LifeLine

Paging Control

Product Manual

The operation and functions described in this manual are available from Software Version PX100-001-00 onwards.

Item	Specification Details	
	Px-100	
Enclosure	Steel IP30 RAL7035	
Dimensions H x W x D mm	288 x 348 x 78	
Weight (excluding batteries)	3.9Kg	
Temperature	-5°C to 40°C	
Humidity (RH)	95% Max	
Cable Entries (20mm knockouts)	6x top / 4x bottom / 1x rear	
AC Supply (ratings marked on label inside panel – see section 3.1 for location)	230V AC +/- 15%, xxA	
Battery Capacity	2.6Ah (min) 7Ah (max)	
Charging Current	0.35A nominal	
Battery support	Up to 72 hours *(depending on battery and backlight mode)*	
Ripple (Vpkpk)	200mV max (Note: 1V p-p including switching frequency).	
Max Battery Resistance	1Ω +/1 0.1 Ω	
Imax(a)/ Imax(b)	2.0A 2.0A	
Supply Monitoring	Serial Data Communcations to main processor Indicates AC condition, battery voltage, charger voltage, charging current and temperature.	
Display	Backlit 124 x 64 graphical LCD	
LED Indicators	1 Green (Power), 1 Blue (Transmit & 3 Yellow (Fault & Status)	
Keypad	Alpha Numeric Keypad, Navigation Keys	
Controls	4 Programmable Function Buttons	
Serial port	USB only	
Transmitter Frequency	459.15MHz, 25KHz channel separation	
Transmitter power	Selectable in defined steps from 25mW to 2.0W	

As our policy is one of constant product improvement the right is therefore reserved to modify product specifications without prior notice

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1   Introduction

1.1   Standards

Advanced Electronics Ltd declares that the product identified below conforms to the essential requirements specified in the RTTE Directive 1999/5/EC:

C€ ⓘ	On-site paging
EN 300 224-2 ERM On-Site Paging EN 301 489-2 ERM EMC Radio Paging Equipment	
Px-100	

ⓘ   This product is of the Equipment Type "Class 2" (See Section 1.4.3).

It has been tested to and complies with the harmonised standards listed above.

Furthermore, the product has been tested to and complies with the following standards:

Low Voltage Directive 2006/95/EC

EN60950-1: 2006   Safety of information technology equipment

Electromagnetic Compatibility Directive 2004/108/EC

EN55022: 1998   Emissions, Class B

EN50130-4: 1996 +A2: 2003   Immunity, Product Family Standard

In addition, the product is in conformity with the requirements of the following standard:

EN54-4: 1997 +A1:2002 +A2:2006   Power Supply Equipment

1.2   Cautions and Warnings

STOP — **BEFORE INSTALLATION – Refer To the Ratings shown on the label inside the product and to the 'Specifications Chart' in this document.**
Please read this manual carefully. If you are unclear on any point DO NOT proceed. Contact the manufacturer or supplier for clarification and guidance.

❗ Only Trained service personnel should undertake the Installation, Programming and Maintenance of this equipment.

C€ This product has been designed to comply with the requirements of the Low Voltage Safety and the EMC Directives. Failure to follow the installation instructions may compromise its adherence to these standards.

ATTENTION — OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES — This equipment is constructed with static sensitive components. Observe anti-static precautions at all times when handling printed circuit boards. Wear an anti-static earth strap connected to panel enclosure earth point. Before installing or removing any printed circuit boards remove all sources of power (mains and battery).

1.3   Description

This manual covers the installation, programming and operation of the *Px-100 Series* Paging Control Panel. This manual provides generic programming, installation and operation information.

Refer to the User Manual (Document No. 680-191) for a quick guide to operation.

1.3.1   Px-100 Series

The *LIFELINE Px-100* is a Control Panel for communication of alarm, fault, test and other conditions to hand held or fixed paging receivers for the purpose of communicating those conditions to persons with deafness or hard of hearing.

Install the panel in accordance with the instructions in Section 3 and then program the operation in accordance with the instructions detailed in Section 4.

The basic operation is indicated in Section 2 and is fully detailed in User Manual 680-191.

1.4   Installation Approvals

1.4.1   Fire System Installations

The panel must be installed and configured for operation in accordance with these instructions and the applicable code of practice or national standard regulations for fire systems installation (for example BS5839-1: 2002) appropriate to the country and location of the installation.

1.4.2   Wiring Regulations

The panel and system must be installed in accordance with these instructions and the applicable wiring codes and regulations (for example BS7671) appropriate to the country and location of the installation.

1.4.3   Radio Licence

Use of this equipment requires this issuance of an "Individual Site Licence" by the national body responsible for frequency allocation and use.

2   Operation

Display

Navigation Buttons

Status Indicators

Function Buttons

Number Buttons
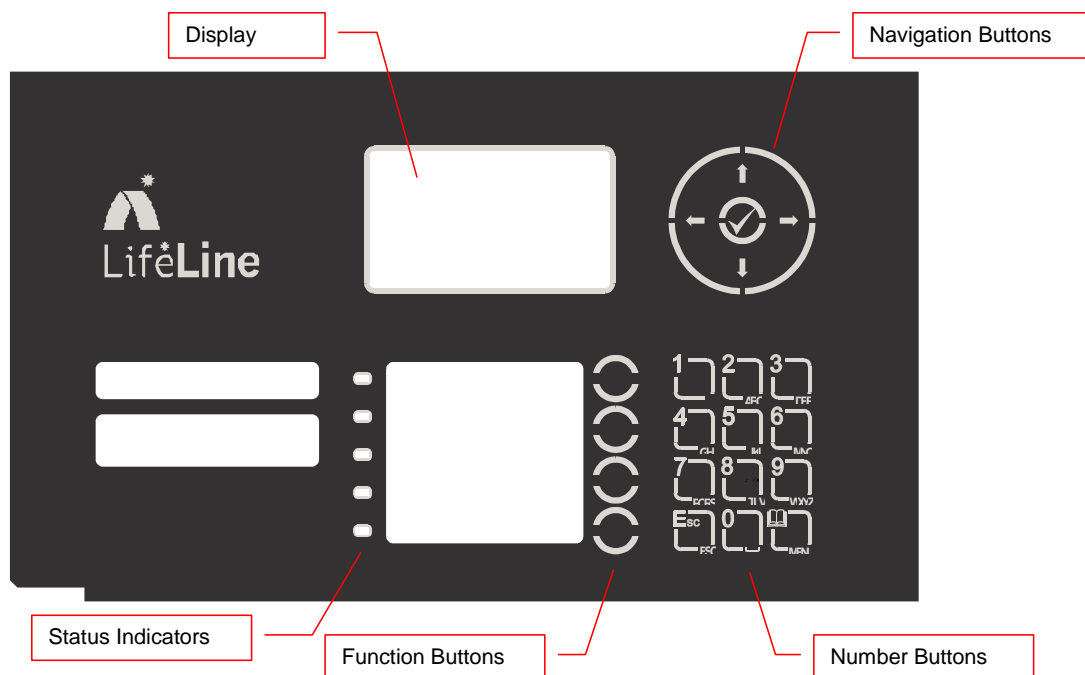
2.1   Controls and Indications

2.1.1   Graphical Display

The graphical display provides detailed information on current operational condition, any fault condition and provides a menu function for configuration.
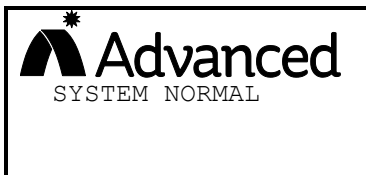
SYSTEM NORMAL

The normal (quiescent) display is shown opposite. The display will show events and other information as required.
The logo may be different and show the installer / maintenance company logo.

2.1.2   LED Status Indicators

The LED Status Indications show the basic operational state of the panel and whether the panel is in a fire alarm, fault, disabled or test condition.
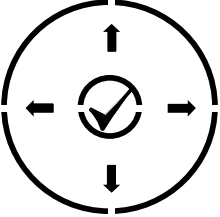
Function	Colour	Description
Power	Green	Indicates the presence of power
Transmit	Blue	Indicates that a transmission is in progress – illuminates when a transmission occurs
Fault	Yellow	Indicates that the system has detected a fault condition
System Fault	Yellow	Indicates the presence of a system fault
Commission	Yellow	Indicates that the panel is in a programming / service condition

2.1.3 Function Buttons
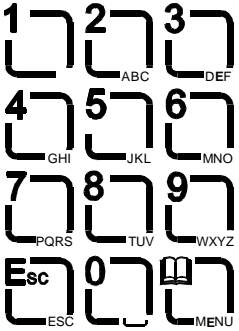
The following table contains a list of all of the control button functions available.

Button	Description	Access Level
	Function Button Programmable message function – the function will be identified on slide-in label text. Press to send the programmed message.	Level-1 or Level-2 Depends on Programming

2.1.4 Navigation Buttons

	←↑↓→ Press to scroll through Menu Options. Press to display more information. Press to scroll through the text of sent messages.
	Press to confirm entry of numeric or letter information entry. Press to confirm selection of a menu option. Press to change some of the configuration options. Press to mute the buzzer.

2.1.5 Number and Letter Buttons

	Used to enter numbers or letters.
Esc	Press to return to a previous menu. Press to exit the menu functions and return to the normal display.
Menu	Press to show or return to Menu Functions.

2.1.6 Buzzer

The buzzer sounds to indicate fault conditions.

Condition	Operation
Fault	The buzzer operates intermittently.

2.1.7 Key Switches

The key switches are used to enable access to the system and to configure the system to operating modes.

Switch	Operation	KEY
ACCESS (Controls)	2-Position: Enables user controls and Level-2 access – key is trapped in the enable position.	L003
MODE (Engineer)	3-Position: Enables test and engineer modes in addition to the normal "Operate" mode.	CAT30

2.2 Access Levels

The panel operation is protected from inadvertent and erroneous misuse by means of four access levels. These levels are as follows:

Level 1   Untrained user
Level 2   Authorised Users
Level 3   Service and Maintenance Engineer
Level 4   Service and Maintenance Engineer – Special Tools required

- A Level 1 Untrained User can view the current operational condition of the system and may MUTE the internal buzzer.
  NOTE: Depending on the configuration settings, a Level 1 user may also be permitted to operate the CONTROL buttons by pressing the appropriate button and entering a password.

- A Level 2 Authorised User can view the operational condition of the system and may MUTE the internal buzzer. In addition, the CONTROL buttons are enabled and access to the Level 2 Menu functions is available.
  NOTE: There are up to 4 User ID codes available, each with its own password, which can be configured.

- A Level 3 User has access to program and configure the operation of the panel. This is described in detail in Section 4.

2.2.1 Changing Access Levels

The main user controls and Level-2 operation are normally enabled by means of the controls key-switch.

Insert key and turn to the enable position to enable controls.

The key cannot be removed in this condition. Turn the key back to disable controls and remove the key.

Alternatively, they can be enabled by means of a password.

Press the MENU button and the display will prompt for the Level 2 password. Enter the password using the number buttons and then press the ✔ button. The Level 2 menu will now be shown.

To cancel Level 2 access, select the menu function EXIT LEVEL-2. The controls will then be disabled the display will revert to the normal display. The panel can also be configured to automatically cancel Level-2 access after a preset time of no activity (default 5 minutes).

2.2.2 Access Level 3 - Programming

Access Level 3 can only be reached by first enabling the Level-2 controls.

Use the ⬆⬇ buttons to select the COMMISSION menu option and press the ✔ button. The display will prompt for the Level 3 password.

For further information, refer to the programming section.

2.3 User Functions

Operating Modes – The panel has three basic operating modes selected by the position of the front panel key-switch (or by menu option).

Normal Mode
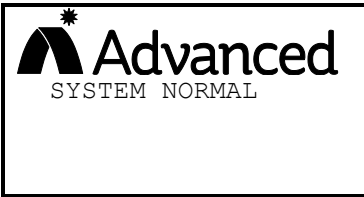
```
   ☀
  ▲ Advanced
SYSTEM NORMAL
```

The normal (quiescent) display is shown opposite. The display will show events and other information as required.

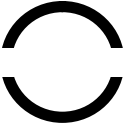The logo may be different and show the installer / maintenance company logo.

Messages will be automatically transmitted to the pagers when the connected fire alarm control panel activates into fire, fault, pre-alarm or warning conditions (as programmed).

The panel will automatically transmit a confidence message every 60s (if configured). This is used by the pagers to detect if they remain within range of the transmitter. If the pagers do not receive this message for 120s then they will vibrate and indicate an out of range condition.

Test Mode

```
   ☀
  ▲ Advanced
 SYSTEM NORMAL
SYSTEM IN TEST MODE
```
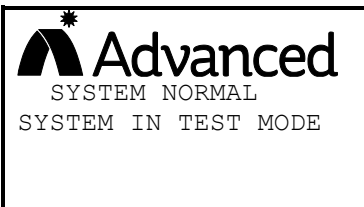
If the operating switch is set to test mode, the display will show this condition.

All paging messages will be prefixed by the word TEST (or alternative configured text)to indicate that the message is a test only message.

Engineer Mode

```
   ☀
  ▲ Advanced
 SYSTEM NORMAL
ENGINEERING MODE ON
```
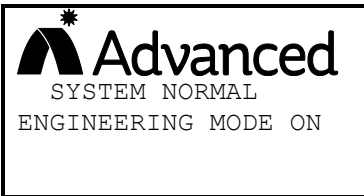
If the operating switch is set to engineer mode, the display will show this condition.

All paging messages will now **only be sent** to the special "engineers" pager.

Not to other pagers.

All other pagers will not receive messages!
Ensure that other measures are in place to alert occupants should a fire alarm occur.

Fault Conditions

```
   [System Status]
 1 of  1 conditions:
INPUT 8
OPEN CIRCUIT
_____
LAST MESSAGE SENT…
FAULT >INPUT 8 >OPEN
```

If the panel detects a fault condition, the details are shown on the display. The Fault LED will flash.

As with all transmissions, the display will also show the text of the last transmitted message for 30 sec after the last key press.

The first fault condition is shown along with the number of fault conditions present.

If there is more than one fault condition present, use the ⬆⬇ buttons to scroll through the list of fault conditions. For example:

```
   [System Status]
 2 of  3 conditions:
MAINS SUPPLY
MISSING
_____
LAST MESSAGE SENT…
FAULT >INPUT 8 >OPEN
```

If there is more text in the last message sent than can fit on the display, use the ⬅➡ buttons to scroll through the remainder of the text message.

NOTE: If the AC Mains supply fails, the display will indicate this fault condition and will turn off the display backlight to extend the battery support time.

Pressing any of the navigation keys will reactivate the backlight for 30 seconds.

Manual Message

The function buttons allow a pre-programmed message to be transmitted to one or more pagers.

If required, insert and turn the "Access Enable" key.

Press the required Message Button.

The pre-programmed message will be sent and the blue transmit indicator will illuminate as the message is sent.

2.3.1 Level 1 Menu Options

Press the MENU button.

```
    [Level 1 Menu]
ENABLE CONTROLS
VIEW
LED TEST
```

The Level 1 menu shows three options.

Use the ⬆⬇ buttons to select the required option. Press the ✔ button to select.

2.3.1.1 Enable Controls

Disable Enable

Enable controls is normally activated using the front panel key-switch.

Insert the key and turn clockwise to enable controls.

The key can only be removed in the disable position.

Alternatively, to use a password, select the Enable Controls menu option and then press the ✔ button. The display shows:

```
Enter your password
          **
```

Enter the password using the number buttons
and then press the ✔ button to confirm.

Each number button press is indicated by a
'*' character.

Enter the password using the number buttons and press the ✔ button. If the password is not entered quickly enough or is not recognised, the display shows:

```
Enter your password
Not recognised!
```

The display will revert back to the Level 1
Menu after a few seconds.

When controls are enabled, the display will show the Level 2 Menu options.

2.3.1.2 View

```
   [View Menu]
FAULTS
PANEL
SW VERSIONS
```

The Level 1 view menu shows three options.

FAULTS:

The display will show any faults currently registered.

```
[Fault Status]
1 of 1
INPUT 8
>OPEN CIRCUIT
```

If there is more than one fault condition present, use the ⬆⬇ buttons to scroll through the list of fault conditions.

PANEL:

The display will show the internal operating conditions for the system power.

```
[Panel Levels]
SYSTEM VOLTS  13.31V
BATTERY (V)   13.52V
CHARGER (V)   13.94V
CHARGER (I)    322mA
TEMPERATURE    25deg
```

In addition to the parameters opposite, the transmitter current is available. This is shown in milliamps.

Use the ⬆⬇ buttons to scroll through the readings.

Press ESC to return to the previous menu.

SW VERSIONS:

The display will show the versions of software programme into the main processor and the power supply processor

```
[Software Versions]
PANEL      : 01.00
P.S.U.     : 03.00
```

Press ESC to return to the previous menu.

2.3.1.3   LED TEST
Select the LED test option. Press the ✔ button to select.

The LED indicators will illuminate for five (5) seconds and then revert to the previous indication.

2.3.2   Level 2 Menu Options

```
    [Level 2 Menu]
VIEW
TEST
OPERATING MODE
EXIT LEVEL-2
COMMISSION
```

The Level 2 menu shows five options.

Use the ⬆⬇ buttons to select the required option. Press the ✔ button to select.

2.3.2.1   VIEW
This menu is identical to the view menu available at Level-1.

2.3.2.2   TEST
This option will test the operation of user control buttons and indicators.

```
    [Test Menu]
DISPLAY
BUZZER
```

The Test menu shows two options.

Use the ⬆⬇ buttons to select the required option. Press the ✔ button to select.

DISPLAY:

This is similar to the Level-1 menu, but the display option will test both the indications on the LED indicators and those on the LCD.

In addition, it is possible to test the operation of each of the front panel buttons.

Press ESC to return to the previous menu.

BUZZER:

This option will activate the internal buzzer for five (5) seconds.

2.3.2.3   OPERATING MODE

Operate
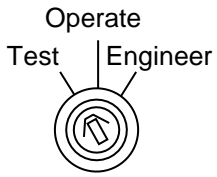
Test   Engineer   This function is normally activated using the front panel key-switch. Insert the key and turn anti-clockwise or clockwise to select the test or engineers mode as required.

The key can only be removed in the normal operating mode.

Alternatively, to enable from the menu, use the ⬆⬇ buttons to select the operating mode menu option and then press the ✔ button to select.

```
      [System Mode]
NORMAL OPERATION
TEST MODE
ENGINEERS MODE
```
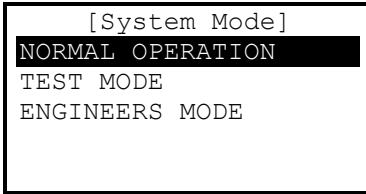
The Test menu shows three options.

Use the ⬆⬇ buttons to select the required operating mode menu option and then press the ✔ button to select.

NOTE: The panel will remain in the mode selected. Remember to select and revert to the normal operating mode when testing or engineer functions are completed.

2.3.2.4   EXIT LEVEL-2
Select this option to cancel Level-2 and revert to Level-1

2.3.2.5   COMMISSION
Select this option to enable Level-3 programming functions. Refer to programming section.

3 Installation

3.1 Identification of Parts

The following diagram shows the major parts of the panel.

The Px-100 comprises of a back box, chassis plate electronic assembly, aerial assembly and a cover.

The chassis plate is fixed to the back box with two screws.

The cover is fixed to the back box with two hex (Allen) key screws.

The cover earth lead must be connected to the spade terminal in the back box.
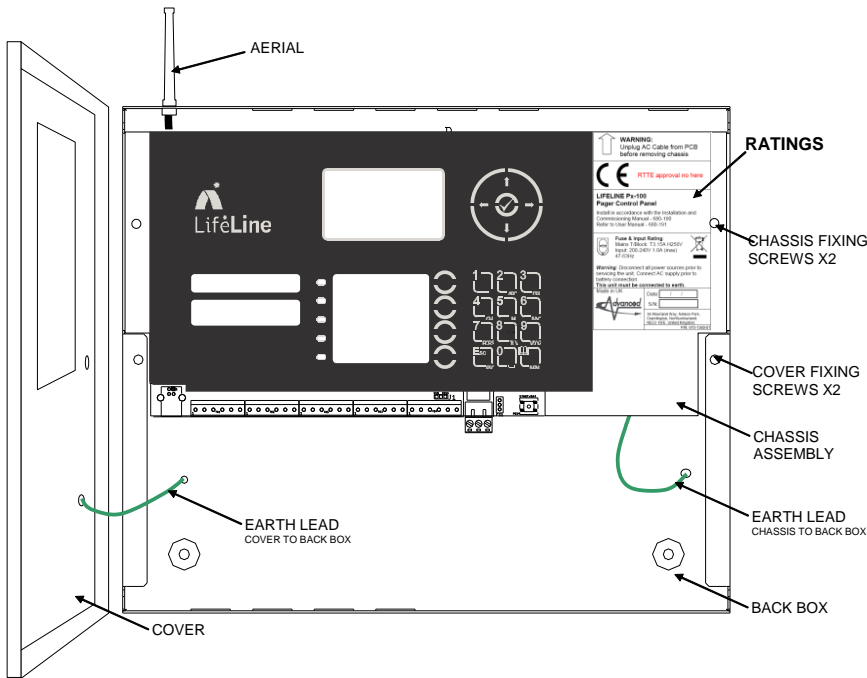
3.2 Installing the Enclosure

Use the appropriate fixing hardware to secure the panel to the wall. See table below for maximum weights.

Enclosure	Weight	Maximum Battery	Overall Maximum Weight
Px-100	3.9kg	7Ah	5kg

3.2.1 Opening the Enclosure Cover

The enclosure covers of the Px-100 is fixed with two screws – use the supplied Allen key. Detach the earth lead from the back box to completely remove. Place the cover in a safe place to prevent accidental damage and retain the fixing screws.

3.2.2 Removing the Chassis

It is recommended that the chassis be removed before fitting the panel to the wall. To remove the chassis:

Disconnect the earth cable connecting the chassis to the spade terminal on the rear enclosure.

Remove the two screws holding the chassis to the back box and carefully remove the chassis from the rear enclosure. Before the chassis can be fully removed, unplug the AC Mains Cable and Transmitter Aerial cable from the PCB. Place the chassis in a safe place to prevent accidental damage and retain the fixing screws.

DO NOT lift the chassis by holding onto any of the printed circuit cards. Hold the chassis by the metal plate only.

DO NOT dismantle the chassis assembly or remove the cover for the PSU area.
WARNING – HIGH VOLTAGE.
The transmitter module is an inherent part of the chassis assembly. DO NOT remove.

3.2.3 Mounting the Enclosure

Firstly, remove the required knockouts for the installation wiring. There are six knockouts on the top of the enclosure that will suit all normal installation wiring.

Alternatively, there are four additional knockouts at the bottom of the enclosure for signal wiring. A single knockout is provided in the rear wall for rear entry cabling of the AC Mains power, if required.

The enclosure is provided with three fixing points.

The diagram opposite shows the positions of the three holes and dimensions of each enclosure. Use all three positions to ensure the panel is held securely to the wall.

Drill the required holes in the supporting wall using a drill bit diameter 7.0 mm and plug with a suitable 40mm or longer expansion plugs. Affix the panel to the wall with M5 screws or No.10 screws. Use appropriate fixings to support the weight including the batteries.

Ensure that there is sufficient space to allow the door to be opened when the panel is mounted.

Finally, use a brush to remove any dust or swarf from inside the enclosure.
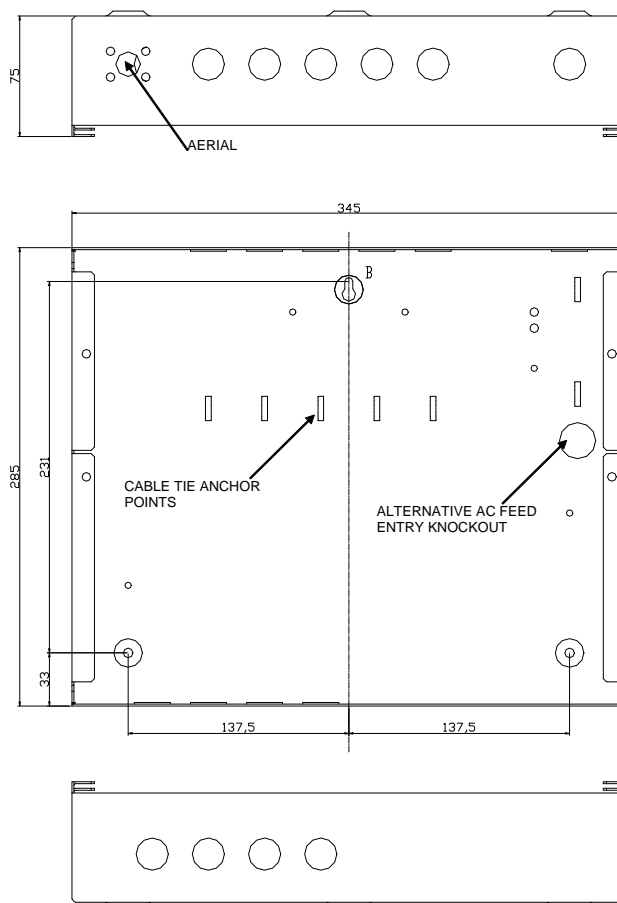
Px-100 Enclosure Size and Fixing Point Dimensions

3.2.4 Remounting the Chassis

Carefully replace the chassis and fix into place using the two screws.

Reconnect the chassis earth cable to the spade terminal in the rear of the enclosure.

3.2.5 Recommended Cable Routing Arrangement

It is recommended that the typical routing arrangement shown in the diagrams opposite be employed.

Segregate the low voltage wiring (DC Power and Field Wiring) from any AC Mains Wiring.

Refer to Appendix 2 – Recommended Fire Rated Cables for further information on cable types to be used.

If using the top knockouts – Tie-wrap the data cables to the back of the enclosure using the anchor points provided

If using the bottom knockouts – Ensure the data wires are routed to the left of the battery so that they do not foul with the battery retaining bracket on the cover.
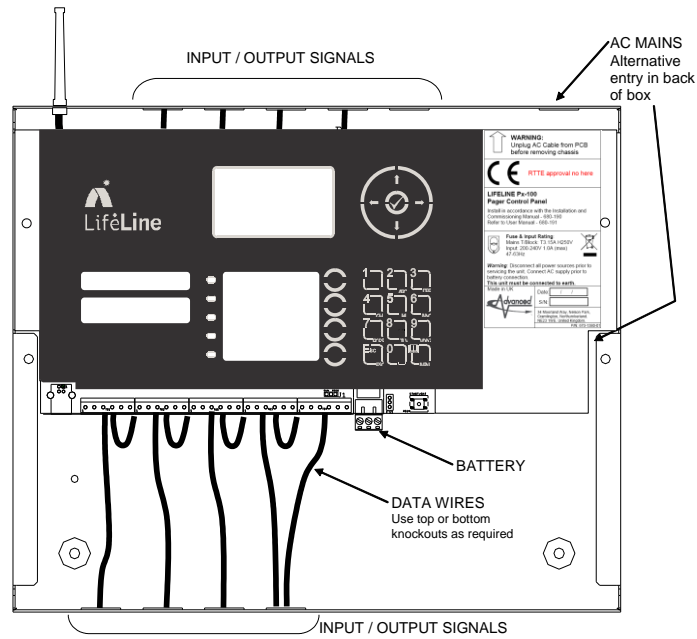
Internal arrangement showing recommended routing of cables.

The AC Feed cable and the aerial cable are connected to the reverse of the chassis directly onto the PCB.

The diagram opposite shows the connector positions.

Remember that there is a separate earth lead connecting the chassis plate to the back box. Ensure that the spade terminal is plugged onto the blade connector on the rear wall of the enclosure.
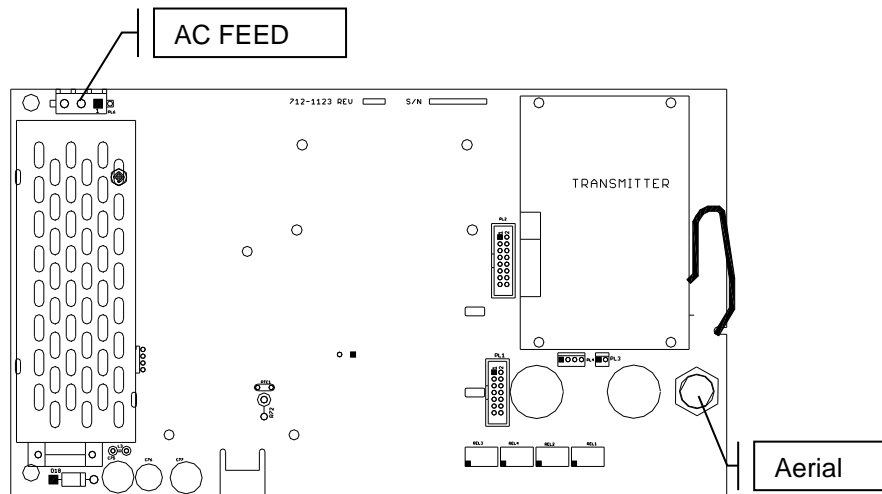
3.3   Wiring Installation

All electrical wiring installation work should be carried out in accordance with the code of practice or applicable national standards appropriate to the country of installation.

To maintain electrical integrity of the SELV wiring on the DC Power and communications lines all SELV wiring should be segregated from the LV mains wiring and be wired using cable with insulation suitable for the application.

To minimise the effects of EMC interference all data wiring circuits should be wired with a twisted pair of conductors with a cross sectional area suitable for the loading conditions.

In areas where cabling may come into contact with high frequency interference, such as portable radio transceivers etc. the data wiring cable should be of a twisted pair construction within an overall screen. Care should be taken to correctly terminate this screen, refer to the appropriate sections of this manual for further information for each circuit type.

3.3.1   AC Mains Wiring

Route the high voltage mains AC wiring into the enclosure at the upper right corner only. Keep the AC wiring away from the circuit boards and all other wiring.

Must be earthed

The panels must be connected to the supply earth through the power cable.

The mains input connector is shown in the diagram opposite. Note the positions of the earth, neutral and live terminal connections. These are clearly marked on the label next to the connector. The connector block contains an integral fuse holder.

Secure the mains input wiring by tie wrap as close to the terminal block as possible – cable tie anchor points are provided.

Connect the Control Panel to the mains supply via a readily accessible disconnect-device (Isolation Switch) and suitable earth fault protection incorporated in the building installation wiring. The Mains cable should be 0.75mm^2 cable rated at 250V and fused via a 5A anti-surge fuse.

Panel Wiring

AC Mains terminations

The fuse is rated as follows:

T 3.15A H 250V

Replace with correct rating and specification only.

Cable size: 12-22AWG (0.5mm^2-4.0mm^2).

3.3.1.1   Cable Gland

The cable gland and any cord clamp bushings used in routing the Mains cable through the 20mm knockout must have a minimum flame-retardant rating of 94HB.

Suggested glands and bushings are: -

Type	Manufacturer
Gland IP65 – Brass M20, EExd / Eexe	Lappcable
Gland IP68 – Nylon 66 M20 Black, UL94V2	Multicomp
Bushing – Nylon 66 M20 Black, UL94V2	Multipcomp

3.3.2 Battery Installation

The panel requires a single 12V battery for standby operation.

The battery leads are connected onto the base card via a plug, as shown in the diagram opposite.

Refer to the Specifications for minimum and maximum battery sizes allowed.

OBSERVE POLARITY OF CONNECTIONS!

Once correctly wired, the terminal block plug is arranged so that no damage will occur if it is plugged in back to front.

Slide the battery to the right. There is a bracket on the cover that acts as a battery retaining strap to avoid movement of the battery in the installation.

BATTERY LEADS

BATTERY up to 7Ah
Slide battery to the right. A restraining bracket is provided as part of the cover to prevent movement of the battery.
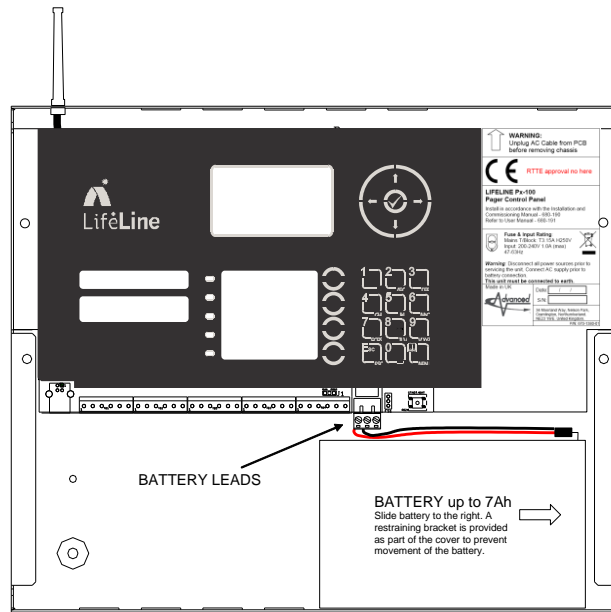
Battery Terminations

Place the battery in the bottom of the enclosure and connect the 'Red' lead to the positive (+) terminal of battery and the 'Black' lead to the negative (-) terminal of the battery.

Ensure that the battery terminals do not short out against any part of the enclosure, circuit board or chassis plate.

Cable size: 24-14AWG ($0.3mm^2$-$2.5mm^2$).

NC

BLACK

RED
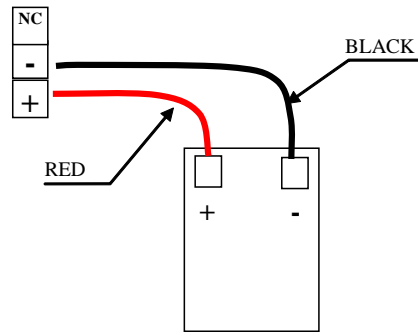
3.3.2.1 Battery Support

The following table shows the battery sizes required to support 24, 48 or 72 hours battery support in accordance with the recommendations in BS5839-1:2002.

The table covers different backlight operating modes and is applicable for all transmitter power settings.

Hours	Battery Capacity
24	2.6Ah
48	7Ah
72	7Ah

3.3.3 Switch Inputs

Eight programmable switch inputs are provided and can be configured to activate predefined messages. Each input is (optionally) monitored for short and open circuits and for activation.

The negative connection is connected to chassis ground (earth).

A 6K8 EOL resistor must be fitted across the terminals if the input is unused.

Maximum circuit impedance 50 ohms.

Cable size: 28-16AWG ($0.1mm^2$-$1.5mm^2$).

Refer to programming section on how to configure these inputs.

INPUTS
Volt-free
Monitored for open,
short and active –
6K8 EOL
Activation resistor –
470R

+
–
470R
6K8
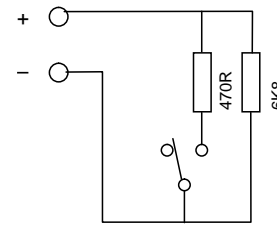
The optional EXP-005 module provides a convenient method of terminating the line with the correct resistor values.

3.3.4 Relay Outputs

All relay outputs are rated at 30V AC/DC, 1.0A, resistive.

Cable size: 28-16AWG ($0.1mm^2$-$1.5mm^2$).

One dedicated relay (FLT RLY) is provided for fault indication. This is a changeover type relay configured for "Fail-Safe" operation. It is normally energised and will de-energise under any fault condition included total power failure.

Three programmable relays are also provided. These are normally de-energised and will activate on the programmed condition.

Refer to programming section on how to configure these outputs.

FAULT RELAY
"Fail-Safe" Operation
The relay will de-energize on any fault condition. The de-energized state is shown

NO
NC
COM
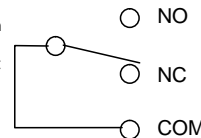
PROG RELAYS
RLY-1, RLY-2, RLY-3
Relays energize on the programmed condition.

NO
COM
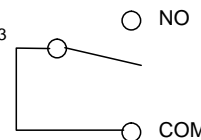
3.3.5 RS232 Interface

The *Px-100 is* equipped with an RS232 I/F Circuit at the bottom of the base card.

The terminal block connections are shown opposite.

TX = Transmit Data from the panel, RX = Receive Data into the panel, GND = Ground Reference.

The RS232 Interface uses common signals with the RS485 Interface. Only one of these interfaces can be used.

Cable size: 28-16AWG ($0.1mm^2$-$1.5mm^2$).

This interface can be used for serial connection to the Mx range of fire alarm control systems offered by Advanced Electronics Ltd.

RS232   RS485   FLT RLY   RLY-1   RLY-2
TX RX GND   A B
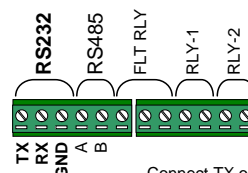
Connect TX output to panel RX input
Connect RX input to panel TX output
Connect GND to panel GND

Base Card Connections.

3.3.6 RS485 Interface

The *Px-100 is* equipped with an RS485 I/F Circuit at the bottom of the base card.

The terminal block connections are shown opposite.

The RS485 Interface uses common signals with the RS232 Interface. Only one of these interfaces can be used.

Cable size: 28-16AWG (0.1mm^2-1.5mm^2).

This interface can be used for serial connection to the Mx range of fire alarm control systems offered by Advanced Electronics Ltd.
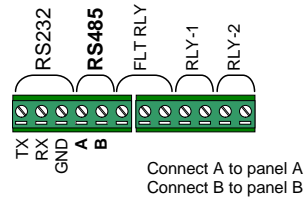
Base Card Connections.

3.3.7 USB Interface

The *Px-100* is equipped with a USB I/F Circuit.

This can be used for connection to a PC for use with the PC Tools.

3.3.8 Aerial

The aerial is a ¼-wave antenna.

To prevent erroneous or inadvertent removal, the aerial can only be removed from inside the panel.

The aerial is attached to the bulkhead connector on the mounting plate. The mounting plate is fixed to pillars inside the back box using 4x M3 screws.

The aerial is connected to the printed circuit card chassis by means of a separate coax screened cable.

To remove / replace the aerial, remove the four M3 fixing screws. Unscrew the aerial from the connector.
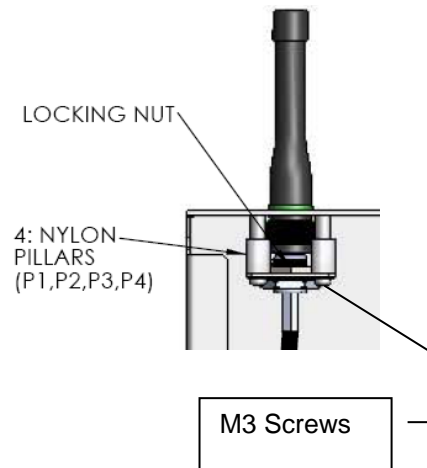
3.4 Slide-In Labels

The function of the message buttons can be customised (see Programming Section). To complement this, the functions assigned to the buttons can be adjusted and a new slide-in label can be inserted behind the fascia label to customise the panel. A sample template is included in Appendix 4.

Refer to the www.advancedco.com to download a copy of the template in an editable format.

4   Programming

4.1   Introduction

4.1.1   Access Levels

The panel operation is protected from inadvertent and erroneous misuse by means of four access levels. These levels are as follows:

Level 1 Untrained user
Level 2 Authorised User
Level 3 Commissioning, Service and Maintenance
Level 4 Commissioning, Service and Maintenance – Special Tools Required

This document covers the Level 3 functions. For details on the operation and use of the panel at Levels 1 & 2, refer to User Manual 680-166. Full details are supplied with the special tools.

A level-3 password is required to enter the commissioning menus. For details of Passwords, refer to Section 4.2.6.

Level-3 Passwords.

If this number is lost, it is not possible to enter commission mode functions.

Refer to section 6.1 for further formation.

**Default
7654**

4.1.2   Navigating through menus

The display will revert to status mode after 60s. Press the '**Menu**' button to restore the display.

```
      [Level 3 Menu]
GENERAL TEXT
MESSAGE BUTTONS
INPUTS
OUTPUTS
TOOLS
```
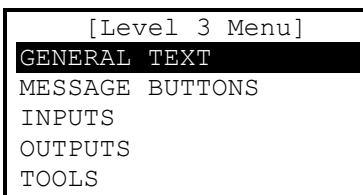
When a menu is displayed, use the ⬆⬇ buttons to highlight the required menu option and then press the ✔ button to select it.

Press the **'Esc'** button from within a menu option to return to the previous menu.
The display can be forced back into status mode by pressing the **'Esc'** button when at the top level commissioning menu (or by waiting 60s).

4.1.3 Changing Text Descriptions

Various parameters can have a text description defined.

To change the text description, first highlight the text description within the appropriate programming option and then press the ✔ button. The display then changes to show the text entry dialogue screen. For example:

```
KEY IN TEXT

>ADVANCED SITE 2

 <
```
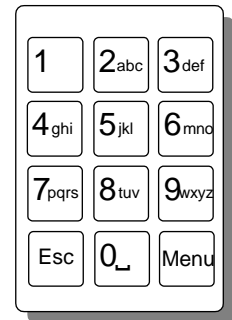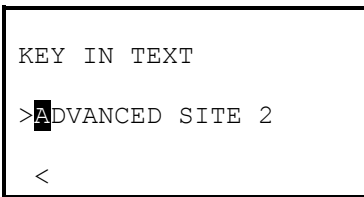
The method of entering the characters is similar to the method employed on mobile telephones. The number buttons provide both their appropriate number and several letters of the alphabet. An example of the keypad is shown opposite.

For example, Button 2 allows entry of the number 2 and letters A, B and C.

When a button is pressed, the first character is shown on the display at the current cursor position. If the button is pressed again within ½ second, the second character replaces the first. A further press displays the third available character and so on – see table below. After pressing the button to obtain the required character, wait for 1-second and the character will be entered and the cursor will move to the next character in the text description.

Pressing another button will immediately enter the previous character and move the cursor on to the next character.

Use the ←→ buttons to move backwards or forwards along the line. When the text description is as required, press the ✔ button to confirm the change.

If the text has been entered incorrectly, press the **'Esc'** button to cancel all changes and return to the previous display.

The following table shows the numbers, characters and symbols assigned to each button on the keypad.

Button	1st Press	2nd Press	3rd Press	4th Press	5th Press
1	1				
2	A	B	C	2	
3	D	E	F	3	
4	G	H	I	4	
5	J	K	L	5	
6	M	N	O	6	
7	P	Q	R	S	7
8	T	U	V	8	
9	W	X	Y	Z	9
0	Blank	0			

Alternatively, press the ↑↓ buttons to scroll through a list of characters. When the required character is shown, press the ➜ button to move on to the next character. The list of characters available and the order of presentation is as follows:

Blank !"#$%&'()*+,-./ 0123456789 :;<=>?@ ABCDEFGHIJKLMNOPQRSTUVWXYZ [\]^_`abcdefghijklmnopqrstuvwxyz

4.1.4 Numeric data entry

Numbers are entered by moving to the required field, and then typing in the required number, followed by the ✔ button.

If the number is entered incorrectly, press the **'Esc'** button to restore the previous number.

4.2 Level 3 Menu Functions

The following table gives a list of the Level 3 Menu Functions, the sub-functions available within each main function and a brief description for each function.

Main Menu Option	Comments
GENERAL TEXT	Configure panel name and general text items
MESSAGE BUTTONS	Configure the message to be transmitted when the button is pressed and at which access level the button is enabled
INPUTS	Configure the message to be transmitted when the input is activated and configure the input circuit parameters
OUTPUTS	Configure the function of the relay outputs
TOOLS	Configure the transmitter power level and perform site tests.
PASSWORDS	Configure the user and engineer passwords
GENERAL	Configure general operating parameters
ENABLE P.C. LINK	Enable the USB PC Link for configuration purposes
EXIT	Exit from Level 3

4.2.1 General Text

This option enables the name of the panel and the leading text headers for test and fault to be configured.

Each text string can be up to 40 characters long. However, for the test and fault leaders, it is recommended to keep these at no more than five characters so that the messages on the pager display are kept short.

```
[General Text]
PANEL NAME:
ADVANCED SITE 2
 TEST TEXT: TEST
FAULT TEXT: FAULT
```

The menu shows three configurable items.

Use the ↑↓ buttons to highlight the required text item and then press the ✔ button to select it.

Enter the required text – refer to section 4.1.3 for full details of how to change text.

4.2.2 Message Buttons

This menu allows the configuration of the text message to be transmitted when the button is pressed, whether the button is operative at Level-1 and/or Level-2 and whether this button will be used to trigger a SleepCom unit associated with the system.

```
[Message Buttons]
Mesg Button 1
Mesg Button 2
Mesg Button 3
Mesg Button 4
```

The menu shows the four message buttons.

Use the ↑↓ buttons to highlight the required button and then press the ✔ button to select it.

```
[Message Button-1]
INPUT TEXT: BUTTON-1
ACCESS: LEVEL-1
PAGER GROUP: 1
TRIG' SLEEPCOM: NO
```

The menu shows the available parameters.

Use the ↑↓ buttons to highlight the required parameter.

To change the text, press the ✔ button and amend the text – see section 4.1.3 for further information.

To change the access level, press the ✔ button to toggle between Level-1 and Level-2.

To change the access level, press the ✔ button and enter a numeric value, the designated Pager Group. See section 4.2.10 for more information on the use of Pager Groups.

To change the Sleepcom option, press the ✔ button to toggle between Yes and No.

Press ESC to return to the previous menu.

4.2.3 Inputs

This menu allows the configuration input circuit parameters.

Each circuit can be configured to transmit a message (once or repeat) or can be configured as a control input. If the input is assigned to transmit, the input text configured will be transmitted to the pagers when this input is activated.

```
[Inputs]              ↓
INPUT 1
INPUT 2
INPUT 3
INPUT 4
INPUT 5
```

The menu shows the inputs available.

Use the ↑↓ buttons to highlight the required input and then press the ✔ button to select it.

```
[Input-1 Settings]
INPUT TEXT:
 FIRE EVACUATE
ACTION:
 TRANSMIT -REPEAT
MONITORED: NO
```

The menu shows the input parameters available. In addition to those shown opposite, options are also available for Input Type, Pager Group and Trigger SleepCom.

Use the ↑↓ buttons to highlight the required parameter.

4.2.3.1 Input Text

To change the text, press the ✔ button and amend the text – see section 4.1.3 for further information.

Note: The text is only relevant when either of the 'Transmit' actions are configured.

4.2.3.2   Action

To change the action, press the ✔ button and a further menu with options is shown.
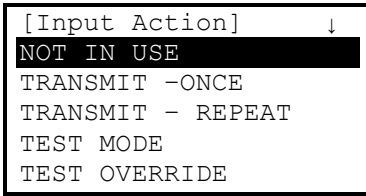
```
[Input Action]      ↓
NOT IN USE
TRANSMIT -ONCE
TRANSMIT - REPEAT
TEST MODE
TEST OVERRIDE
```
The menu shows the input actions available.

The following input actions are possible:

Action	Function
NOT IN USE	This input is not used
TRANSMIT – ONCE	Activation of this input will result in the input text defined for this input being sent once (or the minimum number of sends allowed – see section 4.2.7 for details).
TRANSMIT – REPEAT	Activation of this input will result in the input text defined for this input being sent continuously while ever the input remains active, with an interval of 10 seconds.
TEST MODE	Activation of this input will place the panel into TEST mode (alternative method to the key-switch and menu functions). Note: ENGINEER mode overrides TEST mode.
TEST OVERRIDE	Activation of this input will cause any active test-mode to be cancelled. This is intended to cover a situation where a real fire occurs whilst part of the system is undergoing testing.
GENERAL FAULT	Activation of this input will place the panel into a fault condition.
LEVEL-2 ACCESS	Activation of this input will enable Level-2 control and menu functions (alternative method to the key-switch and menu functions). All such inputs (and key-switch) must be inactive in order to cancel level-2 access.
ENGINEER MODE	Activation of this input will place the panel into ENGINEER mode (alternative method to the key-switch and menu functions). Note: ENGINEER mode overrides TEST mode.
WALK TEST	Activates a special sequence which transmits a test message repeatedly (time interval dependant on configuration) to allow a one-man walk test of the building to assist in ascertaining reception coverage.

4.2.3.3   Monitored

The switch wiring can be set to monitored (Yes) or not monitored (No).

When set to monitored, the panel will check the wiring for normal, open circuit, short circuit and active conditions.

When set to not monitored, the panel will check for normal and activation only.

To change the monitored parameter, press the ✔ button to toggle between YES and NO.

4.2.3.4   Type:

The normal input condition can be changed to suit the type of switch connected.

To change the type parameter, press the ✔ button to toggle between NORMALLY OPEN and NORMALLY CLOSED.

The default setting is normally open.

4.2.3.5   Pager Group:

The Pager Group setting determines which pagers in use on site the message will be sent to. The number of pager groups actually available will be dependant on the pagers and there group settings ordered with the system.

To change the access level, press the ✔ button and enter a numeric value, the designated Pager Group.

The default setting is 1. See section 4.2.10 for more information on the use of Pager Groups.

Note: This parameter is only relevant when either of the 'Transmit' actions are configured.

4.2.3.6   Trigger SleepCom

The "Trig' SleepCom" option is used to denote whether this input will be used to trigger a SleepCom unit associated with the system.

To change the monitored parameter, press the ✔ button to toggle between YES and NO.

The default setting is YES.

Note: This parameter is only relevant when either of the 'Transmit' actions are configured.

4.2.4 Outputs

This menu allows the outputs to be configured.

```
[Prog. Outputs]
RELAY 1:
   ANY INPUT ON
RELAY 2:
   GENERAL FAULT
RELAY 3:
```

The menu shows the output modes available.

Use the ⬆⬇ buttons to highlight the required output and then press the ✔ button to select it.

```
[Output Settings]
MODE: TEST MODE
INVERTED: NO
```

The menu shows the output settings available.

Use the ⬆⬇ buttons to highlight the required parameter and then press the ✔ button to select it.

4.2.4.1 Mode

There are several possible cause and effects options that can be configured to turn the relay on.

```
   [Output Modes]
NOT IN USE
GENERAL FAULT
TEST MODE
ENGINEER MODE
```

The menu shows the output modes available.

Use the ⬆⬇ buttons to highlight the required mode and then press the ✔ button to select it.

The following output modes are possible:

Mode	Function
NOT IN USE	This output is not used
GENERAL FAULT	The output will activate and remain active while ever a fault condition is present.
TEST MODE	The output will activate and remain active while ever the test mode is operational.
ENGINEER MODE	The output will activate and remain active while ever the engineer mode is operational.
ANY INPUT ACTIVE	The output will activate and remain active while ever any of the 8 inputs is active. This can be used as a general acknowledgement that a signal has activated an input.
INPUT-1 ACTIVE	The output will activate and remain active while ever input-1 is active. This can be used as a specific acknowledgement that input-1 has been registered by the panel as active.
INPUT-2 ACTIVE	The output will activate and remain active while ever input-2 is active. This can be used as a specific acknowledgement that input-2 has been registered by the panel as active.
INPUT-3 ACTIVE	The output will activate and remain active while ever input-3 is active. This can be used as a specific acknowledgement that input-3 has been registered by the panel as active.

4.2.4.2 Inverted

The output can be changed from normal (NO, normally open, closed on activation) to inverted (YES, closed, open on activation).

To change the inverted parameter, press the ✔ button to toggle between YES and NO.

4.2.5 Tools

This menu allows the basic transmitter functionality to be tested and configured.

```
   [Tools Menu]
WALK TEST
SEND TEST MESSAGE
TRANSMITTER POWER
```

The menu shows the options available for testing and configuring the transmitter.

4.2.5.1 Walk test

This menu allows a walk-test to be controlled from the level-3 menu.

Activates a special sequence which transmits a test message repeatedly (time interval dependant on configuration) to allow a one-man walk test of the building to assist in ascertaining reception coverage. While running a message is repeatedly transmitted which contains numeric value incremented on each send. Any messages not received by the walk test pager can be identified by a break in the sequence of the numeric value between messages.

```
     [Walk Test]

  Press ✔ to start
 0 to reset count
   Test running…
         05
```

This function replicates the Walk Test input action, directly from the menu system.

Press the ✔ button to toggle the Walk Test ON and OFF.

Press the 0 button to re-start the count.

Use of the ESC button to exit this option will automatically cancel any running walk test.

4.2.5.2 Send Test Message

This menu allows the activation of an input or message button to be simulated in order to verify reception of the intended message at the pager.

```
   [Test Message]
TEST INPUT 1
TEST INPUT 2
TEST INPUT 3
TEST INPUT 4
TEST INPUT 5
```

Select an input/ message button to send a test message to the relevant pager.

Note that an input must have a transmit message related input-action configured.

Use the ↑↓ buttons to highlight the required input/ button and then press the ✔ button to select it and send the message.

4.2.5.3 Transmitter Power

The power of the transmitter can be adjusted to suit the conditions on the site.

Always start at the lowest level and check for reception in all areas of the building. Increase the power level by one discrete step at a time and check for coverage across the site.

The greater the power level is set; the greater the risk of spreading outside the area and creating a disturbance to neighbouring sites. Keep the final level to the minimum required for coverage of this site.

Press the ✔ button to change the setting.

```
[Pager Power]
25mW
50mW
0.1W
0.25W
0.5W
```

The power level can be adjusted in discrete steps from 25mW up to 2W.

Use the ⬆⬇ buttons to highlight the required power level and then press the ✔ button to select it.

Refer to the Site Survey section for the procedure and tools / settings required to undertake the task of surveying the site and commissioning the panel for optimal transmitter power / reception.

4.2.6 Passwords

This menu allows the four user passwords and the engineering password to be adjusted.

```
[Select User]
USER 1     :1234
USER 2     :1234
USER 3     :1234
USER 4     :1234
ENGINEER  :7654
```
The menu shows the output settings available.

Use the ⬆⬇ buttons to highlight the required USER and then press the ✔ button to select it.

```
[Number Entry]
Value: 1234
Enter New Value:-
              0

Maximum: 99999999
```
The display shows the number entry screen.
The password can be from 1 digit up to 8 digits in length.

Enter the required password using the number buttons and the ✔ button to confirm.

4.2.7 General Parameters

This menu allows the four user passwords and the engineering password to be adjusted.

```
[General Settings]
LEVEL2 TIME-OUT: 5
WALK TEST DELAY: 30
1 SEND -REPEATS: 0
OUT-OF-RANGE: YES
ESPA ADDRESS: 2
```
The menu shows the general parameter settings available.

Use the ⬆⬇ buttons to highlight the required parameter and then press the ✔ button to select it.

4.2.7.1 Level 2 Time-Out
Access to the controls (Level 2) can be configured to automatically cancel after a preset time of no activity. The default time is 5 minutes.

Select the option and use the number buttons to change the time-out. The time-out can be adjusted in the range 0 - 5 minutes. Where 0 is configured, the menu will never timeout.

4.2.7.2 Walk Test Delay
The walk test function can be adjusted to alter the time between each message transmission – default 30 seconds.

Select the option and use the number buttons to change the delay. The delay can be adjusted in the range 5 - 60 seconds.

4.2.7.3 1 Send Repeats
The '1 Send Repeats' parameter determines the number of repeated sends of the same message which follow a transmission resulting from an input trigger configured as Transmit –Once.

Select the option and use the number buttons to change the setting. The number of repeat sends can be adjusted in the range 0 - 10 seconds.

4.2.7.4   Out of Range

The Out-of-Range setting is used to determine whether background messages are to be periodically sent or not. The background message is used to communicate to pagers regularly in order that the pager can sense that it is within range of the transmitter. If the pager receives no background message for a period it will alert the user with an 'Out of Service' message. This function is also dependant on pager settings.

Use the ✔ button to toggle the setting between YES and NO.

Note: Confirmation that the Out-of-Range background messages are being sent can be acomplished by monitoring the Transmit LED while the panel is in the commissioning menu. The LED will light with each background message sent while in level-3. Though the messages are still sent, the LED is not illuminated for background messages in access levels 1 or 2.

4.2.7.5   Espa Address

This setting is reserved for future use – leave set at 2 (default).

4.2.7.6   Serial Comms

This parameter is used to denote which of the 2 serial communication ports is in use. The options are RS-232 or RS-485. The LifeLine panel may be connected to an Mx Fire System (Advanced Electronics Ltd) via a serial link. This link may take the form of an RS-232 or RX-485 standard – normally the RS-232 port will be used to connect directly to an MXP-047 interface unit.

Use the ✔ button to toggle the setting between RS-232 and RS-485.

4.2.7.7   Service Number

The service number is a field of configurable text to record the contact details of the service company should a fault occur. This contact information (where configured) will be presented on the display should a fault be registered on the control panel.

To change the text, press the ✔ button and amend the text – see section 4.1.3 for further information.

4.2.7.8   Service Due

This is a date which can be modified to display when the next service is due. This field is an aide memoir for the service engineer and is only ever displayed/ used within this menu.

4.2.7.9   Config

The storage of the configurable settings is protected by a method using a checksum. A fault condition will be indicated if the memory contents have altered such that the checksum is incorrect.

The configuration memory can be set back to factory default values. Press the ➔button to show the following display:

```
[Factory Defaults]
Note: All Changes
Made Will be Lost


  ✓:  ALL TO DEFAULT
ESC: RETAIN SETTINGS
```

Press the ✔ button to reset the configuration back to factory default settings.

Press the ESC button to cancel.

4.2.7.10 Program
The display shows the current version of software installed in the panel.

The operating program is protected by a method using a checksum. A fault condition will be indicated if the memory contents have altered such that the checksum is incorrect.

Press the ➔button to show the checksum

```
[Program Checksum]

    85585846
 Checksum is OK
```

The checksum value will depend on the version of software installed. The display will indicate if the program memory contents are correct.

4.2.8   PC Link
This option is where the logo presented at level-1 access can be updated – via a special P.C. application. Select this option prior to transferring the new logo to the panel.

4.2.9   Exit
Select the EXIT option to cancel Level-3 access and return to Level-2.

Entry of the Level-3 password is required to confirm the operation.

Any changes made must be confirmed before the panel will switch from Level 3 to Level 2 operation.

```
[Save Any Changes]

   ✓:  APPLY SETTINGS
ESC: DISCARD CHANGES
```

Press the ✔ button to confirm the changes.

Alrerntatively, press ESC to abandon any changes and retain the original settings.

4.2.10 Pager Groups
Each pager can reside in up to 4 groups (these must be specified when ordering the pagers), each message transmitted by the panel is directed to one of these groups. The specific Pager Group to which a message is directed is determined by the configuration of each of the wired inputs/ message buttons or, in the case of a serial link message, by the configuration of the interface unit (MXP-047).

The allocation of Pager Groups should be considered prior to ordering the system to ensure that the pagers are correctly assigned. It is possible to order further pagers with group assignments so long as the serial number of the LifeLine control panel is known.

Consider a simple example: We have premises where nominated members of staff are responsible for investigating pre-alarms and warning conditions whereas other building occupants must be made aware only of the need to evacuate in an emergency. We have two different types of message to send, so this will require two different pager groups: Group 1 for warnings and Group 2 for evacuation.

4.2.10.1 Inputs & Message Buttons and Pager Groups
Each separate input and message button can be assigned to one of twelve Pager Groups. So in this example we will use input -1 for warnings, program suitable message text and assign it to send messages to Pager Group-1. Input 2 will be used for Evacuation, so similarly we program a suitable Evacuate message and assign input-2 to send messages to Pager Group-2.

The nominated staff members will be assigned pagers which respond to Pager Group-1 & Pager Group-2 (they also need to be made aware of evacuate messages). All other users will be assigned pagers responding to only Pager Group-2 (evacuate) messages.

4.2.10.2 Serial Messages and Pager Groups

Using the MXP-047 Interface unit, a similar Pager Group configuration can be realised for a serial connection to an MX Fire System. In this case the 'Address' parameter associated with the 'Pager Zones' edit screen of the MXP-047 configuration tool relate directly to the Pager Group designations of the LifeLine control panel.

So, to replicate the example above, we would include a zone range of say 1 – 1000 for Address 1 and the same zone range for Address 2. From here Address 1 would be assigned to all shift patterns under the pre-alarm Pager Event and Address 2 would be assigned to shift patterns under the Fire Pager Event. Any Fire event in the zone range will now be reported to LifeLine Pager Group 2 and any pre-alarm to LifeLine Pager Group 1.

Note: The MXP-047 also uses the terminology "Pager Group". This does not relate to the LifeLine Pager Groups. The LifeLine Pager Groups are associated with the MXP-047 Pager Addresses (1 -12).

5   Service and Maintenance

5.1   Maintenance Schedule

This equipment should be maintained in accordance with the regulations and codes appropriate to the country and location of installation. The following is recommended if no other regulations apply.

5.1.1   Daily Actions

The site operator / user should perform the following checks and actions:

a)   The panel indicates normal operation. If any faults exist, these should be recorded in a logbook.

b)   Any recorded faults have received attention and have been signed off.

5.1.2   Monthly Actions

The site operator / user should perform the following checks and actions:

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

b)   Perform a "TEST" transmission to all pagers. Check with users that the transmission has been received.

c)   Check that all outstanding faults have been recorded and have received attention.

5.1.3   Quarterly Actions

The service / maintenance contractor should perform the following checks and actions:

a)   Check that all entries in the logbook have been addressed, check the event log in the panel and take the necessary remedial actions.

b)   Visually inspect the panel for any moisture ingress or other deterioration, check all battery connections and test / check the alarm, fault and other functions of the panel operation.

c)   Ascertain if any building or structural alterations have been carried out that could affect the range of transmission and the reception of messages. If so, perform a reception survey inspection.

d)   Record in the logbook any defects or remedial actions that must be undertaken and arrange for these to be carried out as soon as possible.

5.1.4   Annual Actions

The service / maintenance contractor should perform the following checks and actions:

a)   Perform the checks as recommended above in the daily, monthly and quarterly schedules.

b)   Perform a complete ENGINEERING test for all inputs and buttons. Check that the correct transmission messages are received by the engineering pager.

c)   Visually inspect all cable fittings. Check that the equipment is undamaged and that the conditions of installation have not changed such that they fall outside of the equipment specifications.

d)   Inspect and test all batteries and replace as required – refer to Section 5.2 for recommended replacement schedule.

e)   Record in the logbook any defects or remedial actions that must be undertaken and arrange for these to be carried out as soon as possible.

f)   Assess whether any changes to the building structure have been undertaken that might affect the reception of messages. If necessary, perform a site survey using the current power settings.

5.2   Replacement of Components

In general, all of the components parts used in the construction of the panel have been selected for long life and reliability.

However, certain components may require to be changed on a regular service basis. The details of these are as follows:

5.2.1   Liquid Crystal Display

Expected Life: -   > 10 years

Replacement Schedule: -   When the display becomes difficult to read. The display contrast will gradually fade with time.

Manufacturer / Part Number: -   Replace the complete display / keyboard assembly.

5.2.2   Batteries

For battery installation, see section 3.3.2

Respect the Environment.

Batteries must be disposed of responsibly and in accordance with any local regulations.

5.2.2.1   Standby Batteries

Expected Life: -   3-5 years at an ambient temperature of 20°C

Replacement Schedule: -   As above. However, note that the expected battery life is shortened by increase in ambient temperature. The life reduces by 50% for every 10°C rise above ambient. Refer to battery manufacturer for further information.

Manufacturer / Part Numbers: -   YUASA   POWERSONIC

                                                        2.8AH   NP2.8-12   3.2AH   PS-1230

                                                        7AH   NP7-12   7AH   PS-1270

For optimum performance and charge retention, Yuasa recommend that batteries are 'top-charged' prior to installation.

For batteries up to 6 months old from date of manufacture, charge at 2.4V per cell (i.e. 14.4V per battery) for 20 hours prior to installing the batteries.

It is not recommended to use batteries that are more than 6 months old, from their date of manufacture, on a new installation.

It is quite normal for lead-acid batteries to vent hydrogen when being charged.

The panel is adequately ventilated to dissipate this hydrogen. DO NOT seal the enclosure or install in a sealed enclosure or cavity.

5.2.3 Spares

Part Number	Description
PXS-001	Px-100 Chassis Assembly
PXS-002	Px-100 Back Box Assembly
PXS-003	PX-100 Cover Assembly
PXS-004	PX-100 Antenna
EXP-005	Switch End-of-Line Module (Pack of 5)

For all other items, please refer to the sales part list for the sales item part number.

5.3 Site Survey

The procedure outlined in this section details how to perform either an initial or an on-going site survey to configure the optimal transmitter power setting.

The objective is to minimise the power setting to prevent excessive interference spread outside the building whilst maintaining reception at all required locations in the building.

The main menu functions are:

[1]	Set Power Level	Refer to section 4.2.5.3
[2]	Set Range Test Delay	Refer to section 4.2.7.2
[3]	Activate Range Test	This function can be activated by either a menu function or by a switch input action.
		Refer to sections 4.2.5.1 or 4.2.3.2

The range test function will automatically broadcast messages with an interval between each message as defined in the range test delay parameter.

Set a delay that will allow time to comfortably reach the next location but not too long that the complete survey time will be too long. The time chosen will, obviously, depend on the nature and structure of the particular building being surveyed.

Each message includes a unique incrementing number. Using this approach, any non-received messages can be easily identified.

For new installations, start with the minimum power level setting.

For existing installations, start with the current power level setting.

Activate the range test function and walk the building. Check at each location that the next message is received.

When all locations have been checked ascertain if all messages have been received at the required locations. If some messages have been missed, this could indicate the location of possible blind spots.

If all messages have been received then the power level setting is correct.

If some messages have not been received, then increase the power level by one increment and repeat the walk test of the building. Repeat this procedure until the power level is at the optimum to ensure all required locations can receive messages.

Note: The location of the transmitter antenna may be a factor in optimising the reception in all locations for the lowest power level setting possible. Consideration should be given to the location of the antenna and, if required, moving the position of the panel or mounting the antenna in a more suitable position and connecting it to the panel via a coax extension cable.

6   Appendices

6.1   Appendix 1 – Forgotten Level 3 Password

Should the Level-3 password be forgotten, contact Customer Support to obtain a temporary permit number to regain access to the panel programming functions.

Customer Support will require a decryption key displayed by the panel. To obtain this number, attempt to gain access to the Level-3 Programming Functions entering "**1**" when prompted for the password. As soon as the "Password Invalid" message is shown, press the "**0**" button and the display will show a decryption key. Make a note of the first part of this number.

For example:

```
[Level 2 Menu]

   Please Enter Your Password
           214728378
```
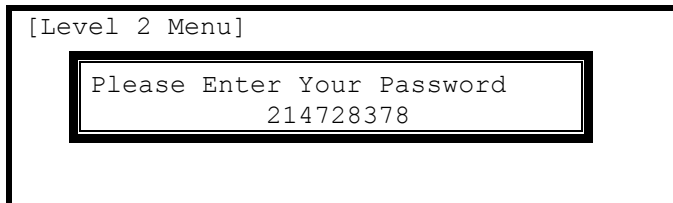
Customer Support will provide a temporary permit number that you can enter when prompted for the Level-3 password. As soon as access has been regained to the Level-3 Programming Functions, select the Passwords Menu Option and check / change the Level-3 password. (Refer to Section 4.2.6 for further information).

6.2   Appendix 2 – Recommended Fire Rated Cables

The following table provides a list of suitable fire rated cables with standard (30 minute) and enhanced (120 minute) classification. Refer to Document No. 680-088 for an up to date list.

Manufacturer	Cable Type	Core Sizes (mm)			5839-1 Rated		
		1.0	1.5	2.5	S (30)	E (120)	
AEI	Firetec Multicore Enhanced Ref. FE2C	-	✓	✓		✓	
AEI	Firetec Armoured Ref. F2C	-	✓	✓			
Calflex	Calflam CWZ	-	-	✓			
Cavicel SpA	Firecel SR/114H [1]	✓	✓	✓	✓		
Cavicel SpA	Firecel SR/114E [1]	✓	✓	✓		✓	
Draka	Firetuf (OHLS) FTZ	✓	✓		✓		
Draka	Firetuf PLUS	✓	✓	✓		✓	
Draka	Firetuf Power (Armoured)	-	✓	✓			
Draka	Firetuf Data 1-Pair 0.63mm	-	-	-			
Huber & Suhner	Radox FRBS/M1x2	-	✓	✓			
Irish Driver-Harris Co Ltd	Kilflam 2000	✓	✓	✓	✓		
Irish Driver-Harris Co Ltd	Kilflam 3000	✓	✓	✓		✓	
Prysmian (Pirelli)	FP200 Flex	✓	-	-			
Prysmian (Pirelli)	FP200 Gold	✓	✓	✓	✓		
Prysmian (Pirelli)	FP PLUS		✓	✓		✓	
Prysmian (Pirelli)	FP400 (Steel wire armoured)	-	✓	✓			
Tratos Cavi SpA	FIRE-safe TW950	✓	✓	✓	✓		
Tyco Thermal Controls	Mineral Insulated Twin Twisted PYRO-E CCM2T	✓	✓	✓			
Tyco Thermal Controls	Pyrotenax Served Mineral Insulated Cable (light and heavy duty)	✓	✓	✓		✓	
Tyco Thermal Control	Pyro-S	✓	✓	✓	✓		
Wrexham	Mineral Insulated Cable (light and heavy duty)	✓	✓	✓		✓	

---

[1] Also available in steel wire armoured (SWA) and steel wire braid (SWB) formats. $1.0mm^2$ preferred for network.

6.3   Appendix 3 – Site Configuration Record

6.3.1   Site Pagers and Pager Group Allocation

1. Determine how many different User Groups are required for the system. Consider how many groups of users there are requiring different types of message.

Example Site Pager Record

User Group (Pager Type)	Quantity Required
Engineer Pagers*	*2*
Staff Member	*3*
General / Visitor	*10*
Maintenance Staff	*2*
SleepComm Units	*2*

Site Pager Record

User Group (Pager Type)	Quantity Required

*: Note Engineers pagers are available as a standard part and will respond to Fault events or events transmitted during Engineer Mode.

2. Determine what types of messages are to be sent by the system to different user groups.

Example Message Types

Pager Group	Message Type
1	*Fire*
2	*Pre-Alarm*
3	*Security*
4	*Test*
5	*Plant alarm/ Supervisory*
6	
7	
8	
9	
10	
11	
12	

Message Type Record

Pager Group	Message Type
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Note: Faults are sent to the Engineer's Pager automatically

3. Assign which Pager Groups each of the User Group pagers will respond to.

Note that a maximum of 4 Pager Groups can be assigned, if this limit causes difficulty consider whether any Message Types can be combined.

Example Pager Configuration

User Group (Pager Type)	Pager Group Assignments (Enter 1-12)			
	1	2	3	4
Staff Member	*1*	*3*	*4*	*-*
General / Visitor	*1*	*4*	*-*	*-*
Maintenance Staff	*1*	*2*	*5*	*-*

Site Pager Configuration

User Group (Pager Type)	Pager Group Assignments (Enter 1-12)			
	1	2	3	4

6.3.2 Px-100 Configuration Record

6.3.2.1   Text Configuration

General Text	Text
PANEL NAME	
TEST TEXT	
FAULT TEXT	
INPUT TEXT	
INPUT 1	
INPUT 2	
INPUT 3	
INPUT 4	
INPUT 5	
INPUT 6	
INPUT 7	
INPUT 8	
BUTTON TEXT	
BUTTON 1	
BUTTON 2	
BUTTON 3	
BUTTON 4	

6.3.2.2   Message Buttons

Button	Pager Group (1-12)	Access Level (1/2)	Sleepcom
1		1 / **2**	Y / **N**
2		1 / **2**	Y / **N**
3		1 / **2**	Y / **N**
4		1 / **2**	Y / **N**

6.3.2.3   Outputs

Relay	Mode (Tick One)								Inverted?
	Not In Use	General Fault	Test Mode	Engineer Mode	Any Input ON	Input-1 ON	Input-2 ON	Input-3 ON	
1									Y / **N**
2									Y / **N**
3									Y / **N**

6.3.2.4 Inputs

Input	Pager Group (1-12)	Action (Tick One)									Monitored?	Normally Closed?	Sleep-com?
		Not In Use	Transmit - Once	Transmit - Repeat	Test Mode	Test Override	General Fault	Level-2 access	Engineer Mode	Walk Test			
1											Y/**N**	Y/**N**	**Y**/N
2											Y/**N**	Y/**N**	**Y**/N
3											Y/**N**	Y/**N**	**Y**/N
4											Y/**N**	Y/**N**	**Y**/N
5											Y/**N**	Y/**N**	**Y**/N
6											Y/**N**	Y/**N**	**Y**/N
7											Y/**N**	Y/**N**	**Y**/N
8											Y/**N**	Y/**N**	**Y**/N

Note: Text, Pager Group, Monitored & SleepCom input settings are only relevant when the action is configured as "Transmit – Once" or "Transmit – Repeat".

6.3.2.5 Transmitter Power

Transmitter Power setting (Tick One)							
25mW	50mW	0.1W	0.25W	0.5W	0.75W	1W	2W

6.3.2.6 Passwords

User 1	User 2	User 3	User 4	Engineer

6.3.2.7 General

Level 2 Timeout (0-5)	Walk Test Delay (5-60)	1 Send Repeats (0 -10)	Out Of Range	Espa Address (0 – 9)	Serial Coms (232/485)	Service Number	Service Due
			Y / N		**232** / 485		

6.4   Appendix 4 – Slide-In Template

An electronic editable version (Word™) of the template can be dowloaded from the website – see www.advel.co.uk.

✂   If required, use the default slide-in label or write in the required text on the second label.

Cut out the label and slide into the pocket of the fascia label.

6.4.1   Approvals and Key-switch:

$C \in \mathbb{O}$ EN 300 224-1
EN 300 489-2

ACCESS   MODE
                          Operate
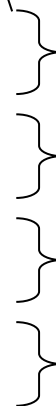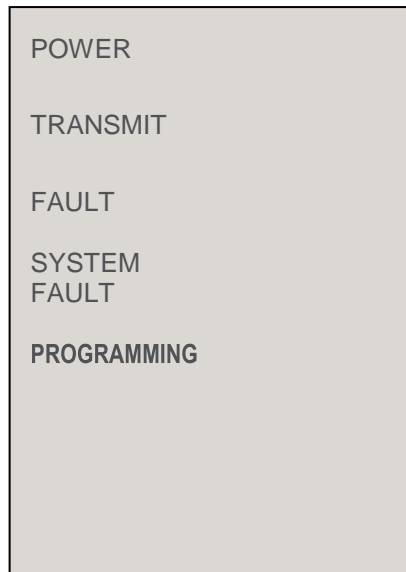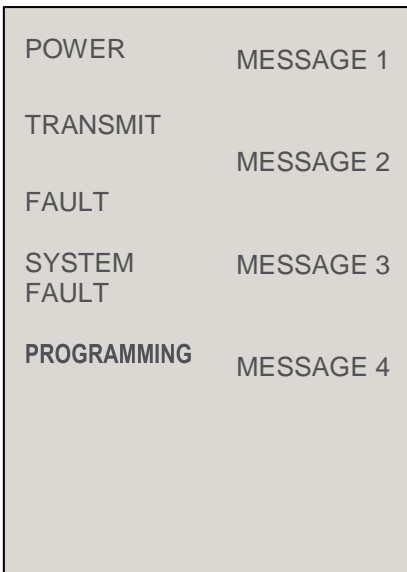Disable Enable   Test   Eng'r

6.4.2   Indicator and Buttons

LED indicators have fixed function.

Message buttons have programmable function.

Brackets show the space available and centre position for each button.

POWER   MESSAGE 1

TRANSMIT
                   MESSAGE 2

FAULT

SYSTEM   MESSAGE 3
FAULT

PROGRAMMING   MESSAGE 4

POWER

TRANSMIT

FAULT

SYSTEM
FAULT

PROGRAMMING

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USER NOTES