Orisec

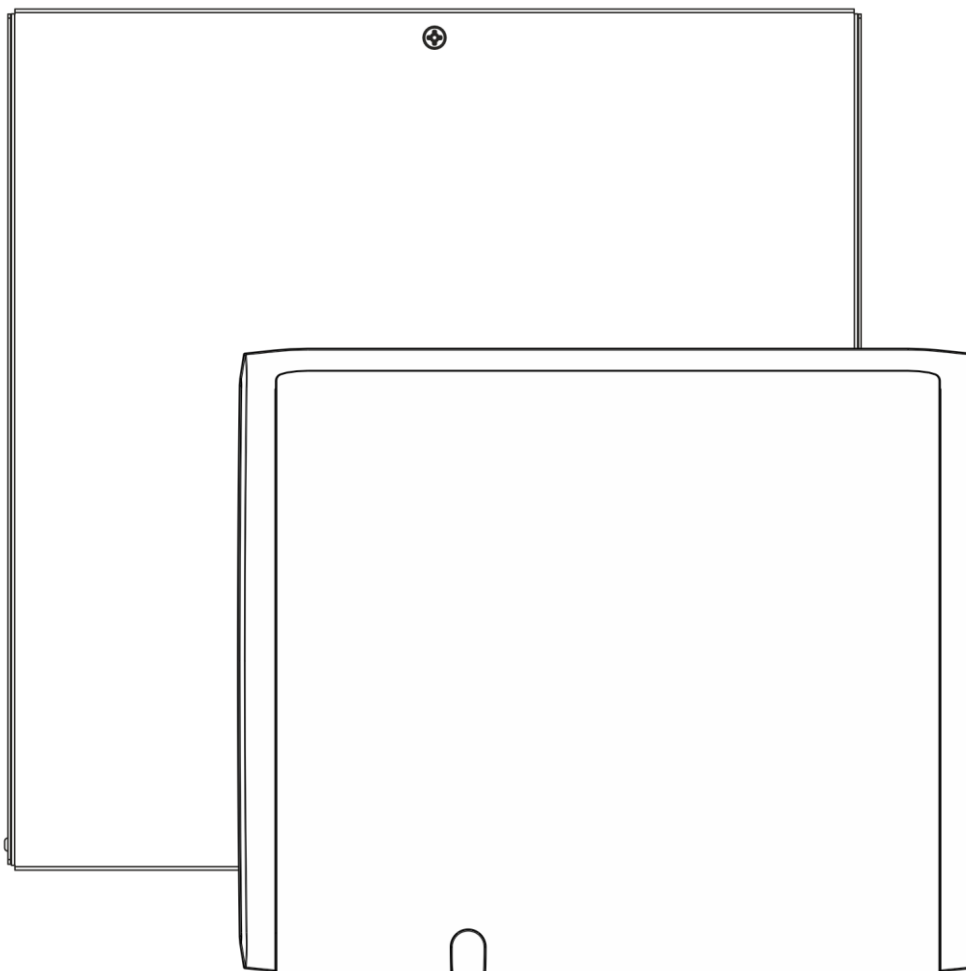# PZX-10

Installation Manual

Designed and Manufactured
in the United Kingdom

www.orisec.co.uk

Contents

1. Introduction

The Orisec PZX-10 powered expander is compatible with all CP series control panels. It provides an additional 10 programmable zone and outputs along with an integrated intelligent Switch Mode Power Supply (SMPS). The PZX-10 is available in either a polymer enclosure which has space for a 7Ah battery or a metal enclosure which has space for a 17Ah battery. Features of the Orisec PZX-10 include:

Key Features
▶ 2.75A Switch Mode Power Supply (SMPS)
▶ 10 programmable zone inputs
▶ 10 programmable outputs
▶ Speaker connections
▶ Onboard Piezo
▶ 7-Segment display for local programming and diagnostics
▶ RJ-45 support
▶ Network IN and OUT connections

2. Installation

Mounting

Mount the unit on a flat, plumb wall using at least three appropriate screws. The rear casing has been designed with a central key-hole slot so that mounting is possible without removing the Printed Circuit Board (PCB).

If the PCB must be removed, first unplug the two harness leads from the SMPS, then undo the securing screws and tilt the PCB forward to disengage from the bottom securing clips. Finally, lift the PCB out of the enclosure and store in safe place.
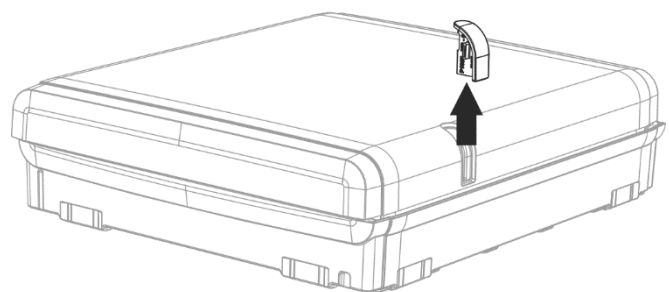
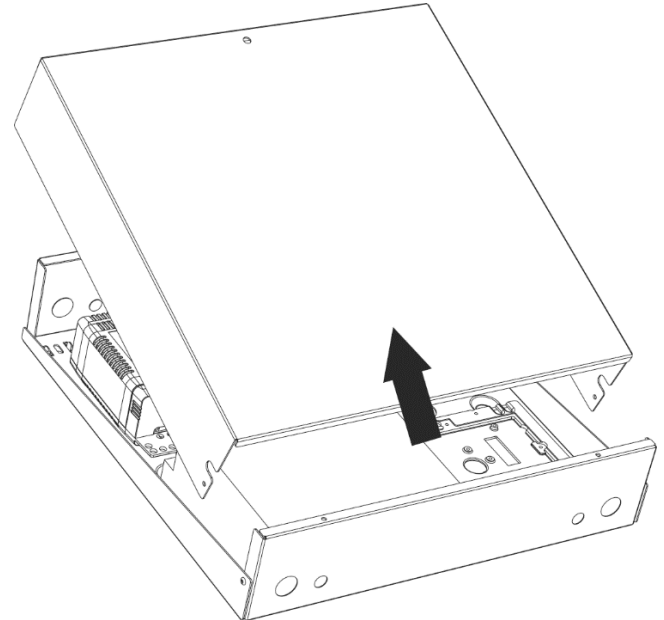To replace the PCB simply reverse the above procedure.

It is essential to ensure that none of the fixing slots or cable entries are accessible after fixing.

Mains cabling must be secured (e.g., with a cable tie) to one of the anchor points provided.

Polymer Enclosure

Removing the polymer enclosure lid
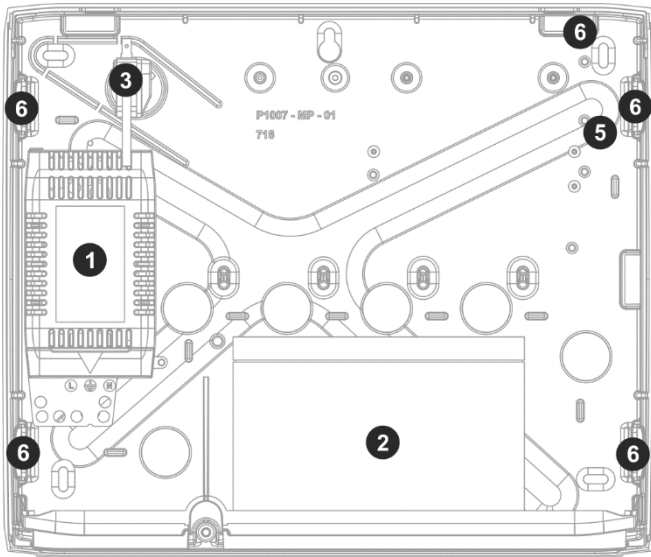
1. PSU location
2. Battery space (up to 7Ah)
3. Tamper switch
4. WebWayOne Nano fixing (See below)
5. CSL Digi air fixing
6. Removable cable entry shutters

Remove pillar to fit WebWayOne Nano

Metal Enclosure

Removing the metal control panel lid

1. PSU location
2. Battery space (up to 17Ah)
3. Tamper switch
4. PCB gantry – ZX-10, WebWayOne or CSL
5. Earth tag for lid connector

Wiring the PZX-10 Expander

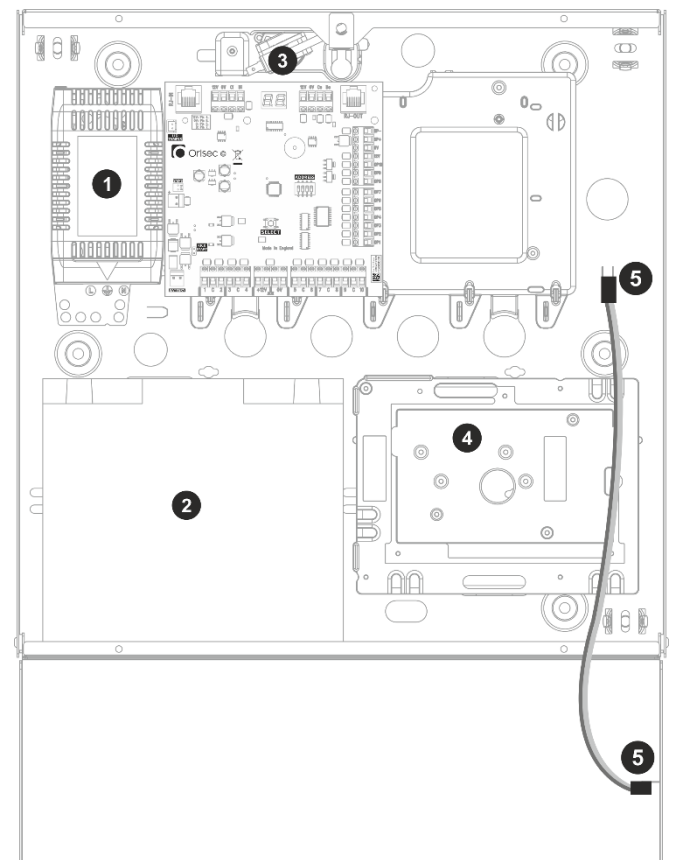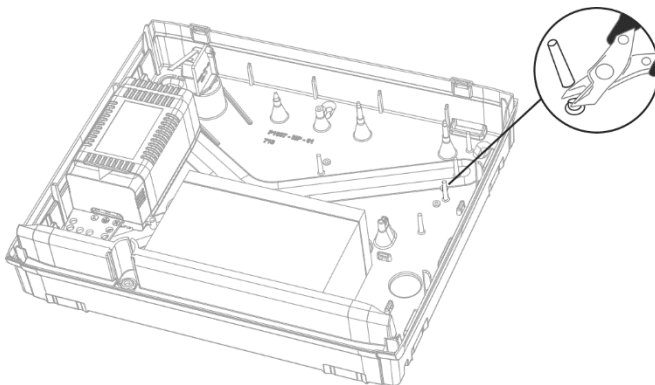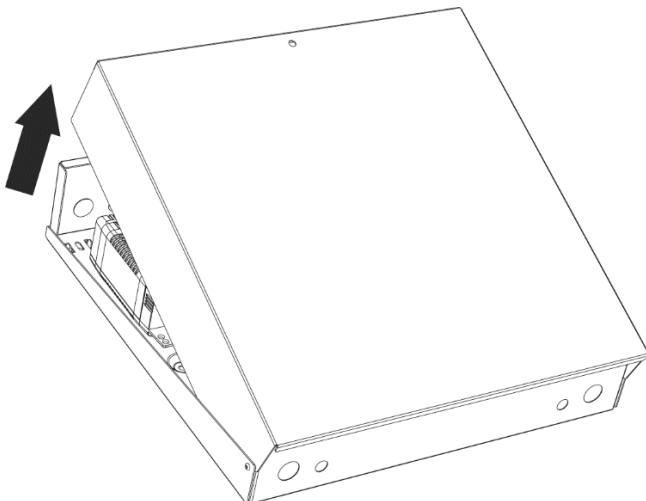**WARNING: ELECTRICITY CAN KILL**
Before connecting the PZX-10 Expander always disconnect the power supply at the consumer unit. Seek advice from a qualified electrician if in any doubt.

Only connect the mains supply to the switch mode power supply. Never connect the mains supply directly to the PCB.

The system installation must be carried out in accordance with the national safety standards, for example EN 60950: 1992.

Always refer to National Wiring Regulations when conducting installation.

An appropriate and readily accessible disconnection device (e.g. an un-switched 3 Amp fused spur) must be provided as part of the installation.

The disconnection device must not be connected by a flexible cable.

Where identification of the neutral in the mains supply is not possible, a two-pole disconnection device must be used.

Use mains cable of adequate carrying capacity for the rated current (i.e. at least 0.75mm2).

📝 Both the back and the lid must be earthed. A cable is provided to connect the lid to the back.

Mains Supply Connection
The AC Mains supply is connected to a 3-way terminal block which is housed in the Switch Mode Power Supply (SMPS).

1. Remove the cable access cover as shown:
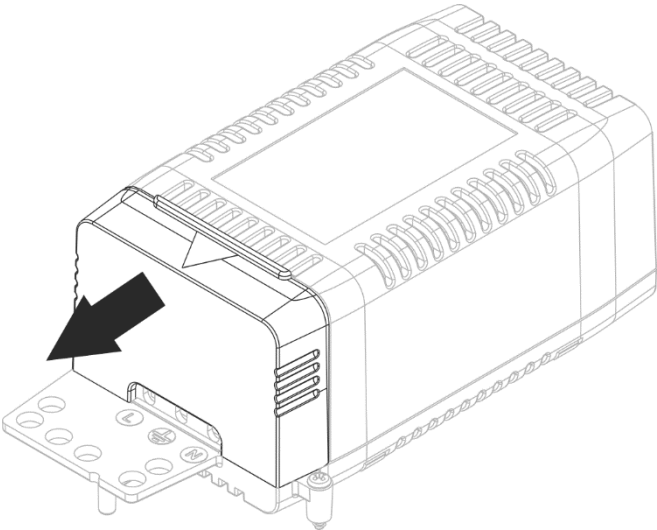
2. Connect the mains supply cable and secure using a cable tie as shown:

Cable Tie
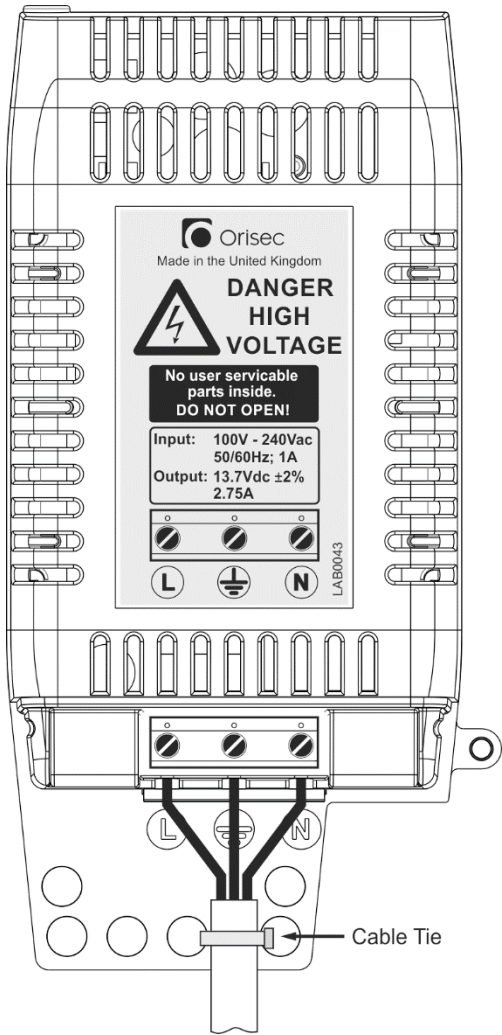
3. Once the mains wiring is completed, replace the cable access cover.

Standby Battery
The system must be fitted with a 12V battery to provide continued operation in the event of an AC mains failure. The maximum capacity of the battery will depend on the enclosure used:

Enclosure	Max Battery Capacity
Polymer	7Ah
Metal	17Ah

When connecting the stand-by battery ensure the red battery lead is connected to the positive terminal of the battery and the black battery lead is connected to the negative terminal.

PCB Layout
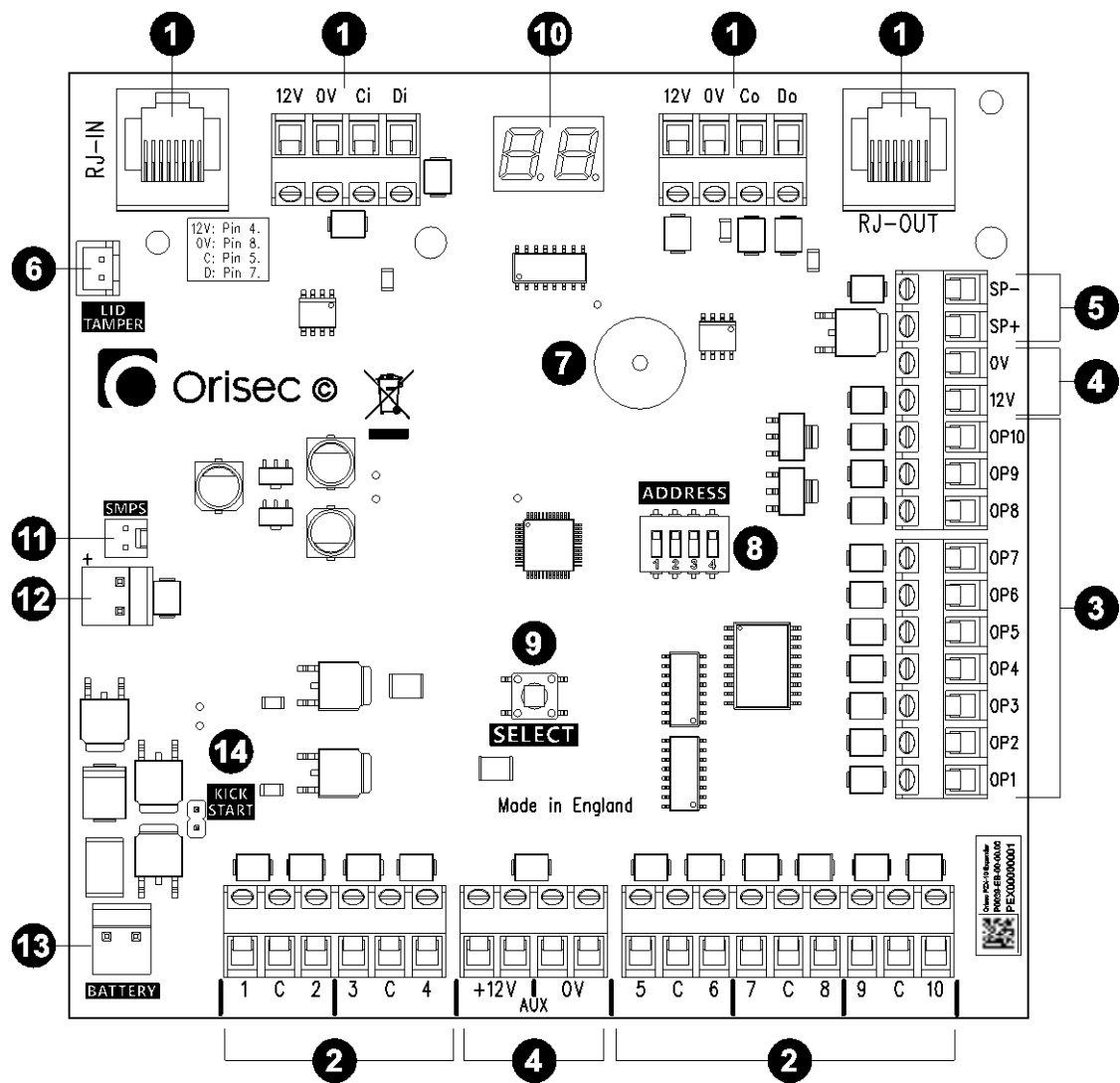
1. Network Connections
The Orisec PZX-10 has Network In and Network Out connections both accessible via conventional terminal blocks and RJ-45 sockets. Any network devices connected to PZX-10 should be connected to the Network Out connections.

2. Zone inputs 1-10
Detection devices such as movement sensors, vibration and door contacts are connected to the zone input terminals. There are several ways in which to connect detection devices, see 'Wiring Detection Devices' on page 8. Each zone can be programmed for type, wiring, areas and options, please refer to the control panel installation manual.

3. Outputs 1-10
These are fully programmable, switched negative outputs. Each output can be programmed for a variety of functions, please refer to the control panel installation manual.

4. Auxiliary 12V
These terminals provide auxiliary power for detection devices that require 12V power, e.g., movement sensors. The auxiliary output is protected by a self-resetting fuse (PTC).

5. Speaker
These terminals are used for driving 16 Ohm extension speakers. Each type of tone can be enabled or disabled, please refer to the control panel installation manual.

6. Tamper Switch
The patented combined lid, screw and wall tamper switch will signal a tamper condition if the front cover locking bolt is undone or if the front cover is removed. On Grade 3 installations it will also signal a tamper if the unit is removed from the mounting surface. The lid/screw tamper for each expander can be enabled or disabled, please refer to the control panel installation manual.

7. Piezo Sounder
The piezo sounder generates low level alarm tones and warning tones. Each type of tone can be enabled or disabled, please refer to the control panel installation manual.
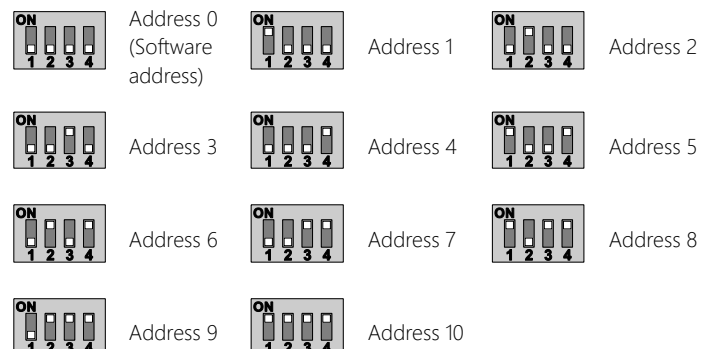
8. Address Selection
Each PZX-10 must be assigned a different address using the Address selector. Set the DIP switch to the required position:

5

If the DIP switch is set as 0 (Software Address), the expander address is defined by software utilising the 'Select' switch and 7-segment display, see page 9.

9. Select button
The local select button will allow for local programming and addressing of the PZX-10 through the on-board 7-segment display, see page 9 for full details.

10. Dual 7-segment display
The 7-segment display will show the expander address when the control panel is in engineer's mode and scrolls through the outer segments when operating normally. The display is also used in conjunction with the select button to perform local programming and diagnostics. see page 9 for full details.

11. SMPS Monitor Connector
The yellow and white harness lead from the switched mode power supply module plugs onto this connector and provides full monitoring and control of the switch mode power supply.

12. SMPS Power Connector
The red and black harness lead from the switched mode power supply module plugs onto this connector and provides 13.7VDC to power the system.

13. Battery Connector
A 12V (up to 17Ah) rechargeable battery must be connected to this connector to provide continuous system operation in the event of mains failure. The battery charging circuit is protected by an auto resetting fuse (PTC) rated at 1.8A.

14. Battery Kick Start
When powering the system from battery only, the 'Kick-Start' pins must be momentarily shorted together with a plain blade screwdriver or similar, to kick start the power supply into operation.

Connecting Devices to the Network

Before connecting a device to the control panel network, ensure all power has been isolated from the control panel (AC Mains & Battery). Do not continue if there is still power present on the control panel as this may damage the device or control panel and invalidate any warranty.

Keypads, expanders and Orisec external sounders connect to the same network terminals. These are located at the bottom left hand corner of the control panel and may be connected serially/daisy chain, in parallel/star, or any combination of the two.

Network Connections
The network is made up of four terminals incorporating power and data. To ensure correct operation, all four terminals on the device must be connected to the corresponding terminals on the control panel, or previous device. The table below shows each terminal and its description:

Terminal	Description
12V	+12V supply, fuse (PTC) protected
0V	0V supply
C	Clock
D	Data

Cable Type and Distances
For improved immunity to electrical noise, the use of screened 4 core cable is recommended. The screen should be twisted together and wired into the (–) terminal at the control panel only.

The maximum recommended distance for devices when using standard 7/0.2 alarm cable is:

▶ 500m for each branch when using the parallel/star configuration

▶ When using a series/daisy chain configuration the maximum distance will depend on the number of devices connected on the chain. The more devices that are connected, the shorter the distance to the last device, due to voltage drop in the cable. The table below shows the voltage drop along standard 7/0.2 alarm cable for different loads:

Current Drawn	Cable Length					
	10m	20m	30m	40m	50m	100m
60mA	0.10V	0.19V	0.29V	0.38V	0.48V	0.96V
80mA	0.13V	0.26V	0.38V	0.51V	0.64V	1.28V
100mA	0.16V	0.32V	0.48V	0.64V	0.80V	1.60V
120mA	0.19V	0.38V	0.58V	0.79V	0.96V	1.92V
140mA	0.22V	0.45V	0.67V	0.90V	1.12V	2.24V
160mA	0.26V	0.51V	0.77V	1.02V	1.28V	2.56V
180mA	0.29V	0.58V	0.86V	1.15V	1.44V	2.88V
200mA	0.32V	0.64V	0.96V	1.28V	1.60V	3.20V
220mA	0.35V	0.70V	1.06V	1.41V	1.76V	3.52V
240mA	0.38V	0.79V	1.15V	1.54V	1.92V	3.84V
260mA	0.42V	0.83V	1.25V	1.66V	2.08V	4.16V
280mA	0.45V	0.90V	1.34V	1.79V	2.24V	4.48V
300mA	0.48V	0.96V	1.44V	1.92V	2.40V	4.80V
320mA	0.51V	1.02V	1.55V	2.05V	2.56V	5.12V
340mA	0.54V	1.09V	1.63V	2.18V	2.72V	5.44V
360mA	0.58V	1.15V	1.73V	2.30V	2.88V	5.76V
380mA	0.61V	1.22V	1.82V	2.43V	3.04V	6.08V

Whichever method of wiring configuration is used, ensure that the voltage between the '+' and '–' terminals at each device is no lower than 10.5V when the system is running on the standby battery.

Overcoming Voltage Drop
There are three ways in which to overcome voltage drop:

1. Use thicker lower resistance cable. Standard 7/0.2 alarm cable has a resistance of 8 Ohm per 100m.

2. Double up on the power connections. This will require using a 6 or 8-core cable rather than a 4-core cable.

3. Install a power supply to power the device locally. Remember to common the two 0V connections and disconnect the positive between the devices.
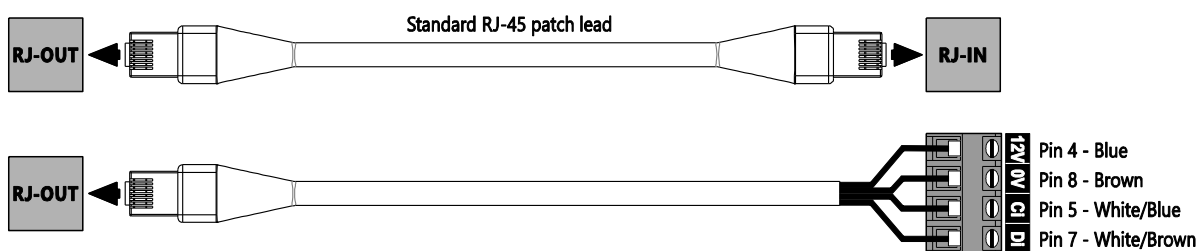
Network wiring examples

Zone Expander – with standard alarm cable
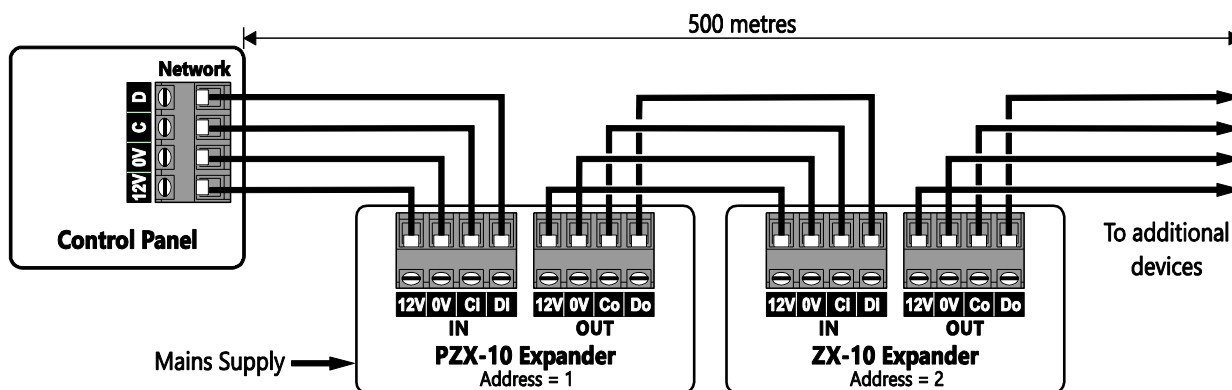
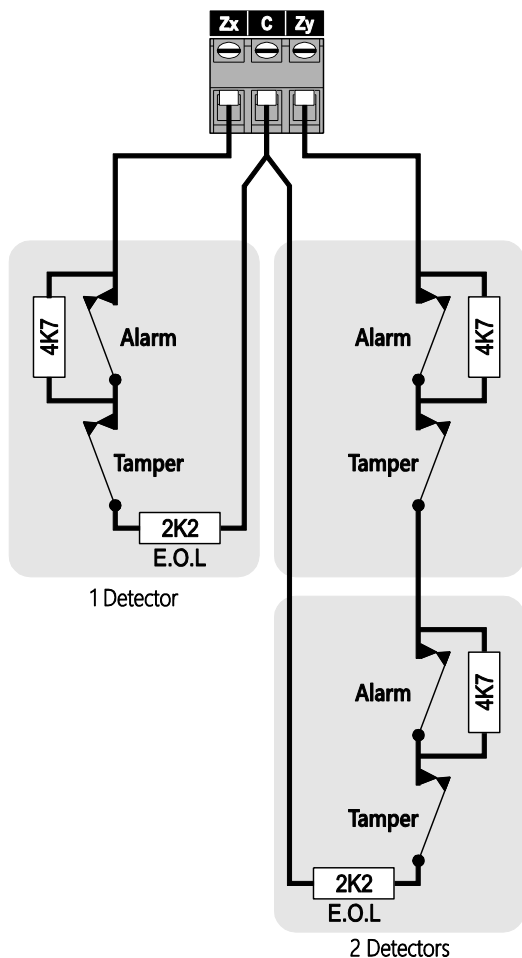## Zone Expanders and keypads – with standard alarm cable
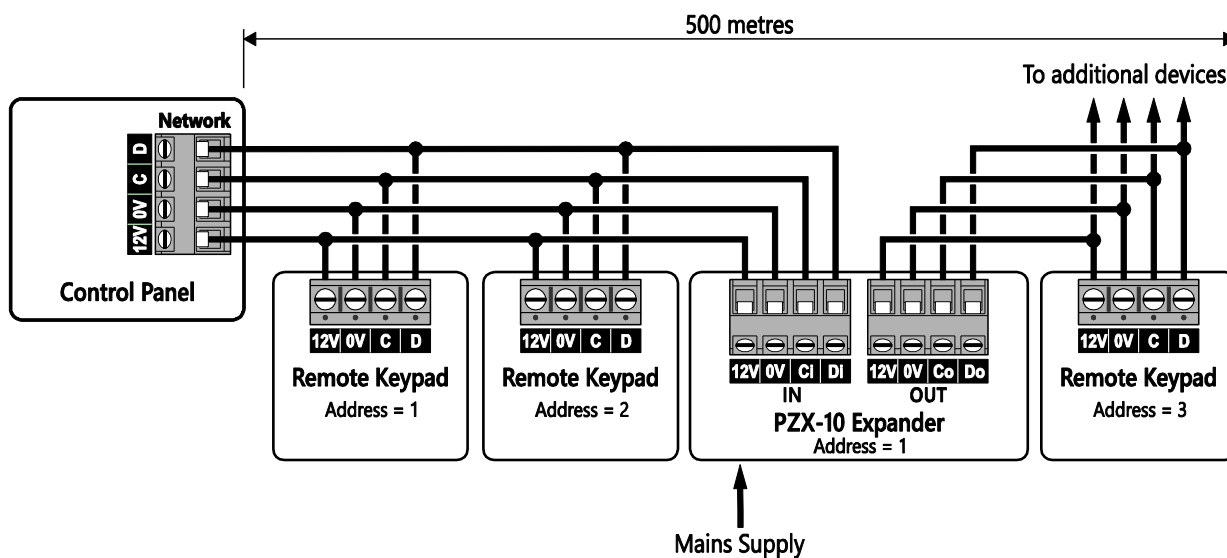
Using RJ-45 patch lead to connect devices

Pin 4 - Blue
Pin 8 - Brown
Pin 5 - White/Blue
Pin 7 - White/Brown
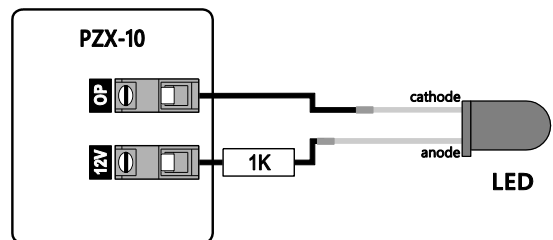
Wiring Detection Devices

Each zone can be wired using different wiring methods. The figure below shows the 'Double EOL' wiring method, for full details on available wiring methods, please refer to the control panel installation manual.
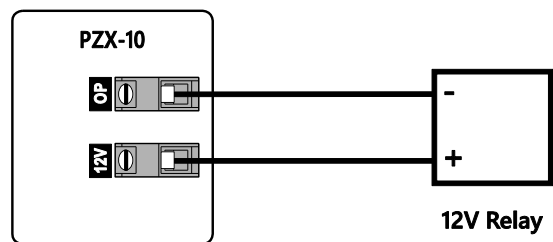

1 Detector

2 Detectors

Loudspeaker Connections

The loudspeaker output is suitable for driving one 16 Ohm or two 8 Ohm loudspeakers wired in series as shown below:

16Ω Loudspeaker

8Ω Loudspeaker

8Ω Loudspeaker

The volume levels for Normal, Chime, Alarm, Advisory and Alarm tones can be programmed, please refer to the control panel installation manual.

Outputs

The outputs can be used to control auxiliary devices e.g., sounders, LEDs, Relays etc. The figures below show some wiring examples:
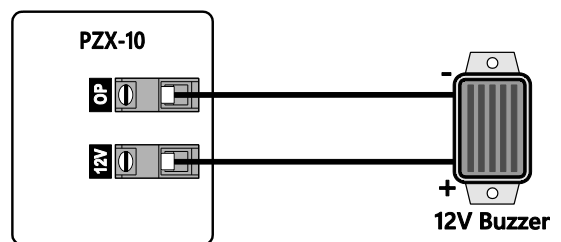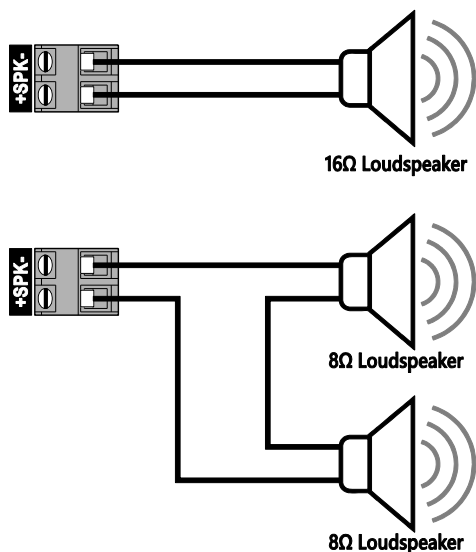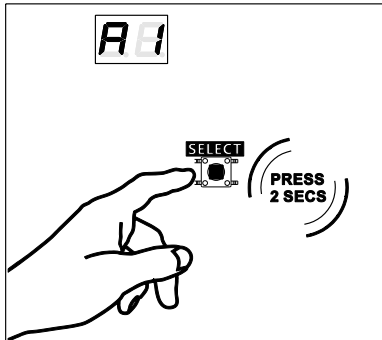
LED Indicator

LED

Relay Driver

12V Relay

Buzzer Driver

12V Buzzer

7-Segment display & Select button

The 7-segment display shows the PZX-10 network address when the control panel is in engineer's mode and scrolls through the outer segments when operating normally.

1. With the system is in engineer's mode press and hold the 'SELECT' button' for 2 seconds for the main menu.

2. To scroll through the menu options, press the 'SELECT' button.
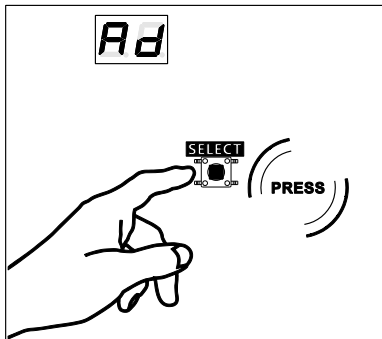
3. To select the displayed option, press the 'SELECT' button' for 2 seconds.

The menus are as follows;

Ad - Address
This menu allows for the expanders address to be set via software as opposed to hard addressed by DIP switches (Dip switches MUST be set as 0 to software address)

Cn - Network Current
This menu will show the current being drawn from the network out connection in mA (milliamp's) i.e. 460 mA will show as 46.

Please note the expander is not a calibrated meter for standards and regulations. Only take these readings as an indication.

CA - Auxiliary 12V Current
This menu will show the current being drawn from the auxiliary 12V connection in mA (milliamp's) i.e. 720 mA will show as 72.

Ct - Zone Status
This menu will show the current zone status as either H (Healthy) or A (Active) for the selected zone i.e. 4A indicates zone 4 on the expander is currently Active.

Op - Outputs
This menu will allow for the outputs on the expander to be inverted for testing purposes. To scroll to the required output, select the output that is required for testing. This will then show one of two states; N (Normal) or I (Inverted).

bA - Battery Voltage
This menu shows the standby battery voltage. If the right-hand decimal point is flashing then the voltage reading is as shown, e.g., '9.8'. If there is no decimal point then add 10 to the displayed reading, e.g., display shows '3.7', then the voltage is 10 + 3.7 = 13.7V.

St - Sounder Test
This menu is for testing the on-board piezo and speaker terminals.

There are two different stages, F (Off) or O (On). When ON the piezo and speaker will be activated until switched OFF.

Er - CRC Errors
This menu will show the current CRC errors on the expander. Errors can be caused by voltage fluctuations, high resistance and disconnections.

LP - Lost Packet
This menu will show the number times that communication with the control panel has been lost.

Wireless Bridge

To operate as a Wireless Bridge, connect the W-XP-R to the Orisec PZX-10 as shown.

An W-XP or W-XP-R needs to be installed locally at the Control Panel.

The bridge should then be learned on the control panel as follows:

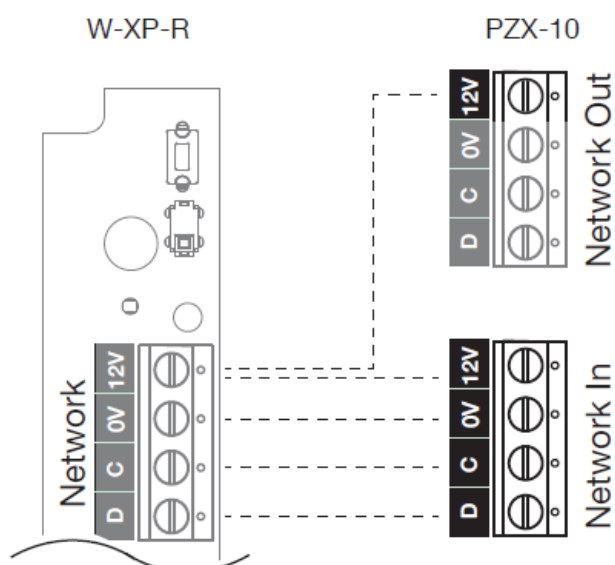- ▶ Enter engineering mode
- ▶ Select "Setup Wireless Zones"
- ▶ Navigate to an available zone
- ▶ Scroll down to "Learn"
- ▶ Press and hold the "Learn" button on the W-XP-R for 1 second.

> NOTE: For tamper monitoring on the W-XP-R program the zone as 'W-KP/Bell/TR'
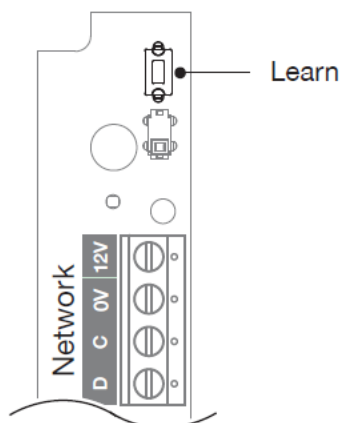
Once configured the PZX-10 will be seen in "Confirmed Devices".

Please refer to the W-XP-R Installation Manual for additional information.

3. Specifications & Standards

Electrical

Supply Voltage:	95 – 265Vac @50/60Hz
Power Supply Type:	A
Rated PSU Output:	7Ah Battery: 0.583A
	17Ah Battery: 1.41A
Nominal Output Voltage:	13.7Vdc
Output Current:	2.75A
Ripple:	0.2V pk-pk
Current Consumption:	95mA
Standby Battery:	7 Ah or 17 Ah SLA
Recharge Time:	<24 hours
Low Voltage Alarm:	10.5V
Deep Discharge Cut-off:	9.5V
Over Voltage Cut-off:	16V
Fuses:	Mains: 1.6A
	Auxiliary: 1.1A PTC
	Network: 1.1A PTC
	Battery: 2A PTC
Network:	4-Wire standard 7/0.2mm alarm cable up to 500m
On-board Zones:	10
Outputs:	10; Outputs 1 - 8 Switched to 0V @100mA, Outputs 9 – 10 Switched to 0V @1A
Loudspeaker Output:	Minimum load of 16 Ohm

Environmental

Operating Temperature:	-10°C to +55°C
Storage Temperature:	-20°C to +60°C
Max. Humidity:	95% non-condensing
EMC:	Residential, Commercial, Light Industrial & Industrial

Physical

Dimensions:	Polymer: 338mm x 287mm x 88mm
	Metal: 390mm x 390mm x 95mm
Material:	Polymer: 3mm ASA
	1.2mm Mild Steel
Packed Weight:	Polymer: 2.0 Kg Metal: 5.3 Kg

BS EN ISO 9001 : 2015
Registered Firm
Certificate No. GB2005228

International
Accreditation Board
Registration No. 0044/1

Security

PD 6662:2017

EN 50131-1:2006+A1:2009

EN 50131-3:2009

Grade 3, Class II

EMC

Conforms to European Union (EU) Electro-Magnetic Compatibility (EMC) Directive 2014/30/EU and EN 50130-4:2011+A1:2014

EMC Environment: Residential / Commercial / Light Industrial / Industrial

CE: You can view the product EC Declaration of Conformity here: www.orisec.co.uk/compliance

WEEE Directive: 2012/19/EU Compliant: This symbol indicates that according to local laws and regulations, this product should not be disposed of as municipal/household waste. Instead, it should be disposed of at the appropriate collection points designated for the recycling of electrical and electronic equipment, or returned to Orisec upon purchase of new replacement products. This will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

RoHS RoHS Directive: 2011/65/EU Compliant:

Orisec declares that this product complies with and conforms to RoHS legislation that it does not contain more than the agreed levels of: Lead (Pb), Cadmium (Cd), Mercury (Hg), Hexavalent chromium (Cr6+), Polybrominated biphenyls (PBB), Polybrominated diphenyl ethers (PBDE)

Manufacturer: Orisec Ltd, 1 St Crispin Way, Haslingden, Lancashire. BB4 4PW. United Kingdom.

Warranty

The Orisec PZX-10 is guaranteed against defects in material or faulty workmanship for a period of 2 years from the date of purchase.

Disclaimer: Orisec will not accept any liability based on a claim that the Orisec PZX-10 failed to perform correctly as it is a component part of an installation and not a complete intruder alarm system.

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