printer. If the printer is left connected and the on-line printer option is enabled *(see "Configuration" on page 46)* events will be printed as and when they occur.

Using the DATAC / RS232 Printer

1. Plug the DCI/MPA on to the PRINTER plug (JP1) on the main control panel PCB.
2. Plug the other end of the DCI/MPA into the DATAC or RS232 printer.
3. In order for the printer to work correctly ensure the printer is set to the following:

Baud rate	=4800
Parity	= None
Start bits	= 1
Stop bits	= 2
Data bits	= 8
DTR	= Normal

4. When set-up correctly the system program details and event log can be printed.
5. When finished unplug the MPA/DCI. If the printer is left connected and the on-line printer option is enabled *(see "Configuration" on page 46)* events will be printed as and when they occur.

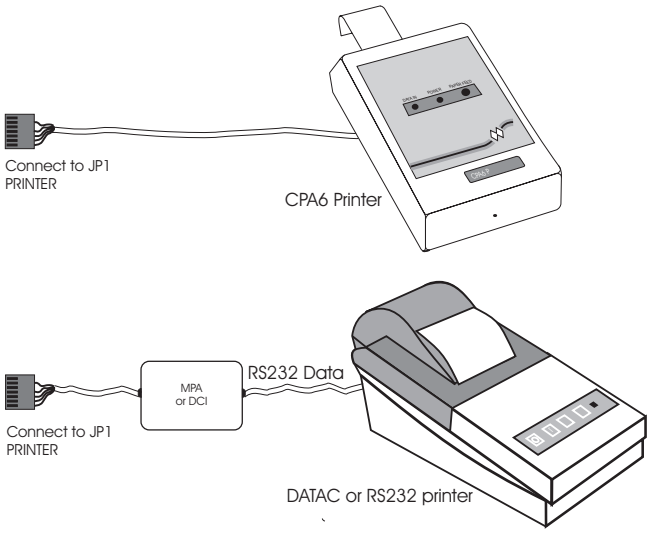


Figure 28. Printer Connections

Programmable Outputs

The TS2500 system has many programmable outputs which can be used to drive relays, LED's etc. Each output can be programmed for a different function, see "Programmable Output Types" on pages 35 - 39.

Control Panel Outputs

The control panel has four programmable outputs:

[1]	Set of voltage free change-over contacts rated at 1 Amp.
[-2-]	Switched -ve output rated at 500mA.
[+3]	Switched +ve output rated at 500mA.
[+4]	Switched +ve output rated at 500mA.

Node Outputs

Each XNode and TS900 Node has two programmable outputs:

[+A]	Switched +ve output rated at 100mA.
[-B]	Switched -ve output rated at 100mA.

Remote Keypads & TS700.LECs

Each remote keypad and TS700 LEC has one programmable output:

[O/P]	Switched -ve output rated at 100mA.

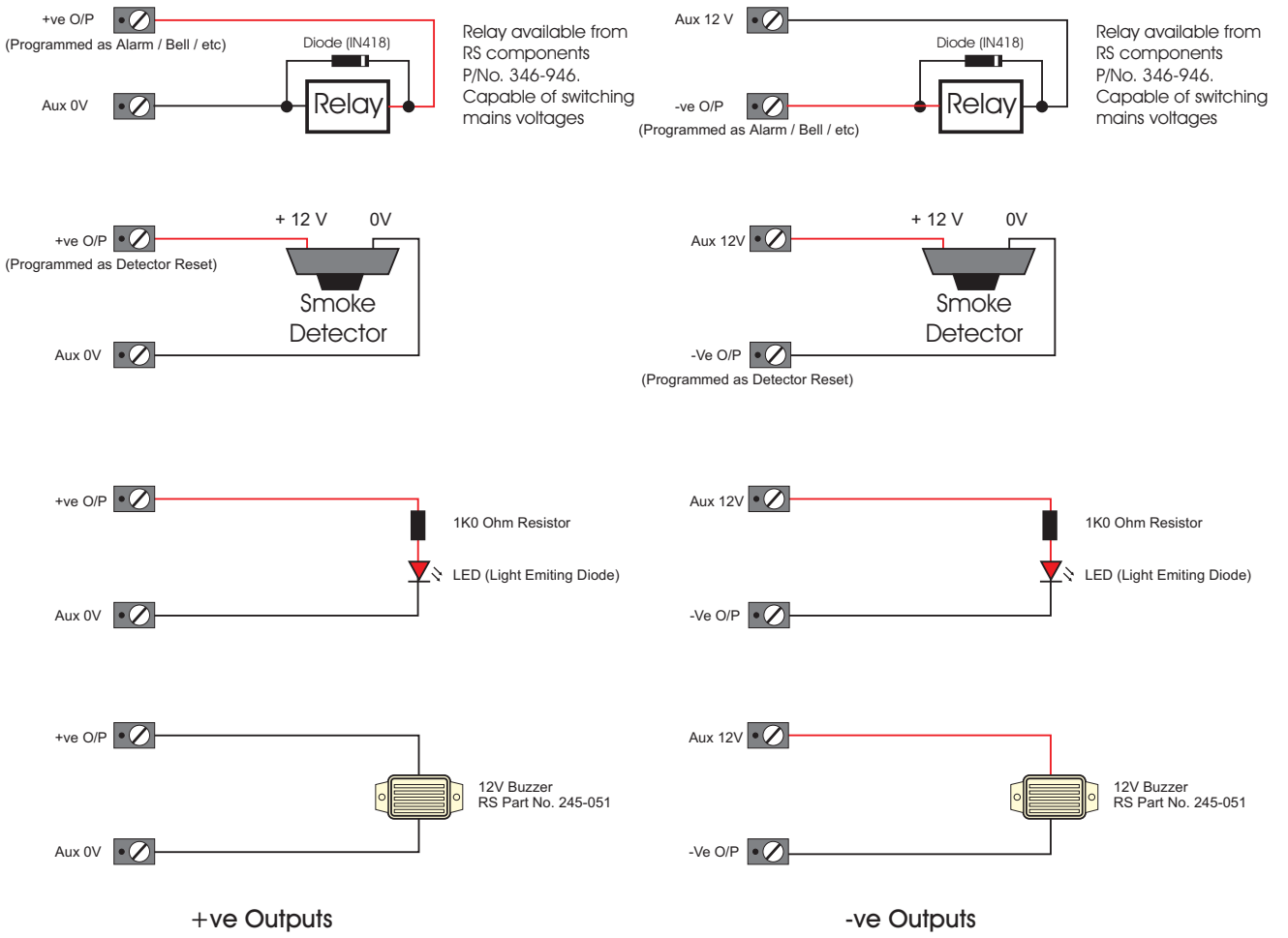


Figure 29. Output Examples

Monitoring a Remote Power Supply

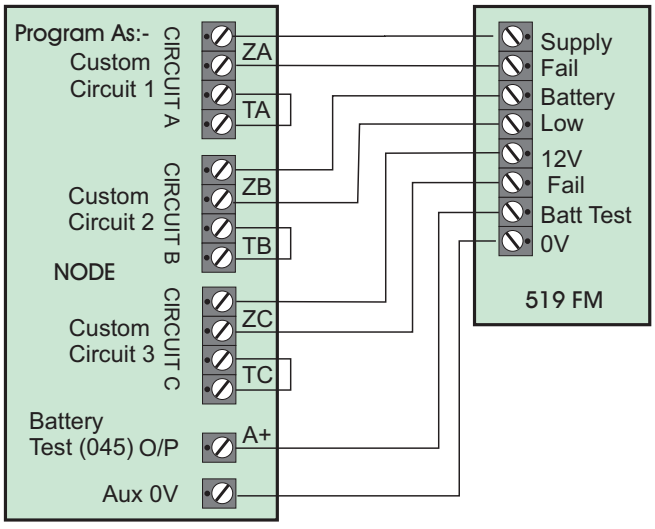
The TS2500 can be configured to monitor a 519XB power supply unit using a 519FM fault monitor PCB. The 519FM plugs directly onto the 519XB PCB plug labelled JP1.

The 519FM PCB monitors any combination of:

- Supply Failure (mains)
- Low Battery Voltage
- 12V Failure (fuse failure)

In order to monitor all the above fault conditions, the outputs on the 519FM must be connected to three detection circuits. It is recommended that the circuits are programmed as custom circuits as shown in Figure 30. For details on configuring "Custom Circuits", *see page 72.*

If required, the PSU battery can be "load tested" periodically by connecting a switched +ve output to the 519FM BATT TEST terminal. The battery test occurs at pre-programmed intervals and every time the engineer logs off the system.



Custom Circuit Programming

	Bell	Digi	Sounder	Warning	Custom o/p		Circuit Text
Custom Circuit 1				Yes		In Unset	PSU A.C. Fail
						In Part Set	
						In Full Set	
Custom Circuit 2				Yes		In Unset	PSU Batt. Fault
						In Part Set	
			Yes			In Full Set	
Custom Circuit 3						In Unset	PSU Fuse Fail
						In Part Set	
						In Full Set	

Figure 30. Monitored Power Supply Connections

Pre Power-Up Checks

Once the system is installed, but prior to powering-up give the system one final check to ensure that:

1. The wiring conforms to the requirements detailed in this manual and that all connections are correct (A to A, B to B etc.).
2. All system cables are kept clear of mains supply cables, telephone cables and R.F. cables. It is recommended that cable ties are used to keep cables separated.
3. Verify that maximum cable lengths and resistance's are not exceeded.
4. Mains power supply cables to the system are connected to an un-switched fused spur.
5. Grommets are used where cables enter metal housings to ensure that the cable insulation is not compromised.

Initial Power-Up

To power the system for the first time:

1. Place a small screwdriver blade between the pins on the control panel PCB, marked "FACTORY RESTART". This will ensure the factory default parameters are set, *see page 49* for a list of defaults.
2. Switch on the 230V mains supply and remove the screwdriver blade after 5 seconds.
3. Check that the power LED on the control panel PCB is illuminated.
4. Check that the remote keypads display "Panel Lid tamper". The remote keypad sounders and extension loudspeakers will operate.
5. Enter the engineers passcode (default 1234) to silence the sounders.
6. Connect the standby battery.

Power-Up Checks

When the initial power-up checks have been completed, check the following:

1. Switch off the 240V mains supply and ensure that the DC voltage at each device on each network is greater than 11V whilst the system is powered from its standby battery.
2. Switch on the 240V mains supply and measure the DC voltage between the mains earth connection and AUX +12V. Then measure the DC voltage between the mains earth connection and AUX 0V. In both cases the measurement should be 1V or less. If the voltage is greater than 1V, the system has an "Earth Fault" and all cables should be checked for isolation to Earth.
3. Using a voltmeter measure the DC voltage across the control panel PCB test points (V) and calculate the system current consumption. Ensure that the reading is not greater than 1.5A.
4. Repeat test (3) with the system in an alarm condition and ensure that the reading is not greater than 1.5A.

☞ ***The TS2500 has an overload protection circuit. If the power supply is overloaded, the display will show: "PSU OVERLOAD ! ! !" and sounder will sound.***

Relearn Required Message

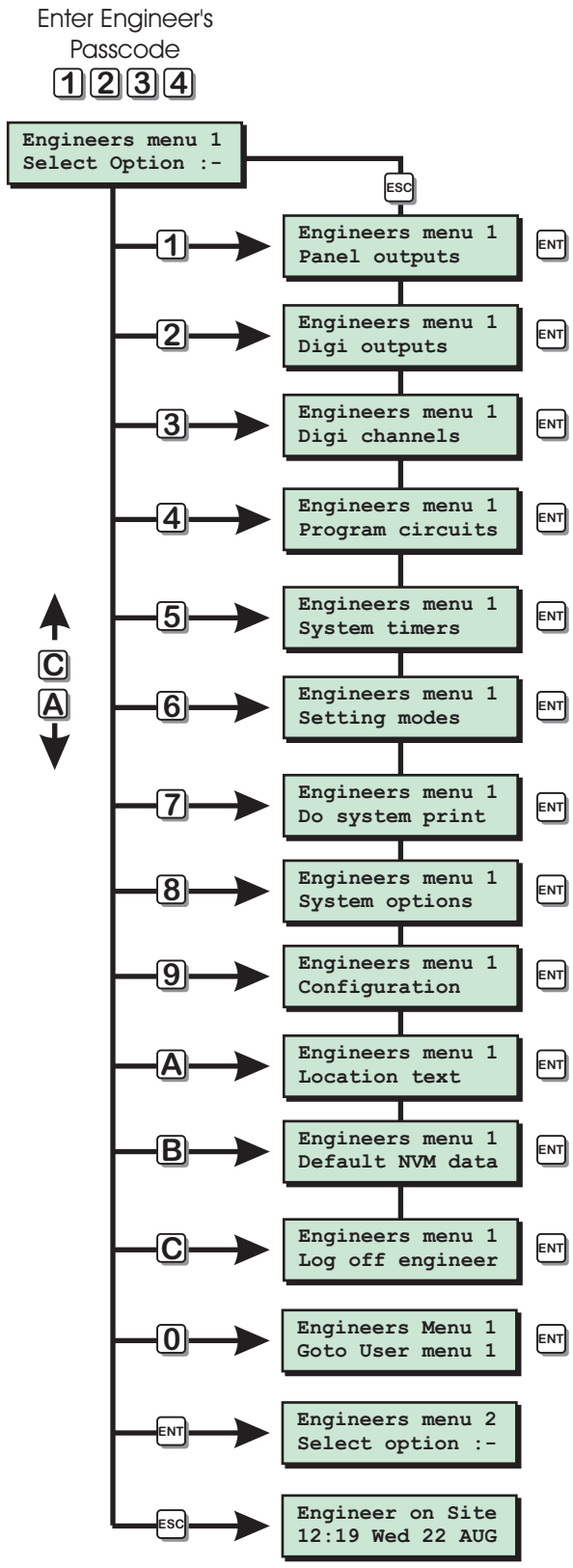
When the system is powered up after a factory restart, the remote keypads will display "RELEARN REQUIRED". On entering your engineer's passcode the system will automatically select the "Confirm Network Devices" option, *see "Confirm Network Devices" on page 69*. After confirming the correct number of devices the "RELEARN REQUIRED" message will be cleared. Once cleared, entering your engineer's passcode will select "Engineers menu 1".

Engineer's Menu 1

Introduction

Engineers menu 1 is the first of four engineers menus, which is selected when the engineer's passcode is entered. The Engineer may leave "Engineer menu 1" by pressing the [ESC] key. The system will return to the unset condition but the remote keypads will show "Engineer-on- site". This message will be cleared the next time a valid user passcode is entered or by selecting the log off engineer option in engineer's menu 1.

Menu contents



Engineers Menu 1

Panel Outputs [1-1]

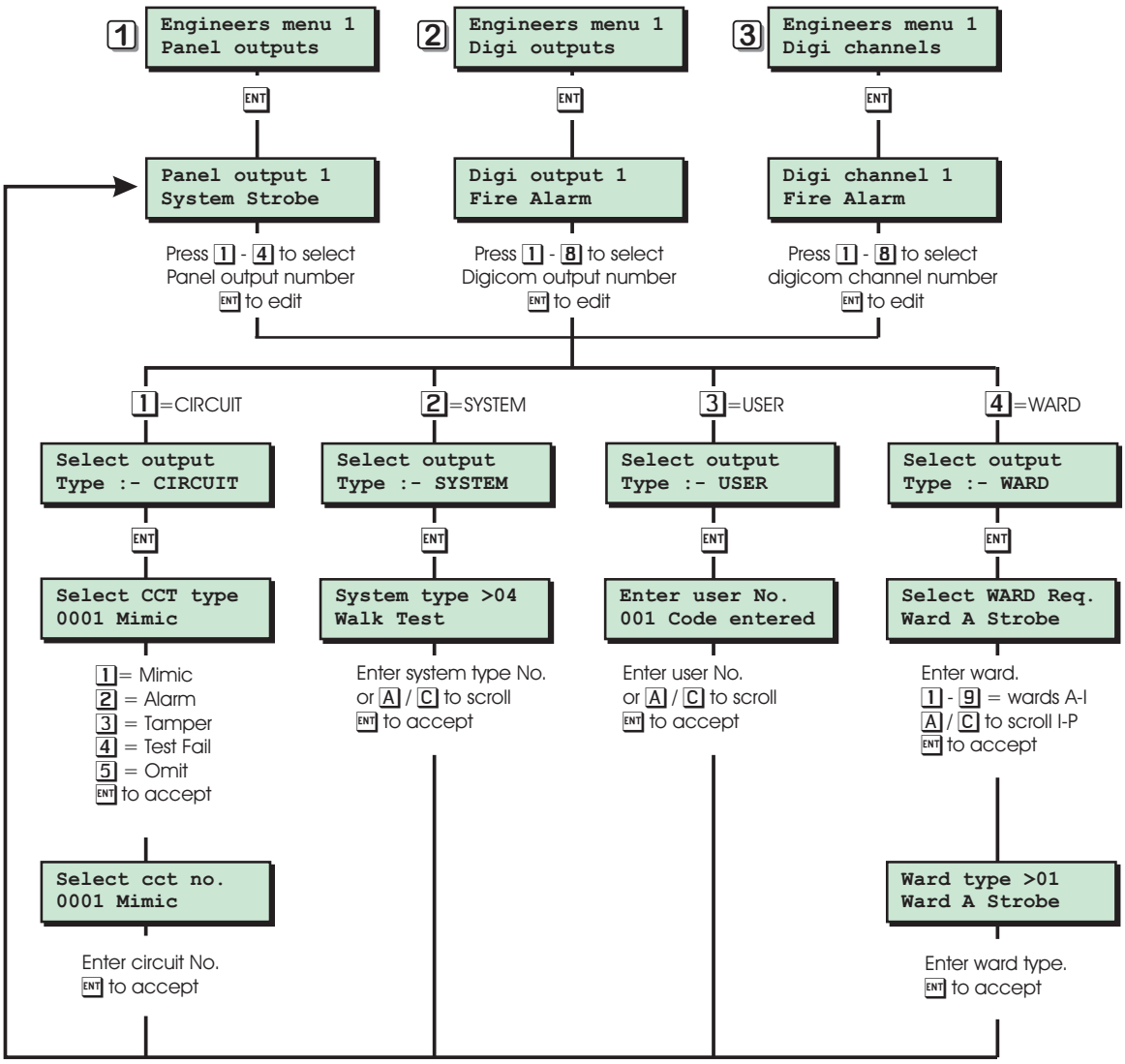
Outputs 1 - 4 on the control panel PCB can be programmed to any of the output types shown on pages 35 - 39. The relay output [Output 1] can also be Inverted, *see "Configuration option 11" on page 46.*

Digicom Outputs [1-2]

The 8 digicom outputs on the control panel PCB can be programmed to any of the output types shown on pages 35 - 39. In addition, all outputs can be inverted, *see "Configuration option 12" on page 46.*

Digicom Channels [1-3]

The 8 plug-on digicom channels can be programmed to any of the output types shown on pages 35 - 39.



Panel Outputs, Digicom Outputs and Digicom Channels Flowchart

Programmable Output Types

The TS2500 output types are broken down in to four specific groups:

Circuit Output types related to the status of detection circuits 0001 to 8128.

System Output types related to the status of the alarm system in general.

User Output types related to the user codes 001 to 199 being used.

Ward Output types related to the status of wards A to P.

Circuit Output Types

1 **Mimic**
Activates when the selected circuit is active, deactivates when the selected circuit is healthy.

2 **Alarm**
Activates when the selected circuit causes an alarm, deactivates when alarm is reset.

3 **Tamper**
Activates when the selected circuit is in tamper, deactivates when tamper is reset.

4 **Test Fail**
Activates when the selected circuit is triggered whilst on test, deactivates when the engineer clears the test failures.

5 **Omit**
Activates when the selected circuit is omitted, deactivates when the selected circuit is reinstated.

System Output Types

00 **Bell (SAB)**
Activates when the control panel bell output is on, deactivates when the control panel bell output is off.

01 **System Strobe**
Activate when the control panel strobe output is on, deactivates when the control panel strobe output is off.

02 **Switch 12 Volts**
Activates when any ward is set, deactivates when any ward goes into alarm or entry mode. This output is normally used for latching detectors

03 **Detector Reset**
Active all the time to power latching detectors (smoke detectors, shock sensors etc.), deactivates for 2 seconds when a code is entered to set the first ward.

04 **Walk Test**
Activates when the walk test option is selected, deactivates when the walk test is exited.

05 **Alarm**
Activates when any ward is in alarm, deactivates when all ward alarms have been reset.

06 **Panic Alarm (PA)**
Activates when any PA alarm is detected, deactivates when all PA alarms have been reset.

07 **Fire Alarm**
Activates when any fire alarm is detected, deactivates when all fire alarms have been reset.

08 **System Set**
Activates when any ward is set, deactivates when all wards are unset.

09 **Code Accepted**
Activates for the duration of the "Access Code Time" after any valid passcode has been entered.

10 **24hr Alarm**
Activates when any 24Hr alarm is detected, deactivates when all 24Hr alarms have been reset.

11 **2nd Alarm**
Activates for the duration of the "2nd Alarm Time" when any ward has a second detector causing an alarm (alarm confirmation).

12 **Courtesy Light**
Activates for the duration of the "Courtesy Time" when any ward is in entry or if any keypad is operated.

13 **Engineer on site**
Activates when the engineer's code is entered, deactivates when the engineer is logged off.

14 **Circuits Omitted**
Activates when any circuit is omitted , deactivates when all circuits are reinstated.

15 **Auxiliary Alarm**
Activates when any ward auxiliary alarm is activated, deactivates when all ward auxiliary alarms are reset.

16 **Always on**
Active at all times.

17 **Bell (SCB)**
This is output type 00 inverted.

18 **Auxiliary Fuse**
Activates when the auxiliary fuse blows.

19 **Auto-Setting**
Activates for 1 minute prior to any ward being set automatically.

20 **Tamper Alarm**
Activates when a tamper alarm is triggered, deactivates when all tamper alarms have been reset.

21 Phone Line Fault
Activates when a line fault is detected, deactivates when the telephone line is restored.

22 Mains Power Off
Activates when the mains power is removed from the control panel, deactivates when the mains power is restored.

23 Exit / Entry
Activates when any ward is in entry or exit mode.

24 Test CCTS Failed
Activates when any circuit fails test, deactivates when reset by the engineer.

25 1st Knock
Activates when any double knock circuit activates for the first time, deactivates when the circuit is activated for the second time or when the system is reset.

26 Digi Failed
Activates for 5 seconds when the digicom fails to communicate (plug-on only).

27 Digi Successful
Activates for 5 seconds when the digicom communicates successfully (plug-on only).

28 Digi Active
Activates when the digicom is activated, deactivates when the digicom has finished communicating (plug-on only).

29 2nd entry only
Activates when any ward starts the second entry timer, deactivates when the second entry time expires.

30 Entry Only
Activates when any ward starts its entry mode, deactivates when the ward is unset.

31 Exit Only
Activates when any ward starts its exit mode, deactivates when the ward is set.

32 Custom o/p 1 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

33 Custom o/p 2 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

34 Custom o/p 3 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

35 Custom o/p 4 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

36 Custom o/p 5 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

37 Custom o/p 6 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

38 Custom o/p 7 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

39 Custom o/p 8 on
Activates when a combination of output conditions occur, *see "Custom Outputs" on page 71.*

40 Time Switch 1 On
This output is controlled by the settings of "Time Switch 1" , *see "Time Switches" on page 62.*

41 Time Switch 2 On
This output is controlled by the settings of "Time Switch 2" , *see "Time Switches" on page 62.*

42 Time Switch 3 On
This output is controlled by the settings of "Time Switch 3" , *see "Time Switches" on page 62.*

43 Access Code
If configuration option 29 is set to "Access code only" this output will only activate when an "Access" type passcode is entered and will remain active for the duration of the "Access Code Time". If configuration option 29 is set to "Access all codes" this output will activate when any valid passcode is entered and will remain active for the duration of the "Access Code Time".

44 Payment Required
Activates when the "Payment Time" has expired, deactivates when engineer resets the system.

45 Battery Test On
Activates during the battery test and for the duration of the "Battery Test" duration.

46 Rem Service Call
Activates when the system is on-line with a remote PC and the Lineload software.

47 System Full Set
Activates when all defined wards are set, deactivates when any ward is unset.

48 24hr Omit Active
Activates when the 24Hr omit group is omitted, deactivates when the 24Hr group is reinstated.

49 PC Output 1 On
This output is controlled by a PC with Lineload software.

50 PC Output 2 On
This output is controlled by a PC with Lineload software.

51 PC Output 3 On
This output is controlled by a PC with Lineload software.

52 PC Output 4 On
This output is controlled by a PC with Lineload software.

53 Service Required
Activates when the "Service Time" has expired, deactivates when the engineer passcode is entered.

54 Reset Required
Activates when the system requires an "Engineer Reset", deactivates when the system is reset either by the engineer or Remote Reset.

55 Always Off
This output never activates

56 Duress Alarm
Activates when a duress code is entered, deactivates when the duress alarm is reset.

57 System Part Set
Activates when any part of the system is set, deactivates when all wards are unset or the system is fully set.

58 Battery Fault
Activates when a battery fault occurs, deactivates when the fault is cleared.

59 Set Failed
Activates when any ward fails to set, deactivates when the set fail condition is reset.

60 System Open
Activates when the system is unset, deactivates when any part of the system is set.

61 Shunt code
Activates for 5 seconds when a shunt code is entered.

62 Random Output On
Activates randomly (between 5 and 60 minutes).

63 Modem Lockout
Activates when the modem is locked-out (four failed attempts), deactivates when a master code is entered or after 4 hours.

64 Auxiliary 1 tamp
Activates when auxiliary tamper 1 is activated, deactivates when the alarm is reset.

65 Auxiliary 2 tamp
Activates when auxiliary tamper 2 is activated, deactivates when the alarm is reset.

66 Bell box tamper
Activates when the bell tamper is triggered, deactivates when the alarm is reset.

67 Panel lid tamper
Activates when the panel lid tamper is activated, deactivates when the alarm is reset.

68 Chime Mimic
Activates for 2 seconds when any chime circuit is activated.

69 24hr CCT Omitted
Activates when any 24Hr circuit is manually omitted, deactivates when all omitted circuits are reinstated.

70 Monitored O/P On
Activates when a monitored circuit is triggered and stays active for the duration of the "Monitor Cct Time".

71 Alarm Abort
Activates for the duration of the "Abort duration" timer when the alarm has been aborted by the user .

72 Code Lock 1 on
Activates when "Code lock timer 1" is on, deactivates when the timer is off.

73 Code Lock 2 on
Activates when "Code lock timer 2" is on, deactivates when the timer is off.

74 Code Lock 3 on
Activates when "Code lock timer 3" is on, deactivates when the timer is off.

75 Rem call enabled
Activates when a user enables remote service call, deactivates when a user disables remote service call or after four hours.

76 Auto-set timer 1
Activates when the "Auto-set timer 1" is on, deactivates when timer is off.

77 Auto-set timer 2
Activates when the "Auto-set timer 2" is on, deactivates when timer is off.

78 Auto-set timer 3
Activates when the "Auto-set timer 3" is on, deactivates when timer is off.

79 Relearn Required
Activates when the system requires a relearn, deactivates when the relearn has been performed.

80 Custom cct 1
Activates when the custom circuit 1 is triggered, deactivates when custom circuit 1 is reset.

81 Custom cct 2
Activates when the custom circuit 2 is triggered, deactivates when custom circuit 2 is reset.

82 Custom cct 3
Activates when the custom circuit 3 is triggered, deactivates when custom circuit 3 is reset.

83 Custom cct 4
Activates when the custom circuit 4 is triggered, deactivates when custom circuit 4 is reset.

84 Custom cct 5
Activates when the custom circuit 5 is triggered, deactivates when custom circuit 5 is reset.

85 Custom cct 6
Activates when the custom circuit 6 is triggered, deactivates when custom circuit 6 is reset.

86 Custom cct 7
Activates when the custom circuit 7 is triggered, deactivates when custom circuit 7 is reset.

87 Custom cct 8
Activates when the custom circuit 8 is triggered, deactivates when custom circuit 8 is reset.

88 Exit Fault
Activates when a circuit is in a fault condition during exit, deactivates when the fault is reset.

User Output Types

1 Code entered
If configuration option 26 is set as "Timed Code Output" the output will activate when the selected user passcode is entered and deactivate when the "Access Code Time" has expired.
If configuration option 26 is set as "Latched Code Output" the output will activate when the selected user passcode is entered and deactivate when the selected user passcode is re-entered.

Ward Output Types

00 Ward Bell-SAB
Activates when the selected ward is in alarm, deactivates when the selected ward bell duration timer expires.

01 Ward Strobe
Activate when the selected ward is in alarm, deactivates when the selected ward is reset.

02 Ward Switch 12
Activates when the selected ward is set, deactivates when the selected ward is in alarm or entry. This output is normally used for latching detectors.

03 Ward Det. Reset
Active all the time to power latching detectors (smoke detectors, shock sensors etc.), deactivates for 2 seconds when a code is entered to set the selected ward.

04 Ward Walk Test
Activates when the selected ward is walk tested, deactivates when the walk test is exited.

05 Ward Alarm
Activates when the selected ward is in alarm, deactivates when the selected ward is reset.

06 Ward P.A. Alarm
Activates when the selected ward PA alarm is detected, deactivates when the selected ward PA alarm is reset.

07 Ward Fire Alm.
Activates when the selected ward Fire alarm is detected, deactivates when the selected ward Fire alarm is reset.

08 Ward Set
Activates when the selected ward is set, deactivates when the selected ward is unset.

09 Ward 2nd Entry
Activates when the selected ward second entry timer is running.

10 Ward 24hr alm.
Activates when the selected ward 24Hr alarm is detected, deactivates when the selected ward 24Hr alarm is reset.

11 Ward 2nd Alarm
Activates for the duration of the "2nd Alarm Time" when the selected ward has a second detector causing an alarm.

12 Ward Entry
Activates when the selected ward is in entry mode, deactivates when the selected ward is unset.

13 Ward Exit
Activates when the selected ward is in exit mode, deactivates when the selected ward is set.

14 Ward CCTS Omit
Activates when the selected ward has any circuits omitted, deactivates when all circuits in the selected ward are reinstated.

15 Ward Access
If configuration option 29 is set to "Access code only" this output will only activate when an "Access" type passcode assigned to the selected ward is entered and will remain active for the duration of the "Access Code Time". If configuration option 29 is set to "Access all codes" this output will activate when any valid passcode assigned to the selected ward is entered and will remain active for the duration of the "Access Code Time".

16 Ward Set Fail
Activates when the selected ward fails to set, deactivate when the selected ward is reset.

17 Ward Bell-SCB
Activates when the selected ward is not in alarm, deactivates when the selected ward bell triggers. Re-activates when ward bell duration timer expires.

18 Ward Settling
Activates when the selected ward settling timer is running.

19 Ward Clear
Activates when the selected ward is clear of faults when setting, deactivates when the selected ward has a fault during setting or when ward is unset.

20 Ward Tamper
Activates when the selected ward detects a tamper alarm, deactivates when the selected ward tamper alarm is reset.

21 Ward Reset Req
Activates when the selected ward requires a "Reset", deactivates when the ward has been reset.

22 Ward Lock-Out
Activates when a security key is active in the selected ward, deactivates when the security key is healthy.

23 Ward Chime On
Activates when any circuit in the selected ward causes a chime tone.

24 Ward 24hr Omit
Activates when the selected ward has one or more 24hr circuits omitted, deactivates when the selected ward has all its 24hr circuits reinstated.

25 Ward Monitor
Activates when a monitored circuit is triggered in the selected ward and stays active for the duration of the "Monitor Cct Time".

26 Ward Alm Abort
Activates for the "Abort Duration" when the alarm in the selected ward has been aborted by the user.

27 Ward Exit Flt
Activates when the selected ward has a fault during the setting procedure, deactivates when the fault is cleared.

28 Ward Exit/Ent.
Activates when the selected ward is in entry or exit.

29 Ward Sndr ctl.
Activates when the selected ward is in exit, entry or alarm.

30 Ward Perimeter
Activates when the selected ward has a Night Perimeter circuit in alarm, deactivates when the alarm is reset.

31 Ward Shunted
Activates when the selected ward has one or more circuit shunted, deactivates when the circuits are reinstated.

32 Ward Auto set
Activates when the selected high security ward is unset, deactivates when the high security ward is set.

Program Circuits [1-4]

The TS2500 can monitor up to 1040 detection circuits, each circuit must be programmed in order for the system to respond correctly.

Circuit Numbering

The circuit number is always a 4 digit number, the first digit refers to the network number and can be 0 to 8 (0 is used for the TSLEC8s at the control panel). The next three digits refer to the circuits numbers and can be 001 to 128 (except when using network 0 which only has a range of 001 to 016). For example to select the first circuit on network 4 you would enter 4001.

Circuit Types

The circuit type defines how the circuit will respond when it is triggered. The circuit can also be programmed to respond differently when unset, *see "Unset Circuit Types" on page 81.* The following circuit types are available:

Not Used
A circuit that will never generate any alarm.

Night
A circuit that will generate a full alarm when the selected ward is set.

24hr
A circuit which is monitored at all times. When triggered in the unset condition a local alarm is generated and when triggered in the set condition a full alarm is generated.

PA Silent
A circuit which is monitored at all times. When triggered it will activate any outputs programmed as P.A.

PA Audible
A circuit which is monitored at all times. When triggered it will activate any outputs programmed as P.A. and generate a full alarm condition.

Fire
A circuit that is normally connected to a smoke detector. When triggered it will generate a fire tone on the internal sounders, the external sounders are pulsed for the bell duration and any outputs programmed as fire will be activated.

Auxiliary
A circuit which is monitored at all times. When triggered it will activate any outputs programmed as Auxiliary.

Final Exit
This must be the first detector or door contact that is triggered when entering the protected area. When the setting mode for the area is programmed for Final Exit setting, opening and closing of this circuit during the exit procedure will cause the ward to set. Once set, activation of this circuit will start the entry timer for that ward.

Exit Term
A circuit that is normally connected to a push button outside the protected area, which can be used to finally set the area.

Ward Key
A circuit normally connected to a shunt-lock or keyswitch, which is used to set and unset one or more wards.

Shunt Key
A circuit normally connected to a shunt-lock or keyswitch, which is used to shunt (isolate) one or more shuntable circuits for the selected wards. If the shunt key circuit is not assigned to any wards the shuntable circuits of the device its connected to are shunted when the shunt key operated.

Tamper
A circuit monitored at all times. When triggered in the unset condition a local alarm is generated and when triggered in the set condition a full alarm is generated. This circuit type can be used for a negative tamper return for monitoring SABs etc. When using the circuit for this type of monitoring the circuit MUST have the "Invert" attribute selected.

Security
A circuit used to lock-out keypad operation.

24hr Silent
As 24hr but remains silent in the unset and set condition.

Night Perimeter
A circuit that is used for perimeter protection. When triggered the internal and external sounders are activated but no digicom output. If any other circuit is triggered the digicom is activated.

Custom Circuits
There are eight customisable circuit types, *see page 72 for details.*

Circuit Attributes

Each circuit type can have one or more attributes assigned to it to alter its operation. The following circuit attributes can be programmed:

Access
Circuits programmed with this attribute are automatically isolated during the entry procedure to allow a "walk through" route for the user to access the remote keypad.

Double Knock
Circuits programmed with this attribute will only cause an alarm condition if:
a) The circuit is activated twice within the Double Knock timer, *see System Timers.*
b) The circuit remains active for the whole duration of the Double Knock timer.

On Test
Circuits with this attribute will be disabled from the system for the period set by the "Test Time", *see System Timers.* If the circuit is activated during this period the activation will be logged and the user is informed of the circuit failure when operating the system. The test fail message can only be cleared with the Engineers passcode. If at the end of the test period no activation's have occurred the test attribute is automatically removed. The test period is initiated by entering the Engineers passcode.

Omittable
Circuits with this attribute can be omitted by the users.

Reset
This attribute is normally assigned to a circuit that is connected to a vibration or smoke detector, so that during the "Detector Reset" period the circuit is not monitored.

Activity
Circuits with this attribute are monitored so that when they activate the circuit activation is stored. When the user attempts to set the system, any circuits not activated during the "Activity Delay" period are reported, indicating that the detector may be obstructed. An example of this feature would be to assign movement detectors within a warehouse area with this attribute. This would report to the user at the time of setting any detectors that have become obstructed by pallets etc.

Entry
Circuits with this attribute will initiate the entry procedure when the system is part-set and respond as normal when full set. This attribute must be assigned to all circuits that are required to initiate the entry procedure in the part set condition.

Chime Tone 1
Circuits with this attribute will cause the internal sounders and remote keypad sounders to generate a single two-tone "chime" sound if the circuit is activated.

Chime Tone 2
Circuits with this attribute will cause the internal sounders and remote keypad sounders to generate a double two-tone "chime" sound if the circuit is activated.

Chime Tone 3
Circuits with this attribute will cause the internal sounders and remote keypad sounders to generate a triple two-tone "chime" sound if the circuit is activated.

Inverted
Circuits with this attribute are inverted so that a healthy circuit is seen as active and an active circuit is seen as healthy. This attribute should be used when monitoring normally open devices such as exit terminator buttons and pressure pads etc.

Shuntable
Circuits with this attribute are shunted (Isolated) when a "Shunt Key" circuit is operated or when a "Shunt code" is entered.

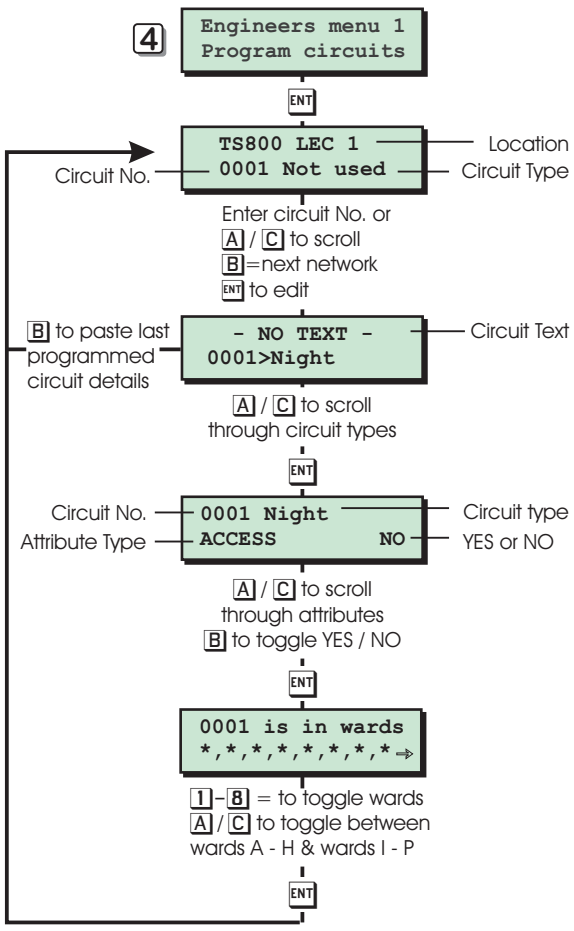
Beam Pair
Circuits with this attribute will only cause an alarm if two or more circuits with the beam pair attribute are in alarm in the same ward within the "Beam Pair" timer.

Eng. Test
Circuits with this attribute are enabled during the engineer false setting routine.

Monitored
Circuits with this attribute activate the "Monitored" output type when triggered.

Non Latching
This attribute is used to make the "Ward Key", "Shunt Key" or "Security Key" non latching.

Circuit Wards
The TS2500 has sixteen wards which are labelled A to P, each circuit can be assigned into one or more wards. Circuits assigned to more than one ward will only be armed when all the wards they are in are set.



Program Circuits Flowchart

System Timers [1-5]

There are 103 programmable system timers which are listed below.

Exit time wards A to P
When using timed exit this timer sets the delay between the user initiating the exit procedure and the ward actually setting. If during the exit time an "Exit Terminator" circuit is activated the any remaining exit time is cancelled and the ward sets immediately. *(Default = 030 Seconds)*.

Entry dly wards A to P
When the ward is set and the entry procedure is initiated, the entry timer starts to count down. If a valid user passcode has not been entered when the timer reaches zero, the internal sounders are activated and the "2nd entry delay" timer is started. *(Default = 015 Seconds)*.

Digi dly wards A to P
When an alarm is triggered the communication of an alarm signal to the central station for the selected ward can be delayed by the value of this timer. *(Default = 000 Seconds)*.

Bell dly wards A to P
When an alarm is triggered the activation of the external sounder for the selected ward can be delayed by the value of this timer. *(Default = 000 Minutes)*.

Bell dur wards A to P
When the "Bell Delay" for the selected ward has expired the duration of the external sounder can be controlled by the value of this timer. *(Default = 020 Minutes)*.

Exit settle time
When a ward is set by "Final Exit" or "Exit Terminator", detectors that are on the exit route sometimes take several seconds to settle after activation. The delay programmed in this timer is used to ensure that these detectors are not active before the ward is set. *(Default = 005 Seconds)*.

2nd Entry delay
When the ward "Entry Dly" has expired the "2nd entry delay" timer starts to count down. If at the end of this time the ward has not been unset then an alarm will be generated for the relevant ward. *(Default = 015 Seconds)*.

Double knock dly
This is the "Double Knock" time window in which either two circuit activations must occur to generate an alarm condition, or the circuit must remain active for the whole duration of this time to generate an alarm condition. This will only apply to circuits with the "Double Knock" attribute. *(Default = 010 Seconds)*.

Abort duration
This timer controls the duration of the "Abort" output. *(Default = 010 Seconds)*.

Abort delay
This timer sets the period in which the alarm signal may be aborted following an alarm condition. When an alarm occurs, the "Abort Output" is only activated if the system is unset within this period. If the system is unset after this period the abort output is NOT activated. *(Default =180 Seconds)*.

2nd alarm time
This timer controls the duration of the "Second Alarm" (Confirmation) output. *(Default = 060 Seconds)*.

Courtesy time
This timer is used to control the duration of the output type "Courtesy Light". *(Default = 120 Seconds)*.

Access code time
This timer is used to control the duration of the output types "Code Accepted", "User code entered" and "Ward Access". *(Default = 005 Seconds)*.

Menu time-out
This timer controls how long a user menu can be selected before timing out and returning the system to the unset condition. *(Default = 180 Seconds)*.

Line fault delay
This timer delays the "audible" line fault indication when a telephone line fault occurs. The display and any outputs programmed as "Phone Line Fault" are not affected. *(Default = 030 Seconds)*.

AC off delay
This timer delays the "audible" mains off indication when the mains power is removed. The display and any outputs programmed as "Mains Power Off" are not affected. *(Default = 030 Seconds)*.

Monitor cct time
This timer affects the duration of the output types "System Monitored" and "Ward Monitor". *(Default = 060 Seconds)*.

Beam Pair time
This is the time window in which two "Beam Pair" circuit activations must occur in order for the system to generate an alarm condition. *(Default = 010 Seconds)*.

Battery test dur
This timer controls the duration of the battery test. *(Default = 030 Seconds)*.

Answer ring time
This timer is used to allow modems and faxes/answer machines to be used on the same telephone line. For example if the timer is set to 30 seconds, the PC will dial into the alarm system and allow the line to ring for 3 or 4 seconds then hang up. The PC will then dial in again and providing this has occurred within 30 seconds of the first time it rang in, the panel modem will answer the call. *(Default = 030 Seconds)*.

Global bell dly.
If the system is fully set and the Global/Ward Bell configuration option (23) is set to "Global" the system will apply this timer to all alarms for all wards, otherwise it will use the relevant ward bell delay timer. *(Default = 000 Minutes)*.

Global bell dur.
If the system is fully set and the Global /Ward Bell configuration option (23) is set to "Global" the system will apply this timer to all alarms for all wards, otherwise it will use the relevant ward bell duration timer. *(Default = 020 Minutes)*.

Activity delay
This timer sets the duration within which all "Activity Monitored" circuits must be activated to ensure that the system may be set without displaying inactive circuits. Once the timer expires it is restarted and all "Activity Monitored" circuits must once again be re-activated. *(Default = 060 Minutes)*.

Defer setting by
When using the auto-set feature users may defer setting of the ward(s) by the amount set in this timer. *(Default = 010 Minutes)*.

Battery test
The timer controls the frequency of the system battery test. *(Default = 060 Minutes)*.

Hi Security time
This timer sets the duration in which a "High Security" ward can remain unset before it automatically attempts to set itself. When a "High Security" ward is unset activation of any circuit with that ward will reset this timer. *(Default = 000 Minutes)*.

Cct test time
This timer varies the number of days that the "Test" attribute may be applied to a circuit. If the timer is set to 000 then circuits will remain on test until the "Test" attribute is removed. *(Default = 014 Days)*.

Service time
The installation company may use this timer to periodically generate "SERVICE REQUIRED" message so that the user is reminded that a service call is required. The users may continue to set and unset the system. When the engineer attends the site and enters their passcode the message is cleared. The service timer is re-started when the engineer re-selects this timer option. To disable this feature set the timer to 000. *(Default = 000 Days)*.

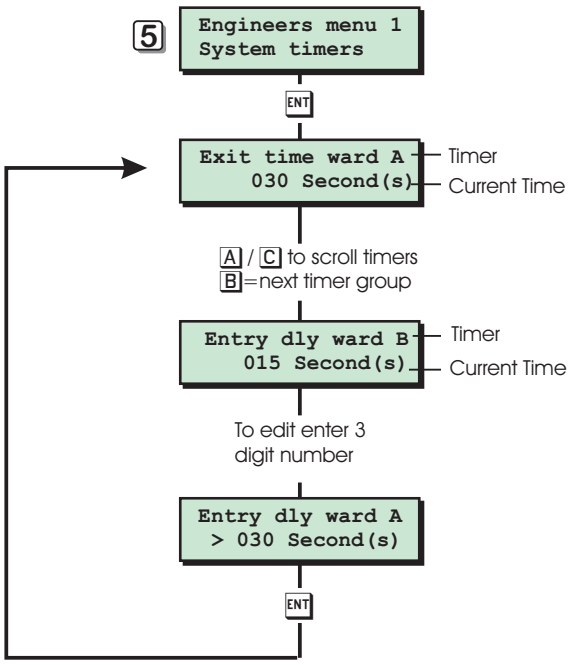
Payment time
The installation company may use this timer to prevent the users from setting the system. When the timer expires the selected ward will lock into "Engineer Reset" and the users are unable to set the selected ward until the engineer has reset the system or the user has been provided with a "Remote Reset" code.

To disable this feature set the timer to 000. The payment timer can be selectively applied to wards A to P, *see "Equipment Wards" on page 80. (Default = 000 Days)*.

Test call every
If the system is fitted with a plug-on digicom (DC54, DC58 or DC58M) it is possible for the control panel to make the digicom send a timed test call to the central station. The "Test Call" timer sets the frequency of activation in days. Once programmed the digicom will send the test call at 3.00AM. *(Default = 000 Days)*.

Select menu time
This timer determines how long the "Set/Unset" menu is displayed after a user passcode is entered. *(Default = 010 Seconds)*.

Custom o/p 2 tmr
This timer determines how long "Custom Output 2" will remain active after it is triggered. *(Default = 000 Seconds)*.



System Timers Flowchart

Setting Modes [1-6]

Each ward A to P can be programmed to set by one of the following modes:

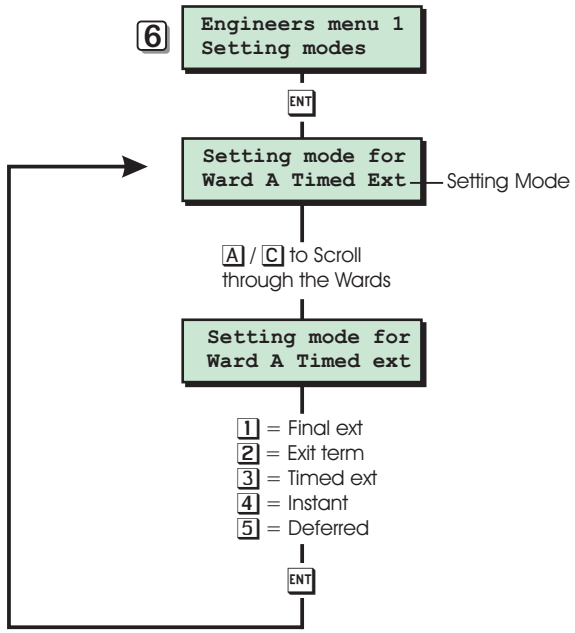
Final Exit
The ward will set when the "Final Exit" circuit is activated and after the "Settle Time" has expired.

Exit Terminator
The ward will set when the "Final Exit" circuit is activated, the "Exit Terminator" button is pressed and after the "Settle Time" has expired.

Timed Exit
The ward will set when the "Exit Time" has expired or if the "Exit terminator" button is pressed.

Instant
The ward will set instantly.

Deferred
As Timed Exit, however, if any circuits are activated during the exit procedure the exit timer is restarted.



Setting Modes Flowchart

Do System Print [1-7]

The system print option is broken down into sections so that the engineer may print only the relevant details. The sections are as follows:

Custom Text
Prints the details of "Reset Message", "Location Text", "Printer Header", "Remote reset Message", "Printer Prefix", Banner Message", Part Set Banner", "Aux Tamper 1", "Aux Tamper 2" and "Modem String".

Modem Data
Prints the details of "Call back No.1", "Call back No.2", "Call back No.3", "Modem Site No" and "Modem Password"

User codes
Prints the "User Number", "User Name", "User Type", "User Wards", User Auto Sets" and "User Auto Unsets" for each defined user.

Configuration
Prints the details of all "Configuration Options".

Outputs
Prints the details of "Panel Outputs", "Digicom Outputs", "Digicom Channels", "Custom Outputs" and "Node/Rem Outputs"

Setting Modes
Prints the details of "Setting Modes" for wards A to P.

System Timers
Prints the details of all "System Timers" and "System Options".

Time Switches
Prints the details of "Time Switch 1", "Time Switch 2" and "Time Switch 3".

Code Locks
Prints the details of "Code lock Group 1", "Code lock Group 2" and "Code lock Group 1"

Auto-set times
Prints the details of "Auto-set Timer 1", "Auto-set Timer 2" and "Auto-set Timer 3".

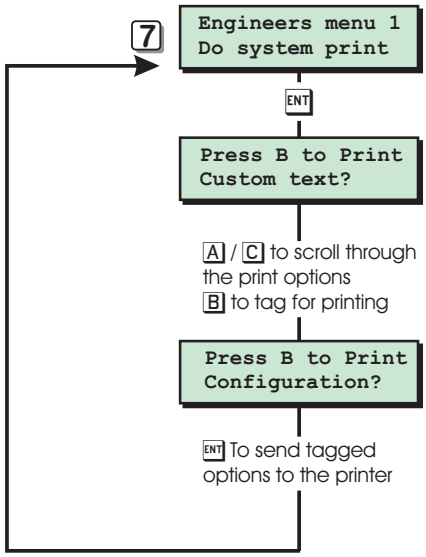
Custom Circuits
Prints the details of the eight "Custom Circuits".

Circuits
Prints the network number, circuit number, circuit status, set circuit type, unset circuit type, circuit attributes, ward assignment and circuit resistance for each defined detection circuit.

Equipment Wards
Prints the ward assignment for all equipment.

Net Equipment
Prints the ward assignment nodes and remote keypads.

Part set groups
Prints the ward assignment and text of the ten part set groups.



System Print Flowchart

System Options [1-8]

The system options are as follows:

Number of rearms

At the end of the bell duration time the system re-arms all circuits that are healthy. Circuits that are still in an alarm are isolated until they change to a healthy condition. This counter controls the number of times that a "circuit" will re-arm before it is locked out of the system. The rearm feature can be selectively applied to wards A to P, *see page 80. (Default = 003)*.

Modem rings

This counter is for use with the DC58M, it allows the engineer to specify how many rings are required before the DC58M answers the call. If the counter is set to 000 it will answer the call immediately. *(Default = 000)*

Keys until tamp

The value of this counter determines how many illegal key presses can be entered before the a code tamper occurs. A code tamper locks out the remote keypad for 5 minutes. *(Default = 017)*

Remote resets

This counter determines how many "Remote Resets" can occur before the system locks into engineer reset only. When the engineer attends site and enters their passcode the counter is restored to its original value.The Remote Reset feature can be selectively applied to wards A to P, *see page 80. (Default = 032)*

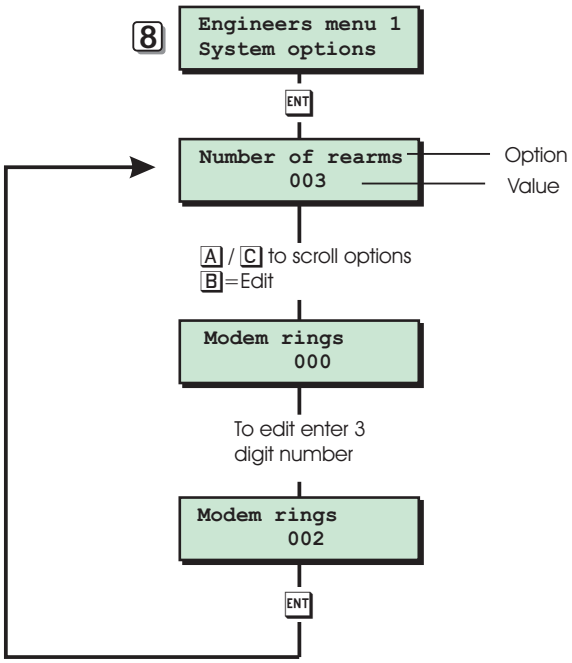
Reset algorithm

When a ward is programmed for "Engineer Reset" the requirement to send an engineer to site can be overridden by the user by using the "Remote Reset" facility. If an alarm is generated the system will respond with a four digit "seed" code which the user quotes to the Alarm Receiving Centre or alarm company. The "seed" code is then entered into a decoder and a unique "Remote Reset" code is generated. This is passed back to the user and on entering the "Remote Reset" code, the system is reset. The remote reset feature can be selectively applied to wards A to P, *see page 80.*

The "Remote Reset" code is generated using an algorithm identified by a 3 digit number. Alternative algorithms can be selected but these must correspond to that used by the ARC (or alarm company) otherwise the "Remote Reset" code will be incorrect. *(Default = 004).*

Double Knocks

This counter determines how many "Knocks" must occur on a double knock circuit before the control panel responds with an alarm condition. This counter can then be selectively applied to wards A to P, *see page 80.* If a ward is not selected to use this counter all double knock circuits within the ward will behave as normal double knock circuits, i.e they must activate twice within the double knock time delay or remain active for the duration of the double knock delay before causing an alarm. *(Default = 002).*



System Options Flowchart

Configuration [1-9]

There are 35 configuration options as follows:

00 Bell Is an SAB (Default)
The control panel bell output applies 0V when active.

Bell is an SCB
The control panel bell output removes 0V when active.

01 View alms P.set (Default)
When the system is part set and alarm occurs in a set ward the alarm information is displayed on all remote keypads immediately.

View alms unset
When the system is part set and alarm occurs in a set ward the alarm information is only displayed when the ward that the alarm occurred in is unset.

02 Duress Disabled (Default)
When entering a passcode with the first two digits reversed a duress alarm will NOT be generated.

Duress Enabled
When entering a passcode with the first two digits reversed a duress alarm will be generated.

03 Engr Authorised (Default)
When using Menvier Lineload software data in the control panel can be overwritten without the users knowledge.

User Authorised
When using Menvier Lineload software data in the control panel can only be overwritten with authorsation by the user.

04 On-Line Enabled (Default)
When using Menvier Lineload software the On-Line Keypad feature is enabled.

On-Line Disabled
When using Menvier Lineload software the On-Line Keypad feature is disabled.

05 Lo-sec Engineer (Default)
The engineer can access the engineers programming menus by entering his engineer's passcode.

Hi-sec Engineer
The engineer can only access the engineers programming menus after entering his engineer's passcode and obtaining a "Remote Reset" code.

06 Normal answer (Default)
When using a DC58M digi-modem the modem will answer the call after a pre-programmed number of rings, *see "System Options" on page 45.*

Timed answer
When using the DC58M digi-modem the digi-modem will used the "answer ring timer", see "System Timer" on page 45.

07 Unset ward first (Default)
When the system is part set and a passcode is entered the "0=UNSET WARDS" option will be displayed first.

Set ward first
When the system is part set and a passcode is entered the "0=SET WARDS" option will be displayed first.

08 Can set with L.F (Default)
The selected wards can be set with a telephone line fault, however the user will be asked to confirm this at the time of setting. Line fault can be assigned to any ward , *see "Equipment Wards" on page 80.*

No set with L.F
The selected wards cannot be set with a telephone line fault.

09 Can set - AC off (Default)
The selected wards can be set with no mains power. Mains power off can be assigned to any ward , *see "Equipment Wards" on page 80.*

No set - AC off
The selected wards cannot be set when the mains power is off.

10 Quiet chimes (Default)
The level of the chime tones is determined by the volume control of the device driving the loudspeaker. If the device is a XNode the volume level set by the volume control pot on the XNode PCB. If the device is the control panel the volume level is set via the "Set Volume Level" option, *see "Set Volume Level" on page 83.*

Loud chimes
The level of the chime tones is always full volume.

11 O/P 1 normal (Default)
Panel output 1 (Relay) is normally de-energised.

O/P 1 inverted
Panel output 1 (Relay) is normally energised.

12 Digi normal (Default)
The eight digicom outputs on the control panel switch from +12V to 0V when active (+ve removed).

Digi inverted
The eight digicom outputs on the control panel switch from 0V to +12V when active (+ve applied).

13 4 digit codes (Default)
All system passcodes are 4 digits.

6 digit codes
All system passcodes are 6 digits. When using 6 digit passcode the last 2 digits of the passcode are the user number, e.g. the engineer's passcode is 123400 and the master user's passcode is 567801.

14 Modem on Com1 (Default)
The panel comms port (JP8) is used for the modem.

Printer on Com1
The panel comms port (JP8) is used for the printer.

15 Chime Audible (Default)
Circuits that are programmed as chime will only generate a chime tone.

Chime Visible
Circuits that are programmed as chime will generate a chime tone and the remote keypads will display the circuit that was triggered.

16 Manual Omits (Default)
Circuits with the omit attribute can only be omitted via the user omit routine.

Automatic Omits
Circuits with the omit attribute are automatically omitted if they are still active when the system is being set.

17 Omit Tampers No (Default)
Tamper faults cannot be omitted by the user.

Omit Tampers Yes
Tamper faults can be omitted by the user.

18 O/M's mimic cct (Default)
The output modules connected to the control panel indicate circuit mimic activations.

O/M's mimic alms
The output modules connected to the control panel indicate circuit alarm activations.

19 Log Time & Date (Default)
The system log will show the time and date in the following format: "17:10.57 25/12" where 25/12 is the 25 December.

Log Time & Day
The system log will show the time and day in the following format: "17:10.57 Wed 25" where Wed is Wednesday and 25 is the date.

20 Global Setting (Default)
The user can set their allocated wards from any remote keypad.

Local Setting
The user can only set their allocated wards from a remote keypad assigned to their wards.

21 Global Unsetting (Default)
The user can unset their allocated wards from any remote keypad.

Local Unsetting
The user can only unset their allocated wards from a remote keypad assigned to their wards.

22 24hr Omit Global (Default)
Any 24hr circuit or group can be omitted from any remote keypad.

24hr Omit Local
Only 24hr circuits or group that are assigned to the same wards as the remote keypad can be omitted.

23 Ward bell time (Default)
The system uses the respective "ward bell delay" and "ward bell duration" timers when the system is full or part set.

Global bell time
When the system is part-set the respective "ward bell delay" and "ward bell duration" timers are used. When the system is full set the system uses the "global bell delay" and "global bell duration" timers.

24 Latching Fire (Default)
Fire detection circuits will cause an alarm when triggered and will only be re-armed after a full reset, i.e. Enter passcode to silence alarm, then enter passcode followed by [ESC] to reset the alarm.

Nonlatching Fire
Fire detection circuits will cause an alarm when triggered. On entering a passcode the alarm is silenced, if the same circuit is activated before carrying out a reset, the alarm re-triggered.

25 Online Printing (Default)
Events recorded in the system log are also sent to the printer port.

Offline Printing
Events recorded in the system log are not sent to the printer port.

26 Timed code o/p (Default)
The "User Code Accepted" output types are timed for the duration of the "Access code time".

Latched code o/p
The "User Code Accepted" output types are activated when user passcode is entered and de-activated when the passcode is re-entered.

27 Activity flt ok (Default)
Users can set their wards with circuits flagged as inactive.

Acitivity flt Bar
Users cannot set the system whilst circuits are flagged as inactive (forced walk test).

28 Latching 24hr (Default)
24 hour detection circuits will cause an alarm when triggered and will only be re-armed after a full reset, i.e. Enter passcode to silence alarm, then enter passcode followed by [ESC] to reset the alarm.

Nonlatching 24hr
24 hour detection circuits will cause an alarm when triggered. On entering a passcode the alarm is silenced, if the same circuit is activated before carrying out a reset, the alarm re-triggered.

29 Access code only (Default)
The "System Access" and "Ward Access" output types are triggered only when a "Access" type passcode is entered.

Access all codes
The "System Access" and "Ward Access" output types are triggered when any passcode is entered.

30 Answer anytime (Default)
When using a DC58M digi-modem, the digi-modem will always attempt to answer incoming calls.

Answer o/p 1 on
The digi-modem will only attempt to answer incoming calls when "Custom Output 1" is on.

31 NVM is Unlocked (Default)
The NVM can be reset to the factory defaults by shorting the FACTORY RESTART pins during power-up.

NVM is Locked
The NVM cannot be reset by shorting the FACTORY RESTART.

☞ *If the "NVM is LOCKED" option is selected it is imperative that the engineer code is not lost or forgotten. If this is the case then the only way of returning the system to its factory default setting is by returning the control panel PCB to Menvier Security.*

32 Unshunt. no exit (Default)
The use of a shunt code to reinstated a selected group of circuits will not initiate the exit procedure.

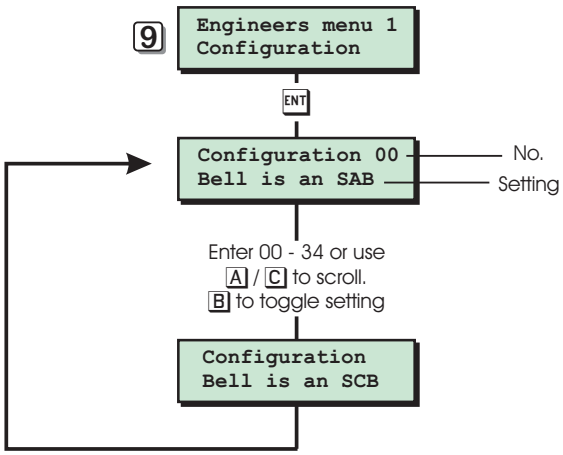
Unshunt & exit
The use of a shunt code to reinstated a selected group of circuits will initiate the exit procedure.

33 Ignore errors (Default)
When attempting to set with one or more circuits in fault the system will continue with the exit procedure but will display the circuits that are in fault. If the circuits are not cleared at the end of the exit procedure a set fail condition will occur.

View exit errors
When attempting to set with one or more circuits in a fault the system will prompt the user that a fault exists and the display will scroll through the circuits that are in fault. Once the faulty circuits are cleared the user will be prompted to press [ENT] to continue with the exit procedure.

34 Mimic. All times (Default)
When using output modules or outputs that are programmed as circuit mimic, the outputs will mimic the circuit at all times.

Mimic. Set only
When using output modules or outputs that are programmed as circuit mimic, the outputs will only mimic the circuit if the circuit is in a set ward.



Configuration Flowchart

Location Text [1-A]

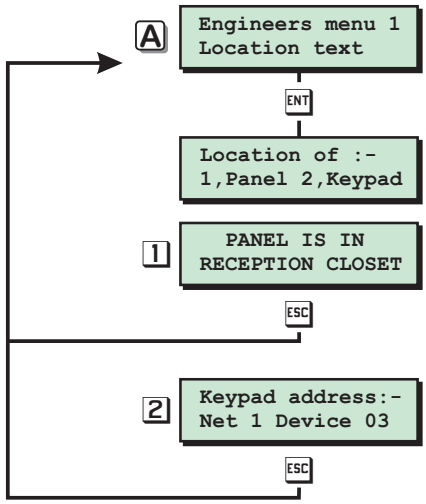
This option allows the engineer to view the following:-

Panel Location Text

This option displays the panel location text which is programmed in "Engineers menu 3", *see "Custom Text Menu" on page 66.*

Keypad Location

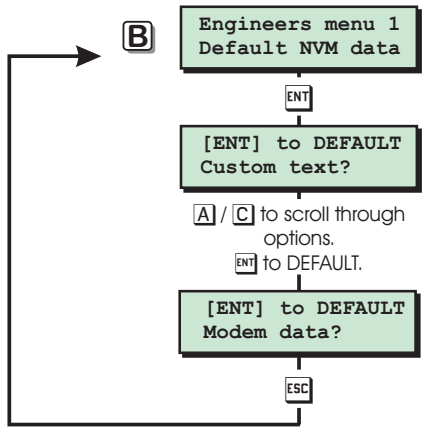
This option displays the network number and device number of the keypad that is currently being used.



View Location Text Flowchart

Default NVM Data [1-B]

The default NVM data option allow the engineer to reset the NVM data back to the factory defaults. The initialisation procedure has been broken down into specific sections so that the engineer can reset all data or specific areas.



Default NVM Data Flowchart

Section	Option	Default
Custom Text	Reset Message	CALL ENGINEER TO RESET SYSTEM
	Location Text	PANEL LOCATION TEXT NOT SETUP
	Printer Header	MENVIER SECURITY TS2500 SYSTEM
	Printer Prefix	Blank
	Banner Message	Blank
	Part Set Banner	Blank
	Aux Tamper 1	Blank
	Aux Tamper 2	Blank
	Remote Reset Msg	RING A.R.C FOR REM. RESET CODE
	Modem String	Blank
Modem Data	Call Back No.1	Blank
	Call Back No.1	Blank
	Call Back No.1	Blank
	Modem Password	Blank
	Modem Site No.	Blank
User Codes	User 000 Engineer	1234
	User 001 Master	5678
	User 002 - 199	Not used
Configuration	00	Bell is an SAB
	01	View alms P.Set
	02	Duress Disabled
	03	Engr Authorised
	04	On-Line Enabled
	05	Lo-sec Engineer
	06	Normal answer
	07	Unset ward first
	08	Can set with L.F
	09	Can set - AC off
	10	Quiet chimes
	11	O/P 1 normal
	12	Digi normal
	13	4 digit codes
	14	Modem on Com1
	15	Chime Audible
	16	Manual Omits
	17	Omit Tampers No
	18	O/M's mimic cct
	19	Log Time & Date
	20	Global Setting
	21	Global Unsetting
	22	24hr Omit Global
	23	Ward bell time
	24	Latching Fire
	25	Online Printing
	26	Timed code o/p

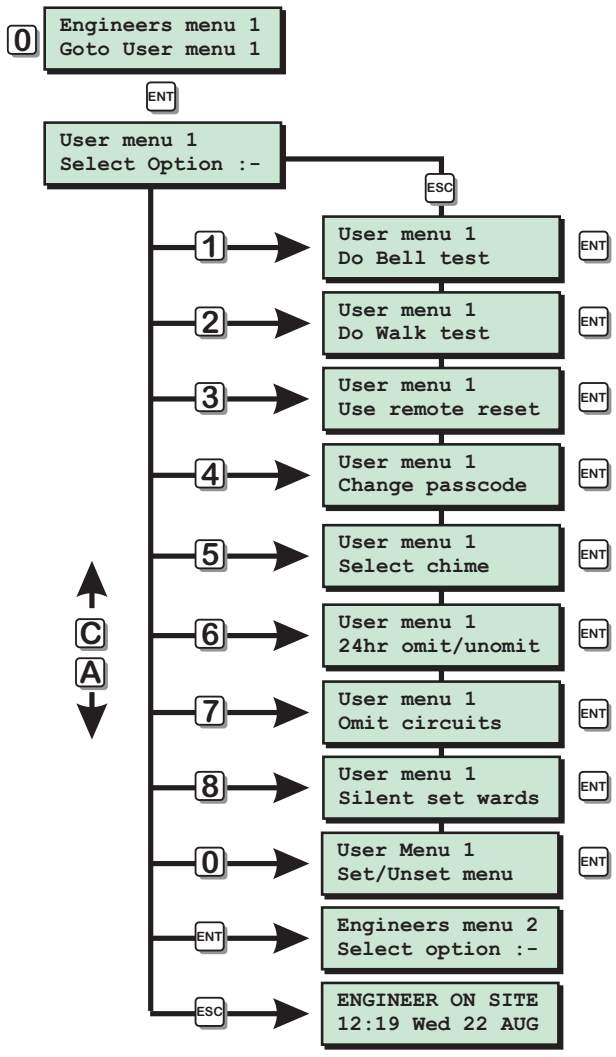
Section	Option	Default
Configuration	27	Activity flt ok
	28	Latching 24hr
	29	Access code only
	30	Answer anytime
	31	NVM is Unlocked
	32	Unshunt & No exit
	33	Ignore errors
	34	Mimic. All times
Outputs	Panel Output 1	Walk Test
	Panel Output 2	Courtesy Light
	Panel Output 3	Switch 12 Volts
	Panel Output 4	Detector Reset
	Digicom Output 1	Fire Alarm
	Digicom Output 2	Panic Alarm (PA)
	Digicom Output 3	Alarm
	Digicom Output 4	System Set
	Digicom Output 5	Engineer on site
	Digicom Output 6	Bell (SAB)
	Digicom Output 7	Tamper Alarm
	Digicom Output 8	2nd Alarm
	Digi Channel 1	Fire Alarm
	Digi Channel 2	Panic Alarm (PA)
	Digi Channel 3	Alarm
	Digi Channel 4	System Set
	Digi Channel 5	Engineer on site
	Digi Channel 6	Bell (SAB)
	Digi Channel 7	Tamper Alarm
	Digi Channel 8	2nd Alarm
	All Node Outputs	Circuit 0001 Alarm
	All Remote Outputs	Circuit 0001 Alarm
	Custom outputs 1-8	Circuit 0001 Alarm
Setting Modes	All Wards	Timed Exit
System Timers	Exit time wards A-P	030 Seconds
	Entry dly wards A-P	015 Seconds
	Digi dly wards A-P	000 Seconds
	Bell dly wards A-P	000 Minutes
	Bell dur wards A-P	020 Minutes
	Exit settle time	005 Seconds
	2nd Entry delay	015 Seconds
	Double Knock dly	010 Seconds
	Abort duration	010 Seconds
	Abort delay	180 Seconds
	2nd alarm time	060 Seconds
	Courtesy time	120 Seconds
	Access code time	005 Seconds
	Menu time-out	180 Seconds
	Line fault delay	030 Seconds
	AC off delay	030 Seconds

Section	Option	Default
System Timers	Monitor cct time	060 Seconds
	Beam pair time	010 Seconds
	Battery test dur	030 Seconds
	Answer ring time	030 Seconds
	Global bell dly	000 Minutes
	Global bell dur	020 Minutes
	Activity delay	060 Minutes
	Defer setting by	010 Minutes
	Battery test	060 Minutes
	Hi Security time	000 minutes
	Cct test time	014 Days
	Service time	000 Days
	Payment time	000 Days
	Test call every	000 Days
	Select menu time	010 Seconds
	Custom o/p 2 Tmr	000 Seconds
	Number of rearms	003
	Modem rings	000
	keys until tamp	017
	Remote resets	032
	Reset algorithm	004
	Double Knocks	002
Time Switches	On times 1, 2 & 3	00:00
	Off times 1, 2 & 3	00:00
	Timers operate on	No days
	Time switch output	Off
Code Locks	On times 1, 2 & 3	00:00
	Off times 1, 2 & 3	00:00
	Timers operate on	No days
	Time lock output	Off
	User assigned	None
Auto-set Times	Set times 1, 2 & 3	00:00
	Unset times 1, 2 & 3	00:00
	Timers operate on	No days
	Wards assigned	None
Custom Circuits	Circuits 1 - 8	Not defined
Circuits	Circuits 0001 - 8128	Not Used
Equipment Wards	Panel tamper	Ward A
	Bell box tamper	Ward A
	Aux 1 tamper	Ward A
	Aux 2 tamper	Ward A
	Phone line fault	Ward A
	Mains power off	Ward A
	Payment timer	Not assigned
	Alarms Eng Reset	Not assigned
	Tamper Eng Reset	Ward A
	Remote reset	Ward A
	Panel speaker	Ward A

Section	Option	Default
Equipment Wards	Relearn required	Not assigned
	Re-arms apply to	Ward A
	Hi Security ward	Not assigned
	Digi in Part Set	Wards A - P
	System Bell/STB	Wards A - P
	Ward A foyer Mode	Not assigned
	Unset fire sig.	Not assigned
	Dble Knock wards	Not assigned
Net Equipment	All new devices	Ward A
Part set groups	Part set groups 0 - 9	Not defined
Log	All 4000 Events	No Event

Goto User Menu 1 [1-0]

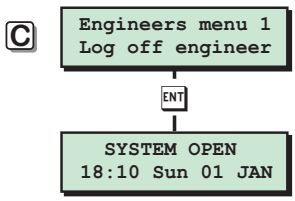
This option allows the engineer to access "User menu 1", the flowchart below shows the options within "User menu 1", for full details refer to the "Operators Manual".



User Menu 1 Flowchart

Log Off Engineer [1-C]

Selecting this option will log off all engineers and return the system to the "SYSTEM OPEN" condition.



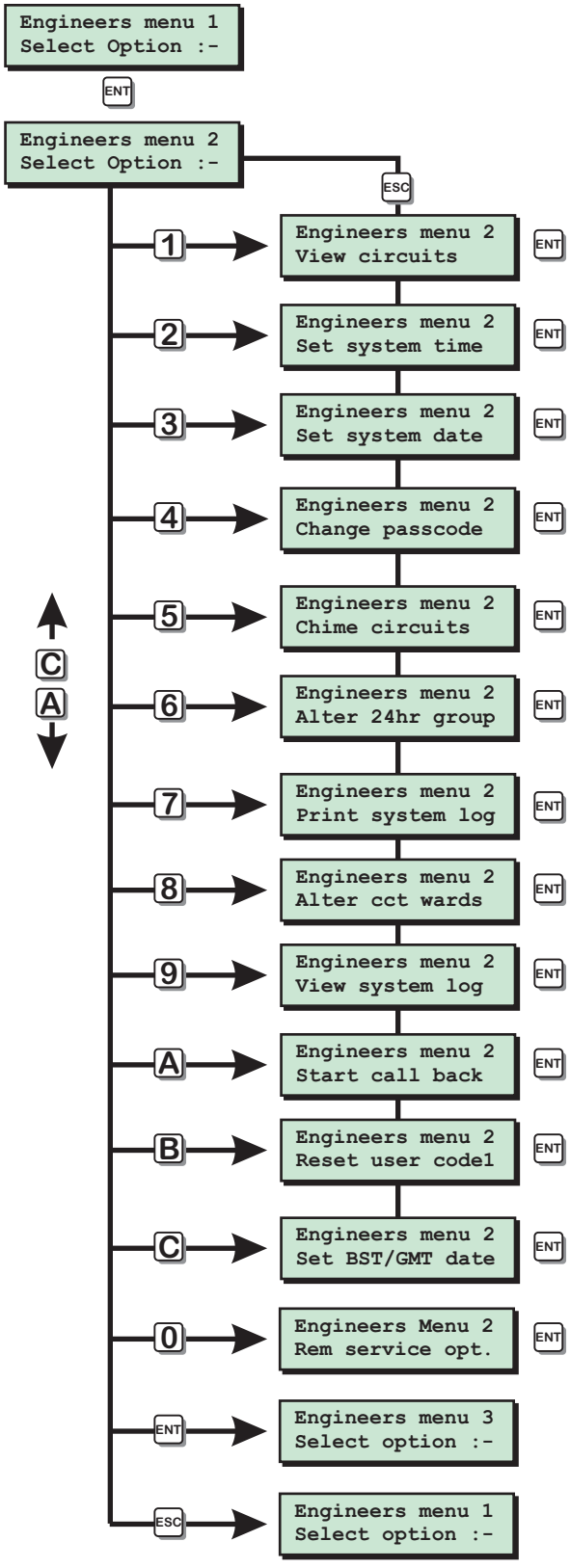
Log Off Engineer Flowchart

Engineer's Menu 2

Introduction

Engineers menu 2 is selected by pressing the [ENT] whilst Engineers menu 1 is selected. Each menu option can be selected by pressing the relevant "hot-key" or you can scroll forwards and backwards through the options using the [A] and [C] keys.

Menu contents

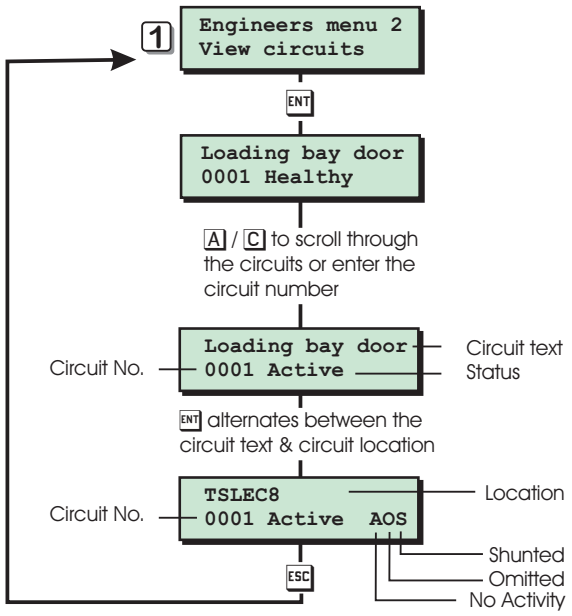


Engineer's Menu 2

View Circuits [2-1]

Each detection circuit may be viewed to ascertain its status. The circuit status conditions and resistance are shown below:

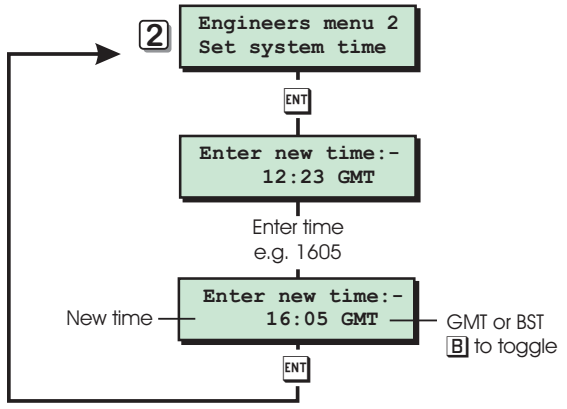
Status	Response	Normal	Min.	Max.
Healthy	None	2.2 KΩ	54 Ω	4.1KΩ
Active	Alarm	6.9 KΩ	4.1 KΩ	54 KΩ
Tamper	Tamper	∞	54 KΩ	∞
Shorted	Alarm	0 Ω	0 Ω	53 Ω



View Circuits Flowchart

Set System Time [2-2]

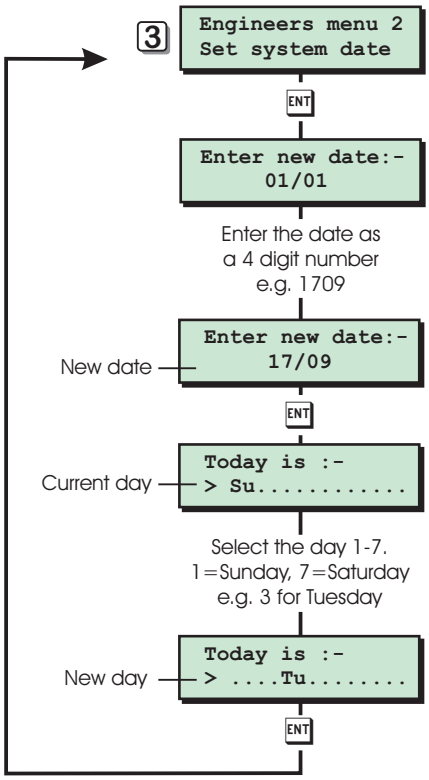
The system time is displayed in a 24hr format on all remote keypads and is also used to time stamp events in the system event log. The BST/GMT changeover can be programmed to automatically occur on specific dates, see page 60.



Set System Time Flowchart

Set System Date [2-3]

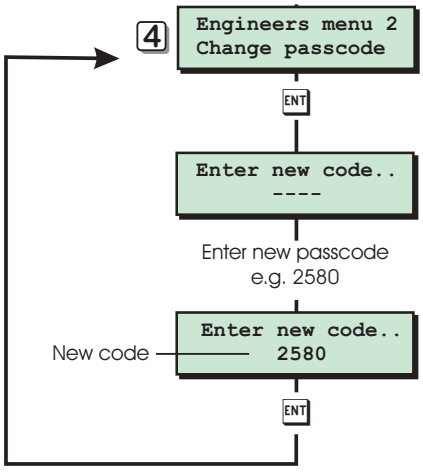
The system date is displayed in a day/date/month format on LCD remote keypads. it is also used to provide date stamps for events in the system log.



Set System Date Flowchart

Change Passcode [2-4]

This option allows the engineer to change their passcode. The default passcode is 1234 if 4-digit passcode are enabled and 123400 if 6-digit passcodes are enabled.



Change Passcode Flowchart

Alter Chime Circuits [2-5]

This option allows an alternative method of programming circuits as "chime". Three types of chime tones are available:

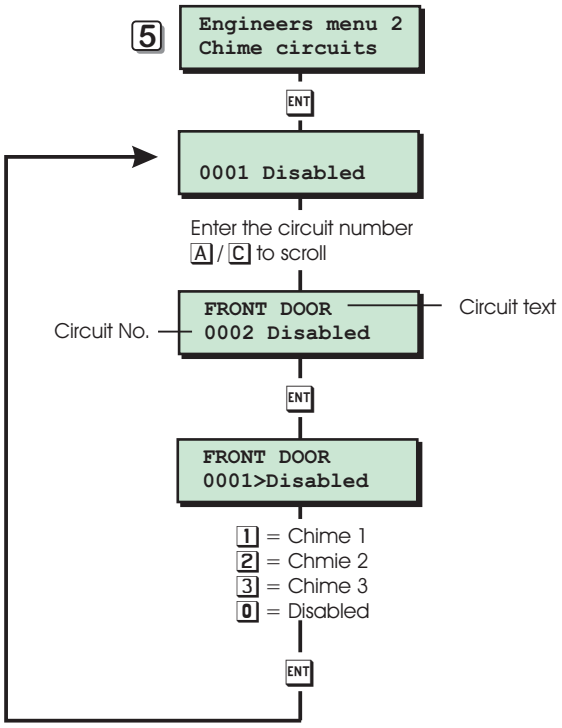
Chime 1
Generates a single two-tone chime sound.

Chime 2
Generates a double two-tone chime sound.

Chime 3
Generates a triple two-tone chime sound.

When a circuit is programmed as chime it will only generates the relevant chime tone from remote keypad sounders and extension loudspeakers assigned to the same ward(s) as the detection circuit.

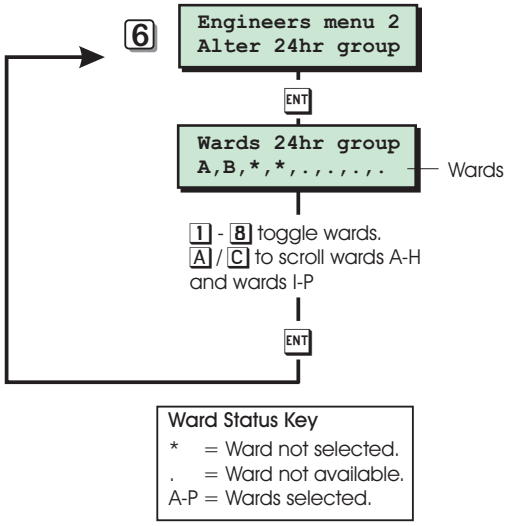
If configuration option 15 is programmed as "Chime Visible", the display will show the circuit that caused the chime.



Chime Circuits Flowchart

Alter 24Hr Group [2-6]

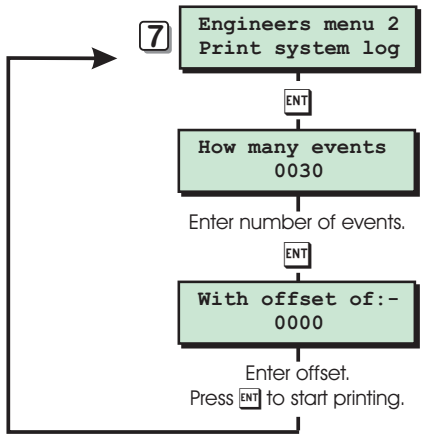
Any combination of wards can be assigned to the 24hr group. Circuit types "24hr" and "Auxiliary" with the "Omittable" attribute within the selected ward will be isolated when the selected ward is omitted using user menu 1 option 6 (24hr omit/unomit). Only the wards that are assigned to the 24hr group can be selected by the user.



Alter 24hr Group Flowchart

Print System Log [2-7]

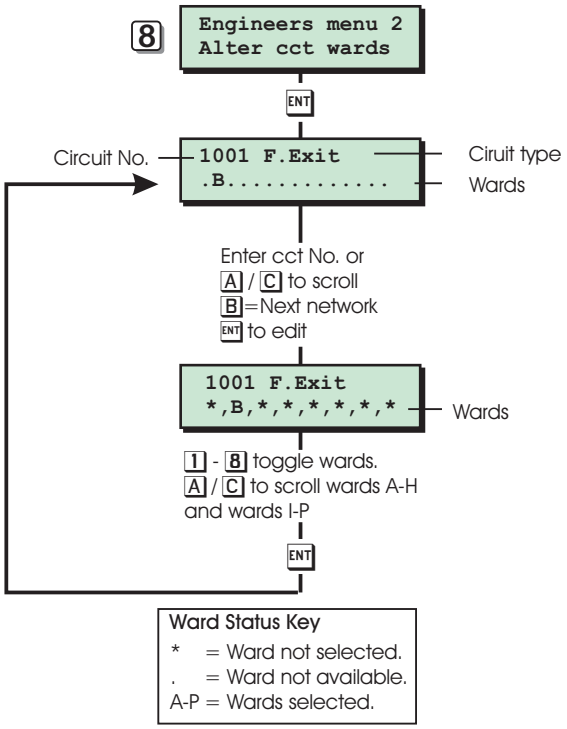
The system log stores 4000 events, if a printer is connected to the system it is possible to print a selected number of events. By specifying an offset you can print the selected number of events from the offset point rather than the last event, e.g. if you specify 100 events with an offset of 1000, you will get a printout of events 2900 - 3000. Once the print-out has been started it can only be stopped by selecting this option again and entering "0000" for the number of events.



Print System Log Flowchart

Alter Circuit Wards [2-8]

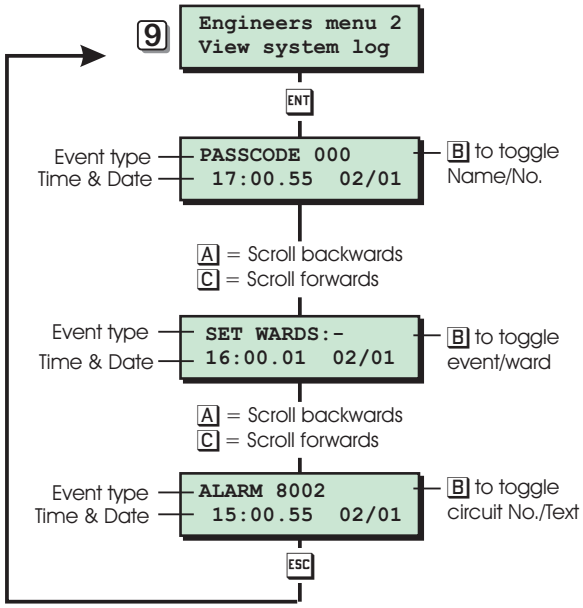
Normally the engineer will assign circuits to wards when using the "Program circuits" option in Engineers menu 1, this option allows an alternative method of configuring wards.



Alter Circuit Wards Flowchart

View System Log [2-9]

The engineer can use this option to view the system log. The [A] and [C] keys allow you to scroll backwards and forwards through the log events. Keys [1] to [9] can be set-up as search keys so that when pressed they take you to specific events within the log. To set-up the search keys see "Engineers menu 4".



View System Log Flowchart

Log Event Codes

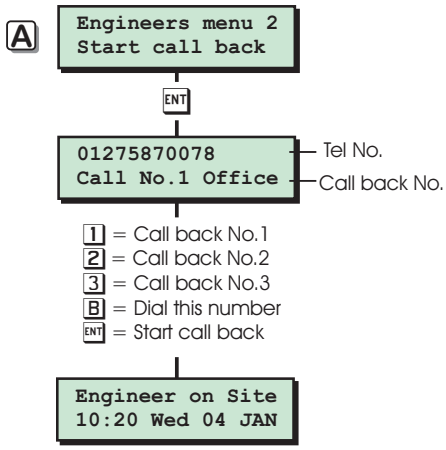
Event	Description
—- NO EVENT —-	No event
#### ACTIVATED	Monitored circuit activated
#,## LEC LOST	Network #, device No. ## is a LEC that has been removed
### LEC or REM'S	The number of LEC or REM's logged on to system after a re-learn
#,## NODE ADDED	Network #, device No. ## is a TS900 Node that has been added to the system
#,## NODE LOST	Network #, device No. ## is a TS900 Node that has been removed
### NODE'S	The number of TS900 Nodes logged on to the system after a re-learn
### XNODE'S	The number of XNodes logged on to the system after a re-learn
#### OFF TEST	Circuit number #### taken off test
#### OMITTED	Circuit number #### omitted
#### REINSTATED	Circuit number #### reinstated
#,## REM ADDED	Network #, device No. ## is a remote keypad that has been added to the system
#,## REM LOST	Network #, device No. ## is a remote keypad that has been removed
#### SHUNTED	Circuit number #### shunted
#,## XNODE ADDED	Network #, device No. ## is a XNode that has been added to the system
#,## XNODE LOST	Network #, device No. ## is a XNode that has been removed
24Hr ALARM ####	24hr alarm from circuit number ####
24Hr OMITTED:	24Hr group omitted in wards:- A - P
24Hr REINSTATED:	24Hr group reinstated in wards:- A - P
24Hr WARDS:-	24hr Alarm on wards:- A - P
ABORT ON WARDS:-	Alarm aborted on wards:- A - P
ABORTED ERRORS	Remote service errors
ACCESS ###	Access passcode ### entered.
ACCESS FAILED	Access failed due to code lock in operation
ALARM ####	Alarm from circuit number ####
ALARM WARDS:-	Alarm in wards:- A - P
AUTOSET # OFF	Autoset timer 1-3 off
AUTOSET # ON	Autoset timer 1-3 on
AUXILIARY ####	Auxiliary alarm from circuit number ####
AUXILIARY # TAMP	Auxiliary 1 or 2 tamper
AUXILIARY FUSE	Auxiliary Fuse failed
BATTERY FAULT	Battery disconnected or voltage level below 9.5V
BATTERY RESTORE	Battery restored to healthy condition
BEAM PAIR ####	First activation of a beam pair circuit number ####
BELL BOX TAMPER	External sounder/bell tamper
BELL TESTED:-	Bell tested for wards:- A - P
BELLS ACTIVE:-	Bell active for wards:- A - P
CALL ABORTED	Remote service call aborted
CALLED No. #	Remote service call initiated via panel to remote PC 1, 2 or 3
CALLING BACK No. #	Remote service call requested via PC to "Call back No" 1, 2 or 3
CCT ON TEST ####	Circuit number #### put on test
CCT TESTED ####	Circuit number #### tested during walk test routine
CCTS REINSTATED	Circuits reinstated with a shunt code
CIRCUITS SHUNTED	Circuits shunted with a shunt code
CODE LOCK # OFF	Code lock number # is off
CODE LOCK # ON	Code lock number # is on
CODE LOCKED ###	User number ### attempted to use their passcode whilst locked-out

Event	Description
CODE TAMPER	Keypad locked out for 5 minutes due to invalid entry of passcode
COMMS FAILED	Plug-on digicom failed to communicate with ARC
COMMS SUCCESSFUL	Plug-on digicom communicated successfully with the ARC
DATE CHANGED	System date changed
DEFAULT USER ###	User 001 defaulted to 5678
DEFERRED SET:-	Deferred set on wards:- A - P
DIGI-COM FITTED	Plug-on digicom fitted
DIGI/MODEM LOST	Plug-on digicom or modem removed
DIGI/MODEM RESET	Plug-on digi-modem reset
DURESS CODE ###	Duress alarm from user number ###
ENGINEER ARRIVES	Engineer is logged on the system
ENGINEER DEPARTS	Engineer is logged off the system
ENTRY ####	Entry mode started from circuit number ####
ENTRY TIME-OUT:-	Entry mode timed out for wards:- A - P
ENTRY WARDS:-	Entry on wards:- A - P
EXIT CANCELLED:-	Exit mode cancelled for wards:- A - P
EXIT STARTED:-	Exit mode started for wards:- A - P
FACTORY RESTART	Factory default loaded
FIRE ALARM ####	Fire alarm from circuit number ####
FIRE WARDS:-	Fire alarm on wards:- A - P
FIRST KNOCK ####	First activation of circuit number #### (circuit with Double-Knock attribute)
From Remote #,##	Quick set perform from remote keypad (# = Network, ## =device No)
Hi Security SET:	Wards A - P set using "High Security" feature
LEC #,## TAMPER	Network #, LEC number ## lid tamper alarm
LINE RESTORE	Telephone line restored to healthy
LINK ESTABLISHED	Remote link via PC established
MAINS POWER OFF	Mains power removed from control panel
MAINS POWER ON	Mains power applied to control panel
MENU TIMEOUT ###	User number ### entered their passcode and did not selected any functions
MODEM FITTED	Plug-on digi-modem fitted
MODEM LOCK-OUT	Modem locked-out (4 failed attempts made via Lineload)
NODE ### R# ADD	Remote keypad added to XNode
NODE ### R# LOST	Remote keypad removed from XNode
NODE ### R# TAMP	Remote keypad lid tamper from remote on XNode
NODE #,## FUSE	TS900 Node fuse failed
NODE #,## TAMPER	TS900 Node lid tamper
NODE SHUNT ####	Circuits shunted on a Node
ON-LINE ENDED	Remote service call ended (PC and Lineload)
ON-LINE TO No.#	On-line to remote PC
ON-SITE RESTART	On-site restart
PA ALARM ####	PA Alarm from circuit number ####
P.A CODE ###	PA code from user number ###
PA WARDS:-	PA alarm on wards:- A - P
PANEL LID TAMPER	Control panel lid tamper
PASSCODE ###	User number ### entered their passcode
PAYMENT EXPIRED	System payment timer has expired
PC CONNECTED	PC connected to control panel (PCI/DCI)
PC DISCONNECTED	PC disconnected from control panel (PCI/DCI)

Event	Description
PHONE LINE FAULT	Telephone line fault detected
QUICK SET KEY #	Quick set key A, B or C activated
Q.SET ABORTED	Quick set key aborted
REARM ON WARDS:-	Wards:- A - P re-armed
REINSTATED WARDS	Wards A - P reinstated
REM #,## TAMPER	Remote keypad lid tamper
REM RESET ACTIVE	Remote reset via the REM RESET input terminal (RedCARE)
REM RESET FAILED	Remote Reset failed
REM SERVICE CALL	Remote service call in progress
RESET WARDS:-	User or engineer has reset wards:- A - P
SEC. KEY ####	Security key operated on circuit number ####
SERVICE CALL END	Remote service finished
SERVICE REQUIRED	System requires a service visit (Service Timer expired)
SET FAIL WARDS:-	Set fail for wards:- A - P
SET FAIL ####	Set fail caused by circuit ####
SET NO ACTIVITY	System was set with inactive circuits (circuits with the activity attribute)
SET WARDS:-	Wards set:- A - P
SET WITH L.FLT:-	Wards A - P set with a line fault present
SETTING DEFERRED	Setting deferred
SHUNT CODE ###	Shunt code number ### enter their passcode
SHUNT KEY ####	Shunt key circuit #### operated
SYSTEM RELEARN	A system relearn has been performed
T.SWITCH # OFF	Time switch number # off
T.SWITCH # ON	Time switch number # on
TAMPER ####	Tamper alarm from circuit number ####
TAMPER WARDS:-	Tamper alarm on wards:- A - P
TEST FAIL ####	Circuit number #### failed whist on test
TEST TOTAL ####	Total number of circuit tested during walk test
TIME CHANGED	System time changed
UNSET WARDS:-	Wards:- A - P unset
USER ### DELETED	User number ### deleted
WALK TESTED:-	Wards:- A -P walk tested
WARD KEY ####	Ward key circuit #### operated
WARDS LOCKED:-	Wards:- A - P locked via security key circuit
WARDS UNLOCKED:-	Wards:- A - P unlocked via security key circuit
XNODE #,## FUSE	XNode fuse failed
XNODE #,## TAMP	XNode lid tamper

Start Call Back [2-A]

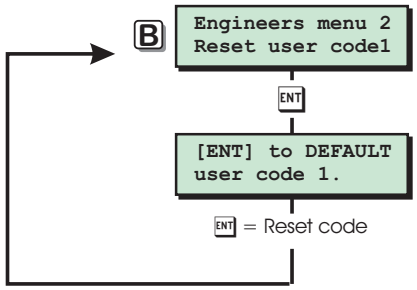
If the the system is fitted with a DC58M digi-modem, it is possible for the installation engineer to initiate an upload sequence to a remote site (normally the alarm company). Once the communication link is established with the remote site, data can be sent and received from the control panel. This feature is only compatible with Menvier Lineload software version 2.2 or above.



Start Call Back Flowchart

Reset User Code 1 [2-B]

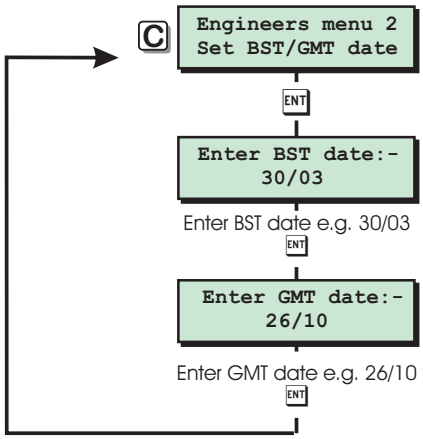
This option allows the installation engineer to reset the master user (user 001) back to the factory default code of "5678". This feature is useful when the master user has forgotten their passcode or has accidentally changed it without realising. This operation is logged.



Reset User Code Flowchart

Set BST/GMT Date [2-C]

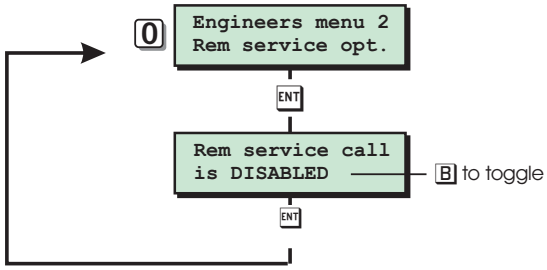
This option allows the engineer to specify the dates at which BST starts and ends. The system will then add an hour at 2:00 am on the BST date and subtract an hour at 2:00 am on the GMT date.



Set BST/GMT Dates Flowchart

Rem Service Option [2-0]

This option allows the engineer to enable or disable the remote service option.



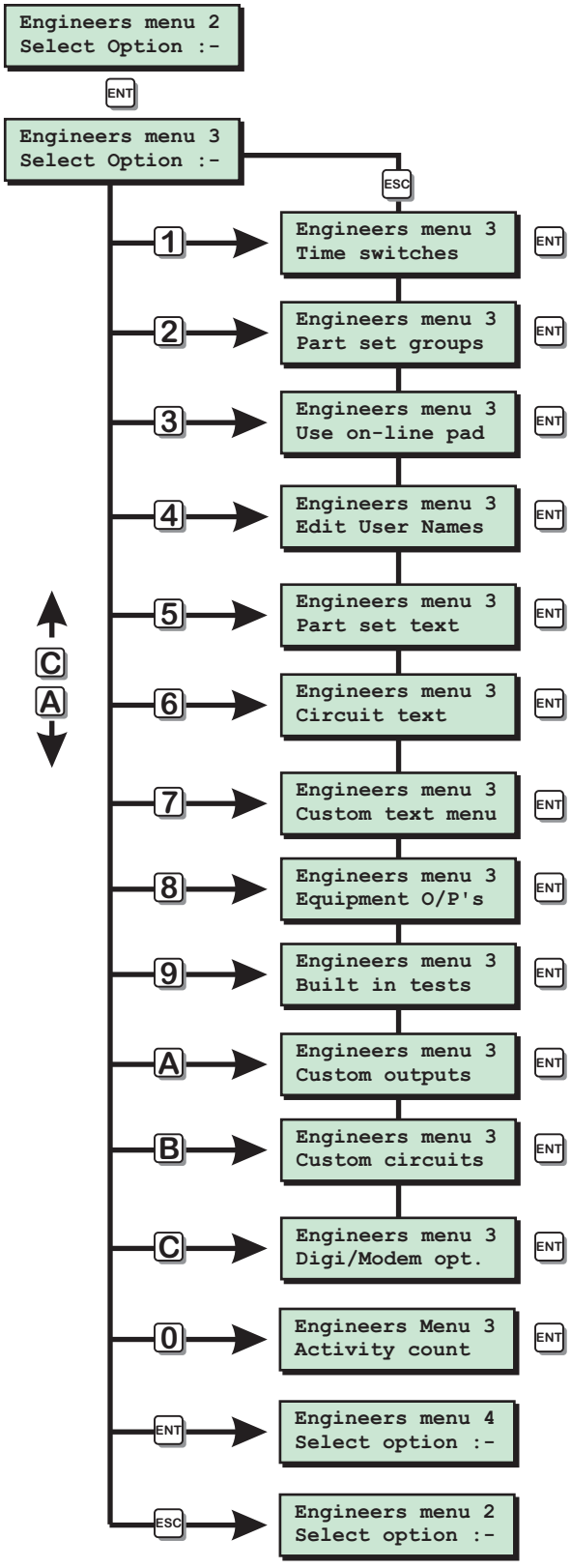
Remote Service Options Flowchart

Engineers Menu 3

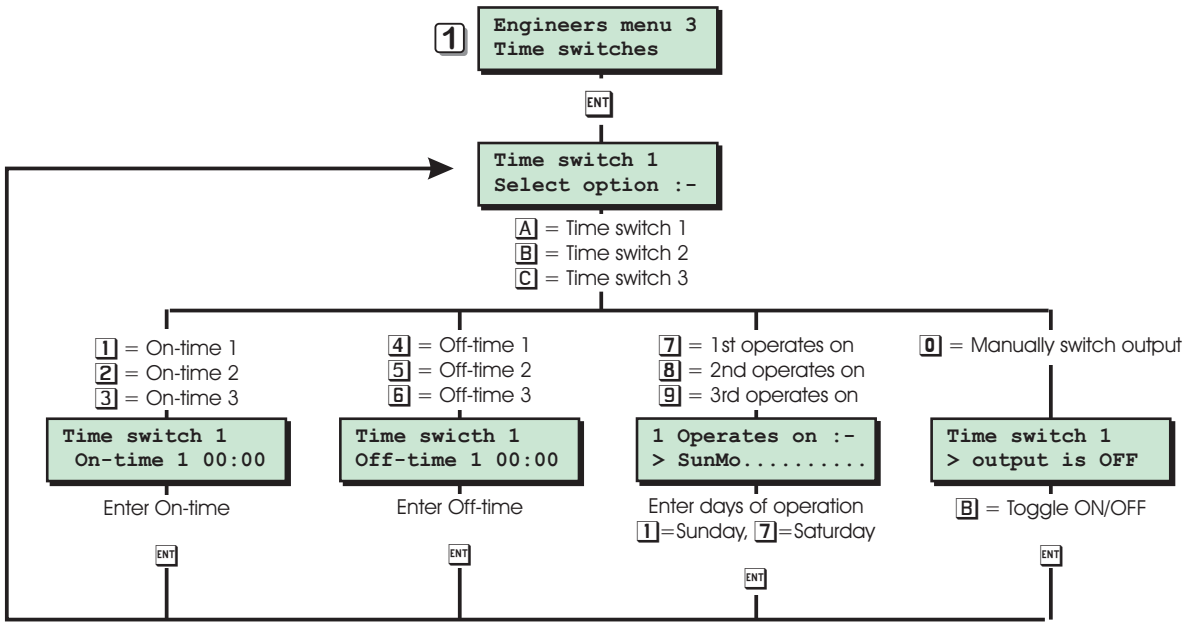
Introduction

Engineers menu 3 is selected by pressing the [ENT] whilst Engineers menu 2 is selected. Each menu option can be selected by pressing the relevant "Hotkey" or you can scroll forwards and backwards through the options using the [A] and [C] keys.

Menu Contents



Engineer's Menu 3



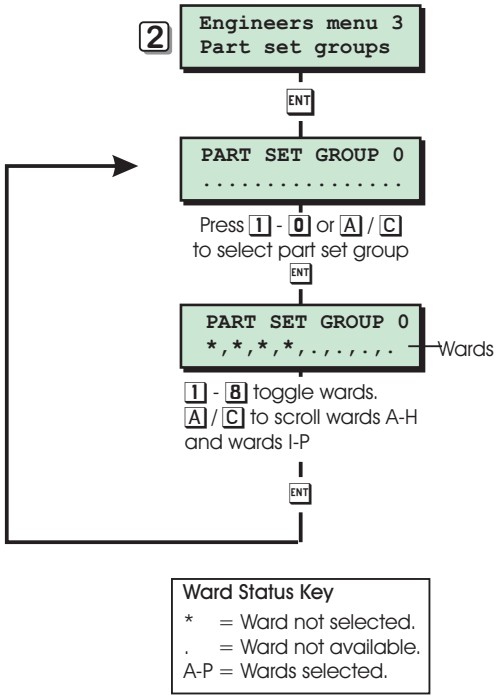
Time Switches Flowchart

Time Switches [3-1]

The TS2500 has three programmable time switches. Each time switch can be programmed with up to three separate on/off times and made to operate on any day of the week. The time switches can be assigned to outputs which in turn can be used to control internal or external lighting via a relay etc.

Part Set Groups [3-2]

This option allows the engineer to define up to 10 part-set groups. Each group can be programmed so that it sets any combination of wards. For example "PART SET GROUP 1" could be allocated wards A and C, whereas "PART SET GROUP 2" could be allocated wards A and B.

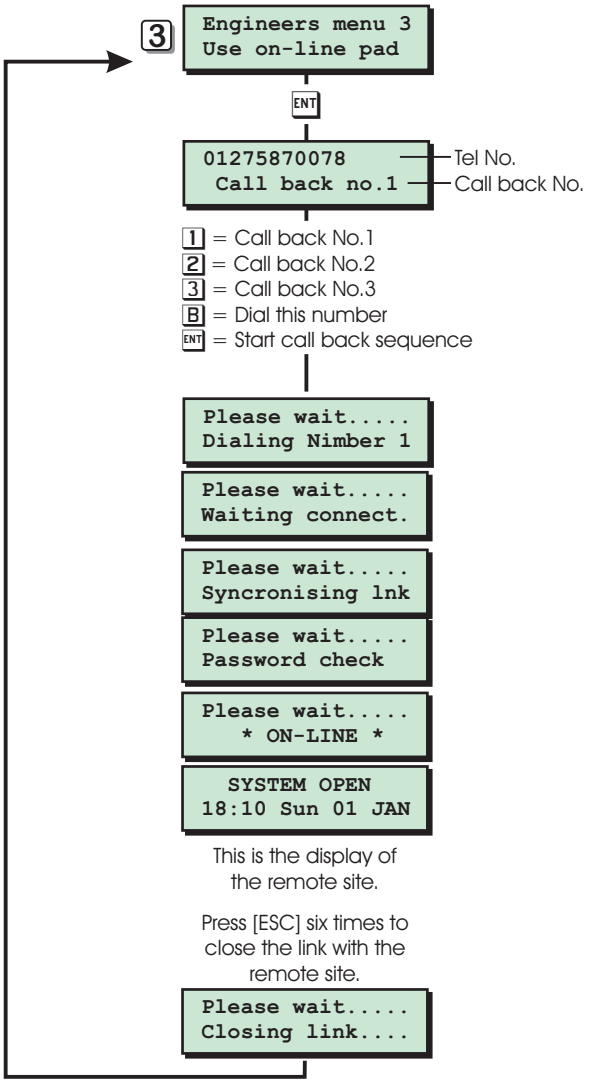


Part Set Groups Flowchart

Use On-line Pad [3-3]

If the system is fitted with a DC58M digi-modem, you can use this option to connect to another TS2500 or TS790/900 (providing the remote system also has a modem fitted). Once a connection has been established the remote keypad will behave as if it were connected to the remote site. For example you could use this option to connect to another TS2500 alarm system and once on-line you can use your own keypad to set the remote site.

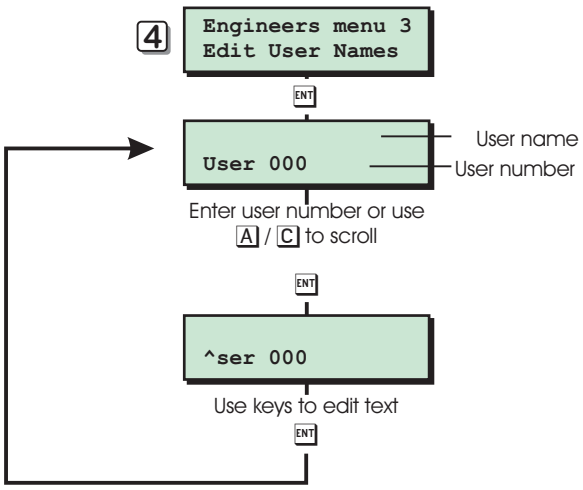
☞ *The modem passcode on the TS2500 must match the modem passcode on the remote site in order for the feature to work.*



Use On-line Keypad Flowchart

Edit User Names [3-4]

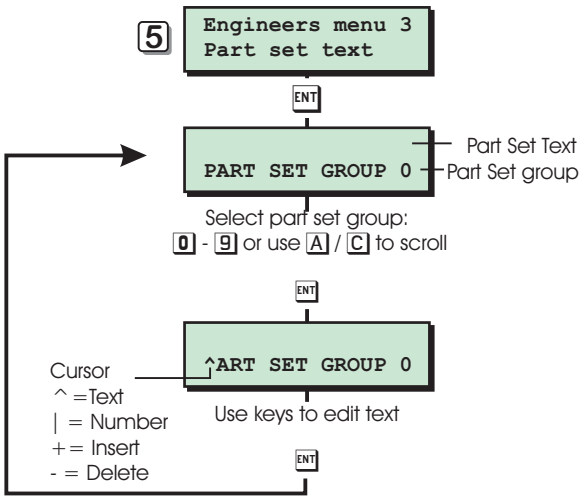
This option allows the engineer to assign a name (8 characters) to each user. When using the view log option you can press the [B] key to alternate between displaying the user number and user name.



Edit User Names Flowchart

Part Set Text [3-5]

This option allows the engineer to assign 16 characters of text to each of the part set groups. When the user selects the part set options during setting, the top line of the display will show the text and the bottom line will show the wards assigned to the part set group.



Edit User Names Flowchart

Circuit Text [3-6]

Each detection circuit can have up to 16 characters of text assigned to it.

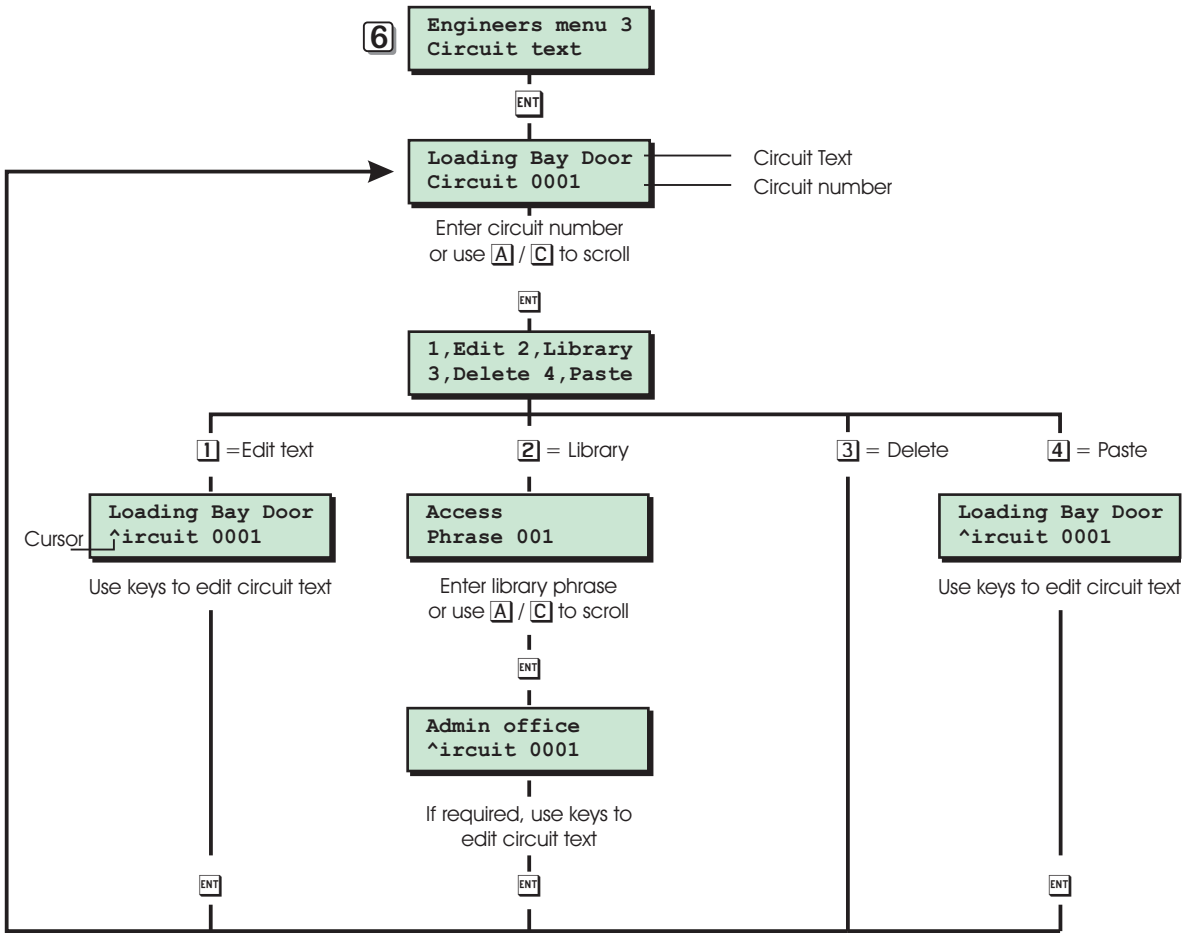
When you have selected the circuit that you require to program, the system will give you the following options:

1 **Edit**
The edit option allows you to edit text that has been previously programmed or to create new text using the text editing keys.

2 **Library**
The library option allows you to choose a phrase from the circuit text library, once the phrase has been selected you can further edit it, if required.

3 **Delete**
The delete option erases the circuit text for the selected circuit.

4 **Paste**
The paste option will paste the last programmed circuit text into the selected circuit. For example if you program circuit 0001 to "Roller Door 1", then select circuit 0002 and choose the paste option, circuit 0002 will also be programmed as "Roller Door 1". After selecting the paste option you are giving the option to edit the pasted text, so in the above example it would be simple case of changing the "1" to a number "2" etc.



Circuit text Flowchart

Circuit Text Library

No.	Phrase	No.	Phrase	No.	Phrase	No.	Phrase
000	Above	044	Church	088	Loading bay PIR	132	Refectory
001	Access	045	Classroom	089	Lobby	133	Research
002	Accountant	046	Cleaners	090	Lounge	134	Restaurant
003	Accounts	047	Collection	091	Lounge PIR	135	Roller
004	Admin office	048	Communicator	092	Lounge window	136	Room
005	Animal	049	Computer	093	Magnetic	137	Safe
006	Annexe	050	Computer room	094	Managers	138	Sales door
007	Arch	051	Conservatory	095	Master	139	Sales office
008	Area	052	Contact	096	Medical	140	Sales PIR
009	Assembly	053	Dark-room	097	Mezzanine	141	Secretaries
010	Assistant	054	Detector	098	Microwave	142	Secretary
011	Attack	055	Dining room PIR	099	Middle	143	Security
012	Attic	056	Director	100	Monitor	144	Sensor
013	Automatic	057	Dispatch	101	Movement	145	Service door
014	Auxiliary	058	Door	102	Nursery	146	Service PIR
015	Back	059	Double doors	103	North	147	Showroom
016	Baggage	060	Entrance	104	Office	148	Shutter
017	Bakery	061	Factory floor	105	Outside	149	Side
018	Balcony	062	Fire door	106	P.A. Button	150	Sliding
019	Ballroom	063	Floor	107	Panel	151	Squash court
020	Bank	064	Front	108	Panic	152	Stairwell
021	Banking	065	Garage	109	Partition	153	Station
022	Bar	066	Geography	110	Passive	154	Store room
023	Barn	067	Grocery	111	Patio	155	Stores
024	Basement	068	Ground	112	Penthouse	156	Surgery
025	Bathroom	069	Guard	113	Perimeter	157	Swimming pool
026	Bay	070	Hall passive	114	Personal	158	Technical
027	Beam	071	Heater	115	Personnel	159	Technician
028	Bedroom	072	History	116	Physics lab	160	Theatre
029	Bedroom PIR	073	House	117	Passive in	161	Toilet
030	Bell	074	Industrial	118	PIR in	162	Transport
031	Biology Lab	075	Information	119	Plumbers	163	Ultrasonic
032	Board room	076	Infra-red	120	Porch	164	Upstairs PIR
033	Bottom	077	interior	121	Power	165	Upstairs Window
034	Break glass	078	Isolation	122	Power supply	166	Ventilator
035	Cabinet	079	Junior	123	Pressure	167	Warehouse
036	Cafe	080	Kitchen PIR	124	Processing lab	168	Window
037	Canteen door	081	Kitchen window	125	Production	169	Woodwork Shop
038	Canteen PIR (1)	082	Landing PIR	126	PSU Battery Fail	170	Workshop door
039	Cashier	083	Landing window	127	PSU Fuse Blown	171	Workshop PIR
040	Ceiling	084	Laundry	128	PSU Mains Fail	172	Workshop Window
041	Cellar	085	Lavatory	129	Public	173	X-Ray department
042	Changing room	086	Library	130	Purchasing		
043	Chemistry lab	087	Loading bay door	131	Reception		

Custom Text Menu [3-7]

This menu option allows the installation engineer to edit the following text messages:

Reset Message

The default reset message "CALL ENGINEER TO RESET SYSTEM" can be personalised by the engineer, e.g. the message may be programmed to read "CALL XYZ ALARMS ON 0181-1234567".

Location Text

This option allows the engineer to program a 32 character location message. When "Engineers menu 1" is selected the engineer can view this message. This can be used to provide the location details for the control panel, e.g., "C P located in reception area", thus assisting service engineers unfamiliar with the site.

Printer Header

This option allows the installation engineer to program a 32 character printer header message. This is printed whenever a system or log printout is taken from the system. This can be used as a site reference, e.g., "ABC Company Job No123456".

Remote Reset Message

The default remote reset message "CALL A.R.C FOR REM.RESET CODE" can be personalised by the engineer, e.g. the message can be programmed to read "CALL 0181 121212 FOR RESET CODE".

Printer Prefix

This option allows the engineer to specify a 16 character message which is prefixed to every event sent to the printer.

Banner Message

Normally when the system is unset the bottom line of the display shows the time and date, and the top line is left blank. This menu option allows the engineer to program or edit a 16 character "Banner" message which is displayed on the top line. This may be used to display the company's name, e.g., "Blogg Alarms", "ABC Security" etc.

Part Set Banner

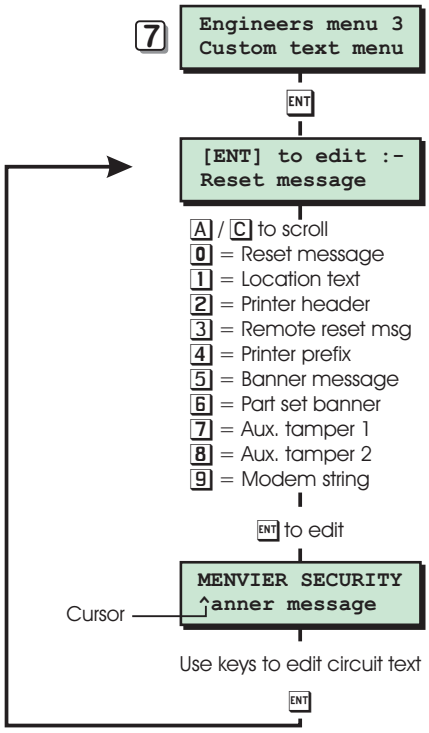
The part set banner is a 16 character message displayed on the top line of the display whenever the system is part set. If the message is left blank the top line of the display will show the wards that are set. If the message is programmed the top line of the display will show the message, e.g., "System Part-Set".

Aux. Tamper 1/2

The control panel has two auxiliary tamper inputs, this option allows the engineer to program a 16 character text description for each input.

Modem String

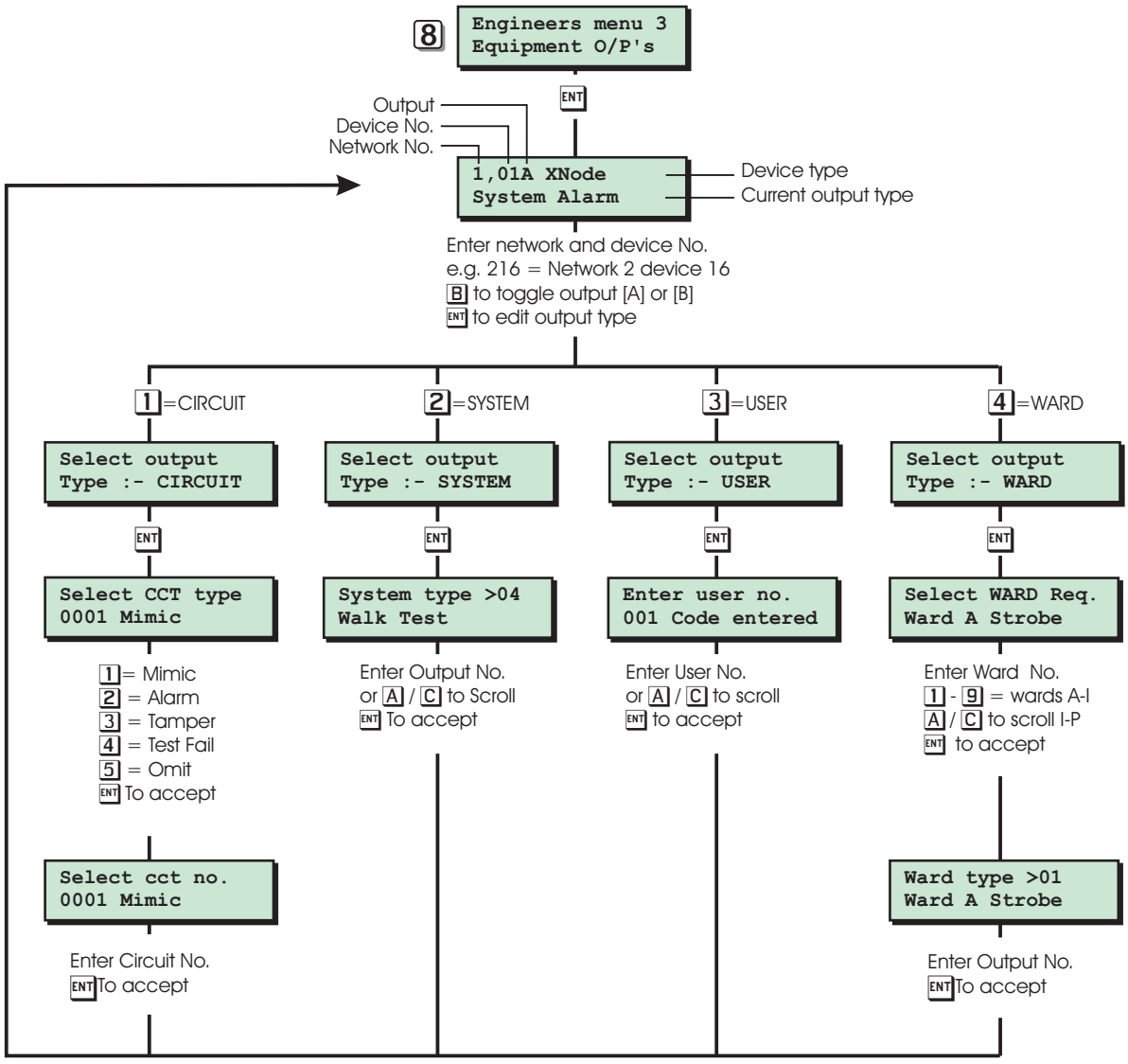
For future use.



Custom Text Menu Flowchart

Equipment O/P's [3-8]

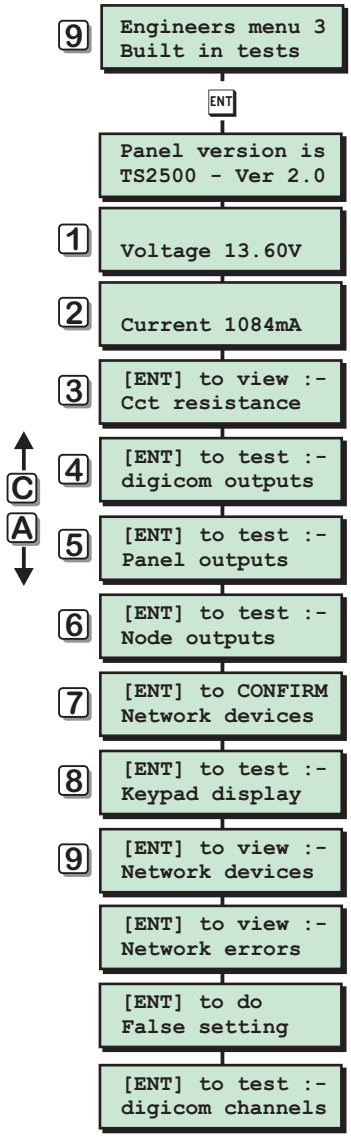
This option allows the engineer to program the two outputs on each node and the single output on each remote keypad or LEC.



Equipment Outputs Flowchart

Built In Tests [3-9]

The TS2500 system has the following diagnostic routines:



Built In test Menu Flowchart

Software Version

When selecting the built in tests routine the software version is displayed until you select one of the other diagnostic routines.

Voltage

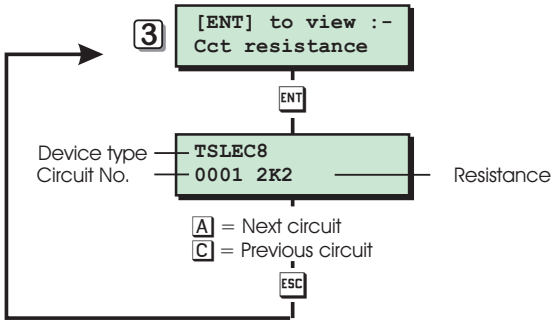
When this test option is selected the battery charging voltage at the control panel is displayed, the accuracy of this measurement is ± 0.2V.

Current Consumption

When this test option is selected the total current consumption for the system is displayed, the accuracy of this measurement is ± 50mA.

View Circuit Resistance

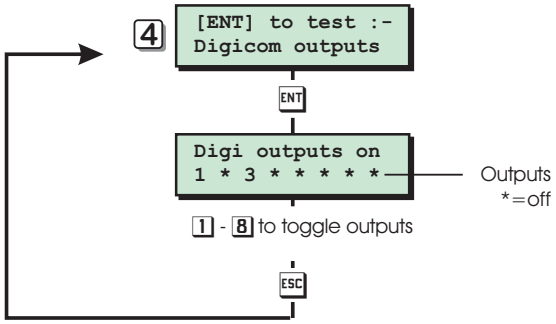
When this test routine is selected the resistance for each detection circuit may be measured, the accuracy of this measurement is ± 0.1 KOhms.



View Circuit Resistance Flowchart

Test Digicom outputs

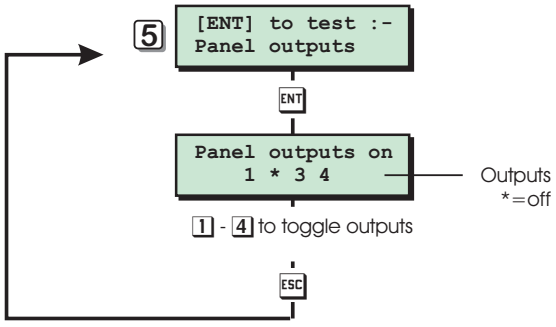
This test routine allows the engineer to test all eight digicom outputs on the main control panel PCB.



Test Digicom Outputs Flowchart

Test Panel outputs

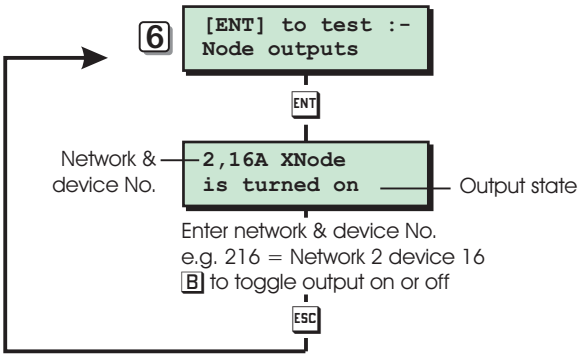
This test routine allows the engineer to test the four control panel outputs.



Test Panel Outputs Flowchart

Test Node outputs

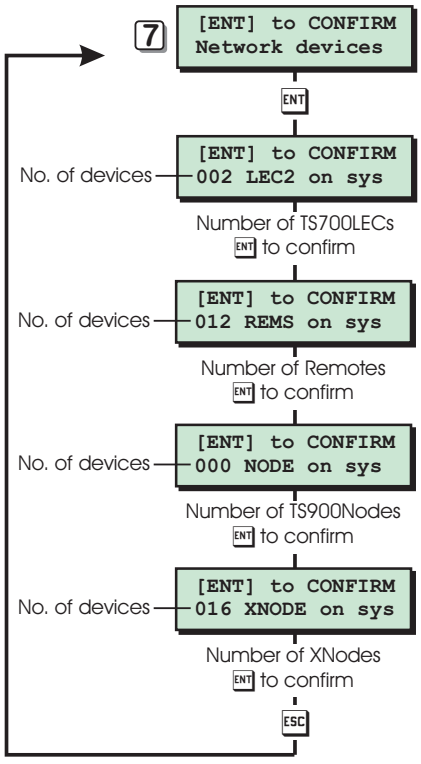
This test routine allows the engineer to test all Node outputs.



Test Node Outputs Flowchart

Confirm Network devices

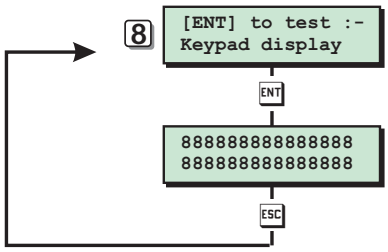
This option allows the engineer to confirm the correct number of devices are connected to the system. After confirmation any changes in the system hardware will cause the "RELEARN REQUIRED" message to be displayed on all remote keypads.



Confirm Network Devices Flowchart

Test Keypad display

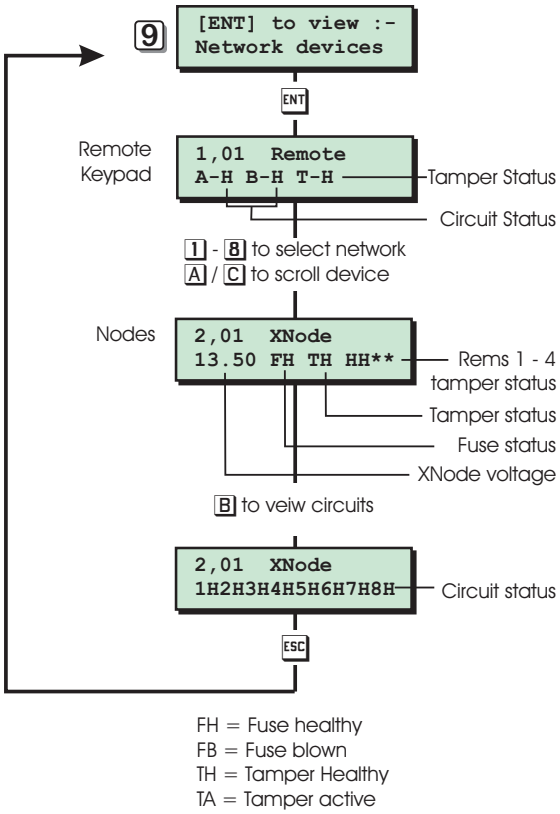
This test routine allows the engineer to test the LCD on all TS900 remote keypads.



Test Keypad Display Flowchart

View Network devices

This test routine allows the engineer to view the status of each device connected to the network. The information displayed will depend on the device type.

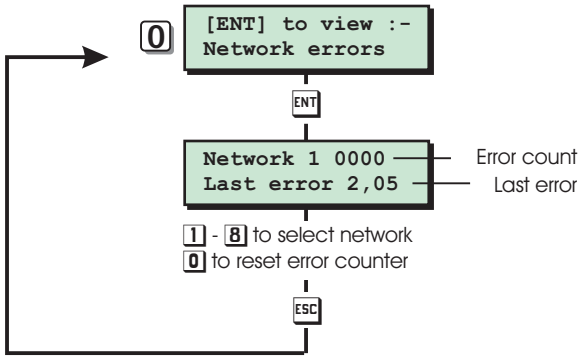


View Network Devices Flowchart

☞ *When selecting this option the remote keypad that you are using is the first device to be displayed.*

View Network errors

This test routine allows the engineer to view the number of data transmission errors for each network.

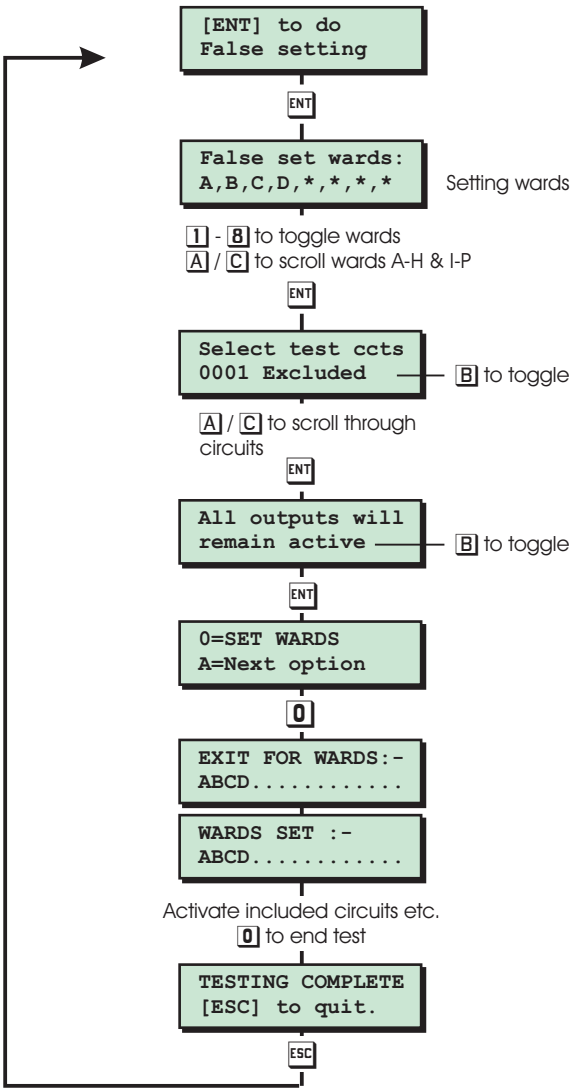


View Network Errors Flowchart

False Setting Routine

This option allows the engineer to set the system whilst the premises are occupied. When selecting this option the engineer can choose the following:

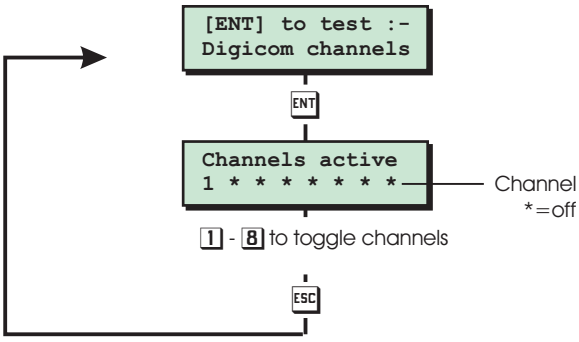
1. The wards that will false set.
2. The circuits that will remain active once the system has been false set. Included circuits will remain active during the false set and excluded circuits will remain isolated during a false set. Normally all circuit default to excluded.
3. All outputs (digicom, bell, strobe etc.) can be enable or disabled during the false set routine.



False Setting Flowchart

Test Digicom channels

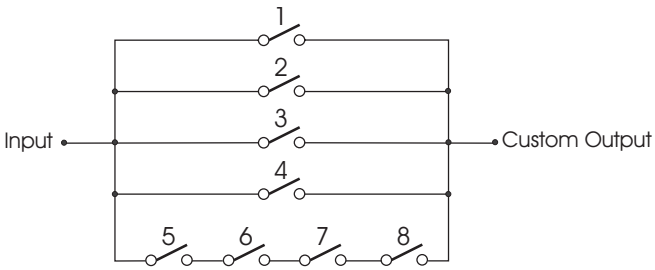
This test routine allows the engineer to test all eight channels for the plug-on digicom.



Test Digicom Channels Flowchart

Custom Outputs [3-A]

This option allows the engineer to program the eight custom outputs type. The diagram below represent the logic circuit for the custom output.



Each switch in the diagram represents a programmable output type, therefore the custom output will only activate when the correct combination of output types are active.

Switches 1 - 4 perform a logical "OR" function and switches 5 - 8 perform a logical "AND" function.

Custom Output - Example 1

This example shows how the "OR" function can be used so that the "Custom Output" activates when circuit 0001 or 0005 or 0016 causes an alarm condition. The table below shows how each switch is programmed to achieve this.

OR		AND	
1	Circuit 0001 Alarm	5	System Always Off
2	Circuit 0005 Alarm	6	System Always Off
3	Circuit 0016 Alarm	7	System Always Off
4	System Always Off	8	System Always Off

☞ *When using the "Custom Output" for "OR" logic only, all unused switches must be programmed to the type "Always Off".*

Custom Output - Example 2

This example shows how the "AND" function can be used so that the "Custom Output" only activates when the system is ward A is set and time switch 1 is active. The table below shows how each switch is programmed to achieve this.

OR		AND	
1	System Always Off	5	Ward A Set
2	System Always Off	6	Time Switch 1 On
3	System Always Off	7	System Always On
4	System Always Off	8	System Always On

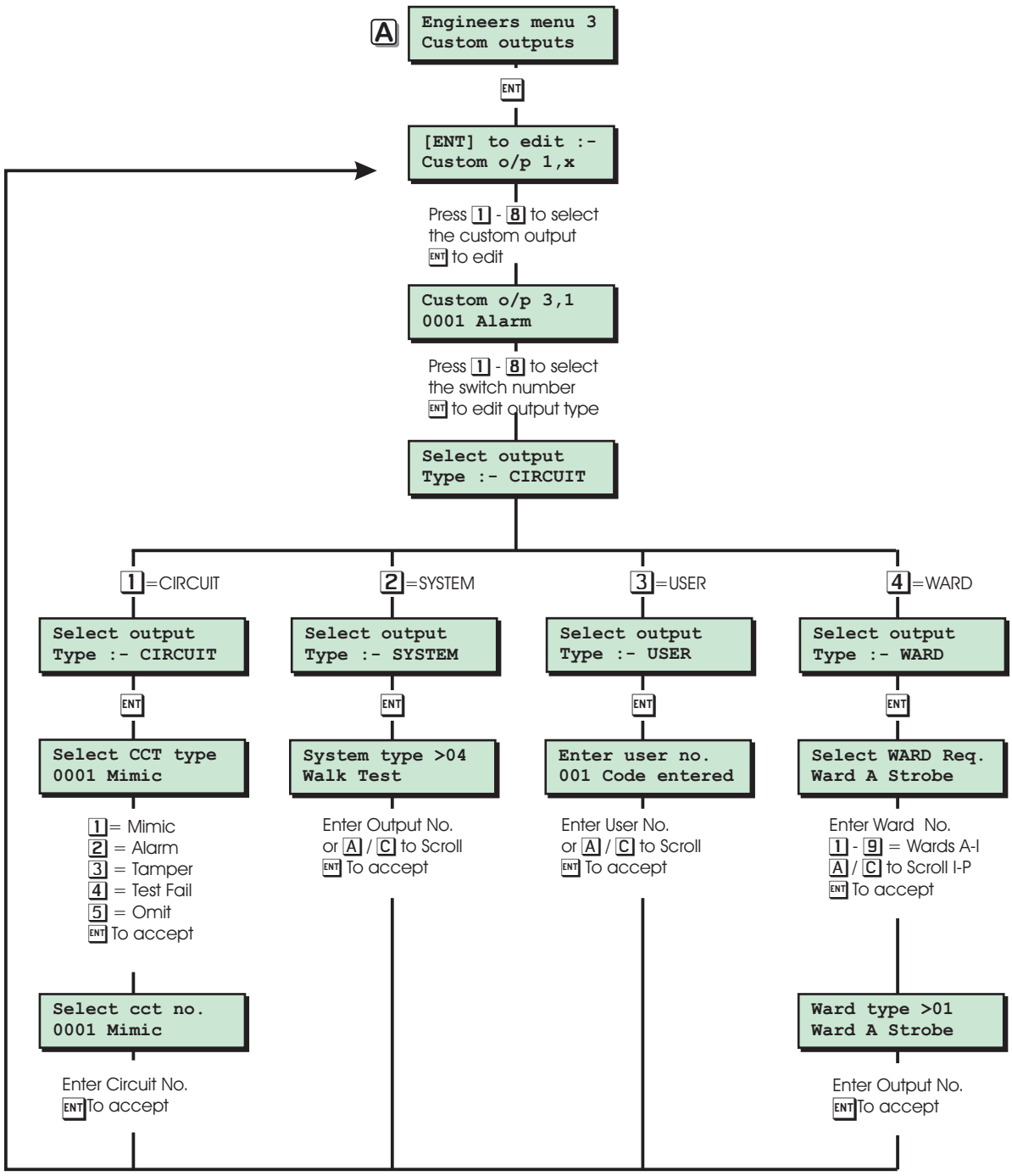
☞ *When using the "Custom Output" for "AND" logic only, switches 1-4 must be programmed to the type "Always Off" and any of the unused "AND" switches must be programmed to the type "Always On".*

Custom Output - Example 3

This example shows how to use both the "AND" and "OR" functions so that the "Custom Output" activates when ward A is set and time switch 1 is active or when the courtesy light output is active. The table below shows how each switch is programmed to achieve this.

OR		AND	
1	System Courtesy Light	5	Ward A Set
2	System Always Off	6	Time Switch 1 On
3	System Always Off	7	System Always On
4	System Always Off	8	System Always On

☞ *When using the "Custom Output" for "AND" and "OR" logic, any of the unused "OR" switches must be programmed to the type "Always Off" and any of the unused "AND" switches (5-8) must be programmed to the type "Always On".*



Custom Outputs Flowchart

Custom Circuits [3-B]

This option allows the engineer to program the eight custom circuit types. Each custom circuit can be programmed to activate the following:

Bell required

A custom circuit with the "Bell required" attribute will activate the control panel bell and strobe output, and any outputs programmed as "System Bell-SAB", "System Strobe". The relevant "Ward Bell-SAB" and "Ward Strobe" are also activated.

Digi required

A custom circuit with the "Digi required" attribute will activate any outputs programmed as "System Alarm" and any relevant "Ward Alarm" outputs.

Sounder required

A custom circuit with the "Sounder required" attribute will activate internal sounders assigned to the same ward as the custom circuit.

Warning required

A custom circuit with the "Warning required" attribute will generate a warning tone every minute from the internal sounder assigned to the same ward as the custom circuit.

Trig Custom o/p
A custom circuit with the "Trig Custom o/p" attribute will activate the relevant "Custom Circuit" output type, e.g. If custom circuit 3 is programmed to trigger its custom output, it will activate "Custom cct 3" output (system output No 82).

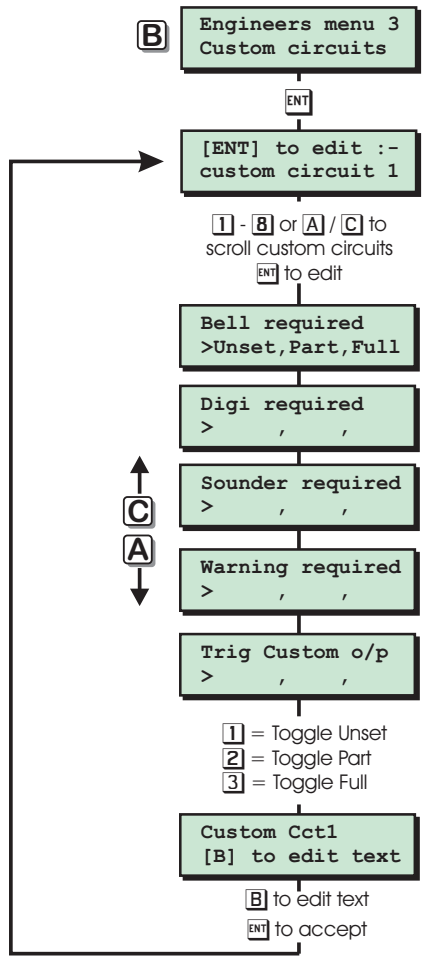
Each attribute can be assigned to the custom circuit so that they are only activated for the following conditions:

Unset
Attributes assigned to the custom circuit for the unset mode will only operate when the ward that the circuit is assigned to is in an unset state.

Part
Attributes assigned to the custom circuit for the part set mode will only operate when the ward that the circuit is assigned to is set and one or more wards are unset, i.e. the system is in a part set state.

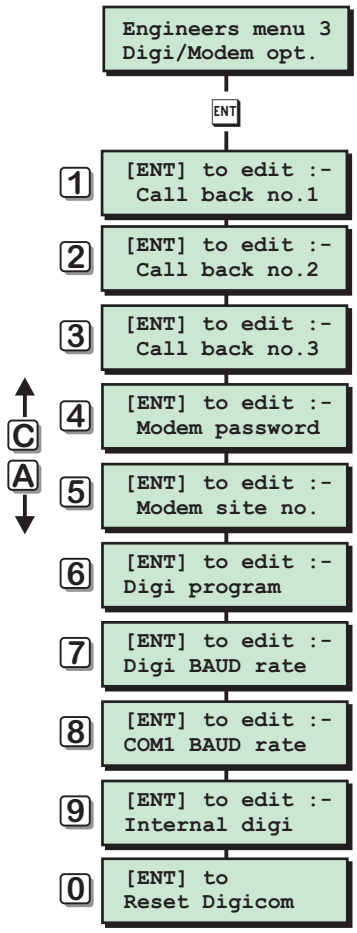
Full
Attributes assigned to the custom circuit for the full set mode will only operate when the system is fully set, i.e. all defined wards set.

Custom Circuit Text
Up to 11 characters can be assigned to each custom circuit. This text is displayed when programming circuits.



Custom Circuits Flowchart

Digi/Modem Options [3-C]
This option allows the engineer to program the plug-on digicom or digi-modem.

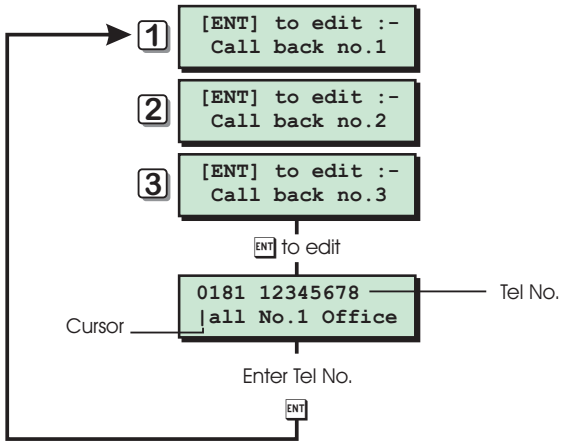


Digi/Modem Options Flowchart

Call Back No.1
This option allows the first call back telephone number to be programmed.

Call Back No.2
This option allows the second call back telephone number to be programmed.

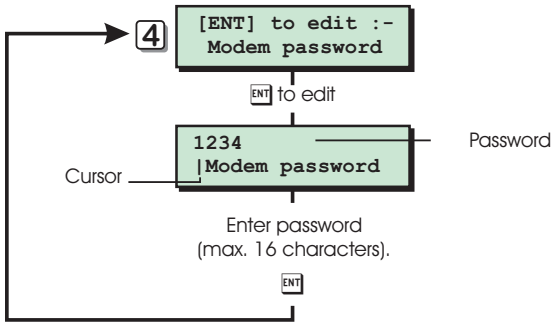
Call Back No.3
This option allows the third call back telephone number to be programmed.



Modem Call Back Numbers Flowchart

Modem Password

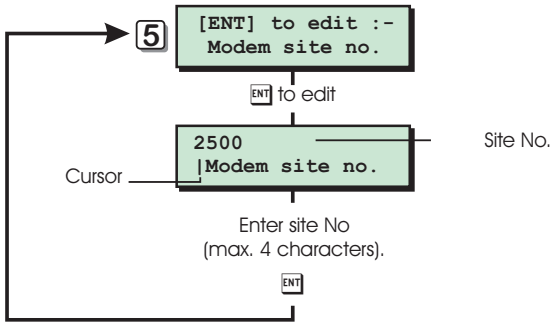
This option allows the modem password to be programmed. The "Modem Password" can be up to 16 character long and provides a means of security for remote communications. When using the "Lineload" software the "Modem Password" in the site profile must match the "Modem Password" that is stored in the control panel.



Modem Password Flowchart

Modem Site No.

This option allows the Modem site number to be programmed. The "Modem Site No." is a 4 digit number that is used as a site reference. When using the "Lineload" software the "Site Reference" number in the site profile must match the "Modem Site No." that is stored in the control panel.



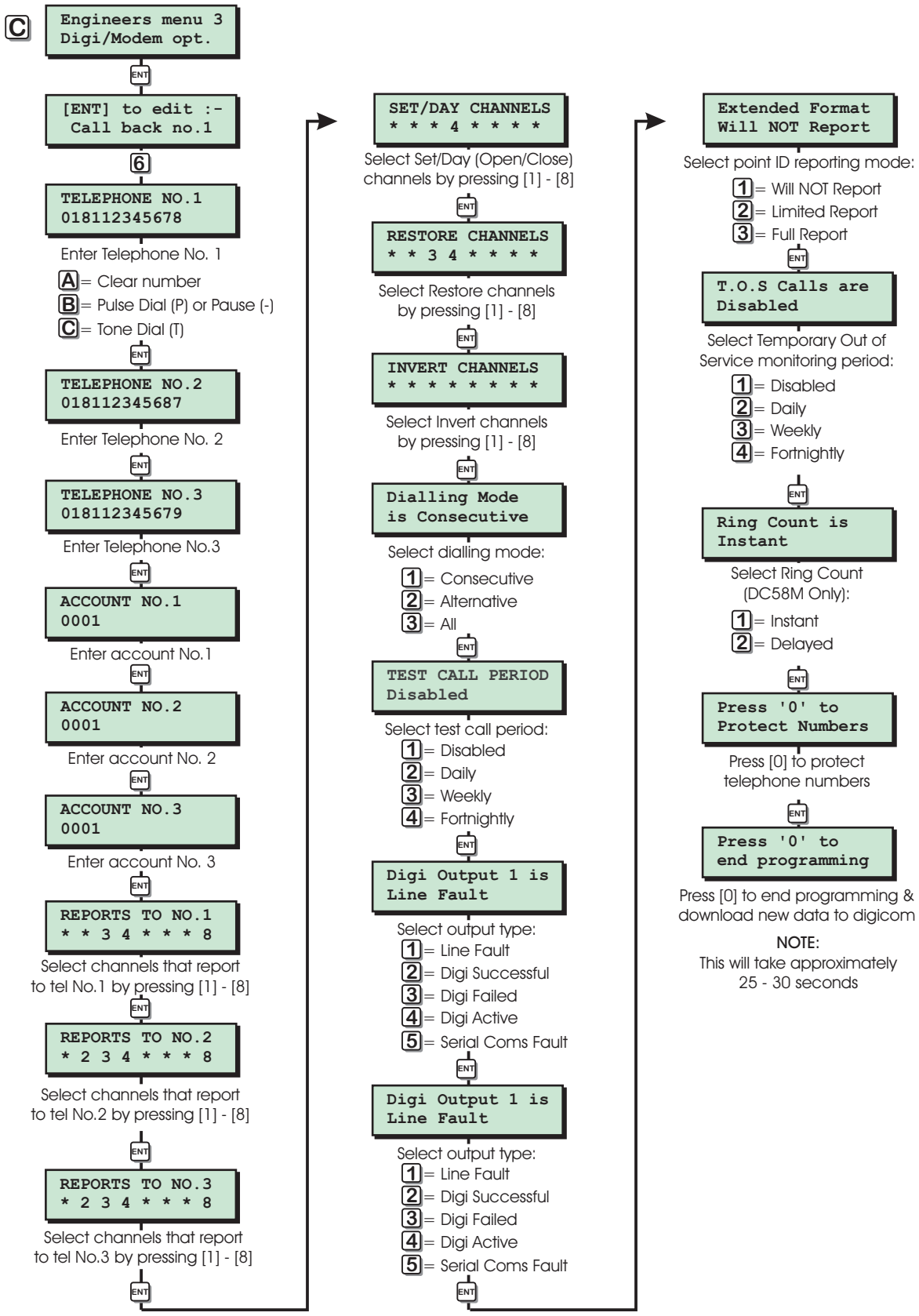
Modem Site No. Flowchart

Program Digicom

This option allows the plug-on digicoms DC54, DC58 and DC58M to be programmed via the control panel.

☞ *When prompted to "press the [0] key to end programming", it will take approximately 25 - 30 seconds to download the new data to the digicom.*

☞ *When using the control panel to program a DC54, the program options that are not applicable can be ignored, e.g. telephone number 3 and channels 5 - 8 are not used by the DC54 and therefore do not require programming.*



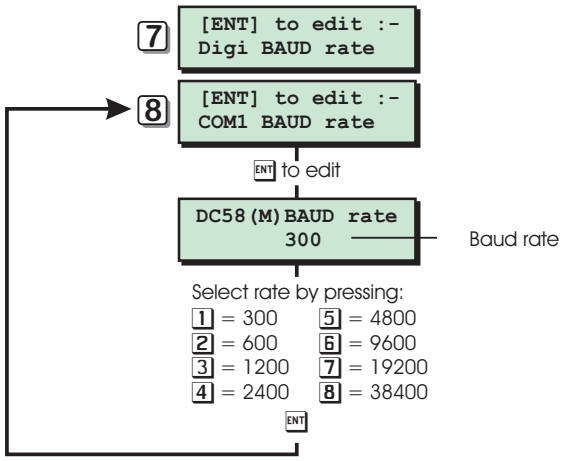
Program Digicom Flowchart

Digi Baud rate

This option allows the engineer to set the baud rate for the plug-on digicom. For the DC54/58/58M this MUST be set at 300 baud.

COM1 Baud rate

This option allows the engineer to set the baud rate for the general communication port (For future use).



Digi & Com1 Bauld Rate Flowchart

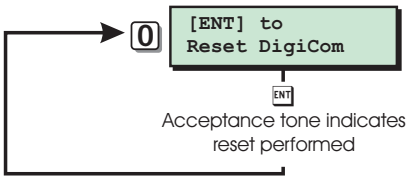
Internal digi

This option allows the engineer to use the DC58/58M as a multi account digicom. This in effect gives you 16 digicoms in one unit. The feature can only be used with DC58/DC58M's fitted with version 2.8 software.

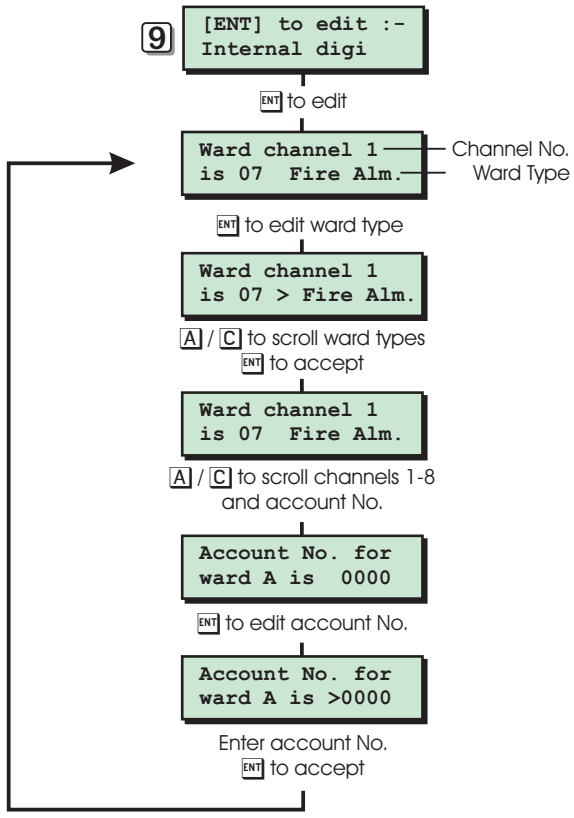
Each channel can be assigned a ward output type, e.g. channel 3 ward alarm. Each ward can then be assigned a four digit account number (if the ward account is set to '0000' then all channels for that ward are disabled).

Reset Digicom

This option resets the plug-on digicom and uploads the digicom NVM data to the control panel. The upload will take approximately 25 - 30 seconds. Once uploaded the data can be edited using the "Program Digicom" option and then sent back to the digicom.



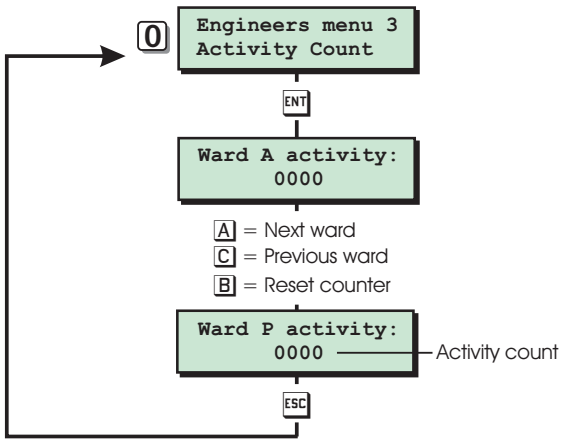
Reset Digicom Flowchart



Internal Digicom Flowchart

Activity Count [3-0]

Circuits with the "Activity Monitor" attribute that have been activated whilst the system was unset cause the "Activity Counter" to be increased by one. This option allows the engineer to view the counter value.



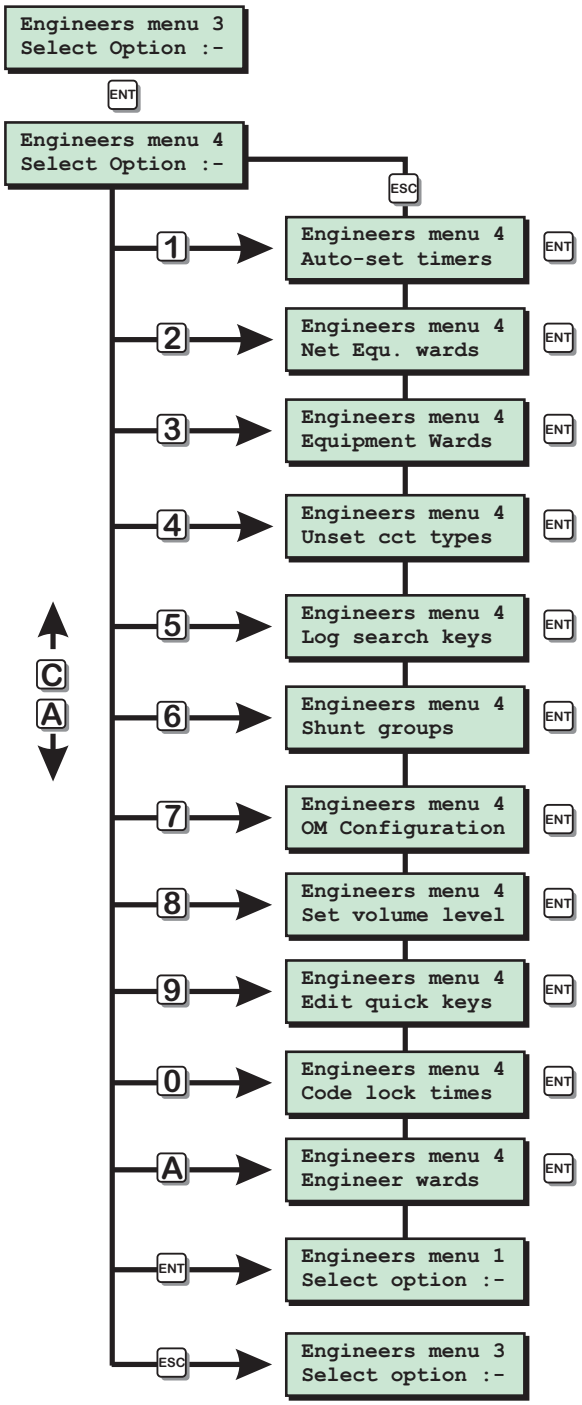
Activity Count Flowchart

Engineers Menu 4

Introduction

Engineers menu 4 is selected by pressing the [ENT] whilst Engineers menu 3 is selected. Each menu option can be selected by pressing the relevant "hotkey" or you can scroll forwards and backwards through the options using the [A] and [C] keys.

Menu Contents



Engineer's Menu 4

Auto-set Timers [4-1]

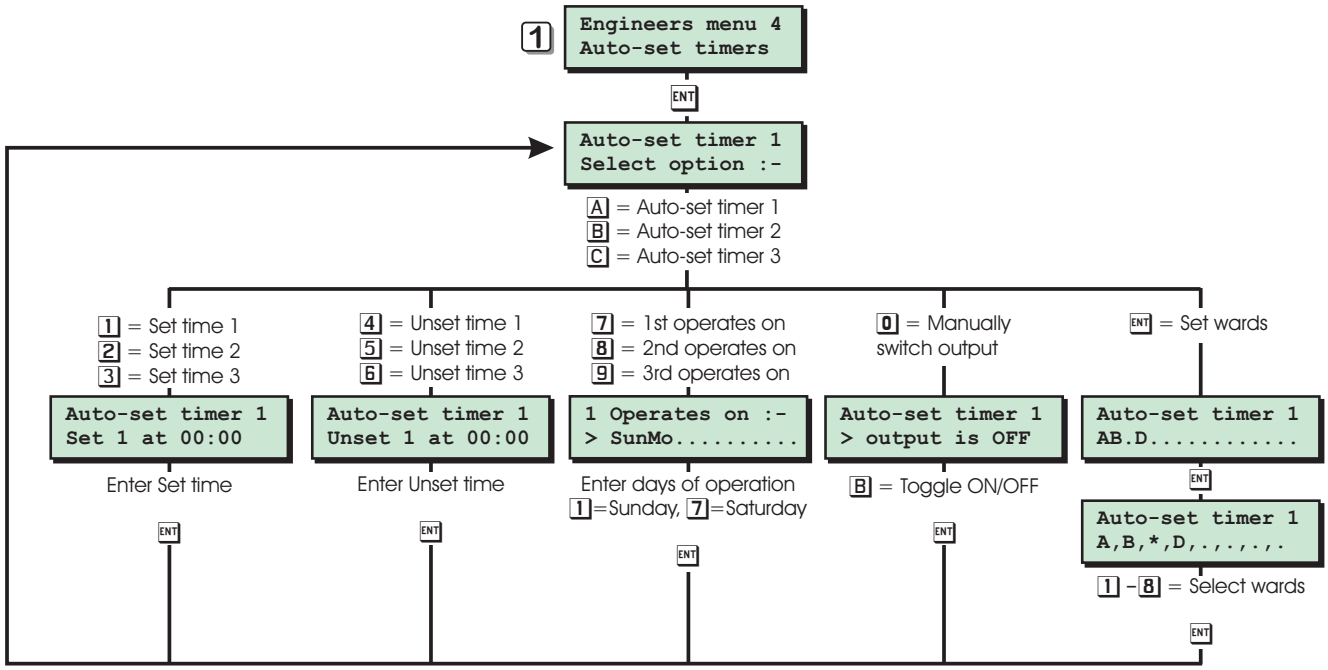
The TS2500 has three auto-set timers, each timer has the following options:

Set times 1, 2 & 3
Each timer has three Independent setting times.

Unset time 1, 2 & 3
Each timer has three Independent unsetting times.

Days of operation 1, 2 & 3
Each of the individual set/unset timers can be programmed to operate on different days of the week.

Set/Unset Wards
Each timer can set and unset any combination of wards A-P.



Auto-set Timers Flowchart

Network Equipment Wards [4-2]

This option allows the engineer to assign remote keypads, XNodes and Nodes to wards.This will ensure that lid tamper alarms from devices on the network have the correct response, e.g. if a Node is assigned to ward A and ward A is unset, an internal alarm is generated when the Node lid is removed. However if ward A is set then a full alarm is generated.

XNodes

The assignment of XNodes to wards will also ensure that the correct operation of remote keypads and extension loudspeaker connected to the XNode. If an XNode is assigned to ward A, the remote keypads and the extension loudspeakers connected to the XNode are also assigned to ward A.

Remote Keypads

The assignment of remote keypads to wards also ensures the correct operation of user passcodes, e.g, if a user is assigned as a "Standard Ward" user type to ward A, the user will only be able to set and unset ward A from a remote keypad that is assigned to ward A.

Keypad Sounder

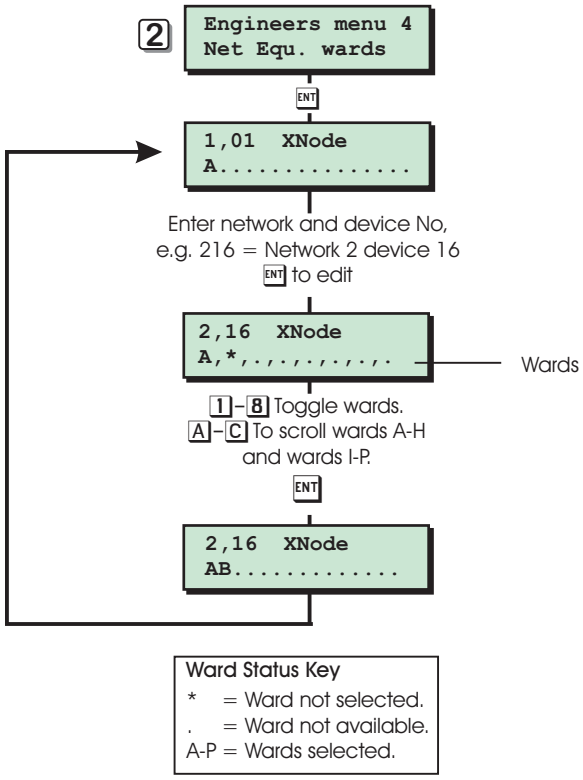
The internal sounder inside each remote keypad will operate as follows:

1. If the remote keypad is connected to an XNode the sounder will follow the assignment of the XNode. For example, if the XNode is assigned to ward B the remote keypad sounder will operate when ward B is in entry, exit or alarm.
2. If the remote keypad is connected directly to a network, the sounder will follow the assignment of the panel speaker *(see "Equipment Wards" on page 80).* For example, if the panel speaker is assigned to wards A & B the remote keypad sounder will operate when wards A or B are in entry, exit or alarm.

Extension loudspeakers

Extension loudspeakers will operate as follows:

1. If the extension loudspeaker is connected to an XNode the loudspeaker will follow the assignment of the XNode. For example, if the XNode is assigned to ward B the loudspeaker will operate when ward B is in entry, exit or alarm.
2. If the extension loudspeaker is connected to the control panel, the loudspeaker will follow the assignment of the panel speaker *(see "Equipment Wards" on page 80).* For example, if the panel speaker is assigned to wards A & B the loudspeaker will operate when wards A or B are in entry, exit or alarm.



Network Equipment Wards Flowchart

Equipment Wards [4-3]

This option allows the engineer to assign the following options to wards.

Panel tamper

The control panel lid tamper can be assigned to any combinations of wards, this will ensure the correct tamper response from a lid tamper alarm.

Bell Box Tamper

The bell box tamper can be assigned to any combination of wards, this will ensure that tamper alarms from external bell have the correct response.

Aux 1 Tamper

Auxiliary tamper 1 can be assigned to any combination of wards, this will ensure that tamper alarms from this input have the correct response.

Aux 2 Tamper

Auxiliary tamper 2 can be assigned to any combination of wards, this will ensure that tamper alarms from this input have the correct response.

Phone Line Fault

The phone line fault input can be assigned to any combination of wards. When a phone line fault occurs the system will respond as follows:

(a) All remote keypads will display "PHONE LINE FAULT".

(b) All internal sounders assigned to the same wards as the "Phone Line Fault" will generate a chime tone every minute on the minute and after the line fault delay timer has expired.

(c) If "Can Set With L.F" is enabled (see configuration) users assigned to the same wards as the "Phone Line Fault" can set their wards but will be asked to confirm that they are setting with a phone line fault present.

(d) If "No Set With L.F" is enabled (see configuration) users assigned to the same wards as the "Phone Line Fault" cannot set their wards until the phone line fault is cleared.

Mains Power Off

The mains power off condition can be assigned to any combinations of wards. When the loss of mains power occurs the system will respond as follows:

(a) All remote keypads display "AC OFF".

(b) All internal sounders assigned to the same wards as the "Mains Power Off" will generate a chime tone every minute on the minute and after the mains off delay timer has expired.

(c) If "Can Set-AC Off" is enabled (see configuration) users assigned to the same wards as the "Mains Power Off" can set their wards.

(d) If "No Set-AC Off" is enabled (see configuration) users assigned to the same wards as the "Mains Power Off" cannot set their wards until the mains power is restored.

Payment Timer

The payment timer can be assigned to any combination of wards, when the payment timer expires the selected wards will then be locked into engineer reset/remote reset.

Alarms Engineer Reset

Alarms can be assigned as engineer or user reset for each ward. If a ward is assigned as engineer reset, the ward can only be reset by the engineer or remote reset (if remote reset is enabled for that ward). If a ward is not assigned as engineer reset it becomes user reset and can be reset by any user that has access for that ward.

Tamper Engineer Reset

Daytime tamper alarms can be assigned as engineer or user reset for each ward. If a ward is assigned as engineer reset, a daytime tamper alarm can only be reset by the engineer or remote reset (if remote reset is enabled for that ward). If a ward is not assigned as engineer reset it becomes user reset and can reset by any user that has access for that ward.

Remote Reset

Remote reset can be enabled or disabled for each ward. If a ward has remote reset enabled users have access to the remote reset feature. If a ward does not have remote reset enabled, only the engineer can reset after alarm.

Panel Speaker

The control panel speaker can be assigned to any combination of wards, this will ensure that the sounders only operate when the relevant ward(s) are in alarm, entry & exit etc.

Relearn Required

When the system hardware configuration changes the system requires a relearn. This option allows you to select which wards require a relearn before the ward can be set.

Re-arms applies to

The rearm facility can be applied to any combination of wards. If rearm is applied to a ward the ward will rearm according to the "Number of rearms"' specified in the "System Options", *see page 45.* If rearm is not applied to a ward, the ward will not auto rearm after an alarm, i.e., one activation of the bell.

Hi Security ward

If a ward is selected as "High Security" the ward will always attempt to stay in a set condition. If the ward is unset by a user the remote keypads display "HI SECURE UNSET" and the "Hi Security" timer is started. Every time a detector is triggered in the unset ward(s) the "Hi Security" timer is reset. When the timer expires the system will attempt to automatically set the "High Security" ward(s).

Digi in Part Set

When the system is full set (all defined wards set), an alarm in any ward will trigger the digicom. This option allows you to select which wards will trigger the digicom when the system is in a part set state.

System Bell/STB

This option allows you to select which wards will trigger the main bell and strobe outputs on the control panel.

Ward A Foyer Mode

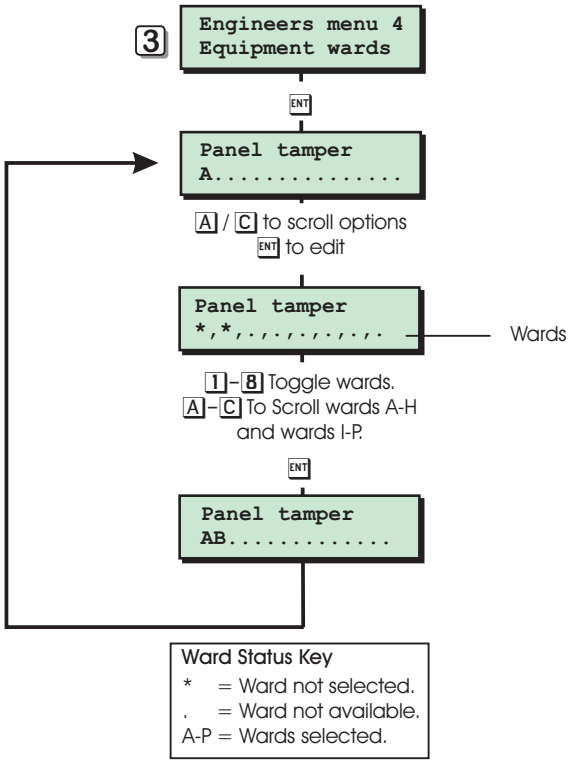
The "Ward A Foyer Mode" allows you to create a common area that is automatically set when all the wards that are assigned to it are set. Ward A will also automatically unset when any one of the assigned wards is unset. For example if wards B, C and D are assigned to the "Ward A Foyer Mode" the system will automatically set ward A when the last ward (B, C or D) is set. The system will automatically unset ward A when the first ward (B, C or D) is unset.

Unset fire Signals

This option allows you to designate which wards will trigger the "System Fire" output and "Ward Fire" output when a fire alarm circuit is trigger within an unset ward. If a ward is assigned to this option, a fire alarm from the selected ward will activate the "System Fire" output and the respective "Ward Fire" output when the ward is set or unset. If a ward is not assigned to this option, a fire alarm from the selected ward will only activate the "System Fire" output and the respective "Ward Fire" output when the ward is set.

Double Knock Wards

This option allows you to designate which wards will use the double knock counter *(see "System Options" on page 45)*. If the double knock counter is assigned to a ward, all circuits with the double knock attribute within the selected ward will use the value defined by the double knock counter (1-999). If the double knock counter is not assigned to a ward, all circuits with the double knock attribute within the selected ward will use a default value of 002.

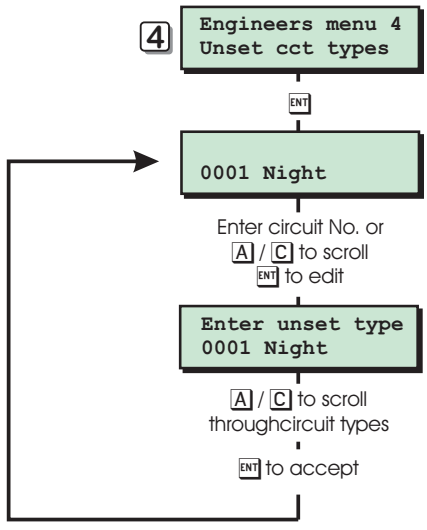


Equipment Wards Flowchart

Unset Circuit Types [4-4]

This option allows the engineer to change the circuit type when the circuit is unset, e.g. detection circuit 1001 can be programmed for night operation whilst the ward is set and then change to PA operation when the ward is unset.

You must program detection circuits in "Engineers menu 1" before programming the unset circuit types. Initially the unset circuit type automatically follows the type programmed in "Engineers menu 1" and must be altered using this option.



Unset Circuit Types Flowchart

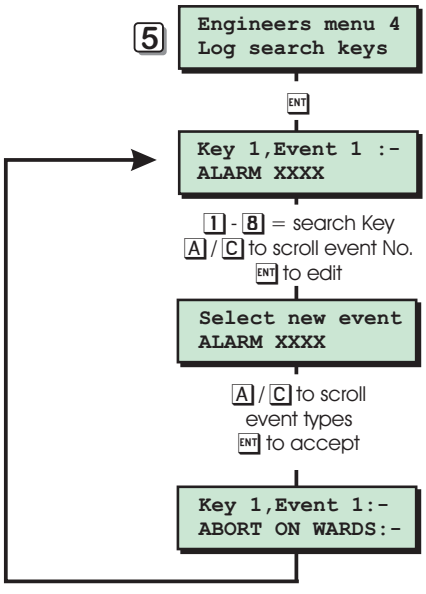
Log Search Keys [4-5]

This option allows the engineer to configure the nine log search keys. When viewing the event log you would normally use the [A] and [C] keys to scroll backwards and forwards through the event log. The log search keys allow you to scroll backwards through the log, but will only display events that meet the search key criteria. Each search key can have up to 5 search events assigned to it.

For example, log search key [1] could be set-up to search for alarms, set wards and unset wards. When viewing the log and pressing [1] the display would show the next event that met the search key criteria, i.e. it would display the next logged alarm, set or unset wards.

If you only want to search for a single event type, then assign all 5 events as the same type. The table below shows the default log search key settings:

Key	Event 1	Event 2	Event 3	Event 4	Event 5
1	ALARM	ALARM	ALARM	ALARM	ALARM
2	24hr ALARM	24hr ALARM	24hr ALARM	24hr ALARM	24hr ALARM
3	FIRE ALARM	FIRE ALARM	FIRE ALARM	FIRE ALARM	FIRE ALARM
4	PA ALARM	PA ALARM	PA ALARM	PA ALARM	PA ALARM
5	TAMPER	TAMPER	TAMPER	TAMPER	TAMPER
6	ENTRY	ENTRY	ENTRY	ENTRY	ENTRY
7	PASS CODE	PASS CODE	PASS CODE	PASS CODE	PASS CODE
8	SET WARDS	SET WARDS	SET WARDS	SET WARDS	SET WARDS
9	UNSET WARDS	UNSET WARDS	UNSET WARDS	UNSET WARDS	UNSET WARDS



Log Search Keys Flowchart

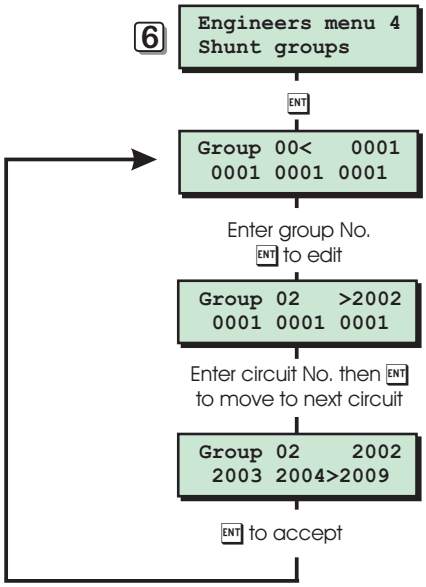
Shunt Groups [4-6]

The TS2500 alarm system has 50 shunt groups each group can have up to 4 circuits assigned to it. Each circuit must have the "Shuntable" attribute assigned in order for it to be shunted. Each group can then be allocated to a user passcode (type "Shunt").

Operation

When a shunt passcode is entered the selected group of circuits are shunted (isolated), this is confirmed by the remote keypads showing "Your circuits are now shunted". When the shunt passcode is re-entered, the selected group of circuits are reinstated and the remote keypad shows "Your circuit are reinstated".

If the system configuration is programmed as "Unshunt, no exit", the shunted circuits are reinstated as soon as the passcode is entered. If the system configuration is programmed as "Unshunt & exit", the exit procedure is started when the passcode is entered and the shunted circuits are reinstated on completion of the exit procedure.



Shunt Groups Flowchart

OM Configuration [4-7]

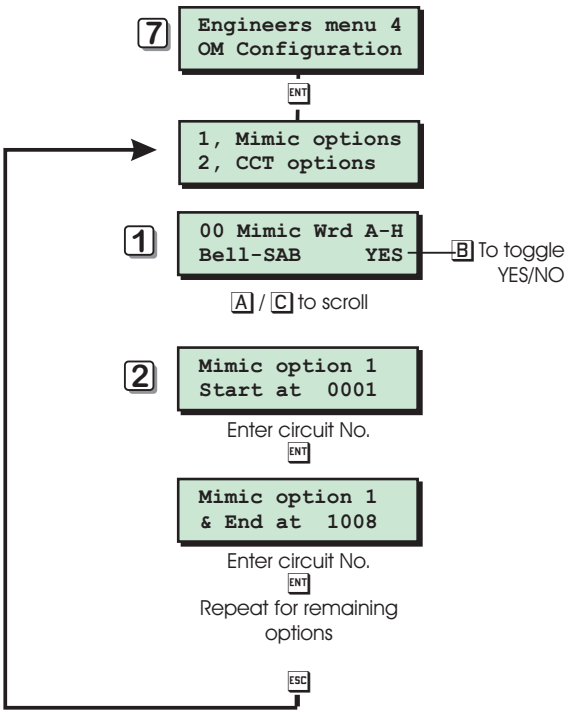
This option allows the engineer to define which ward and circuit status information is sent to the control panel output module port.

Mimic options

The mimic options allow you to define which ward related data is sent to the output module port.

CCT options

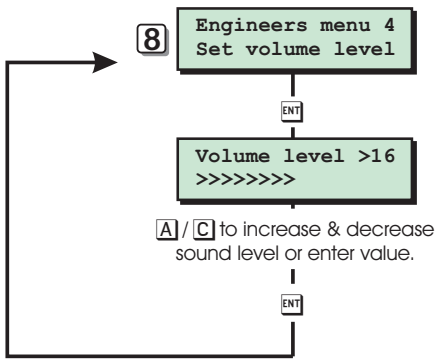
The circuit options allows you to define which circuit related data is sent to the output module port.



OM Configuration Flowchart

Set Volume Level [4-8]

This option allows the engineer to adjust the volume level of the control panel speaker output.

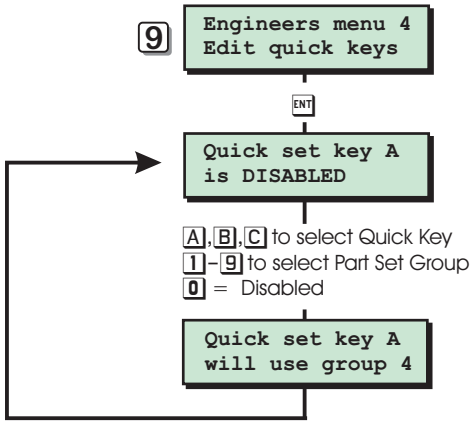


Set Volume Level Flowchart

Edit Quick Keys [4-9]

This options allows the engineer to configure the [A], [B] and [C] keys on the remote keypads to perform set functions. For example, key [A] could be programmed to follow part set group 1, whereas key [B] could be programmed to follow part set group 8.

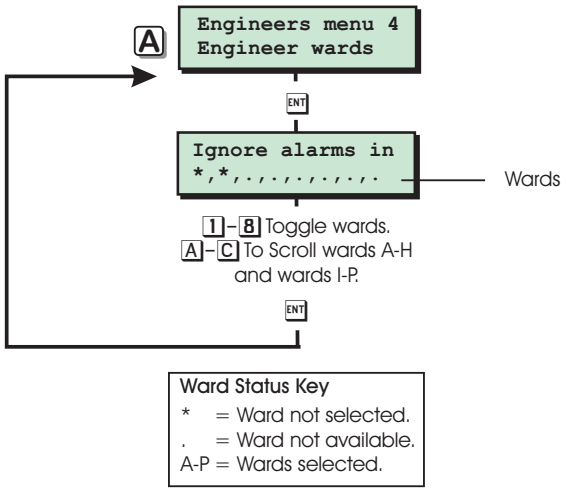
Once defined the quick keys do NOT require the user to enter their passcode, they simply press the relevant "Quick Set Key" and the system will perform the function assigned to that key.



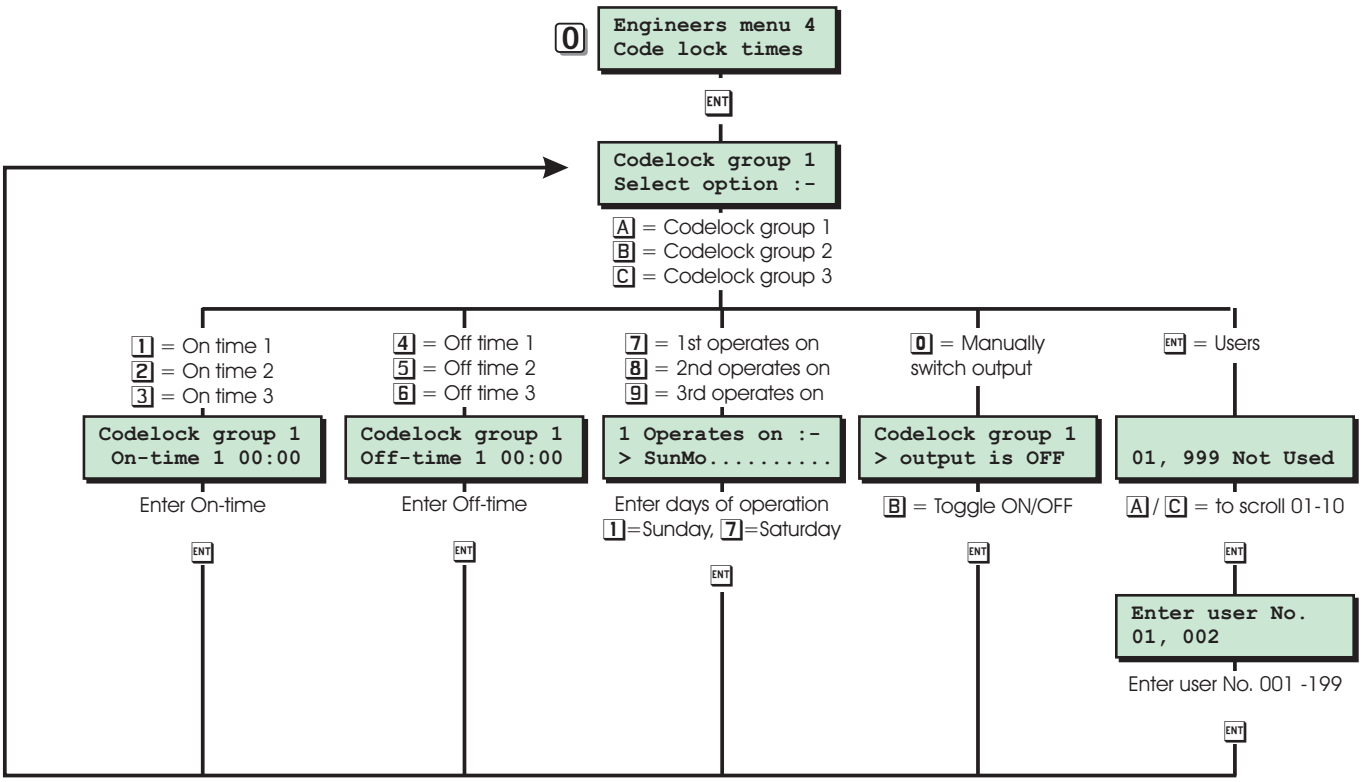
Edit Quick Keys Flowchart

Engineers Wards [4-A]

This option allows the engineer to select wards as "Engineer Wards". When a ward is selected as an "Engineer Ward" all circuits within that ward are NOT monitored whilst the engineer is logged on. If the ward is subsequently set whilst the engineer is still logged on the monitoring of circuits within that ward is resumed. The engineer cannot select a ward that is currently set. This feature allows parts of the system to be disabled and other parts to be kept live when an engineer is logged on.



Engineer wards Flowchart



Code Lock Times Flowchart

Code Lock Times [4-0]

This options allows the engineer to define up to three code lock time groups, each group has the following options:

On- times 1, 2 & 3

Each group has three Independent on times.

Off- time 1, 2 & 3

Each group has three Independent off times.

Days of operation 1, 2 & 3

Each group can be programmed to operate on different days of the week.

Users

Up to 10 users can be assigned to each code lock group.

Operation

Once a user is assigned to a code lock group their passcode is only valid when the code lock group timer is off. If the user attempts to use their passcode whilst the timer is on the display will show "Sorry. Your code is locked out"

Appendices

Text Editing Keys

When programming any text the keys on the keypad function as shown below:

[1] = A	[2] = E	[3] = I
[3] = O	[5] = U	[4] = 0 (zero)
[7] = Move cursor left	[8] = Change case	[9] = Move cursor right
[ENT] = Accept text	[0] = Space	[ESC] = Abandon text editing
[A] = Up the alphabet	[B] = Change cursor	[C] = Down the alphabet

Text Editing Keys

Cursor Types

[^] This is the normal text editing cursor. Use the text editing keys as shown above.

[|] This is the number cursor. Use the numbered keys 0 - 9 to enter numeric data.

[+] This is the insert cursor. Use text editing keys as shown above to insert text at the cursor.

[-] This is the delete cursor. Use key [7] to delete from the left of the cursor and key [9] to delete from the right of the cursor.

Common Key Sequences

Character	Key Sequence	Character	Key Sequence
A	1	U	5
B	1A	V	5A
C	1AA	W	5AA
D	2C	X	5AAA
E	2	Y	5AAAA
F	2A	Z	5AAAAA
G	2AA	:	1CCCCCCC
H	3C	;	1CCCCCC
I	3	<	1CCCCC
J	3A	=	1CCCC
K	3AA	>	1CCC
L	3AAA	?	1CC
M	4CC	@	1C
N	4C	!	0A
O	4	"	0AA
P	4A	#	0AAA
Q	4AA	$	0AAAA
R	4AAA	%	0AAAAA
S	5CC	&	0AAAAAA
T	5C		

Setup New Users

The TS2500 allows up to 199 users to operate the alarm system, each user is assigned a user type, passcode and ward access. User 001 is the master user which has a default setting of 5678.

User Types

The following user types are available:

Master

This user type has access to all fours our user menus and options. A master user is also a global user which allows the user to set and unset their assigned wards from any remote keypad.

Manager

This user type has access to "User menu 1"and "User menu 2". A manager user is also a global user which allows the user to set and unset their assigned wards from any remote keypad.

Standard Global

This user type has access to "User menu 1". A standard global user is also a global user which allows the user to set and unset their assigned wards from any remote keypad.

Standard Ward

This user type has access to "User menu 1". A standard ward user can only set and unset their assigned wards from a remote keypad that is assigned to the same ward(s) that they are trying to set/unset, For example if the user is assigned to wards A and B, then operates the system from a keypad assigned only to ward B, the user would only have the option to set/unset ward B.

Reset Only

This user type allows 24hr alarms to be reset and access to "User menu 1" options 1 to 9. A reset only user is also a global user type which allows the user to reset 24hr alarms from any remote keypad.

Panic Code

This user type does not have access to any user menus nor can it be used to set and unset the system. When this user code is entered a "Panic Alarm"' is transmitted to the alarm receiving centre and the external sounder(s) and strobe light(s) are also activated.

Duress Code
This user type operates in the same way as a standard global user, but when the passcode is used a silent "Panic Alarm" is transmitted to the alarm receiving centre.

☞ *If "Configuration option 02" is set to enabled, all users can generate a "Duress" alarm by entering their passcode with the first two digits reversed (e.g. for a passcode of 2580 enter 5280 to generate a "Duress" alarm).*

Access
This user type does not have access to any user menus nor can it be used to set and unset the system. When this user code is entered it will operate specific outputs which in turn can be used to operate an electric door strike or similar.

Shunt
This user type does not have access to any user menus nor can it be used to set and unset the system. When this user code is entered it will isolate a pre-defined group of detection circuits. When the code is re-entered it will reinstate the group.

Set Only
This user type operates in the same way as a standard global user, except that it only allows setting of wards.

Not in use
This user type does not perform any operation. Select this user type to delete an existing user.

User Wards
Each user must be assigned to wards. Once assigned to wards the user can then set, unset and reset the wards they have been given access to.

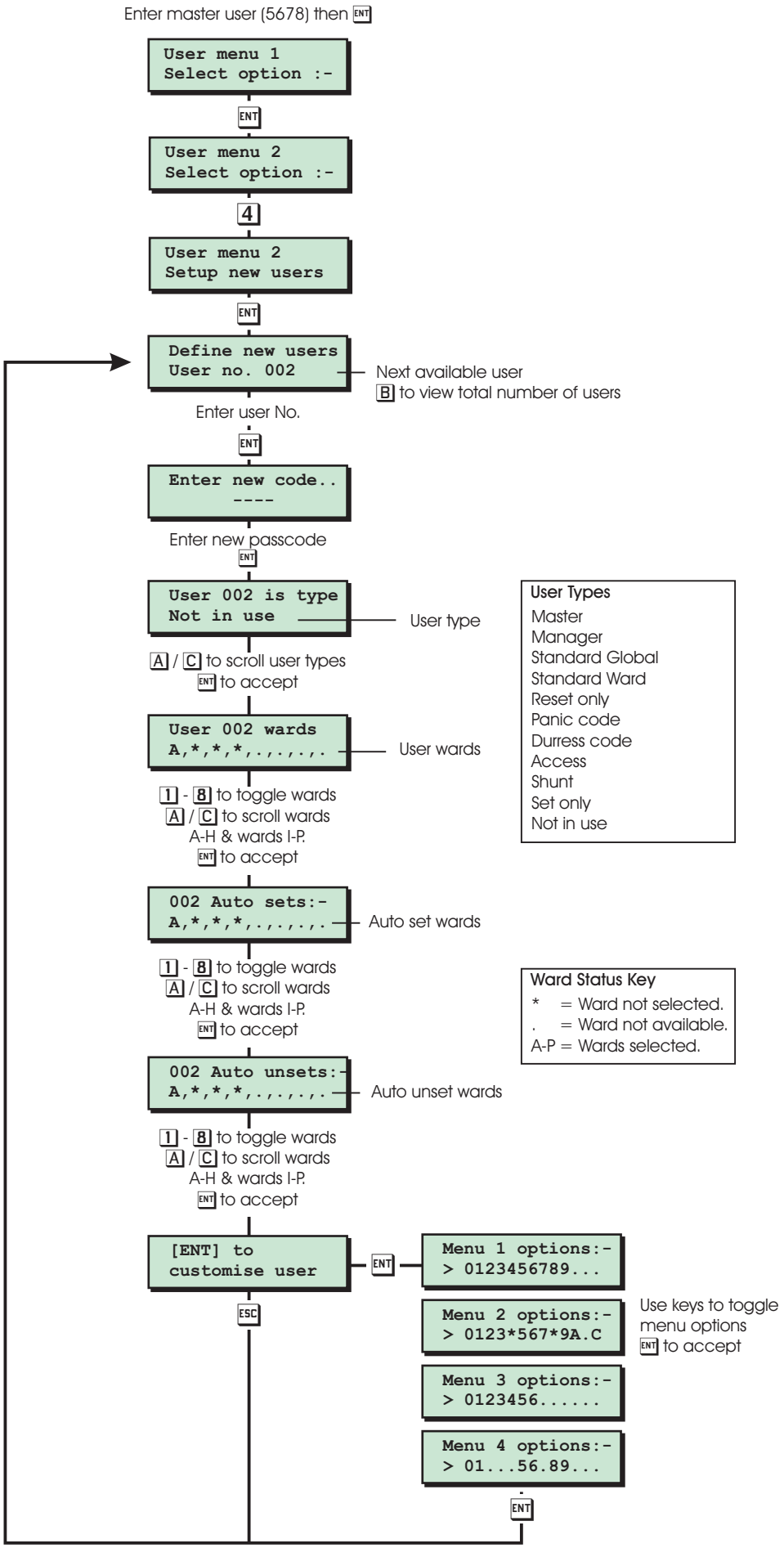
Auto Sets wards
Wards that are assigned as auto set will automatically be selected for setting when choosing the "SET WARDS" option. If a ward is not assigned as auto set the user is given the choice to select the ward at the time of setting.

Auto Unset Wards
Wards that are assigned as auto unset will automatically be selected for unsetting when choosing the "UNSET WARDS" option. If a ward is not assigned as auto unset the user is given the choice to select the ward at the time of unsetting.

Customising Users
Access to user menus is initially defined by the user type, e.g. the manager user has access to user menus 1 and 2, and a standard global user has access to user menu 1 only. However, each user can be customised so that individual options within user menus are available or restricted, e.g. user 002 could be given the initial type of standard ward, then customised to allow the user to access all user menus and options.

The table below shows all four user menus and the options available:

Key	User Menu 1	User Menu 2	User Menu 3	User Menu 4
1	Bell Test	View circuits	Time Switches	Auto-set Timers
2	Walk Test	Set System Time	Part Set Groups	
3	Remote Reset	Set System date	Use On-line Pad	
4	Change passcode	Setup new users	Edit User Names	
5	Enable Chime	Chime Circuits	Part Set Text	Log Search Keys
6	24hr Omit	24hr Group	Circuit Text	Shunt Groups
7	Omit Zones	Print System Log		
8	Silent Set	Alter Wards		Set Volume Level
9		View System Log		Edit Quick Keys
0	Set/Unset	Rem. Serv. Options	Activity Count	Code Lock Times
A		Start Call Back		
B				
C		Set BST/GMT Dates		



Setup New Users Flowchart

Engineer's Quick Reference

Engineers Menu 1

Hotkey	Options	Page
1	Program Panel Outputs 1 = Panel Output 1 (relay) 2 = Panel Output 2 (-ve) 3 = Panel Output 3 (+ve) 4 = Panel Output 4 (+ve)	34
2	Program Digicom Outputs 1 = Channel 1 5 = Channel 5 2 = Channel 2 6 = Channel 6 3 = Channel 3 7 = Channel 7 4 = Channel 4 8 = Channel 8	34
3	Program Digicom Channels 1 = Channel 1 5 = Channel 5 2 = Channel 2 6 = Channel 6 3 = Channel 3 7 = Channel 7 4 = Channel 4 8 = Channel 8	34
4	Program Circuits, Attributes & Wards **Circuit Types** 0 = Not Used 8 = Exit Terminator 1 = Night 9 = Ward Key 2 = 24 Hour A/C = Shunt Key 3 = PA Silent A/C = Tamper 4 = PA Audiible A/C = Security 5 = Fire A/C = 24hr Silent 6 = Auxiliary A/C = Night Perimeter 7 = Final Exit A/C = Custom circuits **Circuit Attributes** 1 = Access 9 = Chime 2 2 = Double Knock A/C = Chime 3 3 = On Test A/C = Inverted 4 = Omittable A/C = Shuntable 5 = Reset A/C = Beam Pair 6 = Activity A/C = Eng. Test 7 = Entry A/C = Monitored 8 = Chime 1 A/C = Non Latching B = Toggle attribute between YES/NO **Wards** 1 - 8 = Select/deselect wards displayed A/C = Toggle wards A-H or I-P B = Select/deselect all wards	40
5	Program System Timers Exit time wards A-P Monitor cct time Entry dly wards A-P Beam pair time Digi dly wards A-P Battery test dur Bell dly wards A-P Answer ring time Bell dur wards A-P Global bell dly Exit settle time Global bell dur 2nd Entry delay Activity delay Double Knock dly Defer setting by Abort duration Battery test Abort delay Hi Security time 2nd alarm time Cct test time Courtesy time Service time Access code time Payment time Menu time-out Test call every Line fault delay Select menu time AC off delay Custom o/p 2 Tmr	42
6	Program Setting Modes A/C =Select ward 1 = Final Exit 2 = Exit Terminator 3 = Timed Exit 4 = Instant 5 = Deferred	44

Hotkey	Options	Page
7	System Print-out 0 = Custom text 8 = Code locks 1 = Modem data 9 = Auto-set times 2 = User codes A/C = Custom Circuits 3 = Configuration A/C = Circuits 4 = Outputs A/C = Equipment wards 5 = Setting modes A/C = Net equipment 6 = System timers A/C = Part set groups 7 = Time switches	44
8	Program System Options Number of rearms Remote resets Modem rings Reset algorithm Keys until tamp Double Knocks	45
9	Program Configuration 00 = Bell is an SAB / Bell is an SCB 01 = View alms P.Set / View alms unset 02 = Duress Disabled / Duress Enabled 03 = Engr Authorised / User Authorised 04 = On-Line Enabled / On-Line Disabled 05 = Lo-sec Engineer / Hi-sec Engineer 06 = Normal answer / Timed answer 07 = Unset ward first / Set ward first 08 = Can set with L.F / No set with L.F 09 = Can set - AC off / No set - AC off 10 = Quiet chimes / Loud chimes 11 = O/P 1 normal / O/P1 inverted 12 = Digi normal / digi inverted 13 = 4 digit codes / 6 digit codes 14 = Modem on Com1 / Printer on COM1 15 = Chime Audible / Chime Visible 16 = Manual Omits / Automatic Omits 17 = Omit Tampers No / Omit Tampers Yes 18 = O/M's mimic cct / O/M's mimic alms 19 = Log Time & Date / Log Time & Day 20 = Global Setting / Local Setting 21 = Global Unsetting / Local Unsetting 22 = 24hr Omit Global / 24hr Omit Local 23 = Ward bell time / Global bell time 24 = Latching Fire / Nonlatching Fire 25 = Online Printing / Offline Printing 26 = Timed code o/p / Latched code o/p 27 = Activity flt ok/ Activity flt Bar 28 = Latching 24hr / Nonlatching 24hr 29 = Access code only / Access all codes 30 = Answer anytime / Answer o/p 1 on 31 = NVM is Unlocked / NVM is Locked 32 = Unshunt & No exit / Unshunt & exit 33 = Ignore errors / View exit errors 34 = Mimic, All times / Mimic, set only B = Toggle between two options	46
A	View Location Text 1 = Panel Location 2 = Remote Location	49
B	Default NVM data 0 = Custom text 8 = Code locks 1 = Modem data 9 = Auto-set times 2 = User codes A/C = Custom Circuits 3 = Configuration A/C = Circuits 4 = Outputs A/C = Equipment wards 5 = Setting modes A/C = Net equipment 6 = System timers A/C = Part set groups 7 = Time switches A/C = Log	49
C	Log Off Engineer	51

Engineers Menu 2

0	Goto User Menu 1 1 = Bell Test 2 = Walk Test 3 = Remote Reset 4 = Change code 5 = Select Chime 6 = 24hr Omit 7 = Omit Circuits 8 = Silent Set Wards 0 = Set/Unset Menu	51

Hotkey	Option	Page
1	View Circuits A/C = Scroll up and down ENT = Toggle text / location	54
2	Set System Time B = Toggle BST / GMT	54
3	Set System Date	54
4	Change Passcode (Engineers)	54
5	Alter Chime Circuits A/C = Scroll up and down ENT = To edit 1 = Chime tone 1 2 = Chime tone 2 3 = Chime tone 3 0 = Disabled	55
6	Alter 24hr Group 1 - 8 = Select/deselect wards displayed A/C = Toggle wards A-H or I-P B = Select/deselect all wards	55
7	Print System Log	55
8	Alter Circuit Wards A/C = Scroll up and down ENT = To edit 1 - 8 = Select/deselect wards displayed A/C = Toggle wards A-H or I-P B = Select/deselect all wards	56
9	View System Log A/C = Scroll up and down B = Toggle user name / No B = Toggle event / ward B = Toggle circuit No / circuit text	56
A	Start Call Back Sequence 1 = Call Back No 1 2 = Call Back No 2 3 = Call Back No 3 B = Enter number required ENT = Start call back sequence	60
B	Reset User Code 1 ENT = Reset user 1 to 5678	60
C	Set BST/GMT Dates	60
0	Remote Service Options B = Toggle Enabled / Disabled	60

Engineers Menu 3

Hotkey	Option	Page
1	Program Time Switches A = Time switch 1 B = Time switch 2 C = Time switch 3 4 = Off Time 1 5 = Off Time 2 6 = Off Time 3 1 = On Time 1 2 = On Time 2 3 = On Time 3 7 = 1st operates on 8 = 2nd operates on 9 = 3rd operates on 0 = Manually switch output	62
2	Part Set Groups 1 - 9/0 = Select part set group ENT = Edit	62
3	Use On-Line Keypad	63
4	Edit User Names A/C = Scroll up and down ENT = Edit text	63
5	Part Set Text 1 - 9/0 = Select part set group ENT = Edit text	63
6	Circuit Text A/C = Scroll up and down ENT = Edit text	64
7	Custom Text Menu 0 = Reset message 1 = Location text 2 = Printer header 3 = Rem reset msg 4 = Printer prefix 5 = Banner message 6 = Part set banner 7 = Aux. Tamper 1 8 = Aux. Tamper 2 9 = Modem string	66
8	Equipment Outputs A/C = Scroll up and down B = Toggle output A / B	67
9	Built In Tests Software Version 1 = Voltage 2 = Current 3 = Circuit Resistance 4 = Digicom Outputs (Panel) 5 = Test panel outputs 6 = Test Node outputs 7 = Confirm Network devices 8 = Test Keypad display 9 = View Network devices A/C = Network errors A/C = False setting routine A/C = Test digicom channels (Plug-on)	68
A	Custom Outputs	71
B	Custom Circuits 1 - 8 = Select custom output 1 - 8 ENT = Edit 1 = Toggle unset 2 = Toggle part set 3 = Toggle set A/C = Bell required A/C = Digi required A/C = Sounder required A/C = Warning required A/C = Trig Custom o/p	72
C	Digi-modem Options 1 = Call back No 1 2 = Call back No 2 3 = Call back No 3 4 = Modem password 5 = Modem site No 6 = Program digicom 7 = Digi Baud rate 8 = COM1 Baud rate 9 = Internal digicom 0 = Reset digicom	73
0	Activity Count A/C = Scroll wards B = Reset counter	76

Engineers Menu 4

Hotkey	Option	Page
1	Auto-set Timers A = Timer 1 B = Timer 2 C = Timer 3 4 = Unset Time 1 5 = Unset Time 2 6 = Unset Time 3 ENT = Select wards 0 = Manually switch output 1 = Set Time 1 2 = Set Time 2 3 = Set Time 3 7 = 1st operates on 8 = 2nd operates on 9 = 3rd operates on	78
2	Network Equipment Wards A/C = Scroll up and down ENT = Edit wards 1 - 8 = Select/deselect wards displayed A/C = Toggle wards A-H or I-P B = Select/deselect all wards	79
3	Equipment Wards 1 = Panel tamper 2 = Bell box tamper 3 = Aux 1 tamper 4 = Aux 2 tamper 5 = Phone line fault 6 = Mains power off 7 = Payment timer 8 = Alarms Eng Reset 9 =Tamper Eng Reset A/C = Remote reset A/C = Panel speaker A/C = Relearn required A/C = Re-arms apply to A/C = Hi Security ward A/C = Digi in Part Set A/C = System Bell/STB A/C = Ward A foyer Mode A/C = Unset fire sig. A/C = Dble Knock wards	80
4	Unset Circuit Types **Circuit Types** 0 = Not Used 1 = Night 2 = 24 Hour 3 = PA Silent 4 = PA Audiible 5 = Fire 6 = Auxiliary 7 = Final Exit 8 = Exit Terminator 9 = Ward Key A/C = Shunt Key A/C = Tamper A/C = Security A/C = 24hr Silent A/C = Night Perimeter A/C = Custom circuits	81
5	Log Search Keys	82
6	Shunt Groups	82
7	OM Configuration 1 = Mimic options 2 = CCT options	83
8	Set Volume Level A/C = Increase / Decrease	83
9	Edit Quick Set Keys A/B/C = Quick set key A/B/C 1 - 9 = Select part set group 0 = Disabled	83
0	Code Lock Timers A = Codelock 1 B = Codelock 2 C = Codelock 3 4 = Off Time 1 5 = Off Time 2 6 = Off Time 3 ENT = Select users 0 = Manually switch output 1 = On Time 1 2 = On Time 2 3 = On Time 3 7 = 1st operates on 8 = 2nd operates on 9 = 3rd operates on	84

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Part No. 496497 Issue 1