DX CONNEXION™

MORLEY IAS **IAS**
FIRE SYSTEMS
by Honeywell

product

manual

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1 Introduction

1.1 Notice

- The material and instructions covered in this manual have been carefully checked for accuracy and are presumed to be correct. However, the manufacturer assumes no responsibility for inaccuracies and reserves the right to modify and revise this document without notice.

- These instructions cover the installation, maintenance and programming of the DX Connexion Series of Fire Alarm Control Panels. Refer to the User Manual (P/N 996-202-00X-X) for details on how to operate the system.

  > For use with software version 1.02, or later.

- The DXc1, DXc2 and DXc4 Fire Alarm Control Panels are 1, 2 and 4 loop panels for use with the range of compatible analogue addressable devices from the appropriate detector manufacturer. Refer to the Product Market Variations Manual (996-220-00X-X) for more details.

1.2 Models

- The DX Connexion Series of Fire Alarm Control Panels, as shown below, are available in two enclosure sizes: the small enclosure for 1 loop and the medium enclosure for 2 or 4 loops. Each panel is capable of supporting up to 80 fire detection zones. If the panel is on a network the range of network zones is 80, so the number of zones supported by any panel would be reduced.

DXc1: 1 Loop Panel
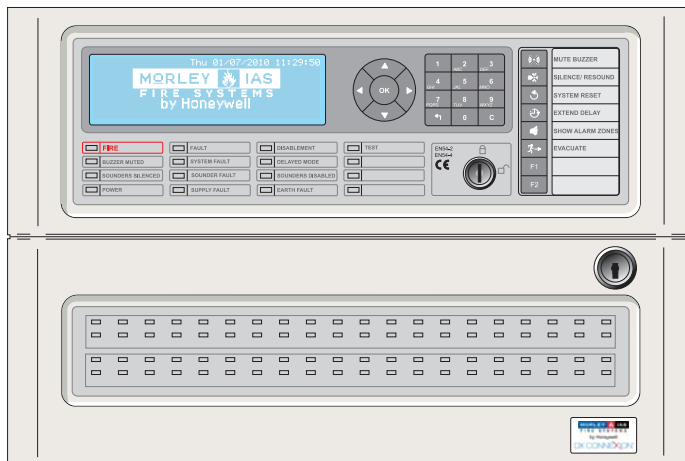
DXc2/4: 2/4 Loop Panel
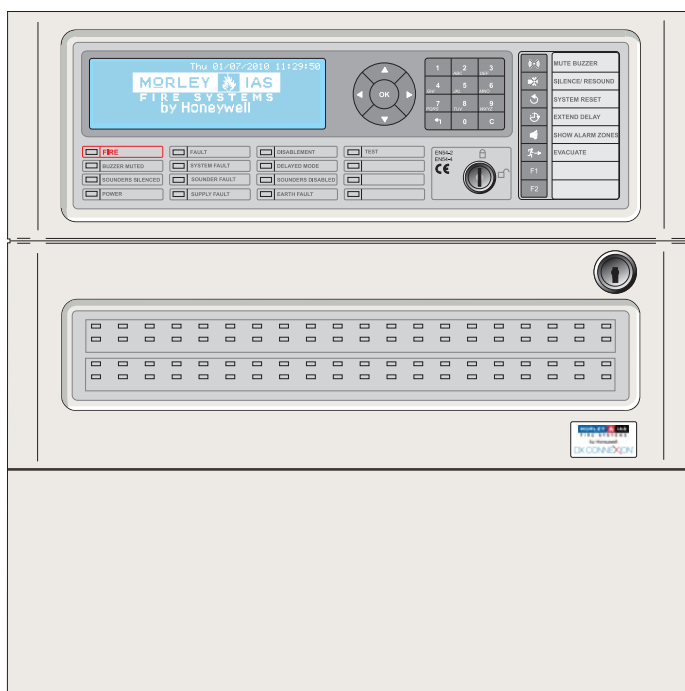
- Installer Fit Options:

- 40 or 80 Fire Zone LEDs

- A front panel keyswitch, P/N 795-098, can be installed in all model variants. This can be used for:

   a) Level 2 User Access Control

   b) Class Change

   c) Bomb Alert

1.3 Warnings and Cautions

These instructions contain procedures to follow in order to avoid injury and damage to equipment. It is assumed that the user of this manual has been suitably trained and is familiar with the relevant regulations.

Electro-static Sensitive Devices.
Take suitable ESD precautions when removing or installing printed circuit boards.

This panel is CE Marked to show that it conforms to the requirements of the following European Community Directives:

The EMC Directive 2004/108/EEC, by the application of the following EMC Standards:

- **EN 61000-6-3: Electromagnetic Compatibility (EMC) Generic emission standard for Residential, Commercial and Light industrial environments**

- **EN 50130-4: EMC Product family standard: Immunity requirements for components of fire, intruder and social alarm systems.**

Low Voltage Directive 2006/95/EEC, by the application of the safety standard:

- **EN 60950-1: Safety of information technology equipment.**

The Construction Products Directive 89/106/EEC, by the application of the following standards:

- **EN 54-2: 1998, (Amd. 1 & 2): Fire detection and fire alarm systems - Control and indicating equipment.**

- **EN 54-4: 1998, (Amd. 1 & 2): Fire detection and fire alarm systems - Power supply equipment.**

CAUTION: A Lithium Battery is used for Clock Retention.
RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE.
Dispose of used batteries responsibly and in accordance with any local regulations.

See Appendix 4 Replacement of Components, Section 1.1 for further details.

EN54-2 13.7
Maximum of 512 sensors / manual call points per panel.

- The DX Connexion Series range of panels has many features that, if used inappropriately, may contravene the requirements of EN54. Where such a possibility may arise, a suitable warning is given with brief details of the EN54 requirement and the relevant section to which it pertains. A typical EN54 non-compliance warning is illustrated.

1.4 National Approvals

- This equipment must be installed and operated in accordance with these instructions and the appropriate national, regional and local regulations specific to the country and location of the installation. Consult with the appropriate Authority Having Jurisdiction (AHJ) for confirmation of the requirements.

- This equipment must be installed in accordance with these instructions and the appropriate national, regional and local wiring regulations.

All equipment is to be installed in accordance with the appropriate standards for the country and area of installation.

1.5 EN54 Information

- This Fire Alarm Control Panel complies with the requirements of EN54-2/4. In addition to the basic requirements of EN54, the panel conforms to the following optional functions.

Option	EN54-2 Clause
Indication:	
Alarm counter	7.13
Fault signals from points	8.3
Controls:	
Delays to outputs	7.11.1
Manual or automatic switching of delays to outputs	7.11.2
Dependency on more than one alarm signal: Type C	7.12.3
Disablement of each address point	9.5
Test condition	10
Outputs:	
Outputs to fire alarm device(s)	7.8

- **The power supplies for the Connexion Series of panels comply with the following clauses of EN54-4.**

DXc1/2/4 Power Supply Functions	EN54-4 Clause
Derive power supply from main power source	5.1
Derive power supply from a standby battery source	5.2
Charge and monitor the standby battery source	5.3
Detect & signal power supply faults	5.4

- In addition to the functions required by EN54-2, the panel supports a number of ancillary functions that are not required by EN54. These are outlined below:	
Ancillary Function	**Manual Section**
Auxiliary supply output	3.4.7
Peripheral loop output & supported devices	3.4.10
Auxiliary relay outputs	3.4.7, 5.2.7
Class Change Input	3.4.9, 5.2.6.1
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Output type filtering	5.3.5.1.5, 5.3.10
Time-of-day filtering	5.3.10.4 & User Manual
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Automatic test selection	5.3.4
Sounder pulsing periods	5.3.5.1.5
Group Disable	5.3.5.1.3 & User Manual
RS232 PC Interface	5.1.2, 5.4 & Appendix 5
Clock - Drift Compensation	5.3.12.2
Diagnostic Mode	5.3.4

2   Unpacking

- The Dx Connexion Series of Fire Alarm Control Panels are simple to install, program and commission if the recommended procedures described in this manual are followed.

- Before installing the Connexion Series Fire Alarm Control Panels, first ensure that all the equipment has been received. The packing box should contain the following items.

Item	Component	Part Number	Quantity
1	DX Connexion Series Fire Alarm Control Panel	As ordered	1
2	Product Manual	996-203-00n-X**	1
3	Product Market Variations Manual	996-220-00n-X**	1
4	User Manual	996-202-00n-X**	1
5	User Guide *	996-214-00n-X**	1
6	Battery Cables Kit [1]	—-	1
7	EOL Resistor (6.8kΩ ½ W)	—-	4

Table 1 - Packing Contents List

*   Frame and mount the supplied User Guide, on the wall, adjacent to the Panel.

**   Different language variants of the manual are identified by the '-00n-' part number descriptor.

Note: The EOL resistors supplied are standard resistors. If EOL resistor assemblies with 150 mm flying leads are required, please order these separately under part number 170-073-682.

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[1]   Battery leads are provided for all models with push-on terminals suitable for 7Ah and 12Ah batteries. Battery leads are also provided for the DXc4 Series panels with ring terminals suitable for 17Ah batteries.

3 Installation

3.1 Identification of Parts

3.1.1 Small Enclosure

- The small enclosure is used for the DXc1 Series panels.
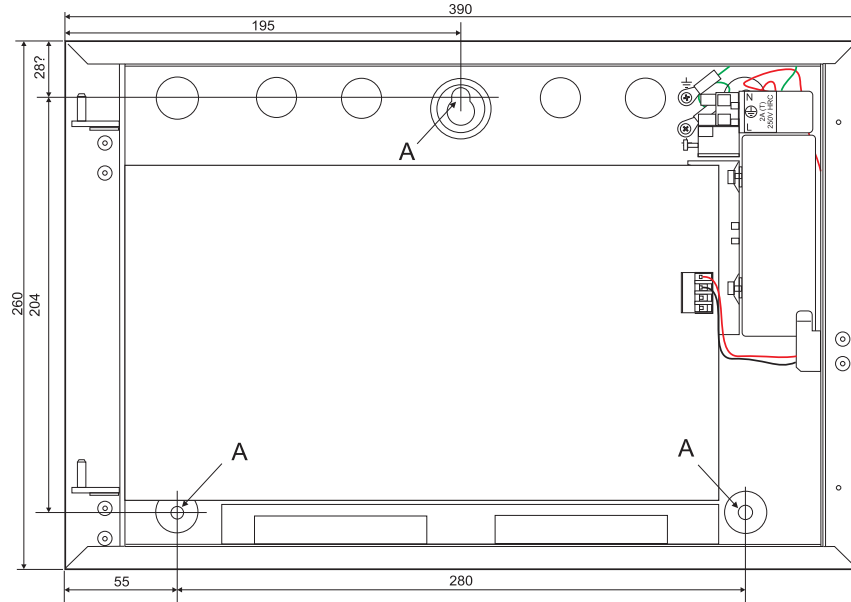
Figure 1 - Dimensions & Fixing Points - Small Enclosure

3.1.2 Medium Enclosure

- The medium enclosure is used for the DXc2 and DXc4 Series panels.
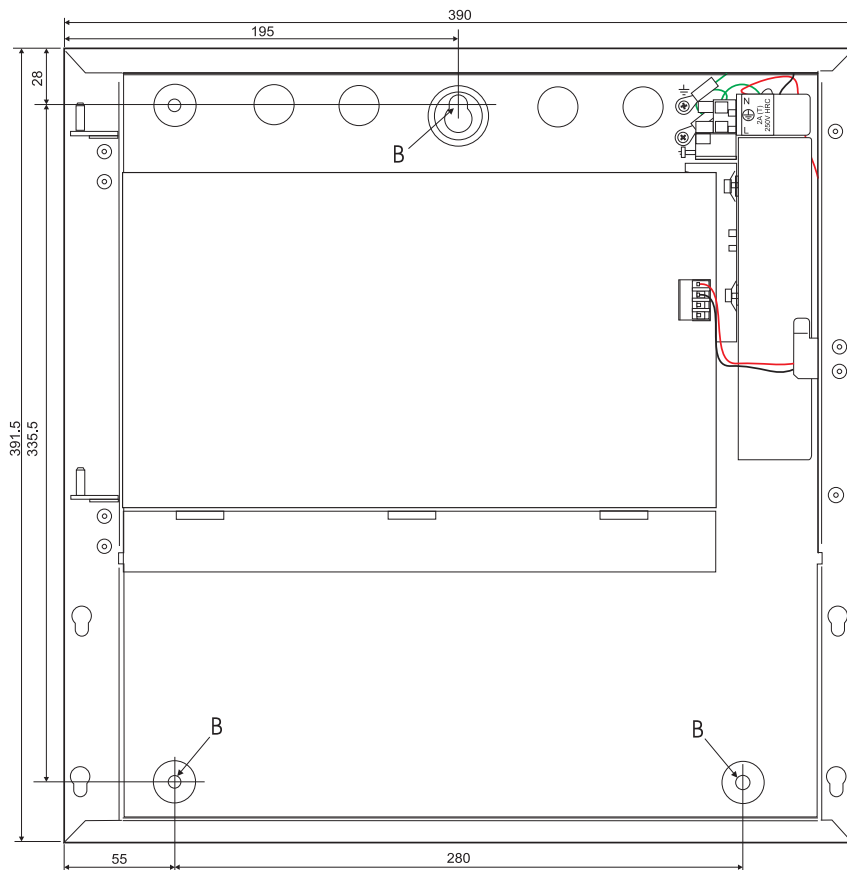
Figure 2 - Dimensions & Fixing Points - Medium Enclosure

3.2   Installing the Enclosure (Surface Mount)

- Using the supplied key open the main door to access the enclosure interior.

- Disconnect the ribbon cable to the Display PCB at the Base PCB (this cable cannot be disconnected at the Display PCB).

- Remove the front cover as follows: with the door at an angle to the enclosure of between 30° and 40°, carefully lift it clear of the two hinge pins - DO NOT force it. If the door does not move up easily, the angle is too small or too large, so adjust the angle in either direction until the door lifts easily.

- If the medium enclosure is to be installed remove the lower cover by moving upwards and pull away. This cannot be removed with the main cover *in situ*.

- The Base card or PSU do not need to be removed from the enclosure if the provided knockouts are to be used. If additional access holes are to be made it is recommended that the Base PCB and PSU are removed to avoid inadvertant damage or contamination.

- Remove the necessary knockouts for the installation cabling.

- Mount the enclosure in the desired location using all three mounting holes A (small enclosure) or B (medium enclosure).

- Use a drill bit diameter 7.0 mm and a suitable 40 mm long expansion plug. Fix the panel to the wall with No. 10 screws length 1½" or M5 screws length 40 mm.

- Install the external wiring into the enclosure using the appropriate glands/ conduit fittings.

- Sufficient knockouts are provided at the top of the enclosure. Refer to wiring sections for recommended positions.

- If you punch out other holes, be sure that they do not interfere with any component mounting positions.

- Use a brush to clean any dust and swarf from inside the enclosure before re-fitting the main door.

To avoid distortion of the back box when preparing knockouts, place the appropriate back box face on a supporting surface (e.g. work bench).

3.2.1 Position of Knockouts

- 20mm knockouts are provided on the top and bottom faces of the enclosures as shown below:

DXc1 Panel   DXc2/4 Panels
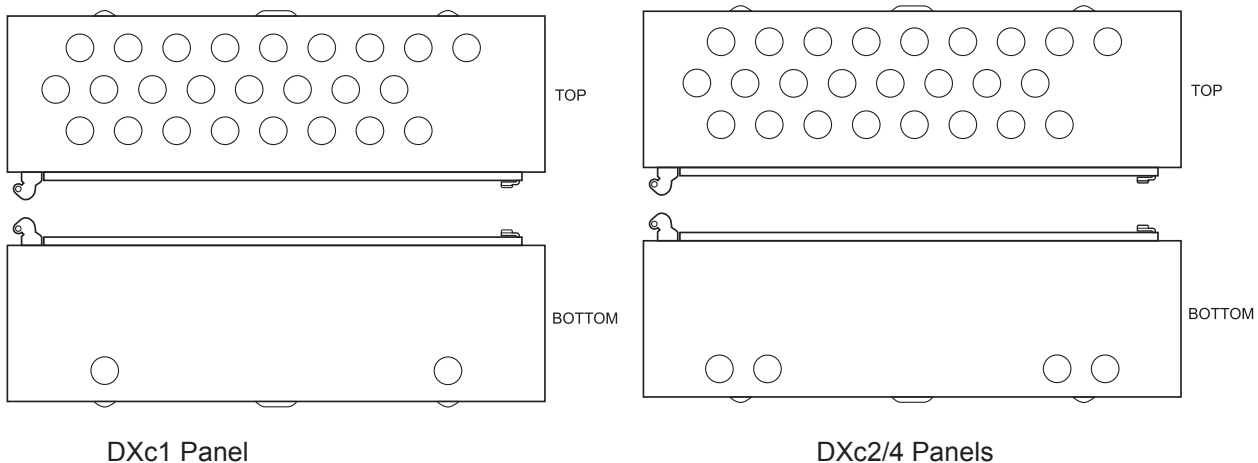
Figure 3 - Position of Knockouts

3.3   Installing the Enclosure (Bezel Mount Option)

- The bezel option is supplied as a separate item.

- The diagram below shows the typical bezel assembly. This arrangement is the same for all bezel options.

- The panel and bezel must be assembled together before fixing into the wall aperture.

- The bezel is fixed to the panel using four screws in positions (A).

Small enclosure bezel

Medium enclosure bezel
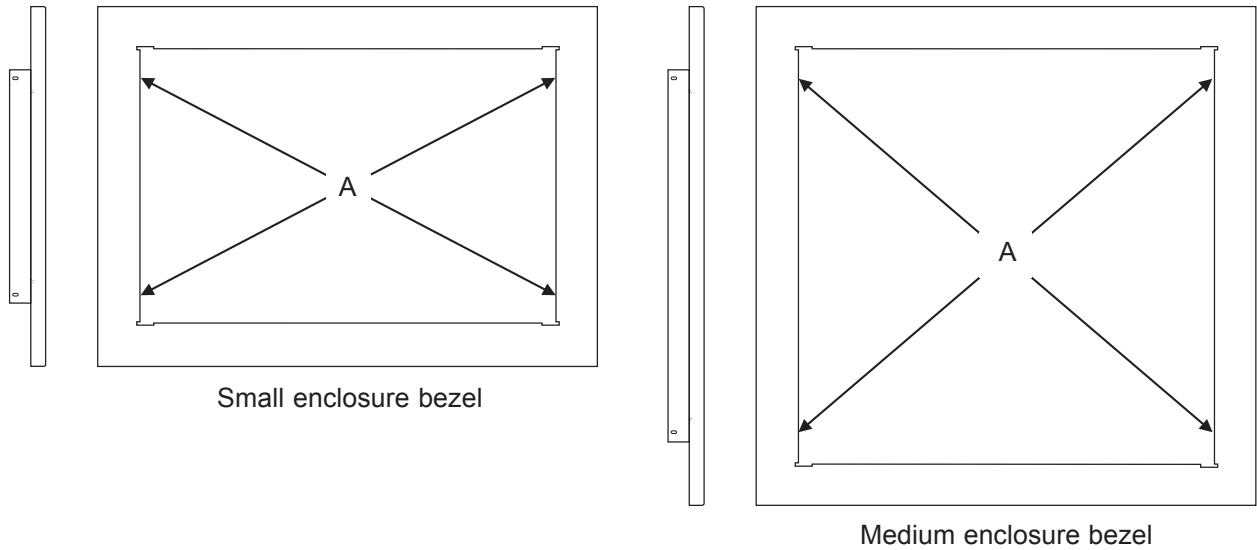
Figure 4 - Small & Medium Bezel Assemblies

3.3.1 Wall Apertures

- Make a recess in the wall large enough for the bezel and enclosure back box to be inserted easily and without unnecessary force. Allow sufficient space for cable entry into the back box. See diagram below for for recommended aperture sizes for the small and medium DXc panel variants.

430mm (All panels)

300mm
Small

430mm
Medium
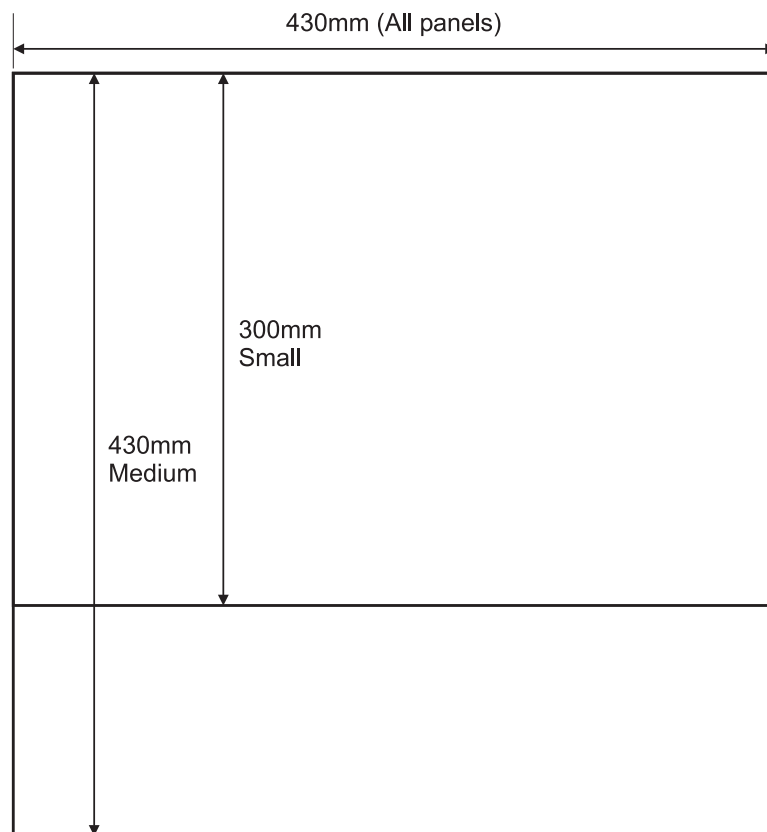
Figure 5 - Recommended Aperture Sizes

3.3.2 Installing the Complete Assembly

- Offer the complete assembly to the recess to check for correct depth and clearance. Repeat this process until the correct depth and clearance have been achieved.

- Support the bezel / back box assembly in the desired position in the recess and mark the three fixing points in the panel (refer to surface mounting installation instructions for positions). Remove the assembly from the recess.

- Drill the supporting wall as described in the surface mounting instructions.

- Remove the required knockouts and install all cable glands as required.

- Orientate the bezel / back box assembly correctly, offer it to the recess, then feed the cables through the glands and take up any excess slack. Secure the assembly in position using appropriate-sized screws as described in the surface mount installation. To avoid distorting the back box, do not over-tighten the screws.

3.4   External Connections

3.4.1 Introduction

BEFORE INSTALLATION: Refer to Ratings label located on the bracket above the PSU.

- Except for the AC mains input, all external field wiring connections are made using two-part connectors.

- SLC loop wiring is terminated along the top edge of the Base PCB for the DXc1 and DXc2 panel variants. For the DXc4 panel variant, the additional SLC wiring is terminated, using two-part connectors, on a 2-loop expander PCB.

- Other external field wiring is terminated either on the Base PCB or optional plug-in PCBs (RS232, RS485 functions, etc.).

3.4.2 Wiring Installation

- The wiring installation should conform to the national, regional or local standards applicable for the specific installation.

3.4.2.1   Inspection and Testing

- Inspection and Testing should conform to any national, regional or local standards applicable for the specific installation.

- Refer to the Product Market Variations Manual for details of local standards requirements that apply to the inspection and testing of installation wiring.

All installation wiring MUST be checked PRIOR to termination in the panel.

The following checks are recommended:

- Check the continuity of all cable runs (including cable screens).

- Check the impedance of all signal cable runs. Ensure that, in alarm mode, any voltage drops induced do not compromise device operation or compatibility. Ensure that cable impedance does not exceed any specific requirements detailed in the remainder of this document.

- Check the isolation between all cores and between cores and screen/earth. Minimum isolation of 2MOhms is required.

- Check that the screen of all signal cables is not grounded to earth elsewhere in the building and that it is installed in accordance with recommendations – refer to relevant wiring installation sections in this document for more information.

- Check that signal cables are not run in cable trays, or the like, alongside power cables for this and other equipment.

3.4.3 Mains Power Input

- The DX Connexion Series Fire Alarm Control Panel receives power from a single-phase, 230V, 50Hz, mains supply. The mains input terminal block is located on the PSU-mounting bracket and in the same way for all DX Connexion Series variants.

- The incoming power feed cable Ground or Earth (Green/Yellow) wire should be connected to the mains terminal block earth connection – middle terminal.

- Connect the neutral (Blue) wire to the top terminal and connect the Phase or Live (Brown) wire to the bottom terminal. The mains terminal block contains an integral fuse to provide the required over-current protection. Rating of the fuse is quoted on the label (located on the front of the PSU-mounting metal bracket - see **Figure 6**) and in **Appendix 1 Specifications** of this document – only replace with the same type or direct equivalent.

Open and lock out the main circuit breaker before connecting any wiring. Do not power the system until the installation is complete.

Maintain separation between the 230V and the low voltage wiring. Do not route in the same trunking and keep apart in the enclosure.
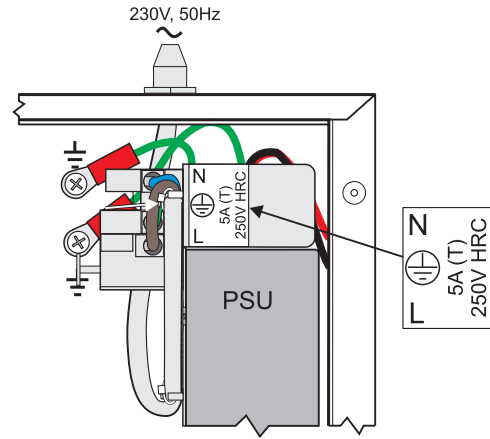
Figure 6 - Mains Input Arrangement - All Panels

- A readily-accessible disconnect device must be incorporated external to the fire alarm control equipment. This device must disconnect both poles (L and N) simultaneously. The device should conform to the requirements specified in EN60950-1, or an equivalent local standard.

The panel shall be supplied with single-phase, AC mains power via a readily accessible, third-party-supplied, disconnect device ('isolation' switch) to facilitate servicing and be provided with suitable earth fault protection incorporated in the building installation wiring. The minimum cross-sectional area of the mains cable should be 0.75mm and the supply should be fused with a 5A HRC anti-surge fuse.

3.4.3.1   Mains Cable Glands

The cable gland and cord anchorage bushing used to route the mains cable through the 20mm knockout MUST have a minimum flame-retardant rating of 94HB.

- Examples of typical glands/ bushings are given in the Product Market Variations Manual.

3.4.4 Battery Installation

- Refer to the **Appendix 2 Standby Battery Calculations** for the size of the batteries required for a particular installation.

Do not make the final battery connections until the installation is complete.

CAUTION: RISK OF EXPLOSION – If battery is replaced by incorrect type.

Battery Lead Connections are not power limited.

Before installation:

New Batteries may require 'top charging' prior to being put into service. Refer to battery manufacturer information for confirmation of this requirement. For further information and for a list of recommended batteries, refer to Appendix 4, Section 1.3.

Ensure the thermistor is affixed to the sidewall of one of the batteries, using a suitable silicon sealant.

When the batteries are connected the panel performs a battery wiring integrity test. If this test fails BATTERY WIRING FAULT is displayed on the LCD. Check for poor battery wiring connections and remedy. If the batteries require charging the test is suspended for a period of up to 12 hours and re-applied. If the batteries have not reached the required minimum voltage the warning is displayed to indicate that the batteries may need replacing.

3.4.4.1   Wiring/ Terminal Block Arrangement

- The wiring / terminal block arrangement is identical for all models.

- Included in the packing is a battery cable kit. Use the cable included in this kit to connect the negative terminal of battery No.1 to the positive terminal of battery No.2.

- Connect the red wire from +ve terminal of Base PCB connector TB17 on the right-hand edge of the Base PCB to the positive terminal of battery No.1.

- Connect the black wire from -ve terminal of Base PCB connector TB17 on the right-hand edge of the Base PCB to the negative terminal of battery No.2.
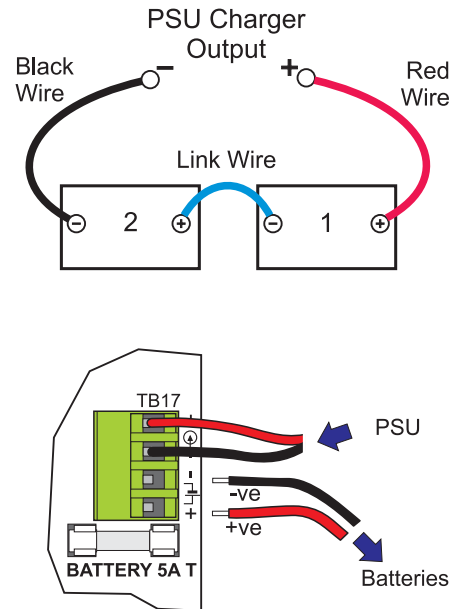
Figure 7 - Battery Wiring/ Terminal Block Details

- The standby batteries should be located in the back box as shown in the diagrams below.

3.4.4.2   Small Enclosure Arrangement

- The diagram opposite shows the position for the 7Ah batteries in the DXc1 Series panel.

- For battery sizes greater than 7Ah, use the medium enclosure models DXc2 or DXc4.

- Alternatively, the batteries should be installed in a separate enclosure suitable for Fire Protection Use, such as Battery Box 797-025-001, with wiring connected to the panel through conduit.
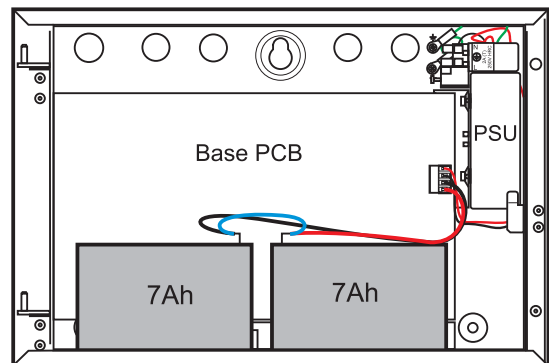
Figure 8 - Small Enclosure 7Ah Battery Installation

3.4.4.3 Medium Enclosure Arrangement

- The diagram opposite shows the position for the 7Ah batteries in the medium-sized enclosure.

- Place the batteries with wiring terminals uppermost and push to the rear of the enclosure.

- The diagrams below show the position for the 12Ah and 17Ah batteries in the medium-sized enclosure.
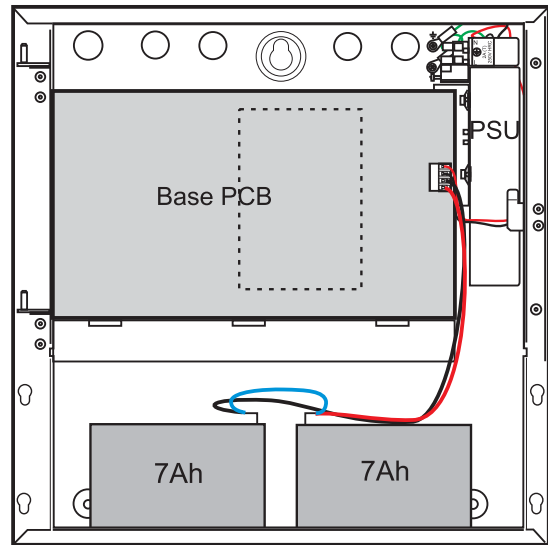
Figure 9 - Medium Enclosure 7Ah Battery Installation
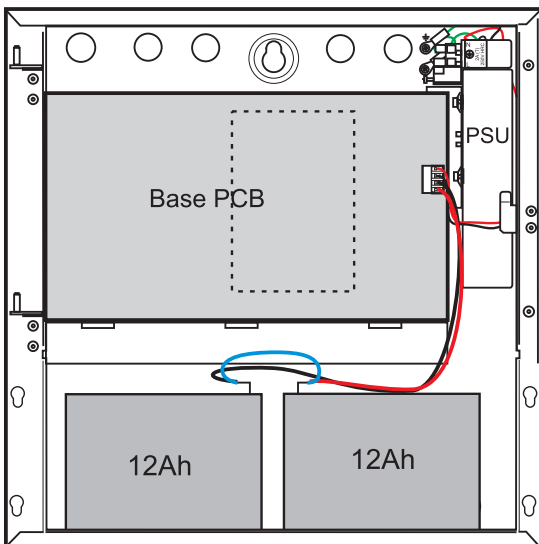
Figure 10- Medium Enclosure 12Ah Battery Installation
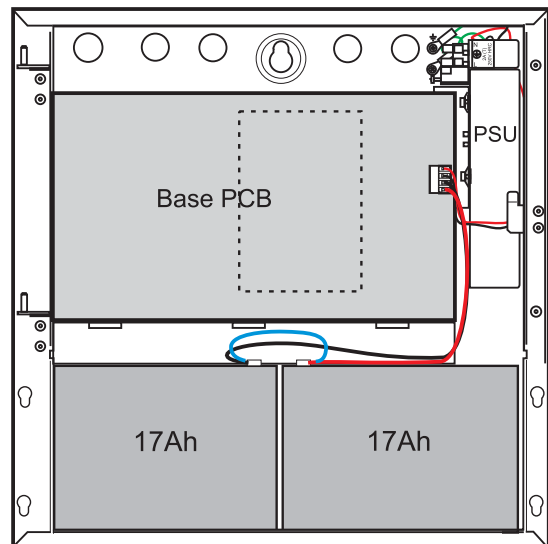
Figure 11 - Medium Enclosure 17Ah Battery Installation

3.4.4.4 Battery Operation

- The main microprocessor of the panel periodical checks the state of the AC Mains, battery and charger circuit. The panel will automatically switch over to the standby battery source when the AC Mains fails.

- When the panel is operating from AC Mains, the panel checks the output of the charger and whether the battery is present. To do this, it momentarily turns off the charger output and checks the battery voltage (battery missing if <15.0V). In a fire alarm condition, the charger is turned off to provide additional current to the outputs.

- When the panel is operating from the battery standby source, the panel will indicate when the battery is low (<21.5V) and will automatically switch off the standby power to prevent irreversible damage (deep discharge) to the batteries (<20.0V).

3.4.5 Detection Loops

3.4.5.1   General Information

-   The control panel supports analogue detectors with a data transmission system. It provides power and communicates with the initiating devices over a two-wire circuit. All signalling loops communicate with the panel using a proprietary protocol. In some market regions the selection of protocol manufacturer is not available. Refer to the Product Market Variations Manual for details.

-   The number of detection loops provided on each of the panels is as follows:

Model	No. of Loops	Enclosure Size
DXc1	1	Small
DXc2	2	Medium
DXc4	4	Medium

**EN54
!**

**EN54-2: 13.7
Maximum of 512
sensors/ MCPs
per panel.**

-   It is possible for up to 800 addressable input points to be connected to the DXc4 Series panel.

-   To comply with EN54-2 requirements, a maximum of 512 sensors/ MCP's (input points) only should be connected to the control panel across all analogue detection loops. This limit includes any conventional detectors/ call points connected to the system via zone monitors.

**EN54
✓**

**EN54-2: 7.1.3
Maximum of 10
secs to respond
to MCP alarms.**

-   The panel conforms with the requirements of EN54-2 for MCP alarm input response time.

The detection circuit should be separated from other cable runs to minimize the risk of external interference. Under extremely noisy conditions, twisted pair wire is recommended to further reduce interference.

The Detection Loop Circuits are supervised and power limited.

3.4.5.2   Cable Requirements

-   Shielded cable must be used for all detection (SLC) circuits. It is important that the shield is always terminated to a good earth connection at both ends of the loop – earthing connection points are provided in the enclosure for this purpose. The shield should never be connected to any other earth point in the building. Refer to **Appendix 1 Specifications** for guidance on recommended fire-rated cables.

-   The core size, length of wiring run and detection circuit loading will produce a voltage drop along the length of the cable. To determine if the loop driver can fully support the planned loop configuration, use the detector manufacturers' calculations for voltage and capacitance.

ALWAYS check that conductors of appropriate diameter are used so that the voltage at the detectors is within the detector manufacturer's specification.

The maximum permitted impedance for the SLC Loop is 40 ohms. This must be reduced if loop powered sounders are installed.

-   The following table lists the maximum recommended cable loop lengths for each detection loop using the indicated cable conductor sizes. Wiring to external devices should follow the appropriate manufacturer's instructions.

Maximum Loop Length			
MICC 1.5mm	18 AWG	16 AWG	14 AWG
2 km	1 km	1.5 km	2 km

Table 2 - Maximum Loop Lengths

- Cable runs in excess of 2km (6400') are not recommended. Otherwise, cable capacitance (Max. 0.5µF per loop) and inductance may start to interfere with data transmission. Refer to the manufacturers' quoted figures for maximum cable capacitance.

3.4.5.3   Loop Wiring Installation

·- The SLC (detector) circuits should be installed as loops with or without isolator modules. The wiring details are as described below.

EN54 !

EN54-2: 12.5.2 Maximum of 32 sensors/ MCPs between isolators.

For best results and system integrity:

The detection loop circuit should be wired as a loop with short circuit isolators. This will allow the system to still function, even if a section of the cable becomes short circuited. It is recommended that short circuit isolators be fitted to the detection loop to prevent an external short circuit from removing more than 32 addressable points from the system.

- The detection loop connections are made on terminal blocks at the top of the base card. The diagrams opposite show the location of the terminal blocks and typical wiring connections.

- The DXc1 variant has only one connector available – i.e. Loop 1. The DXc2 and DXc4 have four connectors available – only Loops 1 and 2 are used on the DXc2.

- Form the loop by taking wires from the positive and negative terminals, at one side of the connector on the base card – see opposite.

- Proceed with installing wiring, around the loop, connecting all devices – see below.

- Return the wiring to the positive and negative terminals at the other side of the connector on the base card.

- Ensure that all devices connected to the loop are correctly oriented for positive and negative connections.

- Refer to the detector manufacturers' data sheet supplied with the signalling device.
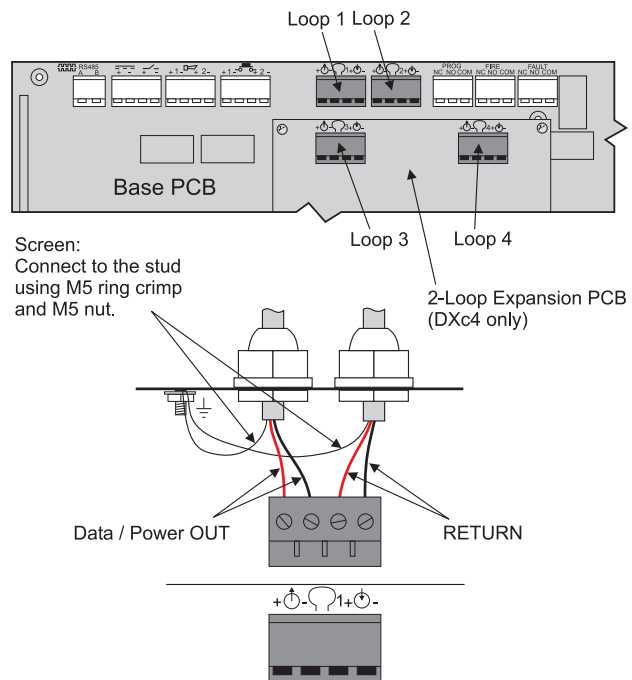
Figure 12 - SLC Connections

FACP Connections

Data / Power (+) OUT

Data / Power (-) OUT

ISOLATORS

Data / Power (+) RETURN

Data / Power (-) RETURN
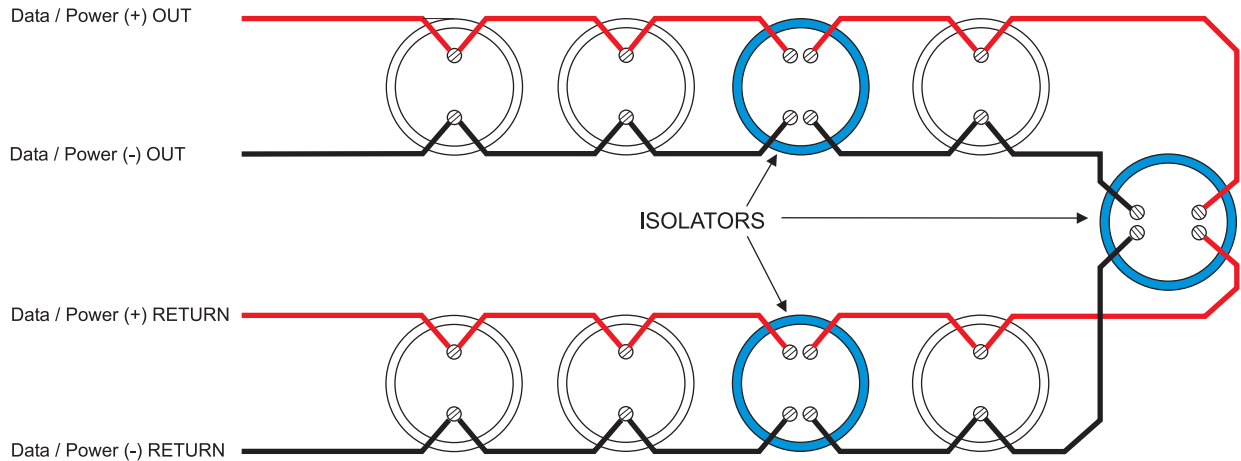
Figure 13 - Loop Wiring with Isolators

DO NOT loop the wiring under any terminals. Break the wire run to maintain supervision.

- It is recommended that short-circuit isolators be installed. Install the isolators at strategic points in the loop (i.e. zonal boundaries) to prevent an external short circuit from removing more than 32 addressable points from the system. Refer to the diagram above for information.

Note: The loop driver modules have built-in isolators so it is not required to place isolator modules on the outputs of the FACP. The Loop functions satisfactorily without isolators fitted, however, this method is not recommended.

3.4.5.4   Unused Loops

- If one of the loops is not to be used, the outputs must be connected to the inputs at the terminal block.

- If the loop wiring is left open, the panel will report an open-circuit wiring fault even though there are no devices connected to the loop.

FACP Connections

Data / Power (+) OUT

Data / Power (-) OUT

Data / Power (+) RETURN

Data / Power (-) RETURN

Figure 14 - Loop Wiring - Unused Loops

3.4.6 Sounder Circuits

- Shielded cable must be used for all sounder circuits. The drain wire should be terminated to a good earth connection at **only one** end of the cable. There are some connection points in the panel enclosure for this purpose. Keep the connection as short as possible. Refer to **Appendix 1 Specifications** for a list of recommended cables.

- The DX Connexion Series Fire Alarm Control Panels have two power-limited and supervised sounder circuits, identified as sounder circuits S1 and S2.

- Each circuit has a maximum rating of 1 Amp.

- Each sounder output is monitored for open and short circuits. An end-of-line (EOL) resistor (6.8KOhms, 0.5W minimum, P/N 170-073-682) must be fitted to the last sounder on the circuit.

- Each sounder should have an integral blocking diode that prevents the sounder from consuming any power in normal monitoring conditions. Monitoring uses reversed polarity. When the sounder circuit is energised the polarity of the sounder output is returned to normal, allowing the sounder to turn on.

- Any other devices connected to sounder outputs must be suppressed and polarized.

Base PCB

Screen:
Connect to the stud using M5 ring crimp and M5 nut.
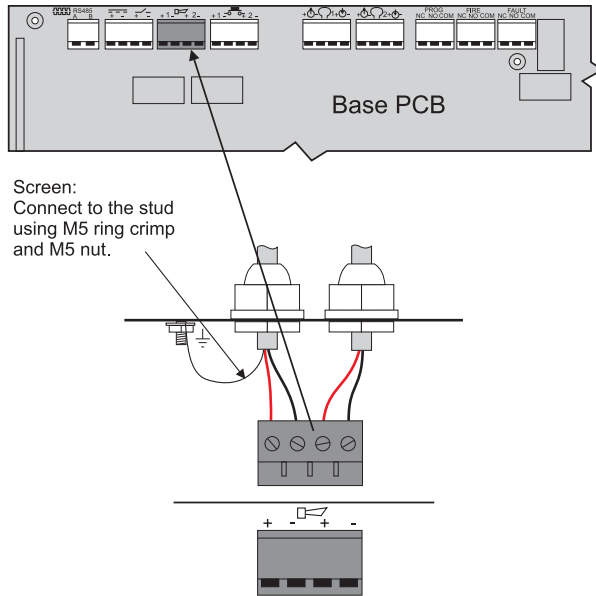
Figure 15 - Sounder Circuit Connections

FACP Connections

SOUNDER 1 (+)

EOL (6.8KOhms)

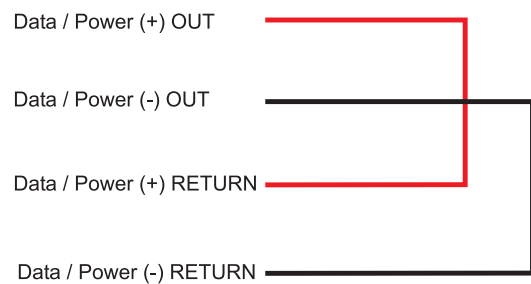SOUNDER 1 (-)

Typical Arrangement

SOUNDER 2 (+)

EOL (6.8KOhms)
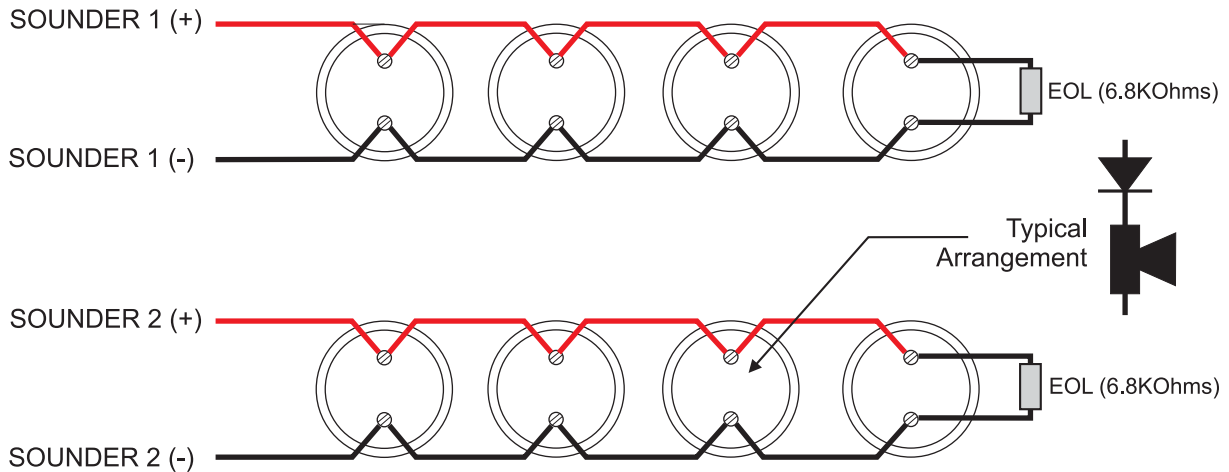
SOUNDER 2 (-)

Figure 16 - Sounder Wiring

DO NOT loop the wiring under any terminals. Break the wire run to maintain supervision.

- Cable runs in excess of 1km (3200') are not recommended. Otherwise, the capacitance and inductance of the cable may affect the performance of the system.

- Always check that conductors of appropriate diameter are used so that the voltage at all sounders is within the manufacturers' specification when the panel is operating under AC Mains failure and minimum battery voltage conditions (Refer to **Appendix 1 Specification** for minimum panel output voltage).

3.4.7 Auxiliary Relay Outputs

- The small enclosure is used for the DXc1 Series panels.

> ⚠ EN54
> !
>
> **EN54-2: 8.8
> Fault Output:
> Relay 1 is configured
> for failsafe operation
> as standard.**

- Relay 1 (FAULT) is normally held in an energized state. It will de-energize under fault conditions.

- The DX Connexion Series Fire Alarm Control Panels have three, unsupervised, relay outputs, with volt-free (dry contact) changeover contacts.

- These are assigned to Fault, Fire Alarm and User Programmable conditions respectively.

- Each output is rated at 24V AC/DC, 1 Amp, 0.6PF.

- Connect the screen drain wire to the nearest earthing point in the enclosure – see loop-wiring section for example.

> ❗ **Do not connect any wiring to the relay contacts that is not power limited.**
>
> **Route wiring away from power limited signal cables.**

Base PCB

Screen:
Connect to the stud using M5 ring crimp and M5 nut.

Note:
PROG relay connection illustrated. FIRE and FAULT relays are wired the same way.

PROG
NC NO COM

FIRE
NC NO COM

FAULT
NC NO COM

PROG FIRE FAULT
NC NO COM   NC NO COM   NC NO COM
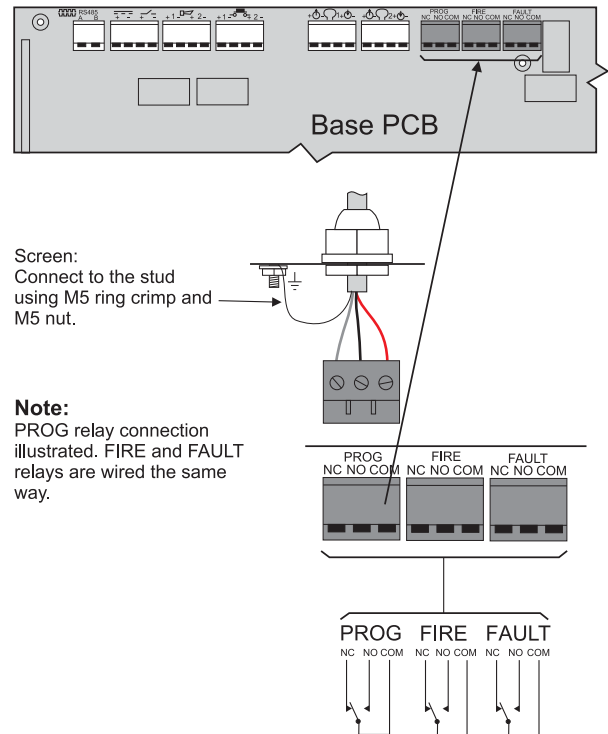
Figure 17 - Relay Circuit Connections

3.4.8 Auxiliary Supply Outputs

- The DX Connexion Series Fire Alarm Control Panels have two power-limited, unsupervised auxiliary (AUX O/P) 24V-output supplies rated at 250mA each/ 250mA total maximum for both circuits.

- The normal AUX 24V can be used to power Remote Annunciator (Repeater) units and other peripheral loop units or other signalling loop units.

- The Switched AUX24V is switched (turned off) on reset for '5' seconds. This reset period is a requirement of input devices such as flame or beam detectors.

- Shielded cable should be used for all AUX circuits.

- Refer to **Appendix 1 Specifications** for a list of recommended cables.

- Connect the screen drain wire to the nearest earthing point in the enclosure – see loop-wiring section for example.

Base PCB

+ - + -

Figure 18 - Auxiliary Supply Circuit Connections

3.4.9 Digital Inputs

- The DX Connexion Series Fire Alarm Control Panels have two power-limited, supervised digital input circuits.

- The circuits can be used as switch input circuits with monitoring for open or short circuit conditions.

- Shielded cable should be used for all digital input circuits wired to switches external to the panel.

- Refer to **Appendix 1 Specifications** for a list of recommended cables.

- Connect the screen drain wire to the nearest earthing point in the enclosure – see loop-wiring section for example.
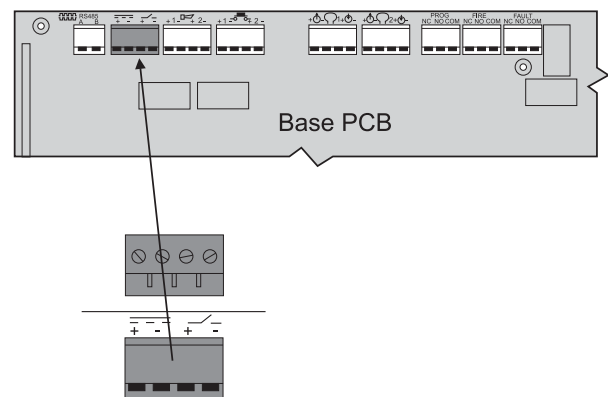
- Refer to **Section 5.3.6 Local Inputs** for details of programming these inputs.

- The normal EOL resistor is 6.8kOhms ½W. Connect the supplied resistor directly across input terminals for unused inputs.

- The diagram opposite shows the arrangement for wiring an input with monitoring.

    Note: The switch / relay output should be wired as 'normally closed' for inactive inputs. The switch should open to activate the input.
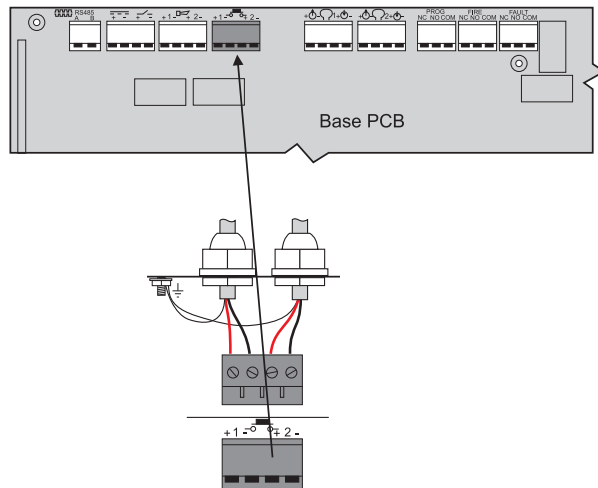
Figure 19 - Digital Input Circuit Connections

6.8kOhms, 0.5W

15kOhms or 2x 6.8kOhms in series (0.5W)

Switch / Relay Contacts
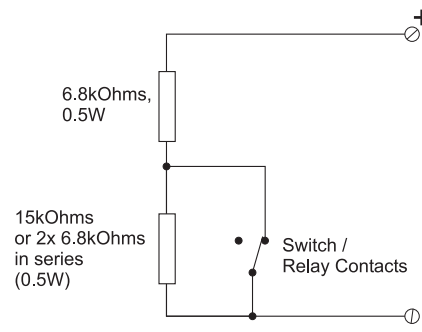
Figure 20- Monitored Circuit Input

3.4.10   RS485 Peripheral Link

> ⚠ EN54 !
> **EN54-2: 8.8 Integrity of transmission paths: The peripheral network does not provide the the required transmission path integrity.**

- The DX Connexion Series Fire Alarm Control Panels can be connected to a range of serial interface devices via the RS485 peripheral loop.

- The RS485 peripheral communications link should be installed in a 'daisy chain' type wiring arrangement.

- Each supervised peripheral device must be given an address. The address can be in the range 1 – 126. Refer to the Installation Guide for each peripheral type for details on the allowed address range.

- The maximum number of physical devices that can be connected to the peripheral loop is 31. This applies only to occasions where passive repeaters are employed at address '0' – the maximum number of addressed (monitored) repeaters being 16.

- The panel supports the following peripheral devices:

Model Number	Device Description	Supervised
ZXr-A	Active Remote Annunciator (Repeater)	YES
ZXr-P	Passive Remote Annunciator (Repeater)	NO[1]

Table 3 - List of Compatible Peripheral Devices

[1]   The ZXr-P may optionally be supervised at the FACP – set the address in the range '1-126' instead of the default '0'.

3.4.10.1   Daisy Chain Style Installation

-    Form the peripheral RS485 link by taking wires from the A and B terminals to the A and B terminals of the next device on the link.

-    Continue wiring to all the units to be connected to the link – connecting A to A and B to B.

-    Install EOL (150Ohms, 0.5W) resistors in the spare terminals in both the first and last units on the link.

-    The maximum allowed length of the link is 1.2km (4000').

-    Shielded cable should be used for all digital input circuits wired to switches external to the panel.

-    Refer to **Appendix 1 Specifications** for a list of recommended cables.
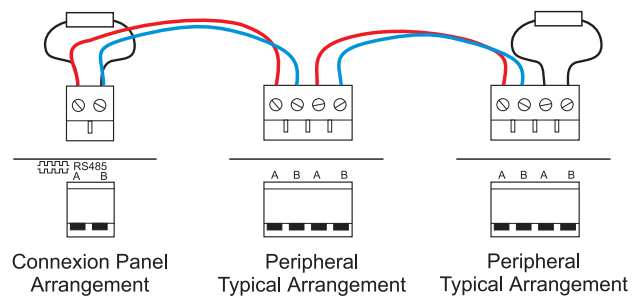
Figure 21 - Typical RS485 - 'Daisy Chain' Wiring

-    The above diagram and instructions are correct for ZXr-A and ZXr-P Repeaters. (Do not re-legend the ABAB terminals in these repeaters with the label supplied). Also the EOL resistors can be configured through correct jumper settings on these repeaters – rather than using the physical EOL resistor arrangement shown above.

3.4.10.2   Cable Screen - Earth Connections

-    During installation of the peripheral link, the consequences of connecting remote grounds together must be considered.

-    When wiring between RS485 circuits and/or peripherals if a drain earth wire is available it should not be bonded to the chassis at both ends of the link.

-    The drain earth wire should only be bonded to one of the panel chasses. The other end should not be bonded directly to the chassis but should be connected through a non-polarised 2.2µFcapacitor. This is shown below.
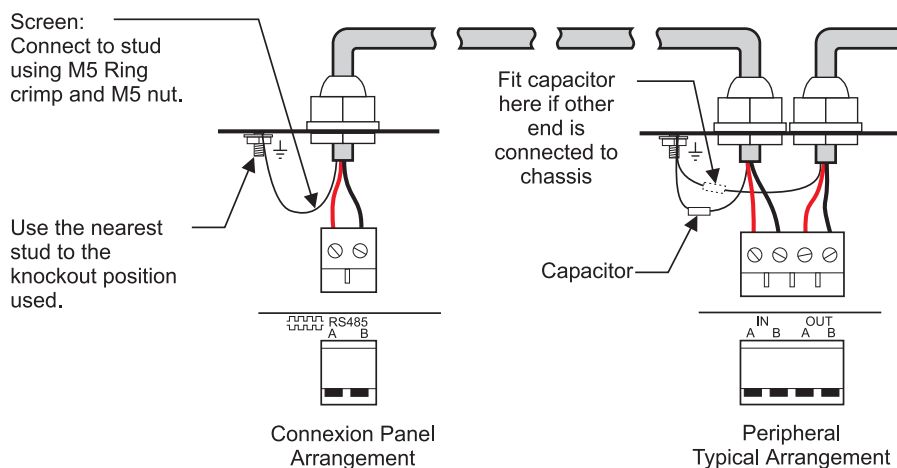
Figure 22 - RS485 Screen - Earth Arrangement

3.4.11 Recommended Cable Routing

- Cables should be routed within the enclosure in accordance with the following diagrams. Ensure that power-limited cables are routed separately from AC Mains and non power-limited cables.

- The diagrams below show typical arrangements for the DXc1 (small enclosure), DXc2 (medium enclosure) or DXc4 (medium enclosure) including recommended top-face knockouts.
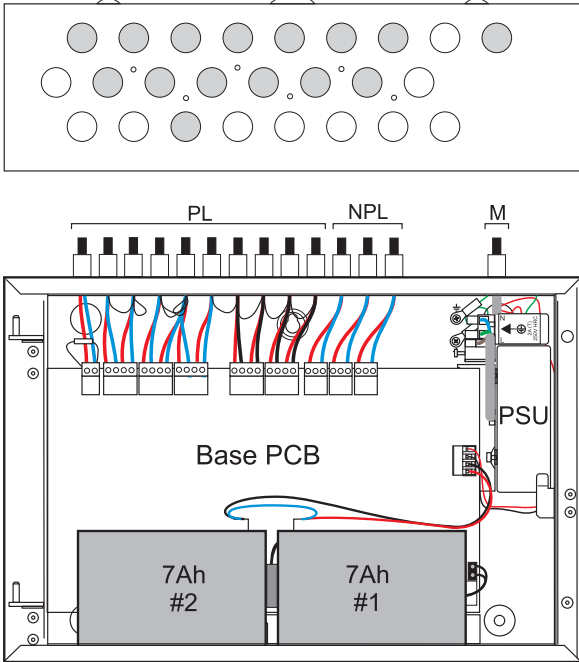
Key:

PL   = Power Limited Wiring (i.e. AUX, Sounders, Inputs, Loops and RS485)

NPL = Non-Power Limited Wiring (i.e. Relays)

M   = Mains Wiring
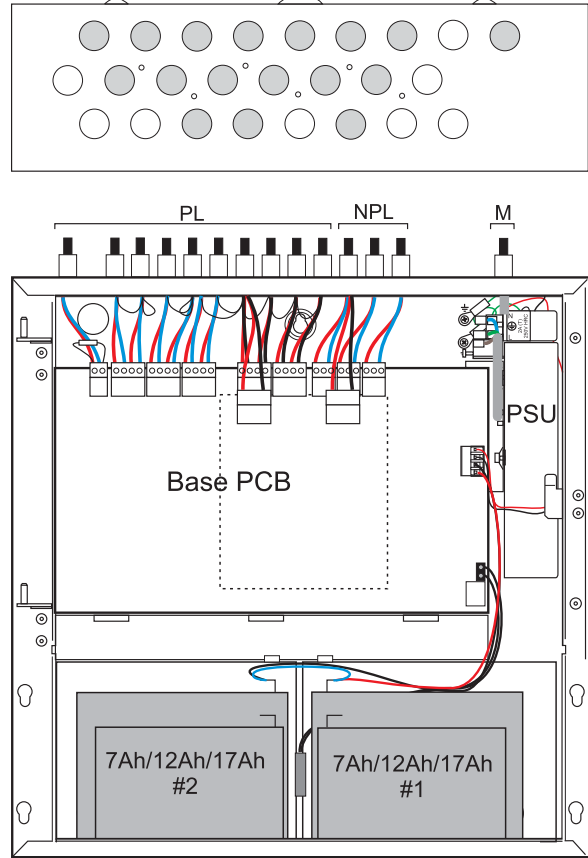
Figure 23 - DXc1 - Recommended Cable Routing

Figure 24 - DXc2/4 - Recommended Cable Routing

CAUTION: **A BATTERY CHARGER FAULT indication is given if the thermistor lead is disconnected. The thermistor is calibrated for use only with the panel Base PCB with which it is supplied. DO NOT use the thermistor with any other panel as this may reduce the capacity / life of the batteries.**

3.5   Keyswitch Option

- The diagram opposite shows the location for the Keyswitch option.

- The position is identical for all models; it is fitted to the right of the panel status LEDs.

- The Keyswitch option comes as a complete assembly including cable and two keys.

- The Keyswitch is mounted onto the hinged fascia/ display plate and plugs directly into a connector, J1, on the Display PCB.
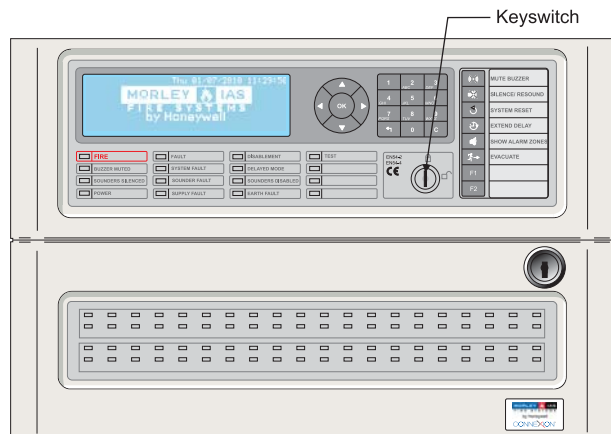
Figure 25 - Keyswitch Location - Front View

3.5.1 Fitting Instructions

Ensure that all power is turned off and disconnected before proceeding.

- From the rear of the front door, apply a consistent force to the removable part of the fascia located over the keyswitch-mounting hole - see illustration at right - until it has become fully detached from the door.

- In its place locate the label provided in the keyswitch kit. Remove the backing paper to reveal the adhesive and, with it correctly orientated, offer to the keyswitch hole. Once in place, press firmly to achieve good adhesion to the door.

- **IT IS IMPORTANT THAT THE KEYSWITCH IS SEPARATED AND RE-COMBINED CORRECTLY! Refer to the notes below <u>before</u> separating <u>and</u> re-assembling the keyswitch.**

  The drawing at right shows the two main components of the keyswitch now ready for fitting.

- Refer to **Section 5.3.6 Local Inputs** to configure the keyswitch.
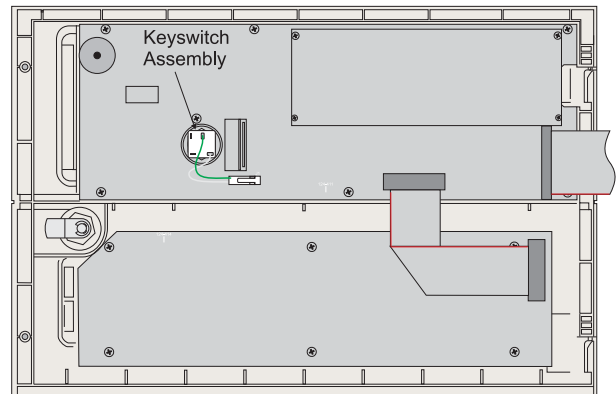
Figure 26 - Keyswitch Location - Rear View
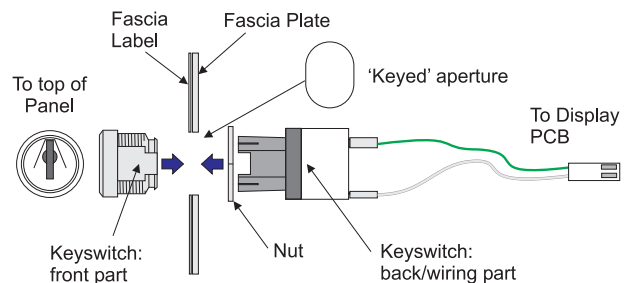
Figure 27 - Keyswitch - Separated Assembly

3.5.1.1 Recommended Procedure for the Separation and Re-assembly of Keyswitch

- To prevent inncorrect re-assebly of the keyswitch it is important that the procedure outlined below is followed:

1. Before separating the keyswitch and prior to fitting the locking mechanism part to the front door, make sure the keyswitch is in the UNLOCKED position, i.e. it cannot be turned anti-clockwise. Also make sure that the keyswitch is orientated such that the the flat areas of the threaded part of the key are on the sides (and not top and bottom) and the green wire is uppermost. The arrow head on the front of the keyswitch should now be pointing up as shown below:

Keyswitch in correct position
(key can be withdrawn)
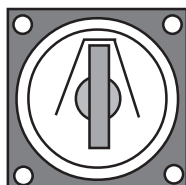
Keyswitch in incorrect position
(key cannot be withdrawn)
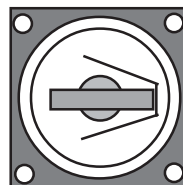
2. The keyswitch MUST be in the vertical position in order for these instructions to work successfully. With the keyswitch in the vertical position, firmly disengage (separate) the plastic part from the metal, locking mechanism.

3. Remove the nut from the threaded part (locking mechanism) and, with the keyswitch correctly orientated, insert the threaded part through the keyed hole in the door. Replace the nut and tighten using the supplied tool.

4. The keyswitch has a square drive that engages the bezel assembly - if this has moved make sure that it engages correctly and in the right orientation by using a small screwdriver to carefully rotate the mechanism fully clockwise.
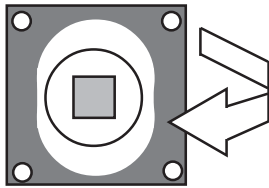
Correct orientation   Incorrect orientation
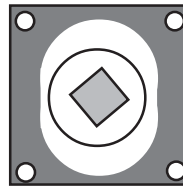
5. Re-assemble the two parts of the keyswitch and check that the keyswitch 'clicks' when the key is rotated in a clockwise direction. If it does not, separate the keyswitch parts and repeat from step 4.

3.6   Slide-in Labels

- The DX Connexion Series of Fire Alarm Panels are provided with slide-in labels to denote the function of the LED Status Indicators and Keyboard Buttons.

- The labels supplied offer all language versions to satisy the intended panel market requirements.

- There are three labels (shown opposite as A, B, and C).

- Label 'A' is for the Control Keys.

- Labels 'B' and 'C' are for the LED Status Indicators

- Before inserting the labels, locate the scoring close to the other end and bend back the label at the scoring through 90°. This needs to be done to stop the text on this part of the labels becoming illegible, by preventing them from bowing away from the fascia windows.
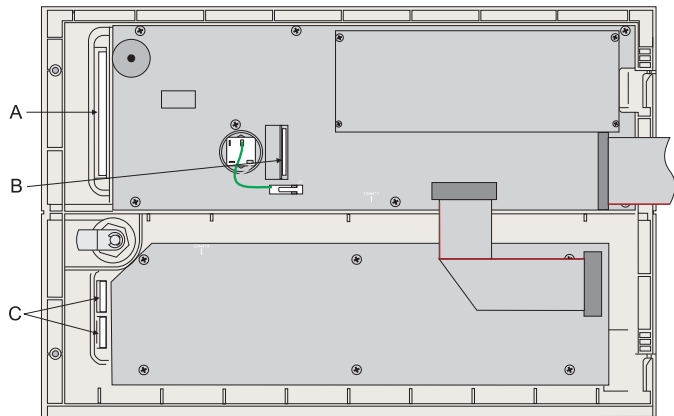
Figure 28- Slide-in Label Locations

4   Controls & Indications

Back-lit LCD

System Status LED Indicators

Zone Fire LED Indicators

Navigation Keys

Numeric Keypad (Program/ Interactive keys)

Control Keys

Optional Keyswitch

Door Lock
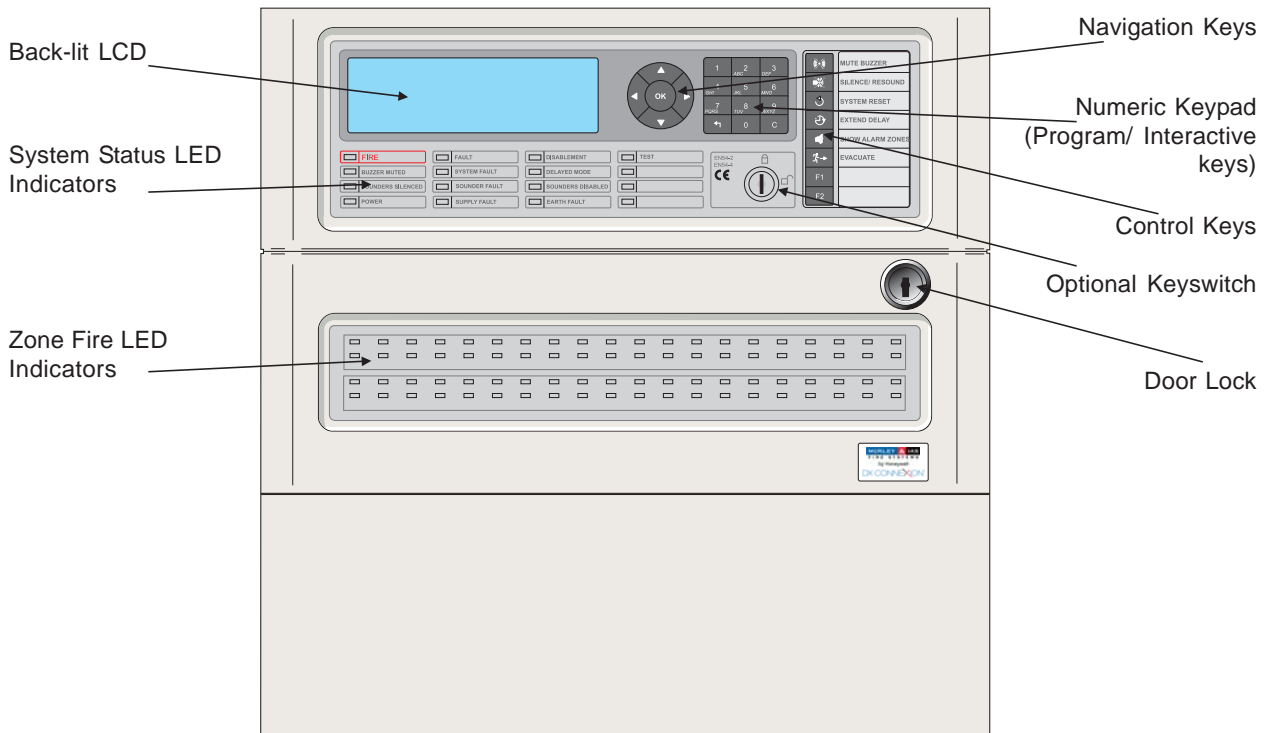
Figure 29 - Typical Controls & Indications

- The illustration above shows the layout of controls and indications of the DXc2 and DXc4 fire control panels and is typical for all variants. For more detailed information refer to the DX Connexion Series User Manual (996-202-001-X).

4.1   User Control Levels

4.1.1 Access Level Definition

- The DX Connexion Series Fire Alarm Control Panels (FACPs) have three user access control levels.

- At all three access levels the LCD displays the status of the installation together with the panel status and Zone LEDs indications. The LCD display provides more details of any current fire alarm, fault, test or disablement conditions.

- At USER LEVEL 1, all the displays are functional but the front panel control keys are inhibited.

- At USER LEVEL 2, all front panel controls are functional and some system operation parameters and functions can be changed. User Level 2 is reached either by entering a password from level 1 or using the keyswitch, if fitted.

- At USER LEVEL 3, all front panel controls are functional and full system configuration and program-ming is possible. User Level 3 is reached by entering a password from either Level 1 or Level 2. User Level 3 is for use by the system installer/ maintenance provider.

EN54 ✓ **EN54-2: 5.1 Viewing Suppressed Information.**	- All of the mandatory indications that may not be suppressed during a fire alarm condition are shown using LED Indicators. If fitted, LED Indicators show fire alarms for each zone.
	- It is possible to view all other conditions such as points in fire, faults, zones in test and disablement conditions using the navigation (arrow head) keys at Level 1.

4.1.2 Passcodes

-       Up to ten USER LEVEL 2 passcodes can be programmed into the panel. The default passcode is **1234**.

-       The USER LEVEL 3 passcode is **9898**. This cannot be changed.

4.1.3 List of Device Abbreviations

-       The following table gives a list of the device (point) abbreviations shown on the LCD.

Abbreviation	Description
CO	Carbon Monoxide Detector
FLM	Flame Detector
ION	Ionisation Smoke Detector
I/O	Input/ Output Module
LSR	Laser Smoke Detector
MCP	Manual Call Point
MLT	Multi-Criteria Detector
MON	Monitored Input
OPT	Optical Smoke Detector
RLY	Relay
SDR	Sounder / Bell
TMP	Temperature Detector
ZMX	Zone Monitor Module

Table 4 - Device Type Abbreviations

5   Programming

5.1   Introduction

- The basic operation and configuration parameters of the DX Connexion Series fire alarm control panels can be very easily programmed using the fastrack procedure which is presented to the user on powering up the panel for the first time. Refer to **Section 5.2 Fastrack Panel Configuration** for more details.

- Alternatively, panels can be programmed manually, refer to **Section 5.3 Programming Manually**, or programmed using the DX Connexion PC Configuration Tool.

5.1.1 Site Configuration Changes

- The entire site-specific configuration programming parameters, history log and other information is stored in non-volatile memory. When changing any of these site parameters the user is prompted, via the LCD, to unlock the memory before any changes can be made. Exiting the Commissioning menu saves any changes and re-locks the memory. Editing and saving configuration changes is controlled in software and, therefore, no hardware jumper links are involved in carrying out this procedure.

5.1.2 Updating Software

- The operating software for both the panel and the loop protocol driver are held in flash memory. The panel and/or configuration software can be updated using a PC and a suitable comms lead - either the existing MIAS communications lead (PN: 795-080) or the Isolated USB to Serial Adapter Kit lead (PN: 020-891) may be used for this purpose. Refer to **Section 5.4 Programming Using the PC Configuration Tool** or **Appendix 5 How to Flash Upgrade the Panel**.

- Further information may be provided with any software upgrade kit.

- The jumper link, J1, located on the Base PCB, enables or disables the Flash Upgrade function. **The jumper link   must only be moved when the panel is powered down**. The JI ENABLE and DISABLE jumper positions are shown to the right of the main illustration below:
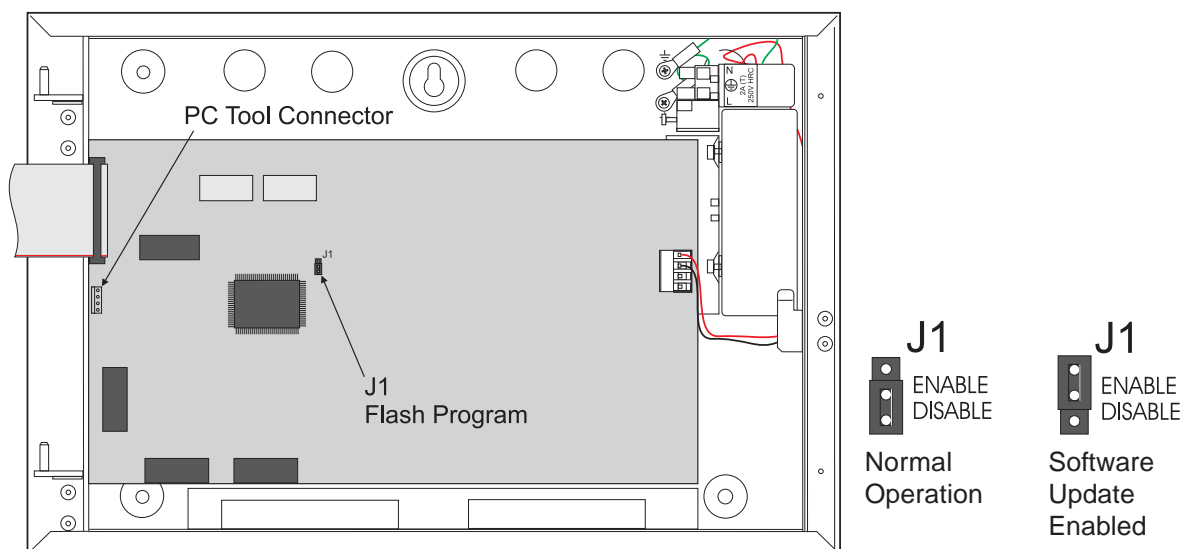

Figure 30 - Location of Jumper Link J1 and PC Tool Connector

5.1.3 Text Entry

- Throughout the programming procedure there are many instances where text entry is required, e.g. a description of each zone location or to describe the location of each loop device, etc. Such text may be entered manually, using the panel's pushbuttons, or via the DX Connexion PC Configuration Tool.

- When programming manually the method of entering text is identical wherever it is required and is described overleaf.

5.1.3.1   Alphanumeric Keypad

- The alphanumeric keypad provides a method of entering text based on typical mobile telephone practice.

- Letters and numbers are assigned to each button as shown opposite.

- In addition, the number '1' key also provides 'space', hyphen '-', full stop, comma and forward-slash characters.

- The first press of a key will bring up the first available letter/ number.
  Press again until the correct number or letter is shown. If another key is pressed, or if no button is pressed for about 2 seconds, the cursor will automatically move to the next position in the text string.

5.1.3.2   Display Format

- The display format for all text entries is shown below:
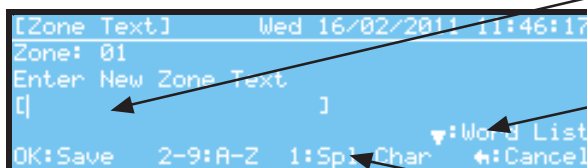
Use the ◀/▶ keys to move the cursor and the C key to erase any incorrect entries.

Press ▼ key to select from the supplied Word List. See below for more details.

Press '1' for Special characters in the following order: space, 1, hyphen, comma, full stop and forward slash.

- The existing text string, if any, is shown at the left-hand side of the fourth line down and between the square brackets. A flashing cursor (|) shows the position of any new character entry; on entry to this screen the cursor is always placed at the first character position.

- Press the ◀ and ▶ keys to move the cursor to a particular character in the string. If editing existing text the character to the left of the cursor is deleted if the C key is pressed. If a new character is inserted, it is placed to the right of the cursor - after a brief pause the cursor moves one place to the right. A new character may now be inserted.

- Use the alphanumeric keypad, as described above, to enter the required text.

- The DX Connexion Series panels have a library of 32 commonly-used words, listed in alphabetical order. Ten additional, site-specific words may be added to this library.

- To access the word library, press the ▼ key instead of entering text using the alphanumeric keypad.

- To display other word options that are not currently displayed, press the alphanumeric key which contains the letters nearest to the desired word - this will advance the list of words starting with the first letter on the pressed key, or the next letter if no words exist for the first letter, etc. (there are no words in the default list beginning with G, H, I, J, M, Q, U, X, Y or Z). Alternatively, use the ▶ /◀ keys to navigate down/up, one page at a time.

- To program up to ten additional, site-specific words, after entering the new location text, e.g. PUMP ROOM, press the ▼ key again and the user is prompted to add the first word to the word list, as follows:

```
[Zone Text]        Thu 16/09/2010 09:55:16
PUMP                    Add to List?
AREA
BASEMENT
BAY
BEDROOM
```
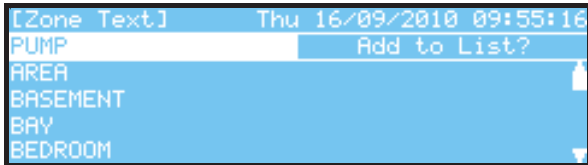
- Confirmation is given that the new word has been added to the list, as shown below:

```
[Zone Text]        Thu 16/09/2010 10:01:55
SHED                    Word Added!
AREA
BASEMENT
BAY
BEDROOM
```
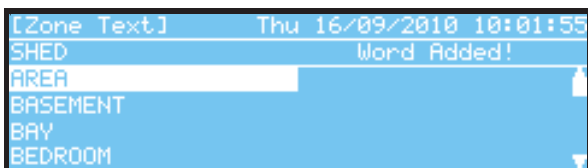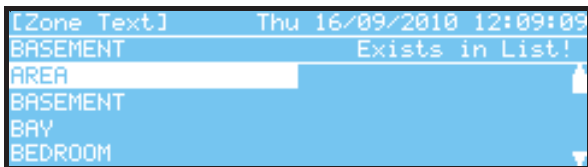
- To add the word 'ROOM' now to the list repeat the above procedure, except this time move the cursor to the position just to the left of 'ROOM' before pressing the ▼ key again.

- If the user tries to add a word to the list that already exists the following message is displayed momentarily and, consequently, the request is ignored.

```
[Zone Text]        Thu 16/09/2010 12:09:09
BASEMENT                Exists in List!
AREA
BASEMENT
BAY
BEDROOM
```

- If the user tries to add a new word to the list which would exceed the word limit, a 'Memory Full!' warning is displayed, alerting the user that this word cannot be added to the list. Once the memory is full, any such word will have to be typed in again each time it is required for text editing.

```
[Zone Text]        Thu 16/09/2010 13:57:35
PUMP                    Memory Full!
BASEMENT
BAY
BEDROOM
BOILER
```
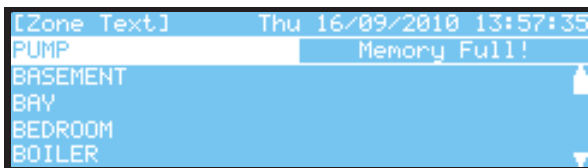
- Press the (OK) key to confirm the changes and exit back to the previous menu display. Press the ⬅ key to exit without saving any changes.

5.2   Fastrack Panel Configuration

- The DX Connexion Series of fire alarm control panels are provided with a built-in, fastrack configuration utility that is simple to use and quickly enables the provision of basic fire cover. The Fastrack process enables the basic configuration parameters to be programmed using a simple, step-by-step approach.

- The fastrack process has up to five steps; covering setting of the panel language, time and date, loop protocol (when optional) and the auto-configuration of all the devices, loop by loop.

- It is possible to program as much or as little as is required when carrying out this procedure. Press the ⏺ key to confirm and move on to the next step. Press the ⬅ key to cancel or return to a previous step in the process. Some steps may be deferred, such as setting the date and time, although it is recommended that these steps are addressed, when prompted, as these are very quick to carry out.

- When the panel is powered up the LCD displays the first configuration prompt. The user is then guided through the fastrack process until finished; the whole procedure takes only a few minutes.

- Throughout this process the internal buzzer activates intermittently, but this may be muted, and the SYSTEM FAULT and FAULT LEDs are illuminated; the LEDs are extinguished upon completion. The intermittent internal buzzer is also silenced, if this was not muted.

Step 1   Language

- First, the LCD displays the language selection screen, as shown below; English language is the default selection - the check mark (tick) is positioned to the right to indicate the current setting.

```
[Language]        Thu 17/02/2011 14:54:32
1:English   ✔        2:Español
3:Português          4:French
5:Italiano
```

- To select the desired language press the ⏺ key to select the highlighted option or move the cursor and then press the ⏺ key to select the alternative option.

Step 2   Set Clock

- Having set the language of the panel the user is now prompted to set the current time and date. The cursor is placed at the first value to be edited. Enter the time, one value at a time - the cursor moves to the next value to be edited automatically until all values have been entered. Use the ◀ key to backspace the cursor should any corrections need to be made.

```
[S1 Set Clock]   Wed 24/11/2010 11:56:39
Time:00:00    (hh:mm)
Date:00/00/00 (dd/mm/yy)


OK:Confirm  ←↕→:Select  0-9:Edit  ⬅:Exit
```
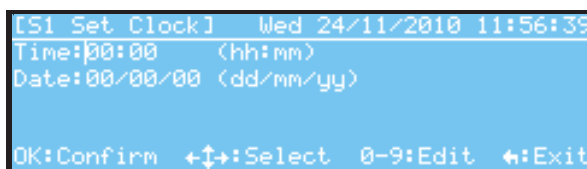
- Press the ⏺ key to confirm the changes.

Step 3   Setting the Loop Protocol

- This step is not presented for all markets. If this option appears select the appropriate loop protocol.

- For markets where protocol selection is required refer to the appropriate Product Market Variations Manual (996-220-00X-X).

Step 4 Learn Loop(s)

- With the loop protocol set (where this step is required) the loop devices can now be configured using auto-learn, one loop at a time. If the panel has more than one loop of devices the total devices configured for each loop is listed before the auto-learn process can continue to the next loop, thereby, allowing the user to go back to the previous step, if desired.

- If option '1: Learn loops' is selected a summary of all device types found is displayed upon completion of each auto-learn operation.

```
[Loop]           Wed 24/11/2010 14:32:45
Loop: 1   Total: 22
Added:22  Removed:0   Changed:0
ION: 2 OPT: 7 TMP: 3 MLT: 1
MCP: 3 MON: 0 SDR: 3 RLY: 0 OTHERS: 3
OK:Confirm                    ←:Back
```

- When finished editing, press the ⌫ key to display the total configured devices on the loop.

- Press the (ok) key to auto-configure the devices on the next loop.

- When all loops are configured press the (ok) key and the fastrack-method commission is complete. Further device editing can be done via the user menus.

- If the 'Skip Learn' option is selected, then none of the loops are configured; each loop total will show that no devices exist. However, these devices can be learnt through the commission menus later or uploaded to the panel from the PC Configuration Tool.

Step 5 Fastrack Setup Complete

- When all loops are configured, or the 'Skip learn' option was selected, the following screen message is displayed momentarily:

```
[System Reset]    Wed 24/11/2010 14:35:32

        Fastrack Setup complete!

Use Commission menu or PC Configuration
Tool to customise the configuration
```
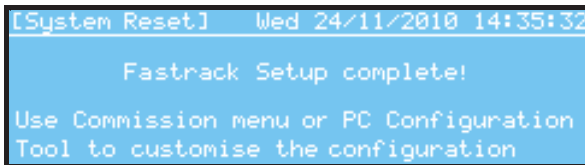
- This is followed by the status normal screen.

```
              Wed 24/11/2010 14:35:35
      MORLEY 🔥 IAS
      F I R E   S Y S T E M S
          by Honeywell
```

- The internal buzzer is silenced and the FAULT and SYSTEM FAULT LEDs extinguish.

5.3   **Programming Manually**

- The DX Connexion Series Fire Alarm Control Panels need to be at user access Level 3 before any commissioning functions can be carried out. Access Level 3 can be accessed the access Level 2 menu, as described below.

5.3.1 Selecting the Commission Option

- Firstly, select Level 2 Menu functions (refer to the User Manual for further information). The LCD then displays the Level 2 User Menu. The level 2 user menu, whether entry is by passcode or keyswitch (if this is fitted and configured for this purpose), presents the same user options. The menu header, located in the square brackets at the top-left corner of the LCD, indicates the method of entry to access this menu; default passcode (U0) or keyswitch (U9). The menu shown below indicates that the default passcode was used.

```
[U0 Menu L2]       Tue 24/08/2010 14:45:39
1:Run Test          2:Set Clock
3:Disable/Enable    4:View Mode
5:Detection Mode    6:Output Delays
7:Commission (L3)
```

- If entering the access Level 3 passcode at the prompt the 'service level' menu (S1) is displayed instead:

```
[S1 Menu L2]       Tue 24/08/2010 14:39:02
1:Run Test          2:Set Clock
3:Disable/Enable    4:View Mode
5:Detection Mode    6:Output Delays
7:Commission (L3)
```

- To select the Commission mode functions, press '7'. If this is done at user access Level 2, the display will then prompt for entry of the access Level 3 passcode.

```
[Access Level]    Tue 24/08/2010 15:53:19
Enter Level 3 passcode:|
```

Note: If the Level 3 passcode is used to confirm entry to the Level 2 Menu options, the panel is already in Level 3 access mode and, therefore, will not prompt for entry of the Level 3 passcode when the Commission option is selected.

- Enter the Level 3 passcode and press (ok) to confirm. The LCD prompts the user to unlock the memory.

```
[Access Level]    Tue 24/08/2010 15:56:16
            Memory is Locked
         Press OK key to Unlock
```

- Press (ok) again to unlock the memory. The Commission Menu options are displayed as follows:

```
[Commission]       Tue 24/08/2010 16:18:29
1:General Options   2:Loop
3:Local Inputs      4:Local Outputs
5:Zone Text         6:Logic
7:Detection Modes   8:7 Day Timers
9:Panel             0:Exit Commission
```

- Press the '0' key to exit the Commission Menu and return to the access Level 2 user menu. Press the ⬅ key to return to the access Level 1 menu.

5.3.2 Recommended Step-by-Step Programming Guide

- The following is the recommended basic sequence for programming the panel manually.

Step 1: Select the protocol (if option is available) and other general set-up options.

Step 2: Learn the loops and program the parameters for the loop devices.

Step 3: Enter the Zone Text

Step 4: Configure the pattern logic and assign the required logic to the outputs.

Step 5: Configure any advanced settings including detection modes and timers, internal inputs and any special panel logic.

Step 6: Assign and enter any Level 2 passcodes required by the user.

Step 7: Enter the correct date and time.

Step 8: Return the panel to normal operation.

5.3.3 Overview of the Menu Structure

Item	Menu Option	Sub-option	Description
1	General Options	--	Configure general system parameters including: Language, date format, device blinking, loop driver protocol (if available), automatic resound, detector automatic test/ calibrate time, sounder group/device disable function, name and telephone number, service due date, network working option, number of repeaters, log diagnostic mode, user passcodes, time-outs, zone LEDs.
2	Loop	--	Configure loop devices including: Location text, zone assignment and disablement group assignment along with other device specific parameters.
		Learn	Configure what devices are connected to the loop
3	Local Inputs	--	Configure the five on-board inputs including: Zone and group assignment and input action.
4	Local Outputs	--	Configure operation of the panel outputs including: Sounders, relays, function LED indicators.
5	Zone Text	--	Configure the location text per zone.
6	Logic	Output Patterns	Configure the criteria for turning on outputs using Pattern logic and logic associated with panel states.
		Panel State Inputs	Configure the criteria for turning on outputs using logic associated with panel states.
7	Detection Modes	Night Levels	Configure the night sensitivity threshold levels.
		Select Mode	Configure the type of mode in operation including: Delayed Mode, Alarm Sensitivity, Alarm Verification.
8	7-day Timers	--	Configure the timers associated with the detection mode selected. Fourteen independent timers can be set.
9	Panel	LCD Contrast	Manually adjust the contrast of the LCD.
		Clock Offset	Adjust clock to offset any gain/ loss of time.
		Wipe Memory	Return the panel to factory default settings.
0	Exit Commission	--	Return to user access Level 2 menu.

Table 5 - Menu Structure Overview

- The following sections detail the programming for each menu option.

5.3.4 General Options

- From the Commission menu selecting 'General Options' displays the first five items in a list of configurable options.

- Use the ▲ and ▼ keys to highlight the desired menu item. Use the ▶ / ◀ to step down/ up one LCD page at a time. Press (OK) to confirm selection. Another menu screen is displayed to allow further function selection or editing of configuration settings.

	Option Title	Default	Setting Options	Description
1	Language	English	English Icelandic	Change the language displayed on the LCD.
2	Date Format	dd/mm/yyyy mm/dd/yyyy		Configure the presentation of the date on the LCD.
3	Device Blinking	ON	ON OFF	Determines if the detector's LED flashes when the device is polled by the panel (protocol dependent).
4	Loop Protocol	-	-	**Option not available for some markets.** Refer to Product Market Variations Manual for details if this is available for your market.
5	Automatic Resound*	YES	YES	YES configures the automatic re-activation of sounders with ANY new alarms after silencing of sounder outputs.
			NO	If NO is configured then no re-activation of sounders occurs with ANY new alarm after silencing of sounder outputs.
6	Auto High Test	-	-	Refer to Product Market Variations Manual for details if this is available for your market.
7	Sounder Group/ Device Disable*	NO	NO	If NO is configured sounder type output devices cannot be disabled using the group/device disablement options only via the global sounder disablement command.
			YES	If YES is configured sounder type output devices can be disabled via the group/device disablement options.
				NOT EN54 COMPLIANT in this mode.
8	Number of Fault Polls	4	4, 5, 6	Number of consecutive polls required before device faults are reported. This setting applies to: DEVICE LEVEL FAULT, DOUBLE ADDRESS FAULT, NO REPLY FROM DEVICE, BAD DEVICE REPLY, DEVICE ADDED, DEVICE NOT SUPPORTED, DEVICE TYPE CHANGED. Refer to Product Market Variations Manual for protocol-specific fault conditions.
9	Phone	Blank	20 character text	User Information. Configure text for phone number of service/ maintenance provider.
10	Site Name ``	Blank	20 character text	User Information. Configure text for Site Reference Name to be used when the user contacts the service/ maintenance provider.
11	Next Service Due	01/01/00	Date	User Information. Set next service due date based on agreed maintenance schedule. User can view this information along with the Site Name Reference and phone number of the service provider.
12	Network Option*	NO	NO YES	Includes the panel as part of a fire detection network arrangement. * If a panel is part of a network the Automatic Resound, Sounder Group/Device Disable and Network Toplogy settings MUST all be set the same. Also required for Detection Mode, Stages 1/ 2 Timers and 7-Day Timers.

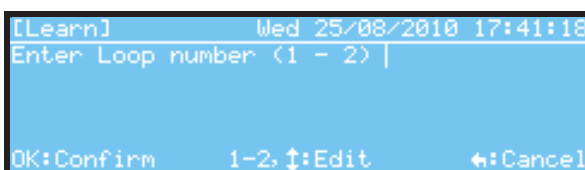|	Option Title	Default	Setting Options	Description
13	No. of Repeaters	0	0 - 16	Determines how many active (or addressed) repeaters are connected to the RS485 Communications link.
14	2nd Serial Port	Disabled	Disabled/ TPP BAUD rate; Monitored Link; Remote Control	TPP enables RS232 Interface PCB to be configured for use with third-party equipment. Available BAUD rate settings: 9600, 14400, 19200, 38400, 57600. Optional TPP equipment comms link monitoring and control functions.
15	Diagnostic Mode	OFF	OFF ON	ON stores additional information in the log and false alarm suppression algorithms are by-passed. OFF stores the basic confirmed fire, fault and other events in the log.
16	Passcodes	L2: '1234' L3: '9898'	Nine 4-number codes --	User access codes for Levels 2 and 3. Nine user configurable L2 passcodes. L3 access passcode is fixed.
17	Access Timeout	10 Mins	0 - 60 Mins	If a button is not pressed within the timeout period selected, the panel will automatically cancel Level 2 control key access. Setting a time of '0' disables the timer and the control keys are permanently enabled. **NOT EN54-2 compliant in this mode.** If the keyswitch is fitted and configured for user Level 2 access, no timeout period is imposed when in the access Level 2 Enabled position.
18	Zone LEDs	NO	YES NO	Includes the Zone Fire LEDs as part of any zone fire indications. Default is 40 Zones. Expandable to 80 Zones

Table 6 - General Options

5.3.5 Loop

- The panel can automatically learn the devices on each of the loops. Once learnt, the basic settings for each device on the loop can be programmed.

- Press the '2' key to select the 'Loops' menu option. The following options are then displayed:

```
[Loop]            Wed 25/08/2010 17:03:02
1:Edit Devices       2:Learn
```
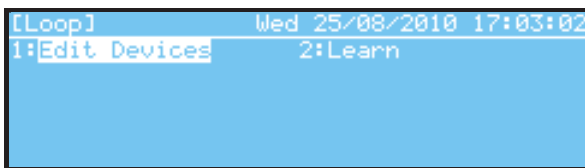
- If the panel has more than one loop the user is now prompted for selection of the loop. The example below shows that the 'Learn' option was selected on a multi-loop panel. The screen format is the same for the 'Edit Devices' option.

```
[Learn]           Wed 25/08/2010 17:41:18
Enter Loop number (1 - 2) |



OK:Confirm    1-2, ↕:Edit       ↤:Cancel
```

5.3.5.1 Edit Devices

- The information that can be programmed for the device depends on the type of device. The basic information available for all devices consist of: a 20-character location text, the assigned zone and the assigned disablement group. For input devices, such as monitor modules, the action and whether the input is latching can be programmed. For output devices, such as sounders or relays, the ringing pattern and other parameters can be programmed. If the unit has both an input and an output circuit, then all programmable options are shown.

- Press the '1' key to select the 'Edit Devices' function. If prompted, enter the loop number and press
  (OK) key to enter.

```
[Edit Devices]    Thu 26/08/2010 09:07:09
Enter Loop number (1 - 2) 1|



OK:Confirm      1-2,↕:Edit        ←:Cancel
```

- Enter the loop number and press the (OK) key to confirm. The devices configured for that selected loop are listed.

```
[Edit Devices]    Thu 26/08/2010 09:14:04
L1 Select Device: ◄ ►:Page 0-9:Addr
Device:001    R&D OFFICE
Device:002    STAIRWELL
Device:003    KITCHEN
Device:004    HARDWARE LAB          ▼
```

- Use the arrow or numeric keys to move the highlight to the device to be edited and press (OK) key to confirm selection. The LCD now displays those device properties that can be user edited:

```
[A002]          Mon 22/11/2010 13:30:35
Text           : STAIRWELL
Zone           : 2
Disable Group  : 0
Input Action   : Fire
Base Sounder   : NO
```

- If the selected loop has no devices the following screen is displayed:

```
[Edit Devices]    Wed 25/08/2010 17:54:24
Loop:1
The loop has no devices.



                                  ←:Exit
```

- With the property selected for editing, press the (OK) key to change the settings of the device.

- The loop devices' address range infomation is provided in the Product Market Variations Manual.
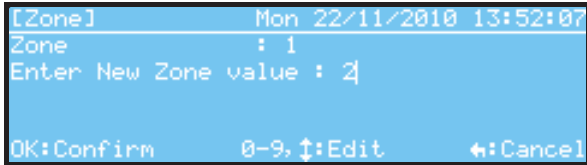
5.3.5.1.1 Edit Device Location Text

- With the text editing screen shown, enter device location text using the alpha-numeric keys. Use the
  ◄ / ► keys to move the cursor. The display is blank, or shows the current text, between the square brackets as follows:

```
[Text]          Mon 22/11/2010 13:39:59
Text           :
Enter New Device Name
[|                    ]

OK:Save    2-9:A-Z  1:Spl Char   ←:Cancel
```

- Refer to **Section 5.1.3 Text Entry** for details on text editing. When finished with editing text, press the (OK) key to confirm the text entry/ changes and the LCD returns to the device edit screen.

5.3.5.1.2　Edit Zone Assignment

- With the zone number option shown, press the ▲ key to increment or the ▼ key to decrement the zone number. Alternatively, using the numeric keys to enter the new zone number.
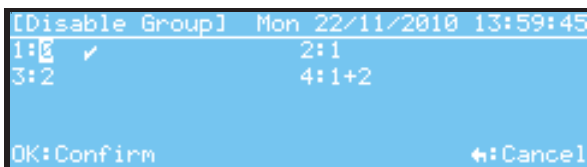
```
[Zone]           Mon 22/11/2010 13:52:07
Zone             : 1
Enter New Zone value : 2


OK:Confirm       0-9,↕:Edit      ↰:Cancel
```

- Press the (OK) key to save the changes. The LCD returns to the device editing screen.

    Note: Zone monitor modules must always be allocated to a unique zone number.

5.3.5.1.3　Edit Group Disable Assignment

- With the disablement group option selected, press either ◀/▶ key to move the highlight to change the disablement group assignment or press the numeric key to select the appropriate option. A device can be assigned to: No Group (0); Group 1 (1); Group 2 (2); Both Groups (1+2).
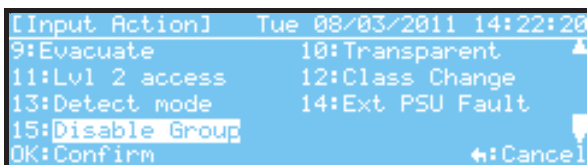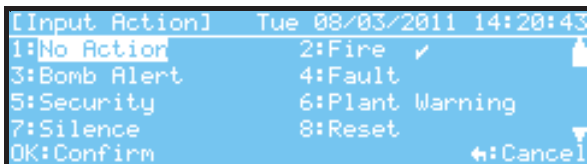
```
[Disable Group]  Mon 22/11/2010 13:59:45
1:0   ✔              2:1
3:2                  4:1+2


OK:Confirm                       ↰:Cancel
```

- Press the (OK) key to save the changes. The LCD returns to the device edit screen.

    Note: Care must be taken to avoid using more than one input switch with Disable Group assignments to prevent situations occurring where it is unclear what the disablement group's status is.

- Refer to the User Manual (PN: 996-202-000-X) for details on how to enable/disable a group.

5.3.5.1.4　Input Actions

- Additional options are presented for input devices such as monitor and zone monitor modules and for the input circuit of a combined input/ output module. Use the ▲ and ▼ keys to view the complete range of options.

```
[Input Action]   Tue 08/03/2011 14:20:43
1:No Action          2:Fire   ✔
3:Bomb Alert         4:Fault
5:Security           6:Plant Warning
7:Silence            8:Reset
OK:Confirm                       ↰:Cancel
```

```
[Input Action]   Tue 08/03/2011 14:22:20
9:Evacuate           10:Transparent
11:Lvl 2 access      12:Class Change
13:Detect mode       14:Ext PSU Fault
15:Disable Group
OK:Confirm                       ↰:Cancel
```

- The following table defines each of the possible input actions and whether it is recommended that it should be set to latching or non-latching.

- The setting for the latching parameter is set automatically to the recommended value when the input action is changed.

Action	Latching	Comments	Process Pattern Logic
No Action	---	The input has no effect irrespective of its input condition.	✕
Fire	Y	Generates a fire alarm from the assigned zone. Bells will ring in accordance with the programmed patterns.	✓
Bomb Alert	N	Generates a bomb (fire) alarm from the assigned zone. Bells will ring in accordance with the programmed patterns.	✓
Fault	N	Generates a fault warning condition from the assigned zone	✕
Security	N	Generates a fault condition from the assigned zone	✕
Plant Warning	N	Generates a plant alarm condition from the assigned zone	✓
Silence	N	Generates a Silence action to silence the outputs on the transition from a normal to an active input condition.	✕
Reset	N	Generates a Reset action to reset the panel on the transition from a normal to an active input condition.	✕
Evacuate	N	Generates an Evacuate action to turn on the sounders on the transition from a normal to an active input condition.	✕
Transparent	N	Processes the pattern logic and operates outputs without generating a fire or fault condition	✓
Level 2 Access	N	Enables Level 2 access to control keys and Level 2 menu options.	✕
Class Change	N	Rings the bells	✕
Detect Mode	N	Overrides the 7-day timer to turn on / off the detection mode.	✕
EXT PSU Fault	N	The fault output from an external power supply can be monitored.	✕
Disable Group	N	The input device can be configured to activate Disable Group 1 or 2.	✓

Table 7 - Input Parameter Options

- Use the navigation or alphanumeric keys to change the settings.

- **Note:** FIRE input action should always be set to Latching (except in special circumstances).

   Note: 'Level 2 Access' input action should always be set to Non-latching to prevent the possibility that the panel could be left in Level 2 Access for longer than necessary.

- These inputs should be installed using MCP or 'Interrupt' type of devices.

|	
⚠️ **EN54 N/A** **EN54-2** **Class Change via Loop Inputs**	- **The operation of a 'Class Change' input MUST be restricted to access Level 2 only. Install accordingly, either using a keyswitch to activate the input or locate it in a restricted area.**
Level 2 Access via Loop Inputs	- **An input used for Level 2 access control must be installed using a keyswitch. The key MUST only be removable in the off (access Level 1) position.**
Day Detect Mode via Loop Inputs	- **This input can be made available at access Level 1 or Level 2 and using a keyswitch. The key should only be removable in the off (day mode inactive) position.**
Silence, Reset, Evacuate, Bomb Alert and Security	- **These inputs must be installed using a keyswitch. The keyswitch should be of the 'momentary-action' type with spring return.**

5.3.5.1.5 Output Controls

- Additional options are presented for output devices such as sounder and relay modules. Use the ▲ and ▼ keys to view the available options, depending on the device type. Some of the possible options are given below:
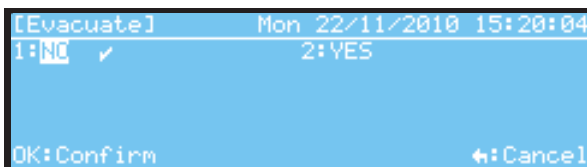
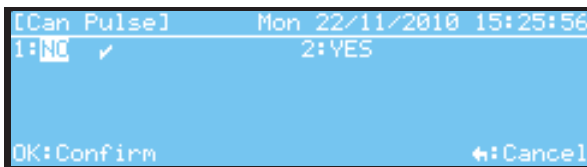   Ringing Pattern - select the ringing pattern to be associated with the ouput action.

    ```
    [Output Pattern] Mon 22/11/2010 15:10:14
    Output Pattern    : 01
    Enter New Pattern value : 3


    OK:Confirm        0-9,↕:Edit        ←:Cancel
    ```
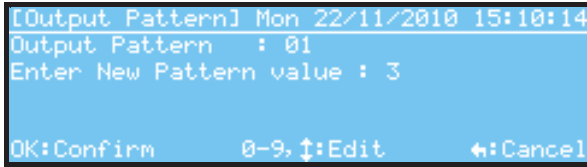
- Silence - select YES if the output can be silenced through the SILENCE/RESOUND key function.

    ```
    [Silence]        Mon 22/11/2010 15:16:01
    1:NO   ✔           2:YES



    OK:Confirm                        ←:Cancel
    ```
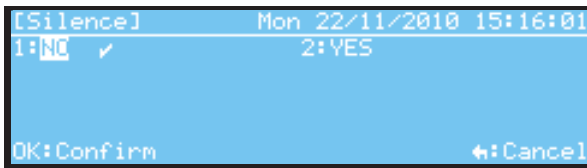
- Evacuate - select YES if the output is to respond to the EVACUATE key function.

    ```
    [Evacuate]       Mon 22/11/2010 15:20:04
    1:NO   ✔           2:YES



    OK:Confirm                        ←:Cancel
    ```

- Can Pulse - select YES if the output is to pulse.

    ```
    [Can Pulse]      Mon 22/11/2010 15:25:56
    1:NO   ✔           2:YES



    OK:Confirm                        ←:Cancel
    ```

- Sounder Fitted - select YES or NO to change the default setting.

    ```
    [Sounder Fitted]        22/11/10 15:29:28
    1:NO   ✔           2:YES



    OK:Confirm                        ←:Cancel
    ```
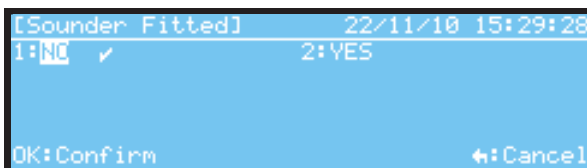
- Output Monitored - select YES or NO to change the default setting.

    ```
    [OP Monitored]   Mon 22/11/2010 15:36:46
    1:NO               2:YES   ✔



    OK:Confirm                        ←:Cancel
    ```

- To edit, highlight the option and press the (ok) key. Use the ◀/▶ keys or alphanumeric keys to edit.

- Refer to **Section 5.3.7 Local Outputs** for information on pattern assignment, silence, evacuate and pulse options. These are the same as for local (on-board) outputs.

- The 'Sounder' and 'Monitored' options are normally pre-configured when the devices are learnt. These can be changed, however, to suit specific installation requirements.

- The 'Sounder' setting selects between a Sounder type output (Y) and a Relay type output (N). The 'Monitored' setting selects between an end-of-line monitored type output (Y) or a dry-contact type relay output (N). Depending on the settings selected, the outputs can be disabled with the user disablement function to disable sounders/ disable other relay and control outputs.

- The following table gives recommended settings for specific options.

SDR	Y	Y	Y	Y	Y	True sounder/ Bell output: Outputs will be disabled when sounders are disabled.
RLY	N	N	N	N	N	Dry-contact-type relay output; output wiring is not monitored: outputs will be disabled when other/ CTL outputs are disabled.
CTL	N	Y	N	N	N	Monitored relay output; output wiring is monitored for short-/ open-circuits: outputs will be disabled when other/ CTL outputs are disabled.

**Table 8 - Output Parameter Options**

Note: Do not set a dry-contact relay type output to be monitored – this may cause a fault condition to be registered at the panel. Refer to the **Product Market Variations Manual** for further details. The exception to this is for combined input/ output modules where the input circuit should be monitored.
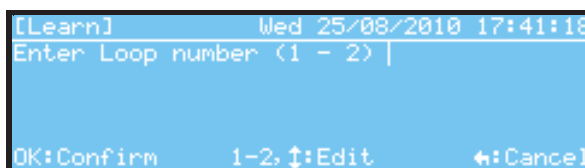
5.3.5.2   Learn Devices

For markets where the protocol is selectable, after a protocol change has been made (refer to the Product Market Variations Manual) WAIT for two minutes before performing a learn operation. The panel attempts to reset loop devices and requires time to complete this procedure.

- Press the '2' key at the Loops menu to select the 'Learn' function.

```
[Loop]            Tue 31/08/2010 09:32:24
1:Edit Devices      2:Learn
```
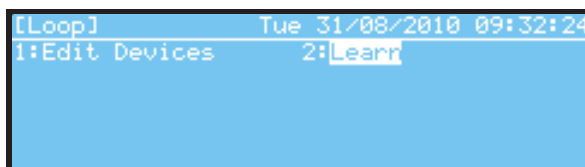
- If the panel has more than one loop, the user is prompted to enter the loop number, as follows:

```
[Learn]           Wed 25/08/2010 17:41:18
Enter Loop number (1 - 2) |



OK:Confirm    1-2,↕:Edit       ◆:Cancel
```

- Enter the appropriate loop number and press the (ok) key. Confirmation is requested to learn all devices on the loop.

```
[Learn]          Tue 31/08/2010 09:37:30
Loop: 1    Learn devices?



OK:Confirm                      ←:Cancel
```

- Press the (ok) key once more to start the learn process. To cancel, press the ⌫ key.

```
[Learn]          Tue 31/08/2010 10:01:11
Learn in progress
[▮▮▮▮▮▮          ]


```

- On completion, a summary of the differences is shown with a total figure. In this example, 23 new devices have been found (added), there are no devices found to be missing (removed) and there are no devices that have been found to change type (changed). Check that the numbers listed against each type of device match the expected physical installation of devices.

```
[Loop]           Tue 31/08/2010 12:12:02
Loop: 1    Total: 23
Added:23  Removed:0    Changed:0
ION:12 OPT: 0 TMP: 4 MLT: 0
MCP: 7 MON: 0 SDR: 0 RLY: 0 OTHERS: 0
↕:Select other loop to view
```

- The lower half of the LCD provides a summary of the number of sensor and module device types found after performing the learn operation; a sub-total of each device type is displayed in two rows: the sensor types in the upper row with the module types in the lower row.

- The main types of devices have their own columns – for other devices, these are summed in the 'Others' column –   the actual type of device will be shown in the user access Level 2 'View Mode/ Devices' for the devices learnt.

- If the panel has more than one loop, use the ▲ / ▼ keys to view the other loop(s).

- Refer to **Table 4** for a list of the device type abbreviations used.

- Press the ⌫ key to exit the summary screen and return to the 'Loop' menu screen.
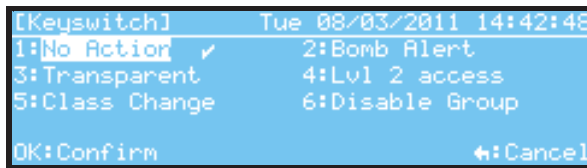

5.3.6 Local Inputs

- The local inputs comprise the optional keyswitch, monitored inputs and function keys. The Input Action, Zone and Disablement Group assigned to each input can be programmed.

```
[Local Inputs]         08/03/11 14:42:13
1:Keyswitch        2:Function Key 1
3:Function Key 2   4:Monitored Input 1
5:Monitored Input 2
```

- With 'Keyswitch' selected, press the (ok) key if a change is required to its assigned Input Action, Zone or Group (disablement action).

```
[Keyswitch]      Tue 08/03/2011 14:42:15
1:Input Action     2:Zone
3:Group

```

- When entering this menu and with 'Action' selected, press the ⊙ᴏᴋ key to change the assigned action ('No action' is the default). The following options are selectable: Bomb Alert, Transparent action, Level 2 access, Class Change and Disable Group. These are listed as follows:

```
[Keyswitch]          Tue 08/03/2011 14:42:48
1:No Action  ✔        2:Bomb Alert
3:Transparent         4:Lvl 2 access
5:Class Change        6:Disable Group

OK:Confirm                        ←:Cancel
```

5.3.6.1   Input Action

- The input actions that can be assigned to the on-board inputs are listed in the table below.

Action	Key-switch	Monitor Input 1	Monitor Input 2	Function Key 1	Function Key 2	Process Pattern Logic	Comments
No Action	✓	✓	✓	✓	✓	✗	The input has no effect irrespective of its input condition.
Fire	✗	✓	✓	✗	✗	✓	Generates a fire alarm from the assigned zone. Bells will ring in accordance with the programmed patterns.
Bomb Alert	✓	✓	✓	✓	✓	✓	Generates a bomb (fire) alarm from the assigned zone. Bells will ring in accordance with the programmed patterns.
Security	✗	✓	✓	✗	✗	✗	Generates a fault condition from the assigned zone.
Plant Warning	✗	✓	✓	✗	✗	✓	Generates a plant alarm condition from the assigned zone.
Transparent	✓	✓	✓	✓	✓	✓	Processes the pattern logic and operates outputs without generating a fire or fault condition.
Class Change	✓	✓	✓	✓	✓	✗	Rings ALL of the bells (sounder outputs and 'Can EVAC' = Y).
Detect Mode	✗	✓*	✓*	✓	✓	✗	Overrides the 7-day timer to turn on/ off the detection mode.
Level 2 Access	✓	✓	✓	✗	✗	✗	Enables Level 2 access to control keys and Level 2 menu options.
EXT PSU Fault	✗	✓	✓	✗	✗	✗	The fault output from an external power supply can be monitored.
Disable Group	✓	✓	✓	✓	✓	✓	Disable Group action may be assigned to input.

Table 9 - Input Actions - On-board Inputs

*　　　DO NOT USE WITH TIMERS. When the input is active then day mode will be on (active). Otherwise, day mode will be off (inactive).

-　　　All input actions are non-latching. A ✓ indicates that this input action is supported on this input. An ✕ indicates that the input action is not supported on this input.

EN54-2
Class Change via Monitored Inputs.
Level 2 access via Monitored Inputs.
Detect Mode via Monitored Inputs.

⚠ EN54 ✓

-　　　**The operation of a 'Class Change' input MUST be restricted to access Level 2 only. Install accordingly, either using a keyswitch to activate the input or locate it in a restricted area.**

-　　　**An input used for Level 2 access control must be installed using a keyswitch. The key MUST only be removable in the off (access Level 1) position.**

-　　　**This input can be available at Level 1 or Level 2. Use a keyswitch. The key should only be removable in the off (day mode inactive) position.**

5.3.6.2　Zone Number

-　　　The input can be assigned to a zone. If the input is used for fire type events, assign the zone in the range 1 – 40. If the input is used for plant type events, assign the zone in the range 41 – 80. When the input is activated, the output pattern will be qualified according to the zone and the appropriate outputs will be activated (see **Table 15** for the input actions that will process the pattern logic).
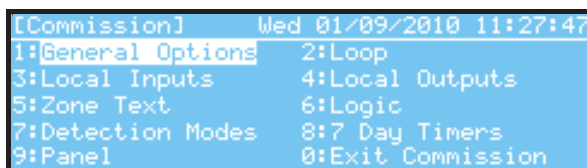
5.3.6.3　Disablement Group

-　　　The input can be assigned to one of two disablement groups (or to both disablement groups). The input will then be disabled when the disablement group is disabled.

-　　　The inputs can be configured to perform, when activated, a Disable Group function. One of two (but not both) Disable Groups may be assigned to the input action. Pattern logic supports any input actions assigned to one of these Disable Groups.
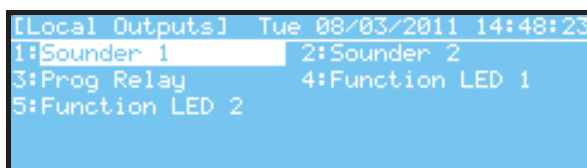
　　　Note: An input cannot be configured to disable a Group to which it belongs. If an input, either from a loop device or a panel control, disables a Group, re-enabling this group is not permitted via the panel menus. A warning message is displayed if either case is attempted.

5.3.7　Local Outputs

-　　　The criteria by which the panel sounder, programmable relay and function LED indicator outputs turn on or off can be programmed.

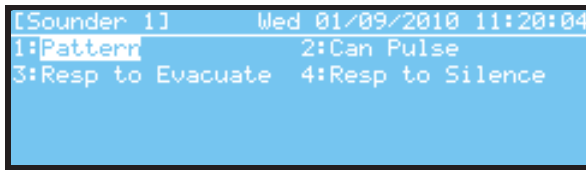-　　　From the Commission menu, press the '4' key. The 'Local Outputs' menu is displayed.

```
[Commission]      Wed 01/09/2010 11:27:47
1:General Options   2:Loop
3:Local Inputs      4:Local Outputs
5:Zone Text         6:Logic
7:Detection Modes   8:7 Day Timers
9:Panel             0:Exit Commission
```

-　　　Press the '4' key to select and display the Local Outputs menu; Sounder 1 is highlighted by default as shown below.

```
[Local Outputs]   Tue 08/03/2011 14:48:23
1:Sounder 1         2:Sounder 2
3:Prog Relay        4:Function LED 1
5:Function LED 2
```

-　　　To select Sounder Output circuit 1 press the (OK) key. Press the '2', '3', '4' or '5' key, or use the navigation keys and the (OK) key, to select one of the alternative outputs.
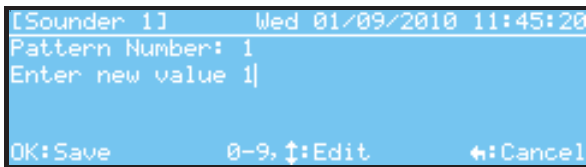
- In the example below the LCD displays the options available for Sounder 1 but these are available for any of the local outputs.

```
[Sounder 1]        Wed 01/09/2010 11:20:04
1:Pattern              2:Can Pulse
3:Resp to Evacuate  4:Resp to Silence
```

- Press the appropriate key to edit the assigned ringing pattern, whether the output can be pulsed, whether the output will turn on when the EVACUATE key is pressed and whether the output can be silenced when the SILENCE/RESOUND key is pressed.

5.3.7.1   Pattern Assignment

- Each output can be assigned to turn on in accordance with a set of rules (Logic) depending on where a fire or plant warning condition occurs (refer to **Section 5.3.9.1 Output Patterns** for details of pattern programming). Up to 40 patterns (patterns 1 – 40) can be programmed in the panel. Each output is then assigned to one of these patterns.

```
[Sounder 1]        Wed 01/09/2010 11:45:20
Pattern Number: 1
Enter new value 1|


OK:Save          0-9,↕:Edit        ←:Cancel
```
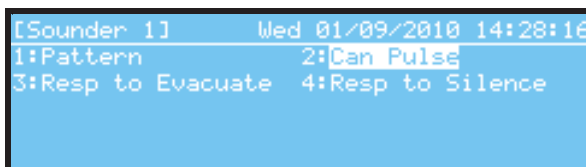
- Pattern '1' is the default pattern assigned to all outputs.
- Pattern '0' is the default pattern (does not respond to pattern zone logic) assigned to Function LEDs 1 and 2.
- Press the ▲ and ▼ keys to change pattern number assigned to the output. Alternatively, press the C key to clear the current pattern number and then, using the numeric keys, assign a new pattern number. Press the OK key to confirm the pattern assignment change.

   Note: Assigning Pattern '0' to the Function LED Indicators will cause the LED to turn on and off in conjunction with the pressing of the corresponding Function Key. Refer to **Section 5.3.6.1 Input Action** for details of function key programming.

5.3.7.2   Can Pulse

- This parameter determines whether the output can be turned on in a pulsed mode.
- By default, all local outputs are set so that pulsing is possible. If the pattern is set to pulse for a specific zone input condition, the output will turn on/ off at a rate of 1-second on/ 1-second off.

```
[Sounder 1]        Wed 01/09/2010 14:28:16
1:Pattern              2:Can Pulse
3:Resp to Evacuate  4:Resp to Silence
```

- To select 'Can Pulse' for the desired local output use the navigation keys to highlight option 2 'Can Pulse' and then press the OK key or, using the numeric keypad, simply press the '2' key to select it.

```
[Sounder 1]        Wed 01/09/2010 14:40:31
1:No                   2:Yes  ✓


OK:Confirm                    ←:Cancel
```
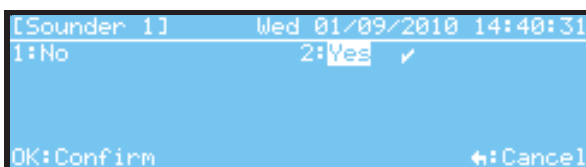
- To change the selection either use the appropriate ◀ / ▶ key to move the highlight and then press the (ok) key to confirm the change. Alternatively, use the numeric keypad and press the '1' or '2' key to move the highlight and then press the (ok) key to confirm.

5.3.7.3 Respond to Evacuate

- This parameter determines whether the output will turn on when the EVACUATE key is pressed. It should also be set true if the output is required to turn on for a Class Change.

```
[Sounder 1]       Wed 01/09/2010 14:54:52
1:Pattern          2:Can Pulse
3:Resp to Evacuate  4:Resp to Silence
```

- Using the numeric keypad, press the '3' key to select the 'Resp to Evacuate' option and then press the (ok) key to select.

```
[Sounder 1]       Thu 16/09/2010 10:57:17
1:No               2:Yes  ✔


OK:Confirm                      ↞:Cancel
```

- Use the numeric keypad or the ◀ / ▶ keys to de-select this function for the selected output.

5.3.7.4 Respond to Silence

- This parameter determines whether the output will turn off/ on when the SILENCE/ RESOUND key is pressed.

```
[Sounder 1]       Wed 01/09/2010 14:57:18
1:Pattern          2:Can Pulse
3:Resp to Evacuate  4:Resp to Silence
```
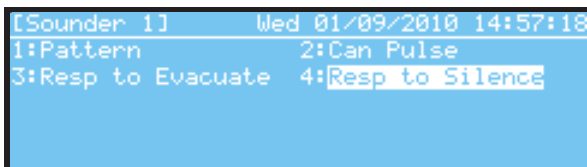
- Using the numeric keypad, press the '4' key to select the 'Resp to Silence' option and then press the (ok) key to select. The option is selected by default.
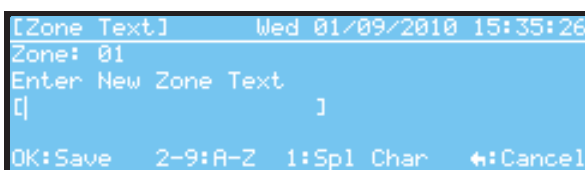
```
[Sounder 1]       Thu 16/09/2010 10:57:17
1:No               2:Yes  ✔


OK:Confirm                      ↞:Cancel
```

- Use the numeric keypad or the ◀ / ▶ keys to de-select this function for the selected output, then press the (ok) key to confirm.

5.3.8 Zone Text

- A 20-character text description (including spaces) can be assigned to each of the 80 zones to clearly identify the location area of the fire alarm or fault. This text is shown on the access Level 1 LCD displays.

- From the Commission menu, press the '5' key. A list of zones is displayed, starting with zones 1 to 4, and any assigned zone text.

- Highlight the zone for text editing. Use the ▼ key to move the highlight down one zone at a time and the ◀ / ▶ keys to navigate up or down the zone pages.
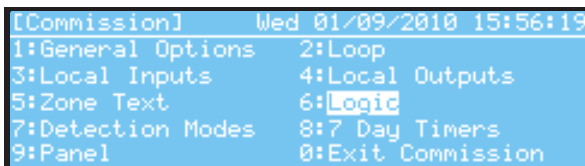
```
[Zone Text]       Wed 01/09/2010 15:33:14
Select Zone:   ◀ ▶:Page    0-9:Zone No
Zone: 01
Zone: 02
Zone: 03
Zone: 04
```

- Press the (OK) key to edit.

```
[Zone Text]       Wed 01/09/2010 15:35:26
Zone: 01
Enter New Zone Text
[|                 ]

OK:Save    2-9:A-Z  1:Spl Char    ←:Cancel
```

- Refer to **Section 5.1.3 Text Entry** for a general description of how to edit text.

5.3.9   Output Pattern Logic

- Refer to **Section 5.3.7.1 Pattern Assignment** for details of control-by-event (pattern) actions.

```
[Commission]      Wed 01/09/2010 15:56:19
1:General Options   2:Loop
3:Local Inputs      4:Local Outputs
5:Zone Text         6:Logic
7:Detection Modes   8:7 Day Timers
9:Panel             0:Exit Commission
```

- Press '6' or move the highlight to menu option '6: Logic' and press the (OK) key. The 'Logic' menu is displayed, as follows:

```
[Logic]           Wed 01/09/2010 15:59:18
1:Output Patterns    2:Panel State Inputs
```
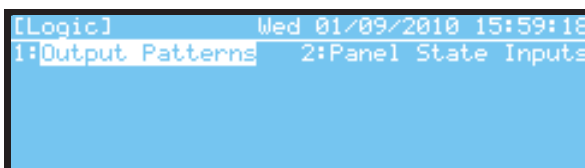
5.3.9.1   Output Patterns

- Select option '1' to edit one of the 40 available output patterns. The LCD prompts for the required pattern number.

```
[OP Pattern]      Wed 01/09/2010 16:14:42
Select Pattern |


OK:Confirm       0-9,↕:Edit      ←:Cancel
```
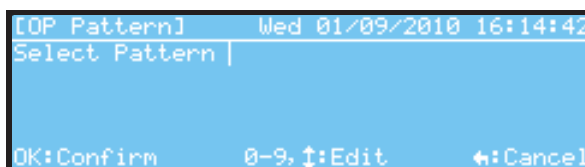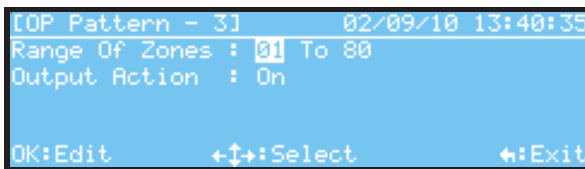
Note: By default, all 40 patterns are set so that a fire in any zone will immediately ring the bells. Some settings override other conditions, e.g. if a fire occurs in a zone set to turn the bells on immediately it will override any zone input configured for delays or pulsing.

- Using the numeric keypad, enter the pattern number and press the (OK) key. Alternatively, use the ▲/ ▼ keys to select a pattern; each press increments/ decrements the patterm number. When selected, the LCD presents the zone range associated with the pattern (1 - 80 is the default), in the Pattern 1 example below:
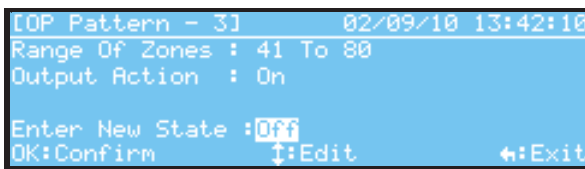
```
[OP Pattern - 1]      01/09/10 16:20:12
Select Zone Range:   ◄ ►:Page
Zone: 1 to 80 Action:On
```

- To edit the pattern press the (OK) key. A range of zones is presented with the first zone highlighted.

- When ranges of zones are to have different outputs set highlight the zone or range of zones and then edit the action; the output actions can only be changed 'one zone' or 'one range of zones' at a time. When selecting a pattern all 80 zones have the default action 'On'.

- An example is provided below of changing the actions associated with zones 41 to 80 of logic pattern 3.
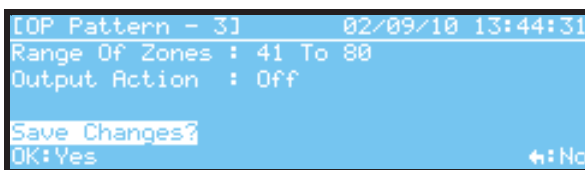
```
[OP Pattern - 3]      02/09/10 13:40:35
Range Of Zones : 01 To 80
Output Action  : On

OK:Edit       ←↕→:Select            ←:Exit
```

Zone 1 is highlighted - this is to be changed to '41'. Press the (OK) key and then enter new zone number '41' and press the (OK) key again to confirm the change.

```
[OP Pattern - 3]      02/09/10 13:41:42
Range Of Zones : 41 To 80
Output Action  : On

OK:Edit       ←↕→:Select            ←:Exit
```
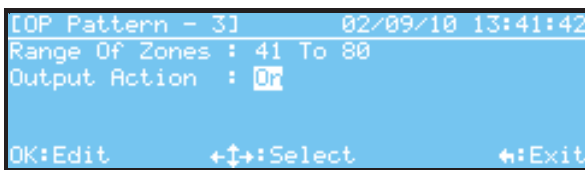
Use the navigation keys to highlight the current output action ('On') and press the (OK) key to edit it.

```
[OP Pattern - 3]      02/09/10 13:42:10
Range Of Zones : 41 To 80
Output Action  : On

Enter New State :Off
OK:Confirm         ↕:Edit           ←:Exit
```
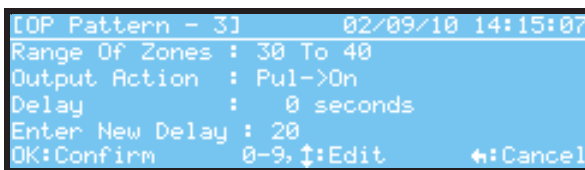
The lower part of the LCD now prompts the user to enter a new state for the zone/ zone range shown above. Use the ▲/ ▼ keys to change the action to: Delay, Coincidence, Pulse, Off or Pul ->On. In this example 'Off' was chosen.

```
[OP Pattern - 3]      02/09/10 13:44:31
Range Of Zones : 41 To 80
Output Action  : Off

Save Changes?
OK:Yes                               ←:No
```

Once the change has been made press the ⬅ key to exit. A 'Save Changes?' prompt is displayed - press the (OK) key to save and exit, or the ⬅ key to cancel any changes and return to the 'Select Zone Range' screen.

```
[OP Pattern - 3]      02/09/10 13:45:12
Select Zone Range:   ◄ ►:Page
Zone: 1 to 40 Action:On
Zone:41 to 80 Action:Off
```

After editing and saving the changes the new action is shown together with all other zones, i.e. zones 1 to 40 in this example. The edited zones, 41 to 80 show the action now as 'Off'.

```
[OP Pattern - 3]      02/09/10 14:15:07
Range Of Zones : 30 To 40
Output Action  : Pul->On
Delay          :    0 seconds
Enter New Delay : 20
OK:Confirm       0-9,↕:Edit       ←:Cancel
```

If 'Delay' or Pul ->On' was selected the user is prompted to enter a delay period (in seconds). Here a delay of 20 seconds has been entered for zones 30 to 40 as part of qualifying conditions set for Pattern 3. See **Section 5.3.9.1.2 Delays** for details on configuring output delays.

- Any other zones or ranges of zones may be edited the same way as described above.

- In the example below logic pattern 5 has been configured to have different actions by zone, or range of zones, where a fire in zones 1 to 8 turn on the sounders, a fire in zones 9 to 11 pulse the sounders and a fire in zone 12 pulses the sounders for 30 secs and then turns them full on. No sounders are activated for any fires in zones 13 to 80.

```
[OP Pattern - 5]          02/09/10 15:37:26
Select Zone Range:    ◀ ▶:Page
Zone: 1 to  8 Action:On
Zone: 9 to 11 Action:Pulse
Zone:12 to 12 Action:Pul->On        30 s
Zone:13 to 80 Action:Off
```

5.3.9.1.1 Zone Qualifiers

- Each zone can be set to qualify the output of the pattern. If the pattern is qualified, the pattern output will cause the bells/ outputs to turn on according to the pattern rules.

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Dependency on more than one alarm signal: Type C. | - Dependency on more than one alarm signal can be configured by using the 'Coincidence' zone qualifier, as described in the table below. |

Qualifier	Display Abbreviation	Comments
On	**On**	A single fire alarm in the zone will cause the pattern to be qualified and the outputs will turn on immediately.
Delay	**Delay**	A single fire alarm in the zone will cause the pattern to be qualified. The outputs will remain off for the delay period and then turn on.
Coincidence	**Coincid**	Fire alarms from two detectors in the zone will cause the pattern to be qualified. The outputs will remain off until there are fire alarms from at least two devices. **Note:** MCP devices override coincidence.
Pulse	**Pulse**	A single fire alarm in the zone will cause the pattern to be qualified and the outputs will turn on immediately in a pulsing mode.
Off	**Off**	The pattern is not qualified even if one or more fire alarms occur in the zone. The outputs will remain off.
Pulse ->On	**Pul->On**	A single fire alarm in the zone will cause the pattern to be qualified. The outputs will pulse for the duration of the delay period and then turn on.
Single Pulse	**Single Pul**	Each operation of the panel System Reset command will trigger the pattern logic as a non-latching, transparent input action (single pulse). This state will remain active for 5 secs.

Table 10 - Zone Pattern Qualifiers

- Refer to **Section 5.3.5.1.5 Output Controls** for further details on individual output settings and protocol specific information.

5.3.9.1.2 Delays

- Changing an output action to Delay or Pulse ->On the user is prompted to specifiy the delay period (in seconds). In the examples below the action for any fire in zone 12 of pattern 7 is to be delayed.

```
[OP Pattern - 7]          03/09/10 08:45:04
Range Of Zones : 12 To 12
Output Action  : On

Enter New State :Delay
OK:Confirm          ↕:Edit          ⬅:Exit
```

- Select Delay at the 'Enter New State' prompt and press the (OK) key.

```
[OP Pattern - 7]       03/09/10 08:45:43
Range Of Zones : 12 To 12
Output Action  : Delay
Delay          :  0 seconds

OK:Edit        ←↕→:Select         ←:Exit
```

- With the current delay period highlighted (0 in the above screen) press the (OK) key to enter a new delay period. The lower part of the LCD now displays 'Enter New Delay' to allow a delay period to be entered. In the example below, a period of 30 seconds has been entered.

```
[OP Pattern - 7]       03/09/10 08:46:18
Range Of Zones : 12 To 12
Output Action  : Delay
Delay          :  0 seconds
Enter New Delay : 30
OK:Confirm     0-9,↕:Edit        ←:Cancel
```

- Press the (OK) key to confirm or the (←) key to cancel any changes and return to the previous screen.

  Note: To change the delay period after it has been set to a value other than '0', e.g. the 30 seconds, in the example above, needs to be changed to another period. Use the ▶ key to move the highlight to the current delay period and press the (OK) key to enter the new delay period.

5.3.9.2   Panel State Inputs

- Specific Panel State conditions can be used as an input to the Output Pattern Logic. This permits specific conditions to turn on outputs. **Special care must be taken when using this option.**

- The general use of this function is to turn on one or more outputs when a specific panel condition occurs. For example, it is possible to turn on/ off an output when the panel is silenced/ resounded or to turn on an output when a day mode program is active. See **Table 11 - Panel State Conditions**.

  ! Use a specific pattern for these options, i.e. pattern 40. Assign to one of the high-numbered zones, e.g. 79, and ensure that all other patterns have this zone set to OFF. Assign the required output to use this pattern.
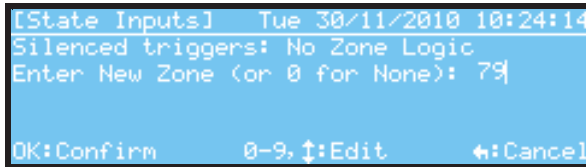
  Ensure that the output is configured not to respond to EVACUATE and SILENCE actions.

```
[Logic]          Tue 30/11/2010 10:13:50
1:Output Patterns   2:State Inputs
```
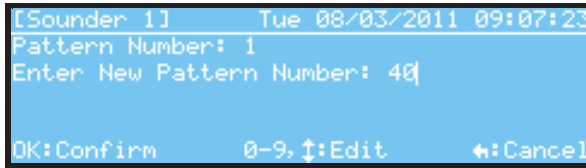
- From the Logic menu, use the numeric keypad to press '2' to select the Panel State Inputs option. Alternatively, use the ▶ key to move the highlight to the Panel State Inputs option and press the (OK) key to select. The panel state conditions are displayed as follows:

```
[State Inputs]   Tue 30/11/2010 10:20:25
Silenced        : No Zone Logic
Panel Evacuate  : No Zone Logic
General Fault   : No Zone Logic
Pre-alarm       : No Zone Logic
General Fire    : No Zone Logic
```
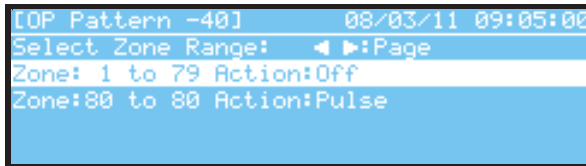
- Press the (OK) key to select Silenced or use the ▼ key to highlight one of the other panel state inputs and press the (OK) key to select.

- At the cursor, use the numeric keys, or the ▲/▼ keys, to enter the new zone logic that will be triggered, e.g. 79:

```
[State Inputs]    Tue 30/11/2010 10:24:14
Silenced triggers: No Zone Logic
Enter New Zone (or 0 for None): 79

OK:Confirm        0-9,↕:Edit        ←:Cancel
```
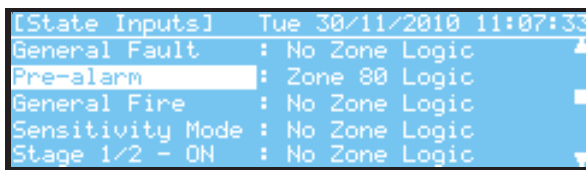
- Press the (OK) key to confirm the changed zone logic.

- A working example is given here of using a panel state input, with a pattern to use the on-board sounder number 1 to indicate when a pre-alarm condition has occurred, by turning on the output in a pulsing mode.

- For sounder output number 1, assign the output to use pattern 40, set respond to evacuation = No, set can silence = No.

```
[Sounder 1]       Tue 08/03/2011 09:07:23
Pattern Number: 1
Enter New Pattern Number: 40

OK:Confirm        0-9,↕:Edit        ←:Cancel
```

- For pattern 40, set all zones to the OFF condition except zone 80. Set zone 80 to PULSE. For all other patterns, set zone 80 to OFF.

```
[OP Pattern -40]          08/03/11 09:05:00
Select Zone Range:    ◄ ►:Page
Zone: 1 to 79 Action:Off
Zone:80 to 80 Action:Pulse
```

- Set the Panel State Input for Pre-Alarm to 'Trigger Zone 80 Logic'.

```
[State Inputs]    Tue 30/11/2010 11:07:33
General Fault     : No Zone Logic        ▲
Pre-alarm         : Zone 80 Logic
General Fire      : No Zone Logic        ■
Sensitivity Mode : No Zone Logic
Stage 1/2 - ON   : No Zone Logic         ▼
```

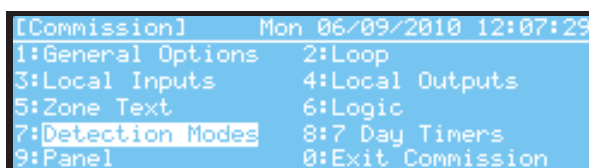| State Condition	Display Abbreviation	Comments
Silenced	**Silenced**	The output(s) will be turned on when the panel is silenced.
Panel Evacuation	**Panel Evacuate**	The output(s) will be turned on when an 'evacuate' condition (sound alarms button pressed) is entered.
General Fault	**General Fault**	The output(s) will be turned on when the panel is in the fault condition.
Pre-alarm	**Pre-alarm**	The output(s) will be turned on when the panel is pre-alarm condition.
General Fire	**General Fire**	The output(s) will be turned on when the panel is in a fire alarm condition.
Sensitivity Mode Activation	**Sensitivity Mode**	The output(s) will be turned on when the panel is in the sensitivity mode active condition.
Stage 1/2	**Stage 1/2 - ON**	The output(s) will be turned on when the panel is in the delayed day mode (stage 1/2) active condition.
Verify Mode Activation	**Verify Mode**	The output(s) will be turned on when when the panel is in the verification mode active condition.
System Reset	System Reset	The outputs will be turned on when a System Reset event occurs. When assigned to a zone, System Reset triggers pattern as a non-latching, transparent action; state is active for 5 secs.

**Table 11 - Panel State Conditions**

5.3.10   Detection Modes

- One of three possible detection modes may be configured, as described in the table below. Only one of these modes can be configured at any one time. These can be configured to be manually activated or automatically activated using the 7-day timers.

- If the panel is part of a network each panel MUST be configured with the same Detection Mode settings.

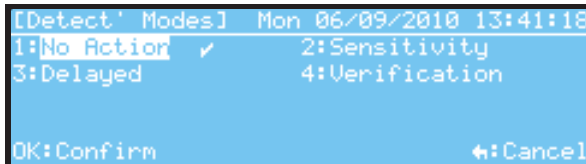| Detection Mode	Function	Description	Settings/ Comments
Delayed	Initiates a Stage 1/ Stage 2 alarm process.	Fire Alarm Signals from detectors are registered at the panel but the outputs are not immediately turned on. The user is given a programmable time (Stage 1) to acknowledge the alarm. After acknowledgement, the panel enters the Investigation Phase. The user is given a programmable time (Stage 2) to investigate whether the fire is genuine. The panel MUST be reset within this time to avoid the panel entering a full fire alarm condition and activating the outputs.	Stage 1 Timer (0 – 600 seconds) Stage 2 Timer (0 – 600 seconds) Note: The maximum delay time (Stage 1 + Stage 2) cannot be greater than 600 seconds. This mode only applies to detectors. Alarm level signals from call points and other inputs will immediately cause the panel to enter a fire alarm condition. A second fire condition will cancel either stage timer and the panel will enter a full fire condition and activate the outputs.
Verification	Initiates a confirmation mode for signals from smoke detectors.	Fire alarm Signals from smoke detectors are not immediately registered at the panel. This is to provide a level of immunity to transient smoke levels such as from cigarette smoke. If the fire alarm signal is still present at the end of the Retard-Reset-Restart time then the panel will enter an alam condition and the outputs will be activated. If the fire alarm signal is not present at the end of the Retard-Reset-Restart time then the panel will enter a Confirmation period. If this detector (or any non-smoke detector) enters the fire alarm condition within the confirmation period the panel immediately enters a fire alarm condition and the outputs will be activated.	Retard-Reset-Restart Period Timer 1 (0 - 60 seconds) Confirmation Period Timer 2 (0 - 60 seconds) This mode only applies to smoke detectors. Alarm level signals from temperature detectors, call points or other inputs will immediately cause the panel to enter a fire alarm condition. Each smoke detector initiates its own Retard-Reset-Retard start time and confirmation period in exactly the same way, even if other smoke detectors have entered this state.
Sensitivity	Initiates a fire alarm from a detector at different sensitivity levels.	The analogue level signal from the detector at which the panel will enter a fire alarm condition can be adjusted. The levels for each detector device can be adjusted for both day (occupied) and night (unoccupied) times.	Pre-alarm and Alarm Levels for both day and nght (see menu option 1 - night levels) periods per individual detector. This does not apply to call points or digital input modules.

Table 12 - Detection Modes

```
[Commission]      Mon 06/09/2010 12:07:29
1:General Options   2:Loop
3:Local Inputs      4:Local Outputs
5:Zone Text         6:Logic
7:Detection Modes   8:7 Day Timers
9:Panel             0:Exit Commission
```

- From the Commissioning menu, using the numeric keypad press the '7' key to select the Detection Modes option. Alternatively, use the ▼ key to move the highlight to the Detection modes option and press the (ᴏᴋ) key to select. The Detection Modes menu is displayed, as follows:

```
[Detect' Modes]   Mon 06/09/2010 12:10:35
1:Night Levels       2:Select Mode
```
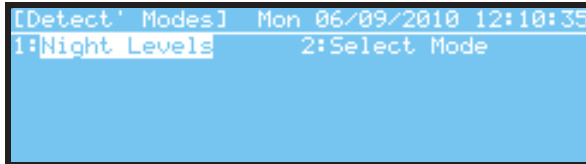
- The 'Night Levels' option is highlighted by default. Using the numeric keypad press the '2' key for the Select Modes option. Alternatively, use the ▶ key to move the highlight to the Select Mode option and press the (OK) key to select. The current settings are displayed; by default no detection mode is configured.
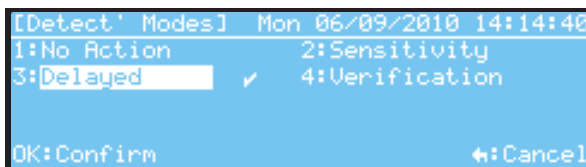
```
[Detect' Modes]   Mon 06/09/2010 13:41:18
1:No Action   ✔     2:Sensitivity
3:Delayed            4:Verification

OK:Confirm                    ←:Cancel
```

5.3.10.1   Delayed (Stage 1/ Stage 2) Mode

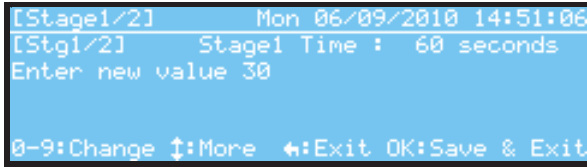| ⚠ EN54 ✓ **EN54-2 7.11.1** **Delays to Outputs**	- The panel can be configured to operate in a delayed mode. If the panel is part of a network all panels MUST have the stage 1 and stage 2 times set the same.
	- During this time, high sensor signals will generate a fire message at the panel, but delay the output to the sounders. The panel will initiate a full fire alarm if action is not taken on this warning within a specified time.
	- Manual call points will always generate an immediate fire alarm, regardless of any day mode setting.
	- Ensure that at least one sounder circuit is configured for immediate operation when the fire alarm is confirmed (end of stage 2 time).
	- The fire output relay operates as soon as a device goes into fire - even if Delayed Mode is active.
	- The fire output relay operates as soon as a device goes into fire - even if Delayed Mode is active. If remote notification is required only once the alarm has been confirmed then the programmable relay should be used rather than the fire relay.

- Use the numeric or navigation keys and to select the required detection mode. Whichever method is used, press the (OK) key to select it.

```
[Detect' Modes]   Mon 06/09/2010 14:14:40
1:No Action          2:Sensitivity
3:Delayed     ✔     4:Verification

OK:Confirm                    ←:Cancel
```

- Selecting the 'Delayed' option now prompts for the setting up of the two-stage timers; by default, 'Timer 1' is highlighted.

```
[Delayed]         Mon 06/09/2010 14:12:35
1:Timer1             2:Timer2
```
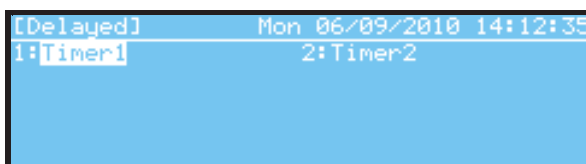
- Press the (OK) key to change the time period for the first stage delay. A delay time of 60 seconds is pre-configured. This may be changed, is so desired, as follows.

- Press any of the numeric keys (0 - 9) to enter a new delay period. Use the numeric keypad to enter the new time. Alternatively, use the ▲/▼ keys to enter a value. The ▲ key will allow a value to be entered - started with '0' and incrementing wiyth each press, whilst pressing the ▼ key once will enter value of 480 seconds, and decrement with additional presses.

```
[Stage1/2]      Mon 06/09/2010 14:51:06
[Stg1/2]     Stage1 Time :   60 seconds
Enter new value 30


0-9:Change ↕:More   ⬅:Exit OK:Save & Exit
```

- Press the (OK) key to exit edit mode. Press the (OK) key to exit the timer edit screen and save the change.

- The procedure for changing the second stage delay timer is the same as described above.
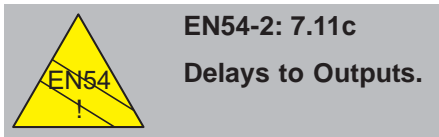
<table>
<tr><td>⚠️ EN54 !</td><td>**EN54-2: 7.11c**

Delays to Outputs.</td><td>- Note that for compliance with EN54 the maximum total delay is 10 minutes. Therefore, the stage 1 delay **plus** the stage 2 delay **plus** any sounder delay must not exceed this time.</td></tr>
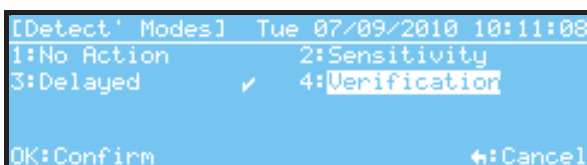</table>

❗ The recommended maximum timer settings are:

Stage 1 Time = 15 seconds

Stage 2 Time = 180 seconds

5.3.10.2   Verification Mode

- Alarm verification can be used to reduce false alarms by introducing a delay on a transient alarm signal received from a smoke detector.

- When an alarm is first received from a smoke detector the panel will start an internal timer and attempt to 'reset' the detector. If the detector is still in alarm after the verification timer has expired the control panel will go into alarm. If the detector is not in alarm at this point, the panel will enter a 'Confirmation period'. Any alarm condition received during the confirmation period will then be deemed a genuine fire alarm.

❗ **The alarm verification feature should not be used as a substitute for proper detector location/applications or regular system maintenance. Alarm verification features are intended to reduce the frequency of false alarms caused by transient conditions. They are not intended to compensate for installation design errors or lack of maintenance.**

Keep the verification delay to a minimum.

- From the Detection Mode menu use the numeric or navigation keys to select the Verification option. Whichever method is used, press the (OK) key to select it.

- The screen below shows Verification has been highlighted but not yet selected as the (OK) key has not yet been pressed.

```
[Detect' Modes]  Tue 07/09/2010 10:11:08
1:No Action       2:Sensitivity
3:Delayed      ✓  4:Verification


OK:Confirm                      ⬅:Cancel
```

- Pressing the (OK) key opens the Verification period timers menu with the first delay period timer highlighted, by default, as below:

```
[Verification mode]        07/09/10 10:15
1:Timer1              2:Timer2
```

- Press the (OK) key to select Timer 1 (Verification period) or, using the numeric keypad, press the '2' key to select the second period timer. Alternatively, use the ▶ key to move the highlight and then press the (OK) key to select Timer 2 (Confimation period). In the example below Timer has been selected with a default delay period of 60 seconds.

```
[Verification mode]        07/09/10 10:28
[Verification mode] Timer1 :   60 seconds

0-9:Change ↕:More   ←:Exit OK:Save & Exit
```

- Press the ▲/▼ keys to toggle between Timers 1 and 2.

- Two methods may be used to change the delay period: either use the ◀/▶ keys to step through the permissable values (0 to seconds) or press any numeric key (0 - 9) to enter delay period editing mode and change the time using either the numeric keys or the ▲/▼ keys.

```
[Verification mode]        07/09/10 11:07
[Verification mode] Timer1 :   60 seconds
Enter new value 30

OK:Save          0-9,↕:Edit          ←:Cancel
```

- After making any necessary changes press the (OK) key to save the changes and exit back to the Verification Mode Timers screen. Press the [←] key return to the Detetction Modes menu - the verification option is now shown as the mode in force, as below:

```
[Detect' Modes]  Tue 07/09/2010 09:32:53
1:No Action          2:Sensitivity
3:Delayed            4:Verification  ✔

OK:Confirm                      ←:Cancel
```

5.3.10.3 Sensitivity Mode

- The sensitivity of both smoke and temperature detectors can be adjusted by changing the threshold at which pre-alarm and fire alarm signals are generated. Increasing the threshold makes detectors less sensitive to smoke/heat and decreasing the threshold makes them more sensitive.

- It is possible to set threshold levels for each device for both the day period (sensitivity mode active – i.e. occupied) and the night period (sensitivity mode inactive – i.e. unoccupied).

    This facility is very flexible. It should only be used in certain specialized applications and with great care. The default mode is for all detectors to default to the manufacturer's recommended alarm level.

    Ensure that the system maintains safe fire alarm notification if thresholds are changed. Also ensure that the sensitivity levels are not set such that false alarms are likely.
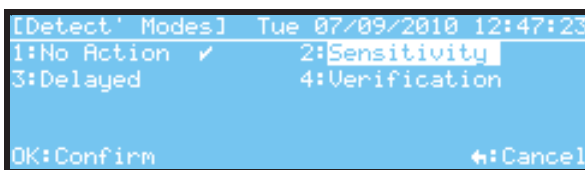
- From the Detection Mode menu use the numeric or navigation keys to select the Sensitivity option. Whichever method is used, press the (OK) key to select it.

```
[Detect' Modes]   Tue 07/09/2010 12:47:23
1:No Action   ✔       2:Sensitivity
3:Delayed             4:Verification


OK:Confirm                        ←:Cancel
```

- Press the (OK) key to select the Sensitivity mode option. If the panel has more than one loop, the user is prompted to enter the loop number. Using the numeric or ▲/▼ keys to enter the loop number. In the example below loop 1 has been entered.

```
[Detect' Modes]   Tue 07/09/2010 13:54:42
Enter Loop number (1 - 2) 1



OK:Confirm      1-2,↕:Edit       ←:Cancel
```
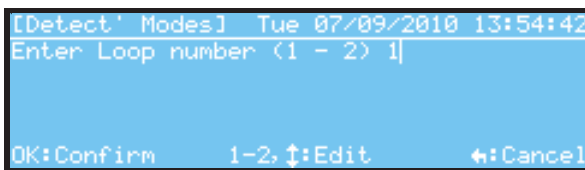
- Press the (OK) key to select. The LCD shows the devices listed in address order, with the first (lowest) address at the top. Use the ▼/▲ keys to navigate one address at a time, down or up, or the ►/◄ keys to step down/up one page at a time.

```
[Detect' Modes]   Tue 07/09/2010 14:18:42
L1 Select Device: ◄ ►:Page 0-9:Addr
S001 OPT   25   Z1
S002 OPT   25   Z1
S003 OPT   25   Z1
S004 OPT   25   Z1
```

- With the selected device highlighted press the (OK) key to view the current alarm threshold.

```
[Sensitivity]     Tue 07/09/2010 14:22:57
[Addr 002 - OPT]  Sensitivity ( DAY )
Alarm        :     3
```
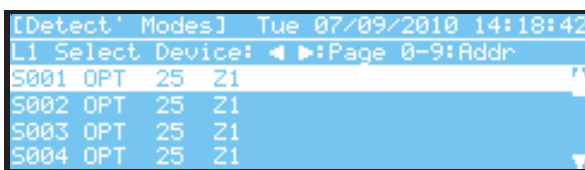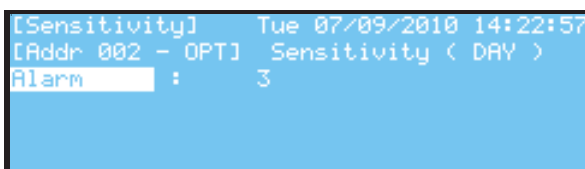
- Press the (OK) key again to edit the alarm threshold. Enter a new value, either using the numeric keypad or the ▲/▼ keys.

- Refer to the Product Market Variations Manual for more details.

- Enter the new alarm level threshold and press the (OK) key to confirm.

> **The panel will not allow the threshold levels to be set at a level that would prevent recognition of a fire alarm condition.**
>
> **The pre-alarm level cannot be set greater than the fire alarm level.**

- After editing, press the (OK) key to save the changes and exit back to the Verification Mode Timers screen. Press the ⬅ key return to the Detection Modes menu - the Sensitivity option is now shown as the mode in force, as below:

```
[Detect' Modes]  Tue 07/09/2010 12:43:14
1:No Action           2:Sensitivity   ✔
3:Delayed             4:Verification


OK:Confirm                      ⬅:Cancel
```

5.3.10.4   Night Threshold Levels

- The default night threshold levels can be adjusted. These levels apply irrespective of the detection mode chosen. In 'Delayed Mode' and 'Verification Mode' these levels will apply irrespectively. In 'Sensitivity Mode' these levels will apply while the sensitivity mode is inactive – the day sensitivity levels will apply while the sensitivity mode is active.

- From the Commissioning menu, using the numeric keypad press the '7' key to select the Detection Modes option. Alternatively, use the ▼ key to move the highlight to the Detection modes option and press the (OK) key to select. The Detection Modes menu is displayed, as follows:

```
[Detection Mode]        17/02/11 11:40:28
1:Night Levels(def) 2:Mode
```
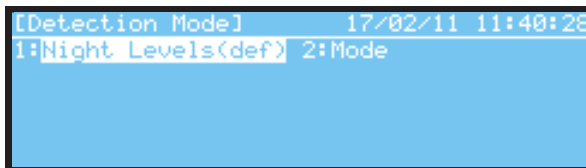
- To change the settings, with option 1 'Night Levels' of the Detection Modes menu highlighted (default), press the (OK) key to display the edit screen for night level sensitivity. If the panel has more than one loop, enter the loop number and press the (OK) key to select.
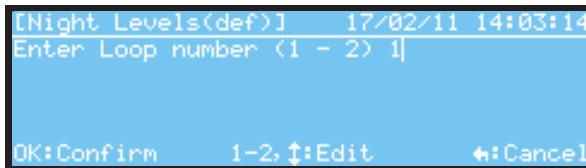
```
[Night Levels(def)]     17/02/11 14:03:14
Enter Loop number (1 - 2) 1|


OK:Confirm      1-2,↕:Edit        ⬅:Cancel
```

- The LCD shows the devices listed in address order, with the first (lowest) address at the top. Use the ▼ / ▲ keys to navigate one address at a time, down or up, or the ▶ / ◀ keys to step down/up one page at a time.

- With the selected device highlighted press the (OK) key to view the current alarm threshold.

- Press the (OK) key again to edit the alarm threshold. Enter a new value, either using the numeric keypad or the ▲/▼ keys.

- Refer to the Product Market Variations Manual for more details.

! **Ensure that the system maintains safe fire alarm notification if thresholds are changed.**

- The threshold level information presented depends on the protocol chosen. The above example is for Apollo Discovery devices.

- Enter the new alarm level threshold and press the (OK) key to confirm.

5.3.11   7-Day Timers

<table>
<tr><td>⚠️ EN54 ✓</td><td>**EN54-2: 7.11.2 Manual or automatic switching of Delays to Outputs.**</td></tr>
</table>

-   The activation of the 'Detection Mode' can be scheduled to operate at specific times.

-   Fourteen (14) separate active times can be scheduled and programmed in the panel. These can cross midnight boundaries if required. All of the timers are used to schedule the automatic activation/ de-activation of the selected detection mode operation.

-   If the panel is part of a network these timers MUST be configured with the same settings.

```
[Commission]      Wed 08/09/2010 10:27:40
1:General Options   2:Loop
3:Local Inputs      4:Local Outputs
5:Zone Text         6:Logic
7:Detection Modes   8:7 Day Timers
9:Panel             0:Exit Commission
```
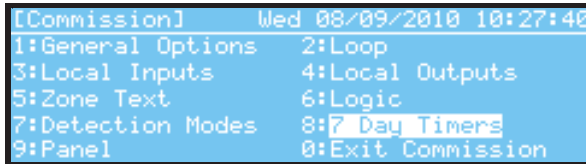
-   From the Commissioning menu, using the numeric keypad press the '8' key to select the '7 Day Timers' option. Alternatively, use the ▼ key to move the highlight to the '7 Day Timers' option and press the (OK) key to select. The 7-Day Timers menu is displayed, as follows:

```
[7 Day Timers]    Wed 08/09/2010 10:29:15
Sensitivity        ◄ ►:Page  0-9:Timer
01      Sun 00:00    TO    Sun 00:00
02      Sun 00:00    TO    Sun 00:00
03      Sun 00:00    TO    Sun 00:00
04      Sun 00:00    TO    Sun 00:00
```
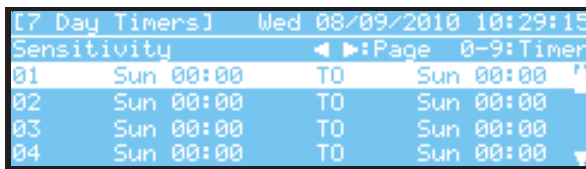
Note: 'Sensitivity' is displayed because this is the configured Detection Mode. 'Delayed' would be shown, for example, if the Detection Mode action 'Delayed' was selected.

-   The LCD shows the programmable timers listed in numerical order, with the first timer at the top. To select a timer first use the numeric keypad to enter the number of the required timer program and then press the (OK) key to select it. Alternatively, use the ▼ /▲ keys to navigate one timer at a time, down or up, or the ► / ◄ keys to step down/up one page at a time.

-   Having selected one of the programmable timers the timer edit screen is displayed, as in the example below for Timer 01:

```
[Timer 01]        Wed 08/09/2010 10:35:48
Start  : Sun 00:00
Finish : Sun 00:00


OK:Edit        ←↕→:Select         ↵:Exit
```
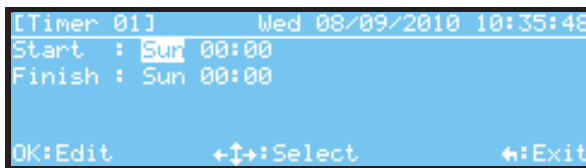
-   To change the day (Sunday is the default) press the (OK) key to enable the edit facility and, using the ▼ /▲ keys, cycle through the days.

```
[Timer 01]        Wed 08/09/2010 10:39:04
Start  : Sun 00:00
Finish : Sun 00:00

Enter New Start Day  : Mon
OK:Confirm       ↕:Edit           ↵:Exit
```
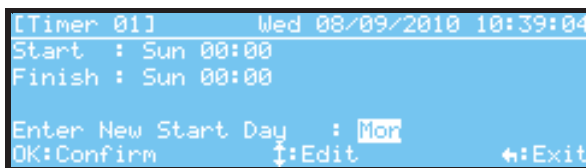
-   Having selected the timer period start day, e.g. Mon (for Monday), press the (OK) key to select it. The LCD now shows the change; the highlight has now moved to the start time field. Press the (OK) key and, using the numeric keypad (keys 0 - 9) enter a start time (using the 24 hour clock format).

```
[Timer 01]        Wed 08/09/2010 10:41:50
Start  : Mon 00:00
Finish : Sun 00:00

Enter New Start Time  : 08:00
OK:Confirm        0-9:Time        ←:Exit
```
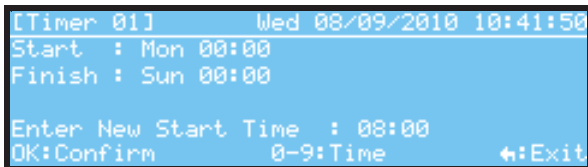
- Press the (ok) key and the LCD returns to the Timer edit screen with the Finish 'day' field now highlighted. Edit this in the same way as with the Start day and time fields.

```
[Timer 01]        Wed 08/09/2010 10:47:11
Start  : Mon 08:00
Finish : Fri 18:00


OK:Edit        ←↕→:Select        ←:Exit
```
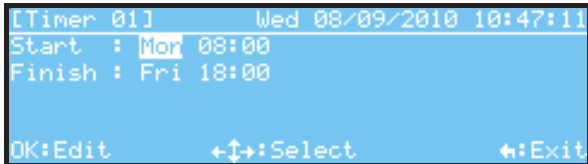
- After programming the timer press the [←] key to exit and return to the list of programmable timers. The user is prompted to save the changes; press the (ok) key to save or the [←] key to exit without saving changes.

```
[Timer 01]        Wed 08/09/2010 12:20:49
Start  : Mon 08:00
Finish : Fri 18:00

Save Changes?
OK:Yes                            ←:No
```

```
[7 Day Timers]    Wed 08/09/2010 12:36:33
Sensitivity        ◄ ►:Page  0-9:Timer
01    Mon 08:00    TO    Fri 18:00  '
02    Sun 00:00    TO    Sun 00:00
03    Sun 00:00    TO    Sun 00:00
04    Sun 00:00    TO    Sun 00:00  ▼
```
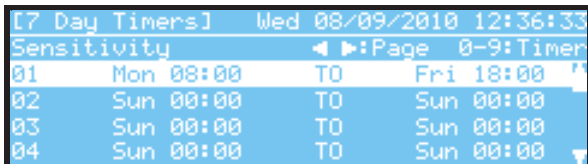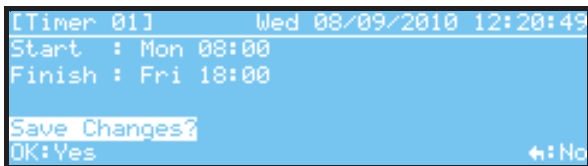
> **Note:** In the above example, timer 01 has been programmed to start at 08:00 (8:00 am) and finish at 18:00 (6:00pm) with Sensitivity as the selected Detection Mode. 'No Action' indicates that the timer will have no effect as no Detection Mode operation has been programmed. This will show: Delayed, Verification, Sensitivity depending on the mode selected.

- If the finish time entered is before the start time (or if the start time entered is after the finish time currently programmed) the display briefly shows a warning message as follows.

```
[Timer 01]        Wed 08/09/2010 16:10:31
Start : Mon 10:00
F┌─────────────────────────────────┐
 │   Finish time before start time !│
 │                                  │
Save Changes?─────────────────────────┘
OK:Yes                            ←:No
```
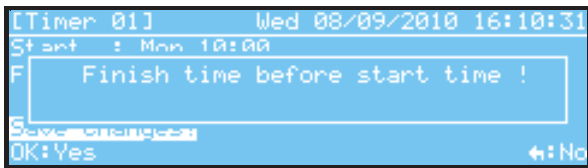
- If no Detection Mode has been programmed (refer to **Section 5.3.10 Detection Modes**) the user is warned when trying to program a timer, as in the example shown below:

```
[Timer 02]        Wed 08/09/2010 14:47:32
Start : Mon 08:30
F┌─────────────────────────────────┐
 │   No timer action programmed !   │
 │                                  │
OK:Edit        ←↕→:Select        ←:Exit
```
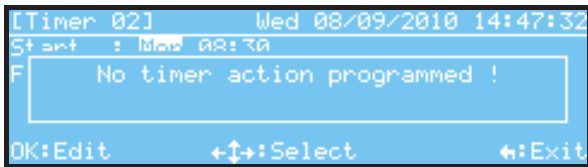
> **Note:** This is just a warning to indicate this condition. It will not stop the settings chosen from being accepted and changed. The timers programmed, however, will have no effect until a valid Detection Mode action has also been selected.

```
[7 Day Timers]    Wed 08/09/2010 14:54:18
No action          ◄ ►:Page  0-9:Timer
01    Mon 08:00    TO    Fri 18:00  ▲
02    Mon 08:30    TO    Fri 20:00  ▮
03    Sun 00:00    TO    Sun 00:00
04    Sun 00:00    TO    Sun 00:00  ▼
```
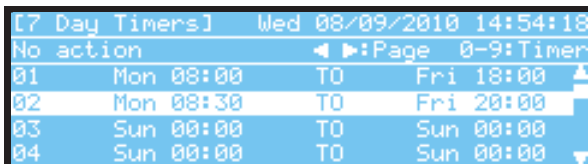
5.3.12 Panel

- From the Commission menu press the '9' key or, using the ▼ key to move the highlight to this option, and press the (OK) key, to select.

```
[Commission]     Wed 08/09/2010 17:12:50
1:General Options   2:Loop
3:Local Inputs      4:Local Outputs
5:Zone Text         6:Logic
7:Detection Modes   8:7 Day Timers
9:Panel             0:Exit Commission
```
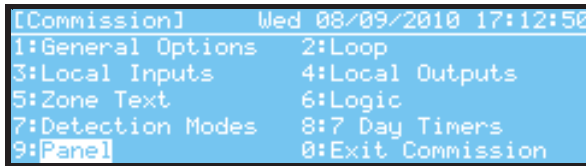
- The Panel menu has three options: LCD Contrast, Clock Offset and Wipe Memory.

5.3.12.1   LCD Contrast

```
[Panel]          Thu 25/11/2010 17:15:35
1:LCD Contrast      2:Clock Offset
3:Wipe Memory
```
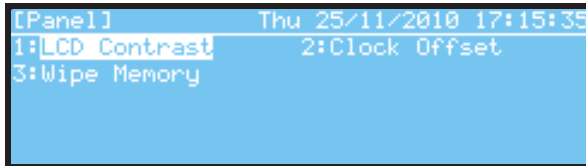
- When entering the 'Panel' menu the LCD Contrast option is pre-selected by default. Press the (OK) key to select. The following screen is displayed.

```
[LCD Contrast]   Mon 22/11/2010 09:03:58
        Set LCD Contrast
        <     150      >
          Adjust Level
       OK:Confirm ←:Cancel
```

- Use the ▶ / ◀ keys to adjust the contrast setting: the ▶ key increases LCD contrast, whilst the ◀ key reduces contrast. When the desired LCD contrast has been obtained, press the (OK) key to save the new contrast setting and exit. Press the ⬅ key to cancel any changes and exit

5.3.12.2   Clock Offset - Drift Compensation

- *The real-time clock in the panel is crystal controlled. However, this can drift (gain/ lose time) over a period of time because of component tolerances, operating temperature, etc. It is possible, however, to compensate for this drift.*

```
[Panel]          Thu 25/11/2010 17:15:35
1:LCD Contrast      2:Clock Offset
3:Wipe Memory
```

- Select option '2: Clock Offset'. The following screen is displayed:

```
[Clock Offset]   Thu 25/11/2010 17:15:35
Clock Offset     :    +0 seconds/week
New Clock Offset :    +0 seconds/week


OK:Confirm       ↕:Edit        ←:Cancel
```
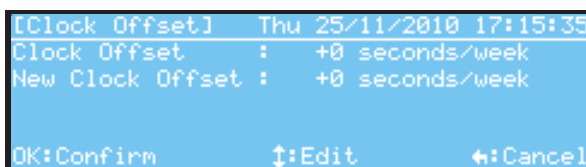
- Determine the clock gain/ loss per week over a period of time.

- Use the ▼ / ▲ keys to change the drift compensation. If the clock is gaining time, enter this as a positive number. The panel will set the clock back automatically by the adjustment once per week. If the clock is losing time, enter this as a negative value.

- Press the (OK) key to save the changes. Press the ⬅ key to cancel any changes and exit.

5.3.12.3   *Wipe Memory*

-    To return the panel to the factory default settings, press the '3' key to select the 'Wipe Memory' option. Alternatively, use the ▶ / ◀ keys to highlight this option and press the (OK) key to select.

```
[Panel]          Mon 22/11/2010 09:03:18
1:LCD Contrast      2:Clock Offset
3:Wipe Memory
```
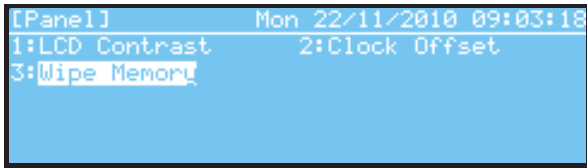
-    The user is prompted as shown below. Press the (OK) key to start the wipe operation. Press the [↰] key to cancel

```
[Wipe Memory]     Wed 08/09/2010 17:18:22
Wipe ALL configuration memory



OK:Confirm                      ↰:Cancel
```
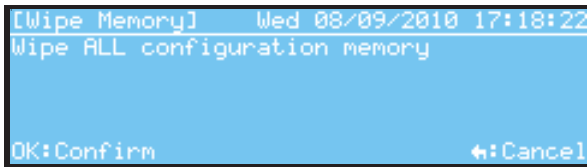
-    During the wipe procedure the following message is displayed:

```
[Wipe Memory]     Tue 14/09/2010 12:21:57
Wiping configuration memory
Please wait...
```
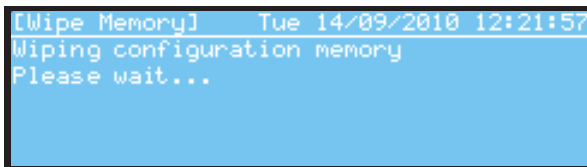
-    During this procedure the Fault and System Fault LEDs illuminate and the internal buzzer activates intermittently once the wipe configuration action is completed.

-    Perform a panel reset to clear these indications. After completion of the wipe procedure the LCD returns to the 'Panel' menu.

-    Re-configure/ re-program the panel manually. Alternatively, switch the panel off/ on or press the hardware reset push-button (located on the base PCB below the Flash Enable/ Disable jumper header J1) to re-initialise the panel – the display will then prompt for programming, using the fastrack process.

5.4   Programming Using the PC Configuration Tool

- The DX Connexion Series of Fire Control Panels allows the programming of ALL configuration parameters including, for some markets, an option to select the SLC device manufacturer's protocol.

- If using the Isolated USB to Serial Adapter Kit lead (PN: 020-891) and 4-way target cable (PN: 082-298), connect to the 4-way connector on the left-hand edge of the Base PCB (see illustration at right). The MIAS communications lead (PN: 795-080) may also be used for this purpose.

- The panel needs to be at user access Level 3 to upload the configuration file to the panel. However, downloading the configuration to the PC does not require this user access level.

- Instructions on how to use the PC Configuration Tool are not given here - refer to the user documentation supplied via the tool's Help menu.
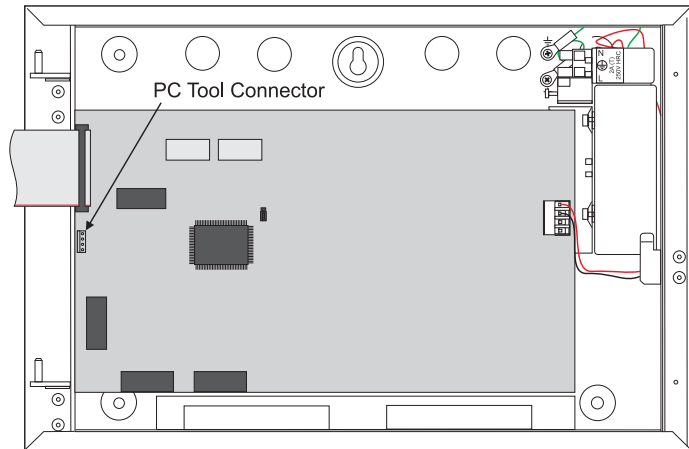
Figure 31 - Position of PC Tool Cable Connector

5.4.1 Retrieving Configuration Data

- To carry out this operation the panel does not require entry of user access passcodes.

- The LCD shows the progress of the data transfer between the panel and the PC. During this operation the LCD displays messages about the data currently being sent to the PC, i.e settings and text information. The user is still able to view panel operating conditions by pressing the ⬅ key.
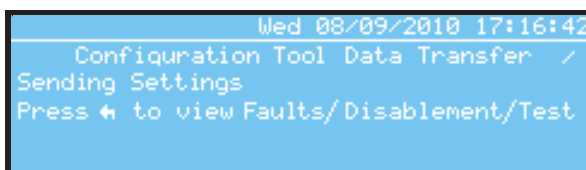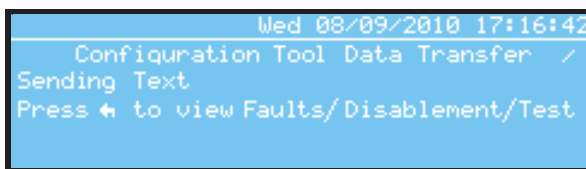
- Following completion the panel will return to the normal status display or the previously-displayed screen.

5.4.2 Sending Configuration Data

- To carry out this operation requires the panel to be at user access Level 3. Refer to the Help documentation supplied with the tool.

Appendix 1   Specifications

1.1   Functional Specifications

Specification Item	Values	
Mechanical	**Small**	**Medium**
Construction	Mild steel sheet rear enclosure. ABS UL94-HB40 plastic front cover. All displays and controls are carried on the enclosure door.	
Dimensions (h x w x d) (mm)	260 x 390 x 145	390 x 390 x 145
Weight (without batteries)	4 kg	4.5 kg
Weight (with batteries)	10.5 kg (7Ah),	13.5 kg (12 Ah), 18.5kg (17Ah)
Mounting Holes	3	3
Knockouts (20mm)	25 (top), 2 (bottom)	25 (top), 4 (bottom)
Terminals	External connections are made using plug-in screw terminals capable of accepting cable sizes between 0.5mm^2 to 2.5mm^2 (14-22AWG).	

Environmental	
Climatic Classification	3K5, (IEC 721-2-3)
Operating Temperature	0°C to +40°C
Humidity	5% to 95% R.H. non condensing
Height above sea level	2000m
Panel Sealing	IP30 (EN60529)
Vibration	EN60068-2-6, 10-150Hz at 0.981ms^{-2}
EMC	Emissions: EN61000-6-3. Immunity: EN50130-4
Safety	EN60950

Controls and Indications	
Display	240 x 64 pixels graphical liquid crystal display (LCD) with back light illumination
Zone Fire Alarm Indicators	40/80 zone LED indicators.
Status Indicators	LED Indicators for FIRE, FAULT, DISABLEMENT, TEST, BUZZER MUTED, DELAYED MODE, SOUNDERS SILENCED, SOUNDERS DISABLED and POWER. Also, dedicated fault LED indicators for SYSTEM FAULT, SUPPLY FAULT, SOUNDER FAULT AND EARTH FAULT.
Push Buttons	Control keys MUTE BUZZER, SILENCE / RESOUND, SYSTEM RESET, EXTEND DELAY, SHOW ALARM ZONES and EVACUATE.
	Navigation keys: ▲, ▼, ◄, ► and (OK).
	Numeric keys: 0-9, [c] (Clear), [←] (cancel)
	Application keys: F1, F2 for application use
Buzzer	Frequency: 4kHz
	Volume: >75dB @ 1m

Specification Item	Values
Features	
Signalling Line Circuits	DXc1 - 1 in-built loop driver panel
	DXc2 - 2 in-built loop driver panel
	DXc4 - 4 in-built loop driver panel
	Supports Analogue Addressable devices over a 2 wire combined power and data transmission loop.
	Loop Output Voltage and Signalling is specific to the configured loop driver protocol. Refer to the Product Market Variations Manual for details.
	Maximum Loop Loading is 0.5A per loop
Sounder Outputs	2 programmable outputs. Open and short circuit monitored.
	6.8kΩ, EOL resistors (P/N 170-073-682).
	1A maximum output current. Minimum switched current – 1mA
	Maximum Output Voltage = 27.5V, Minimum Output Voltage = 19.5V
Auxiliary Relays	3 programmable volt-free, changeover outputs.
	Contacts rated at 24V AC/DC, 1 Ampere, 0.6PF maximum.
	Minimum switched load – 1mA @ 5V
Digital Inputs	2 programmable inputs.
	Monitored for short and open circuit conditions. 6.8kΩ, EOL resistors (P/N 170-073-682).
Key Switch Option	Programmable for Level 2 Access, Class Change, Day/ Night Operation, Transparent operation.
Zone	DXc1 - 40/80 Fire Zones
	DXc2 - 40/80 Fire Zones
	DXc4 - 40/80 Fire Zones
History Log	999 entries
Faults	Latching

Table 13 - Functional Specifications

2.2   Power Supply and Charger

Specification Item	Values		
Operating Voltage	230V 50Hz AC		
Voltage tolerance	+ 10% - 15%		
Incoming mains fuse	5A T5AH250V (20mm HRC anti-surge fuse in AC Mains TB)		
Base card input	25.0 to 23.0 V		
Battery fuse (on Base Card)	F9 5A T5AH250V (20 mm HRC anti-surge)		
Battery Charger Output Voltage	27.2 V nom @ 20°C (temperature compensated and current limited)		
Maximum Battery Current (no mains supply)	5A (limited by battery fuse F9 located on Base PCB)		
AUX DC Output Voltage	27.5V Maximum , 19.5V Absolute Minimum		
	DXc1	**DXc2**	**DXc4**
Panel Quiescent Current[1]	I_{min} = 110mA	I_{min} = 110mA	I_{min} = 160mA
Panel Alarm Current[2]	160mA	160mA	210mA
Battery Charging Current[3]	0.95 A (max.)	1.17 A (max.)	1.17 A (max.)
	0.62 A (min)	0.75 A (min)	0.75 A (min)
AUX DC Output Current[4]	0.25A	0.25A	0.25A
Power Supply Output Rating (Continuous)	2.0A	4.0A	4.0A
Ripple Voltage (Max.)	<1.0V	<1.0V	<1.0V
EN54 Battery Wiring Test Impedance	0.4 Ohm		
	DXc1	**DXc2/4**	
EN54-4 PSU Loadings	$I_{max(a)}$ = 600mA @ 24 Vdc $I_{max(b)}$ = 2A @ 24 Vdc	$I_{max(a)}$ = 700mA @ 24 Vdc $I_{max(b)}$ = 4A @ 24 Vdc	
Standby Batteries (24V DC sealed lead acid)	Minimum = 7Ah Maximum = 7Ah	Minimum = 7Ah Maximum = 17Ah	Minimum = 7Ah Maximum = 17Ah

Table 14 - Power Supply and Charger Specifications

---

[1]   Back light off. No loop devices, no option cards.

[2]   Back light on. Fire relay and 2 sounder relays on.

[3]   Battery charger output is disconnected in alarm.

[4]   Total AUX DC power available - split across both AUX outputs.

3   Recommended Cables

- All cables connected to the fire alarm control panel must be fire resistant cables. Shielded cable must be used for signalling loops and sounder circuits. The drain earth wire should be connected to a suitable earth bonding point at both ends (loops) or single end (sounders) of the cable. Earthing points are provided on the inside of the top face of the back box for this purpose. Keep the earth connections as short as possible.

Loop cable

- A loop cable carries data, therefore, its selection is important. Note the following:

    - In countries where the European EMC directive is in force, only EMC Compliant cables are to be used.

    - The loop cable usage must not exceed 1.5 km. This includes the cable used on main loop and spur circuits.

    - Single pair cables must be used. It is NOT permissible to run mixed loops or outgoing and return pairs in a multi-core cable due to inadequate separation and possible electrical interference problems.

    - Each core of the loop cable must be a minimum $1.5mm^2$ cross sectional area.

    - The cable screen must be capable of being earth-linked through each system device – only one end of each cable screen must be earthed.

    - Red is the preferred cover sheath for fire applications

    - The specified loop circuit cables are also suitable for wiring alarm, auxiliary relay and input/output lines.

Mains supply cable

- The mains supply cable must be a standard fire resisting type and should meet PH30 classification.

Appendix 2   Standby Battery Calculations

Item	Qty	Quiescent Condition A		Alarm Condition B	
		Each Unit	Total Amperes (Units x Qty)	Each Unit	Total Amperes (Units x Qty)
Panel Type:					
DXc1		0.110		0.160	
DXc2		0.110		0.160	
DXc4		0.160		0.210	
Sensor Current[1]					
Loop 1					
Loop 2					
Loop 3					
Loop 4					
Auxiliary Current[2]		(Maximum 0.25 Amps total auxiliary 24V DC Supply)		(Maximum 0.25 Amps total auxiliary 24V DC Supply)	
ZXr-A (Active Repeater)					
ZXr-P (Passive Repeater)					
ZXR5B (Active Repeater)					
ZXR4B (Passive Repeater)					
All Other					
Sounder Outputs[3]					
Sounder Circuit 1 Load					
Sounder Circuit 2 Load					
		Total A =		**Total B[4] =**	
		Standby Period	Total A x 24 =	Alarm Period	Total B x 0.5 =
		Total C	Ah	**Total D**	Ah
		Battery Ah (C + D) x 1.25[5] =			Ah

---

[1]   Quiescent Current – Refer to the manufacturers' published data sheets for the supply current required by each device installed on the loop in normal mode. Calculate the total current required by all devices installed. Take into account the figures quoted for whether the device LED flashes when the device is addressed.

Alarm Current – Refer to the manufacturers' published data sheets for the supply current required by each device installed on the loop in alarm mode. Calculate the total current required by all devices installed. The panel will turn on the LED indicators of the first four sensors that register an alarm. Refer to the manufacturers' published data sheets for the LED current. Ensure the total alarm current does not exceed the power output capability of the loop driver circuit – refer to the specifications section for this value.

Adjustment factors – The panel employs a voltage booster circuit to step the battery voltage up to the required loop voltage. This results in losses and must be accounted for in the calculations. Multiply the calculated loop current by 1.5 to determine the current drawn from the batteries.

[2]   Typical quiescent and alarm mode currents are quoted. Refer to the documentation supplied with the unit for the supply current requirements in all operating modes and supply voltages. Ensure that the total load across each and all outputs does not exceed the specified maximum. Refer to the specification section for these values.

[3]   Ensure that the total load across each and all outputs does not exceed the specified maximum. Refer to the specification section for these values.

[4]   Ensure that the total panel load does not exceed the specified maximum. Refer to the specification section for these values.

[5]   The sum of the overall panel quiescent and alarm figures should be multiplied by a de-rating factor of 1.25. This is to take into account aging of the batteries.

Appendix 3   Maintenance

1.1   Maintenance Schedule

- Refer to national guidelines for recommended maintenance routines to be adopted. The recommendations of EN54-14 are outlined below.

1.1.1 EN54-14 Recommendations

1.1.1.1   Daily Attention

- The user should check the following:

  1. The panel should indicate normal operation & if not the fault should be recorded in a logbook & reported to the maintenance provider.

  2. Any faults previously reported have received attention.

1.1.1.2   Monthly Attention

- The user should check the following:

  1. Any stand-by generators should be started and fuel levels checked.

  2. At least one call point or detector (from different zones each month) should be operated to test the fire panel and any connected alarm/ warning devices.

  3. Where permissible, any link to the fire brigade or remote manned centre should be operated.

- Any faults should be recorded in the log book & corrective action taken as soon as possible.

1.1.1.3   Quarterly Attention

- The maintenance provider should arrange to test the following:

  1. Check entries in the logbook & inspect the panel's log, taking appropriate remedial action where necessary.

  2. Examine all battery connections.

  3. Check the alarm, fault and ancillary functions of the control and indicating equipment.

  4. Visually inspect the control and indicating equipment for any moisture ingress or other deterioration.

  5. Enquire if any structural alterations have been made which could affect the operation of call points, detectors or sounders, if so carry out a visual inspection.

- Any defects should be recorded in the logbook and corrective action taken as soon as possible.

1.1.1.4   Yearly Attention

- The maintenance provider should arrange to test the following:

  1. Carry out the test & inspection routines recommended daily, monthly & quarterly.

  2. 'Walk Test' the system and check that each detector operates in accordance with the manufacturer's recommendations.

  3. Visually inspect all cable fittings and ensure equipment is secure, undamaged and adequately protected.

  4. Examine and test all batteries; note the expected operating life shown in Section Appendix 4 Replacement of Components.

- Any defects should be recorded in the logbook and corrective action taken as soon as possible.

Appendix 4   Replacement of Components

1   General

- All components used in the control panel have been chosen for high reliability and long life. The manufacturers' data on the following items indicates that they may have a life expectancy of less than 15 years and so may need to be replaced in the future.

1.1   Lithium Standby Battery

CAUTION: A Lithium Battery is used for Clock Retention (Models DXc2 and DXc4).

RISK OF EXPLOSION IF THE BATTERY IS REPLACED BY AN INCORRECT TYPE. Dispose of used batteries responsibly and in accordance with any local regulations.

Replace only with the same (CR2025) or equivalent type. Contact Sales to order spare parts.

Manufacturer's expected shelf life	-	In excess of 10 Years
Recommended replacement	-	10 years.

1.2   Liquid Crystal Alphanumeric Display

Manufacturer's expected shelf life	-	In excess of 10 Years
Recommended replacement	-	When the LCD becomes difficult to read.

- The LED-backlit LCD gives a life that is significantly better than most other display technologies. The contrast of the LCD will gradually deteriorate as this part ages. This item can, therefore, be changed when normal contrast starts to fade. Replace the complete Display PCB.

1.3   Standby Batteries

Manufacturer's expected life	-	3-5 years at an ambient temperature of 20° Celsius.

Note that life decreases approximately 50% for every 10° Celsius increase in temperature.

Recommended service	-	Contact Battery manufacturer/ supplier	
Recommended Suppliers	-	Yuasa	
Types	-	7AH Model#:	NP7-12
	-	12AH Model#:	NP12-12
	-	17AH Model#:	NP17-12i

Before installation.

New Batteries may require 'top charging' prior to being put into service. Refer to battery manufacturer information for confirmation of this requirement.

Yuasa recommend top charging at 28.8V DC for 15 – 20 hours for batteries up to 6 months old from date of manufacture.

It is normal for lead-acid type batteries to discharge hydrogen while being charged. The panel is adequately ventilated to dissipate this hydrogen.

DO NOT seal the panel enclosure or mount the panel in a sealed enclosure or cavity.

Dispose of batteries in a responsible manner and in accordance with any local regulations.

2.1 Base PCB

- The Base PCB is fitted in the panel and does not need to be removed for the installation of the fire alarm control panel.

- Each Base PCB variant, 1 Loop (kit PN 795-109) or 2 Loop (kit PN 795-110), is secured in the panel enclosure using four M3 SEM screws.

- The Base PCB supports connection to the following :

    a. Display PCB

    b. PSU

    c. Batteries

    d. Thermistor

    e. All field wiring such as loop(s), sounder circuits, RS485 wiring, volt-free relay circuits, etc.

    f. Optional network PCB.

- The 2-Loop Base PCB, when used in the DXc4 panel 4-loop variant, has a ribbon cable connection to the 2-loop expansion PCB.

- Should the Base PCB need replacing, refer to the instructions provided with the replacement.

2.2 2-Loop Expansion PCB (PN: 795-111)

- This PCB extends a 2-loop panel to four detection loops. The DXc4 panel variant already has this PCB fitted and, consequently, this manual does not provide fitting instructions.

- The 2-loop Expansion PCB locates on four pillars inserted through the Base PCB, to which it is connected via a ribbon cable.

- Should the 2-Loop Expansion PCB need replacing, refer to the instructions provided with the replacement. Replacement kit (PN: 795-111).

2.3 Display PCB (PN: 795-104)

- The Display PCB is fitted to the front door of the Connexion panel variants.

- The PCB is connected directly to the following Base PCB.

- The Display PCB also supports the optional-fit keyswitch and 40-Zone/ 80-Zone PCB assemblies.

- This PCB, or LCD unit, are not individually-replaceable items. In the unlikely event that the PCB should become faulty a complete front door assembly replacement is required. Replacement kit (PN: 795-104).
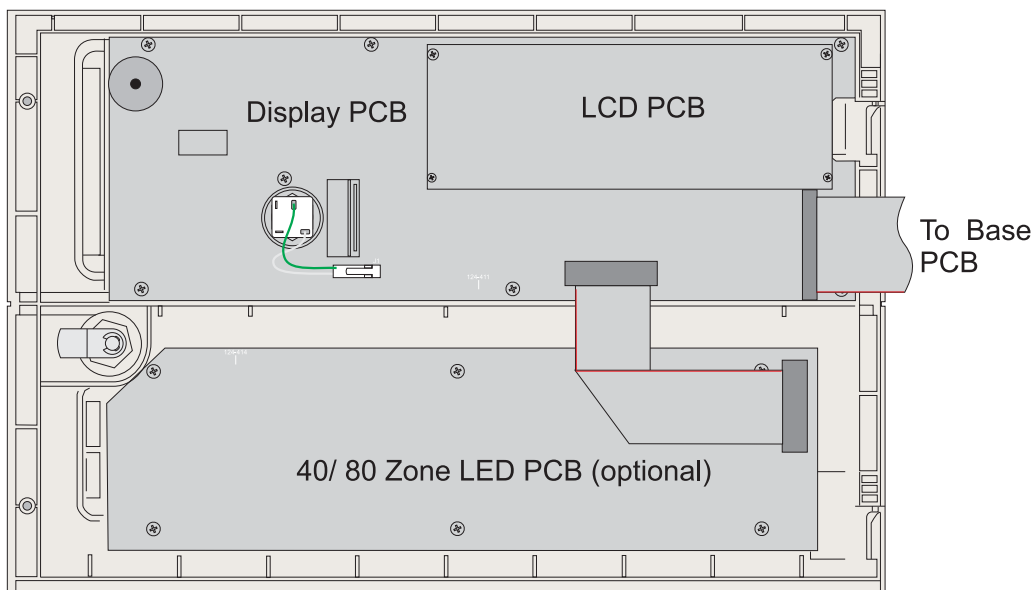

Figure 32 - Location of Display PCB and 40/ 80 Zone LED PCB

- Should the Display PCB need replacing, refer to the instructions provided with the replacement. Replacement kit (PN: 795-104).

2.4   40-Zone LED PCB (PN: 795-102)

- The 40-Zone LED PCB provides individual fire indications for zones 1 to 40. It is located on the lower part of the front door, immediately below the Display PCB and connected to the Display PCB via a ribbon cable.

   Note: If the 40-zone PCB is fitted, do not configure the number of fire zones above 40 as information relating to fires in zone numbers above 40 will only be displayed on the LCD. To provide zone fire LED indications for zone numbers 41 to 80 the 80-Zone LED PCB is required.

- Should the 40-Zone LED PCB need replacing, refer to the instructions provided with the replacement. Replacement kit (PN: 795-102).

2.5   80-Zone LED PCB (PN: 795-124)

- The 80-Zone LED PCB provides individual fire indications for zones 1 to 80. It is located on the lower part of the front door, immediately below the Display PCB and connects to the Display PCB via a ribbon cable.

   Note: The 80-Zone LED PCB can be used only in place of the 40-Zone LED PCB and not in addition to it.

- Should the 80-Zone LED PCB need replacing, refer to the instructions provided with the replacement. Replacement kit (PN: 795-124).

2.6   PSU

- The DX Connexion Series fire alarm control panels use two different PSUs with outputs of either 2A or 4A at 24V dc. The DXc1 panel variant uses the 2A version, while the DXc2 and DXc4 panel variants use the 4A version.

- Should either PSU type require replacing refer to the instructions provided with the replacement PSU kit (PN: 795-106 for DXc-1, PN: 795-107 for DXc-2/ 4).

Appendix 5   How to Flash Upgrade the Panel

1.1   General

- The user may change the panel operating software using a PC and an appropriate version of the panel software (Flash upgrade file in 'hex' format).

- Perform the following four main steps to ensure the successful Flash upgrade of the panel software:

    1 PC back-up of all configuration data.

    2 Flash upgrade procedure

    3 Wipe the panel configuration settings

    4 Download existing site configuration file from PC.

Step 1

- Before performing this procedure it is strongly recommended that a backup of the current panel configuration is downloaded to the PC, using the **latest version** of the PC Configuration Tool (available from Technical Support or your fire panel equipment supplier).

- Connect the lead between the panel, using the PC Tool connector, and PC. If using the Isolated USB to Serial Adapter Kit lead (PN: 020-891) for connection between the panel and the PC, refer to the user documentation supplied with it. Alternatively, use the MIAS communications lead (PN: 795-080) to communicate with the PC. Refer to **Section 5.4 Programming Using the PC Configuration Tool** for further details on how to do this.

- Refer to the user documentation supplied with the PC Configuration Tool for more details on operating the PC configuration tool program.
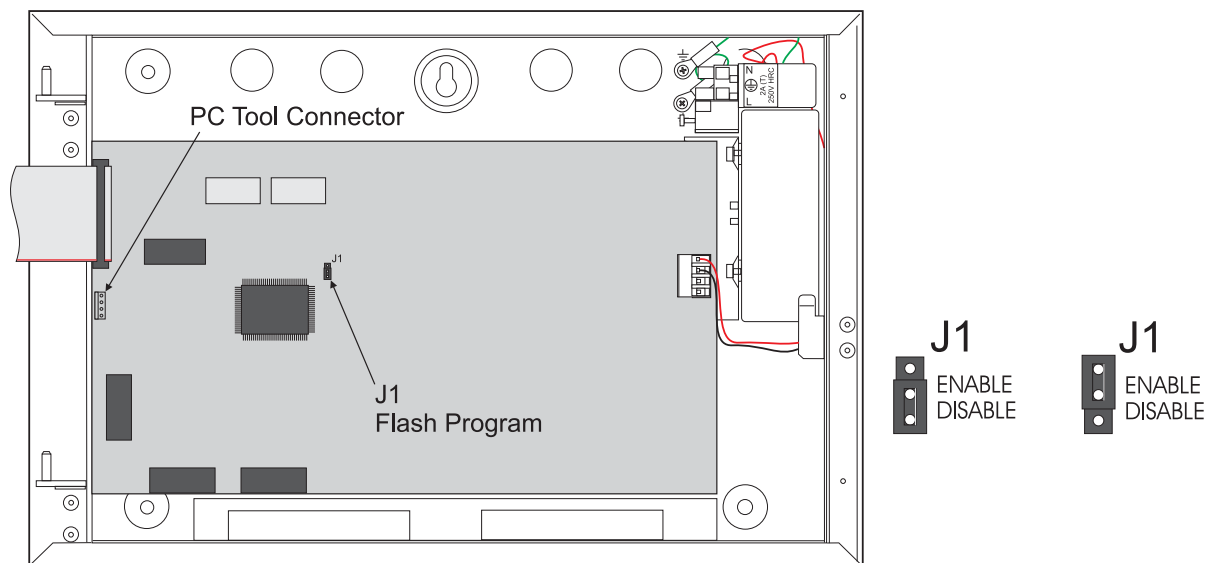
Figure 33 - Location of PC Tool Connector and Flash Programmer Jumper Link J1

Step 2

- Before starting, power down the panel completely (remove mains and batteries). When all power is removed, move the jumper link J1 from the DISABLE position to the ENABLE position. Re-apply power (mains only as this procedure will work without the batteries connected). The LCD remains blank throughout as the PC Flash Program user interface reports the status of Flash upgrade process.

- On the PC start the DXc Flash Programmer. This can be done either by going to the 'Start menu/All Programs/Morley-IAS by Honeywell' and selecting the 'DX Flash Programmer' option, or by double-clicking the 'DX Flash Programmer' desktop icon.

- The following screen is displayed:
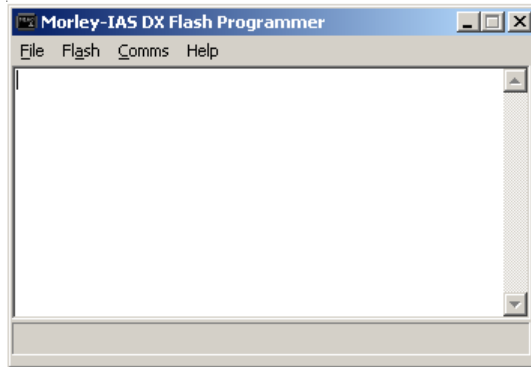
- Click on 'File' and 'Open...' to display the following screen:
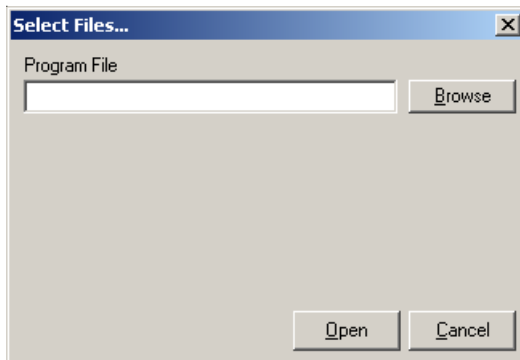
- Click the 'Browse' button to start the search for the required software upgrade 'hex' file. The approriate file will be shown once the correct folder location has been selected, as illustrated in the example below:
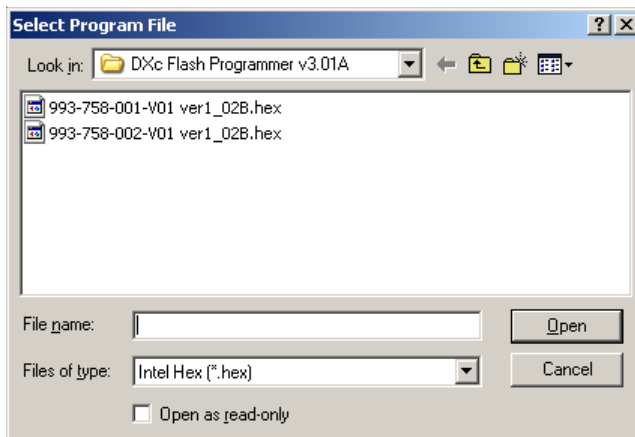
- With the folder containing the correct file, click on 'Open...' to select the file. The following typical screen is displayed, with the selected software upgrade file followed by 'This is DXn Hex file':
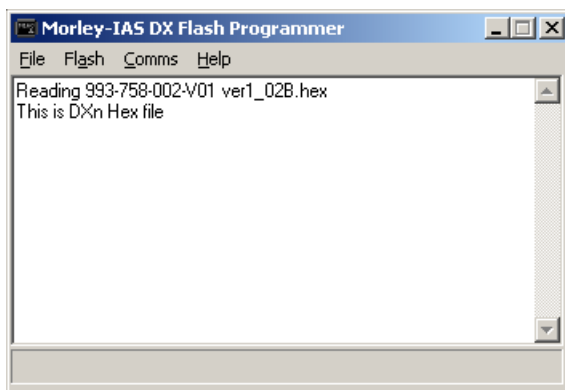
- Click on 'Comms' menu, select 'Port' to check that the correct port is selected.
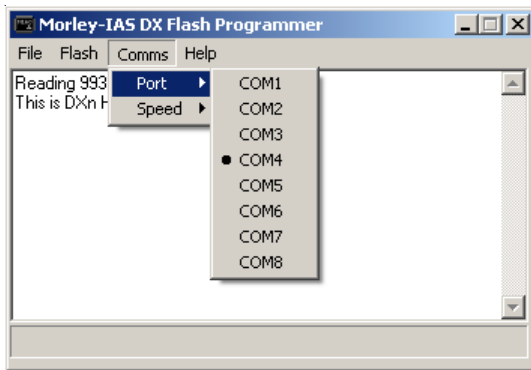
- If the USB to Serial Adapter Kit lead (PN: 020-891) is being used this will have been configured to use a specific port when the driver software was installed. This is a quick way of checking that the configured port has the black circle alongside. If this lead is not being used but the earlier type of communications lead is being used (PN: 795-080) instead, ensure that the port selected is the physical port being used at the back of the PC.

- Then, from the 'Flash' menu select the 'Start' option.
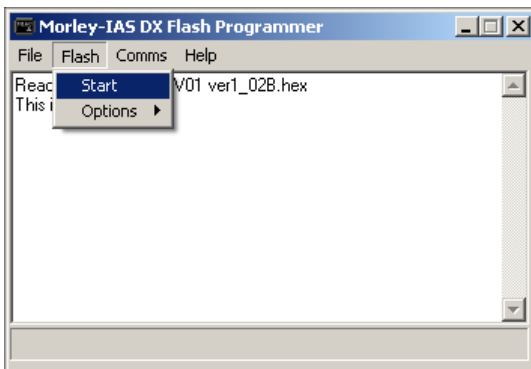
- The panel software upgrade now starts. When finished, the following typical screen will be displayed:
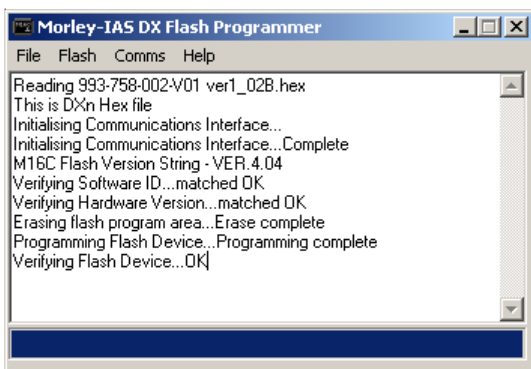
> **Note:** If the upgrade utility reports that there is a problem communicating with the fire panel, first check that the correct comm port is selected. If this does not resolve the problem and the USB to Serial Adapter Kit lead is being used, disconnect the lead at the panel end and try again. The jumper link, J1, MUST be in the ENABLE position to perform this procedure - as confimation of this, the LCD remains blank.

Step 3

-       Remove power from the panel and return the J1 jumper link to the DISABLE position. Re-apply mains and battery power.

-       **IT IS IMPORTANT THAT YOU DO THIS!** It is now necessary to wipe the panel settings from the system menu before restoring them from the PC Tool. Refer to **Section 5.3.12.3 Wipe Memory** for details, if required.

Step 4

-       After the panel software has successfully been upgraded, restore the site configuration settings using the <u>latest</u> PC Tool to ensure correct operation of the panel. Refer to the PC Tool user documentation, if necessary.

Appendix 6　Event Text Explained

- The table below provides a description of the meaning/ cause behind each possible event log entry.

Event Text (English)	Description/ Meaning
Control Actions	
EVACUATE	A 'Sound Alarms' button or digital loop input associated with the 'Evacuate' action has been activated.
SILENCE SOUNDERS	A 'Silence/ Resound' button or digital loop input associated with the 'Silence' action has been activated.
RESOUND SOUNDERS	With sounders already 'silenced', the 'Silence/ Resound' button or digital loop input associated with the 'Silence' action has been activated.
MUTE INTERNAL BUZZER	A panel or repeater 'Mute Buzzer' button has been activated.
RESET PANEL	A 'Reset' button or digital loop input associated with the 'Reset' action has been activated.
EXTEND DELAY	A panel EXTEND DELAY or repeater 'Accept' button has been activated.
Device Actions	
FIRE ALARM	An input device associated with a Fire action has activated
TEST FIRE ALARM	An input device, from a zone currently in test mode, associated with a Fire action has activated.
PLANT ALARM	An input device associated with a 'Plant Warning' action has activated
TEST PLANT ALARM	An input device, from a zone currently in test mode, associated with a 'Plant Warning' action has activated.
PRE-ALARM	A detection device has registered a pre-alarm level - based on it's programmed pre-alarm threshold.
PLANT ALARM RETURN	An input device associated with the 'Plant Warning' action has returned from its activated state back to normal.
FIRE ALARM RETURN	An input device associated with the 'Fire' action has returned from its activated state back to normal.
BOMB ALERT	An input device associated with the 'Bomb Alert' action has been activated
BOMB ALERT RETURN	An input device associated with the 'Bomb Alert' action has returned from its activated state back to normal.
INTRUDER ALERT	An input device associated with the 'Security' action has been activated
INTRUDER ALERT RET'N	An input device associated with the 'Security' action has returned from its activated state back to normal.
TRANSPARENT ACTION	An input device associated with the 'Transparent' action has been activated
TRANS ACTION RETURN	An input device associated with the 'Transparent' action has returned from its activated state back to normal.
CLASS CHANGE START	An input device associated with the 'Class Change' action has been activated
CLASS CHANGE FINISH	An input device associated with the 'Class Change' action has returned from its activated state back to normal.
DETECTION MODE START	An input device associated with the 'Det Mode' action has been activated. Overrides the timer to instigate the detection mode manually.
DETECTION MODE END	An input device associated with the 'Det Mode' action has returned from its activated state back to normal.

Event Text (English)	Description/ Meaning
LEVEL 2 ACCESS START	An input device associated with the 'Level 2 Access' action has been activated
LEVEL 2 ACCESS END	An input device associated with the 'Level 2 Access' action has returned from its activated state back to normal.
FAULT INPUT TRIGG'ED	An input device associated with the 'Fault' action has been activated.
FAULT INPUT REMOVED	An input device associated with the 'Fault' action has returned from its activated state back to normal.
EXT PSU FAULT	An input device associated with the 'EXT PSU Fault' action has been activated. (External PSU fault).
EXT PSU FAULT RETURN	An input device associated with the 'EXT PSU Fault' action has returned from its activated state back to normal.
User Actions	
WALK TEST START	Occurs following the initiation of a walk test with/ without sounders.
WALK TEST RESET	Any activation from a zone in test is automatically reset after a short period.
WALK TEST END	Occurs following the cancellation of 1 or all walk tests with/ without sounders.
DISABLE FULL ZONE	All input devices within a zone were disabled (activations and faults disabled).
ENABLE FULL ZONE	All previously disabled input devices within a zone were re-enabled, i.e. disablement cancelled.
DISABLE DEVICE	A specific device was disabled (input action, output and faults)
ENABLE DEVICE	A previously disabled device was re-enabled i.e. disablement cancelled.
DISABLE ALL SOUNDERS	All output devices designated as sounder devices were disabled.
ENABLE ALL SOUNDERS	All output devices designated as sounder devices, previously disabled, were re-enabled.
DISABLE ALL RELAYS	All output devices not designated as sounder devices were disabled.
ENABLE ALL RELAYS	All output devices not designated as sounder devices, previously disabled, were re-enabled.
DELAYS ON	Pattern delays - user function to enable function.
DELAYS OFF	Pattern delays - user function to disable function.
DISABLE FAULT RELAYS	User menu function to disable the fault relay has been performed.
ENABLE FAULT RELAYS	User menu function to re-enable the fault relay has been performed.
DISABLE DIS GROUP	User menu function to disable a specific disablement group has been performed.
ENABLE DIS GROUP	User menu function to re-enable a disablement group has been performed.
DISABLE LOCAL INPUTS	User menu function to disable on-board/ local inputs (monitored inputs, key-switch, Function keys, panel states) has been performed.
ENABLE LOCAL INPUTS	User menu function to re-enable on-board/ local inputs has been performed
Device Events	
NO REPLY FROM DEVICE	A Loop of peripheral device is not responding - missing.
DEVICE ADDED	A new addressable loop device has been detected - must perform an auto-learn to accept the new device.
DOUBLE ADDRESS	Two addressable loop devices are responding to the same address.
DEVICE TYPE CHANGED	An addressable loop device has been replaced by a different type of device to that which was previously learnt (during an auto-learn).

Event Text (English)	Description/ Meaning
BAD DEVICE REPLY	Persistent communication errors have occurred when communicating with a specific loop/ peripheral device.
DEVICE LEVEL FAULT	Generated if an analogue detection device is returning a very low analogue value. Check/ replace the device.
DEVICE NOT SUPPORTED	An unrecognised/ unsupported loop device has been detected.
System Events	
LOOP OPEN CIRCUIT	Open-circuit wiring fault detected on an Addressable loop - check loop wiring.
LOOP SHORT CIRCUIT	Short-circuit wiring fault detected on an Addressable loop - check loop wiring.
CPU RESTART	The Control panel has been reset - either by complete removal of power to the panel, pressing the reset button, top left of the base-card PCB or automatically by on-board watchdog circuitry.
NO MAINS SUPPLY	The primary power supply (mains) has failed/ been removed.
MAINS SUPPLY LOW	The primary power supply (mains) is unusually low. Check mains voltage.
EARTH FAULT	A wiring fault has been detected to earth. The fault can be narrowed down by systematically disconnecting field wiring sequentially monitor the Earth fault reading, voltage between batt negative and earth or repeatedly reset and wait 100sec each time.
BATT' CHARGER FAILURE	The integral battery charger has failed - not charging batteries. Check thermistor flying leads are correctly connected.
BATTERY WIRING FAULT	Continual checking of battery has identified a possible wiring connection fault. Check connections to the batteries. May also indicate that batteries are in need of replacement (refer to **Section 3.4.4**).
BATTERY LOW	The battery voltage is unusually low - check the battery.
BATTERY MISSING	The presence of a battery cannot be detected.
BATTERY DISCHARGED	The battery voltage is at an absolute low level - check the battery.
LOOP DRIVER BAD COMS	On-board communications to the loop driver have failed - ensure that the loop driver has been properly programmed attempt to re-flash the loop drivers from the set-up menu.
S/W CHECKSUM FAILURE	Continual internal checking of the program memory has found some corruption. The base-card PCB should be re-programmed or returned to the factory.
CONFIG CHECKSUM FAIL	Some form of corruption has been detected within the configuration settings. This can occur following a software upgrade if the memory is not 'wiped'. Try wiping the memory or re-configuring from the configuration tool to clear the fault (followed by a reset) - alternatively the base-card PCB must be returned to the factory.
AUX SUPPLY FAULT	A fault with the auxiliary supply has been detected. Check the Aux voltage and any associated wiring.
MEMORY LOCK OPEN	The Configuration memory lock jumper (top left of the base-card PCB has been detected missing from the locked position.
ZONE LEDS MISSING	A Zone Fire LED PCB is not connected but is included in the configuration. Change the configuration or fit the PCB.
PSU MODULE FAULT	The Power Supply Unit module has failed. Replace the PSU module.

Appendix 7   Peer-to Peer Network Configuration

1   Introduction

- The DX Connexion Series of fire alarm control panels can form part of a fire alarm detection and system status indication network. Two network configuration options are available: loop or linear.

    Loop Configuration: each panel communicates independently with its immediate neighbours using a closed-loop topology. The design of this network meets the requirements of EN54-2 to provide single-fault tolerance, so that in the event of a cable fault communication over the entire network is still maintained.

    Linear: each panel communicates independently with its immediate neighbours. However, this topology, being an open-loop configuration, cannot fulfill the requirements of EN54-2 for single-fault tolerance.

- During the network set-up **each** panel requires the entry of key information such as the type of network to be implemented (see above), its identity on the network (panel ID and name). Also, a network map needs to be created **at each panel** which lists all the other (remote) panels.

2   Procedure

- Each panel has to be individually configured. The network set-up option is one of the General Options of the Commission menu (user access Level 3).

- With the panel at access Level 3 select '7: Commission (L3)' option. Press the (OK) key to unlock the memory. The Commission menu is displayed with the 'General Options' option highlighted. Press the (OK) key to select.

- Eith use the ▼ key or ▶ key (page down function) to move the highlight down until the following screen is displayed:

```
[General Options]        15/02/11 08:44:13
Sndr Grp/Dev Dsbl: NO
Phone            :
Site Name        :
Next Service Due : 01/01/00
Network Option   : NO
```

- Press the (OK) key. The 'Network Option' screen is displayed with the default of 'NO' selected:

```
[Network Option]         15/02/11 08:47:35
1:NO  ✔          2:YES



OK:Confirm                        ←:Cancel
```

- To select this panel to be on the network either press the numeric key '2' or the right arrow key to move the highlight to 'YES' and press (OK) to select. When selected the following network options are displayed:

```
[Network Option]         15/02/11 08:52:58
1:Panel ID       2:Panel Text
3:N/W Topology   4:Remote Panels
```

- To configure the panel ID, press the (OK) pushbutton. The following screen is displayed:

```
[Panel ID]        Tue 15/02/2011 08:56:16
Panel ID    : 0
Enter New Panel ID : |


OK:Confirm      0-9, ↕:Edit      ←:Cancel
```

- To enter a panel ID (in the range 1 to 99) either use the numeric pushbuttons to enter the address or the ▲ / ▼ keys - the first press of either key will enter an ID of '0' (not on network) which increments/ decrements with each press of the ▲ / ▼ keys. Press the (OK) pushbutton to confirm the panel's ID number entry. The Network Options menu is displayed once more.

- The panel can also have an alphanumeric network identity (optional). To enter an alphanumeric identity select option '2: Panel Text'. Identity names of up to 20 characters may be entered.

```
[Panel Text]     Tue 15/02/2011 09:02:01
Panel Text   :
Enter New Panel Text
[               ]
                        ▼:Word List
OK:Save   2-9:A-Z  1:Spl Char  ←:Cancel
```

- In the example below the 'Word List' text entry option was used to give the panel the name 'CEILING VOID'.

```
[Panel Text]     Tue 15/02/2011 09:14:08
Panel Text   : FIRST PANEL
Enter New Panel Text
[CEILING VOID|       ]
                        ▼:Word List
OK:Save   2-9:A-Z  1:Spl Char  ←:Cancel
```

- Network Topology. Select the type of network being used, Linear or Loop.

```
[N/W Topology]   Tue 15/02/2011 10:36:31
1:Linear  ✔          2:Loop


OK:Confirm                     ←:Cancel
```

- Press (OK) to confirm the type of network topology used.

- Remote Panels. Use this option to create a list of all the other panels on the network. When this screen is displayed an 'Add New Panel?' prompt is highlighted as below:

```
[Remote Panels]  Tue 15/02/2011 10:37:44
Add New Panel?



```

- Press the (OK) pushbutton.The 'Panel ID' and 'Panel Text' options are displayed once more. Use these options to add every networked panel that this panel should know about. If any panels on the network are not included in this list this panel will not indicate any alarm of fault conditions related to those panels or respond to any control actions.

```
[Remote Panels]  Tue 15/02/2011 10:39:25
1:Panel ID           2:Panel Text



```

- When every panel on the network has been added, press the ⌫ key to display the list of remote panels; the local panel, of course, is not included in this list.

```
[Remote Panels]  Tue 15/02/2011 16:17:08
Select Panel:  ◄ ►:Page    0-9:Panel ID
Panel: 02  NEXT PANEL                  ▲
Panel: 03  LAST PANEL
Panel: 04  BASEMENT
Panel: 05  BOILER                      ▼
```

- To remove a panel from this list, simply change its ID to '0'. In this case, the local panel is no longer able to respond to alarm or fault events originating from that remote panel.