Hydrosense HSCP
Ancillary Board (K580)
Operation and Maintenance Manual

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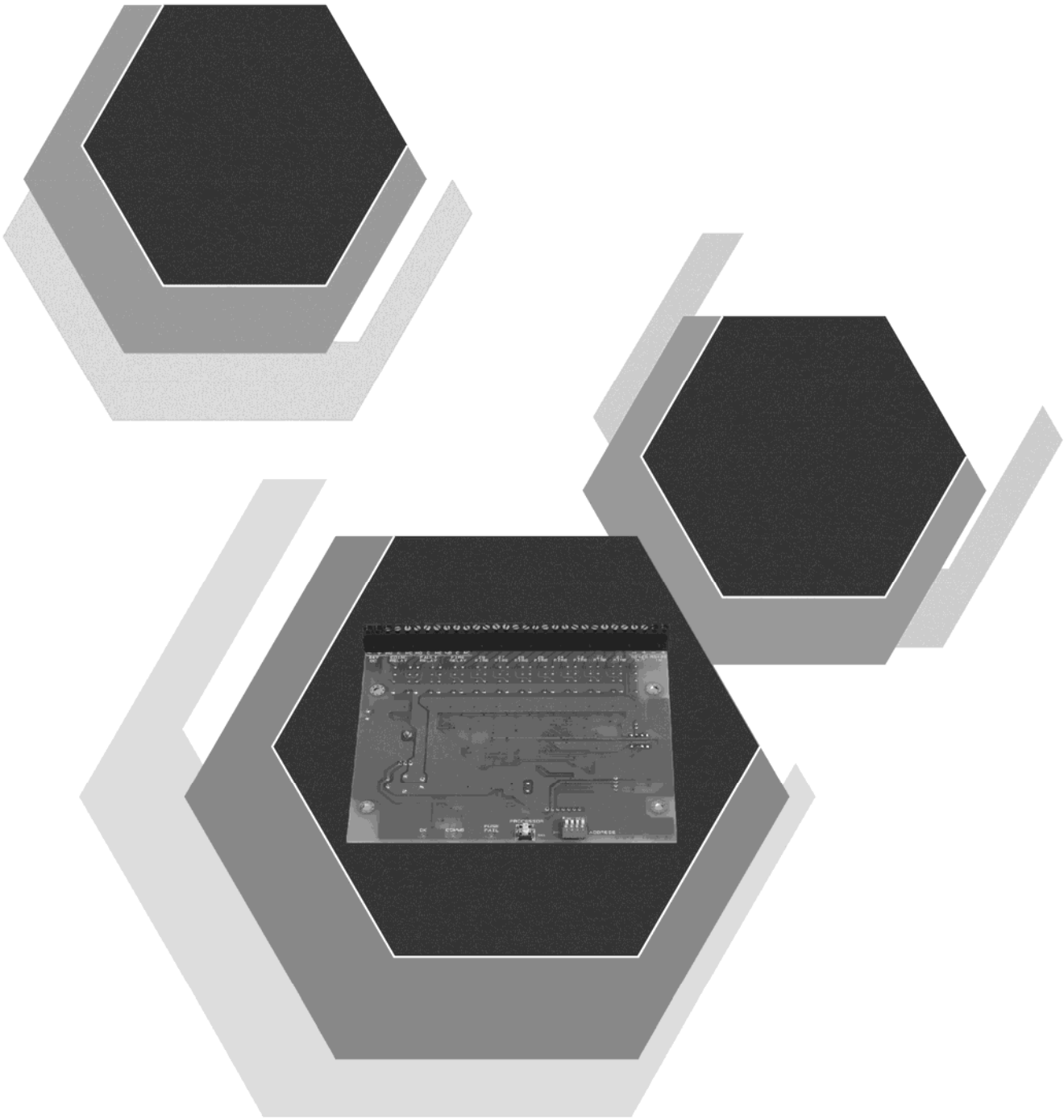

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1. Introduction

The Hydrosense CP ancillary board provides a means to extend Alarm, Fault, Coincidence and zonal alarm volt free contacts to locations remote from the control panel via a 2 core data bus.

The Hydrosense CP ancillary board may not be used to fulfil the requirements of any parts of EN54-1, EN54-2 or EN54-4 and is intended only for additional signalling and control purposes.

The board will typically find applications in plant control, interface to other systems and geographical mimics.

The Ancillary board is compatible with all Hydrosense CPcontrol panels.

Up to 7 ancillary boards can be connected to a control panel and each is allocated an address from 1 to 7 using a binary coded DIL switch.

The total length of the data cable from the main panel to the last ancillary board must not exceed 1200 metres.

2. Safety and mounting

Suppliers of articles for use at work are required under section 6 of the Health and Safety at Work act 1974 to ensure as reasonably as is practical that the article will be safe and without risk to health when properly used.

An article is not regarded as properly used if it is used 'without regard to any relevant information or advice' relating to its use made available by the supplier.

This product should be installed, commissioned and maintained by trained service personnel in accordance with the following:

(i) IEE regulations for electrical equipment in buildings

(ii) Codes of practice

(iii) Statutory requirements

(iv) Any instructions specifically advised by the manufacturer

According to the provisions of the Act you are therefore requested to take such steps as are necessary to ensure that you make any appropriate information about this product available to anyone concerned with its use.

This Ancillary board is designed for indoor use only and at temperatures between -5^0C and $+40^0$C and with a maximum relative humidity of 95%.

Operation outside of these limits may render the equipment unreliable and unsafe.

Mounting

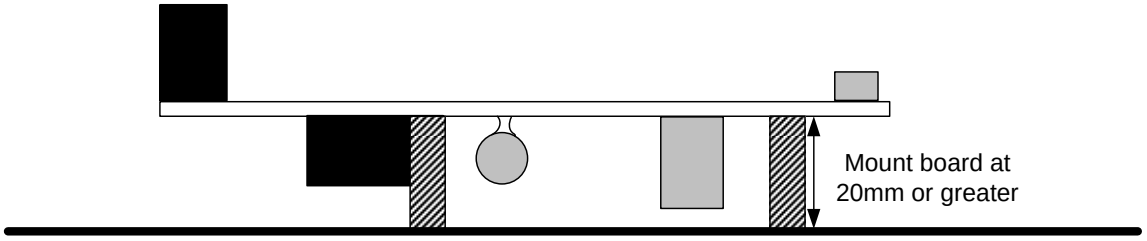
If not fitted inside a Hydrosense CP or Hydrosense CP-R panel, the board should be mounted in a suitable enclosure such that it is protected from ingress of water, dust or foreign bodies.

It should be positioned in an accessible place as agreed with the end user.

Suitable fixings should be used at all fixing points such that the board and enclosure are securely mounted and not liable to move once fixed.

The enclosure should not be mounted near sources of excessive heat.

Cables should be connected using suitable, metal, shielded cable glands. All swarf and debris caused by drilling of additional cable entries must be cleared before power is applied.



3. Technical specification

Table 1 - Electrical specifications

Power supply	21 to 30 V DC	*Nominal 24V DC*
Maximum ripple current	200 millivolts	
Maximum current draw	0.25 Amps	*In full alarm*
Mains failed current consumption	20 milliamps	*In standby mode*
Zonal relay contact rating	30VDC 1A Amp maximum for each	*Maximum ratings not to be exceeded*
Fault relay contact rating	30VDC 1A Amp maximum for each	*Maximum ratings not to be exceeded*
Alarm relay contact rating	30VDC 1A Amp maximum for each	*Maximum ratings not to be exceeded*
Coincidence relay contact rating	30VDC 1A Amp maximum for each	*Maximum ratings not to be exceeded*
Terminal capacity	0.5mm^2 to 2.5mm^2 solid or stranded wire	
Cabling - power	FP200 or equivalent	*Metal cable glands should be used*
Cabling - communication	RS485 data cable or FP200	*Maximum total cable distance 1200 metres. Metal cable glands should be used*
Size	155 X 135 X 30	*Millimetres*
Fixing	Four 4mm holes	*One in each corner of the board*

4. Connecting to the circuit board

All connections for field wiring are to rows of terminals along the top and bottom of the circuit board.
Shielded alarm cable such as FP200 for power and RS485 data cable for comms and metal cable glands should be used for all connections to the board.
The resistance of any core of any cable must not exceed 25 ohms. The shields of the cables should be bonded securely to the enclosure via metal glands.
Wiring should enter the enclosure and be formed tidily to the appropriate terminals.
Terminals are capable of accepting wires of up to 2.5mm^2.
Wiring must not go across the front of the circuit board. If cable entries need to be in positions other than at the knockouts provided, wiring must be fed well away from the surface of the circuit board.

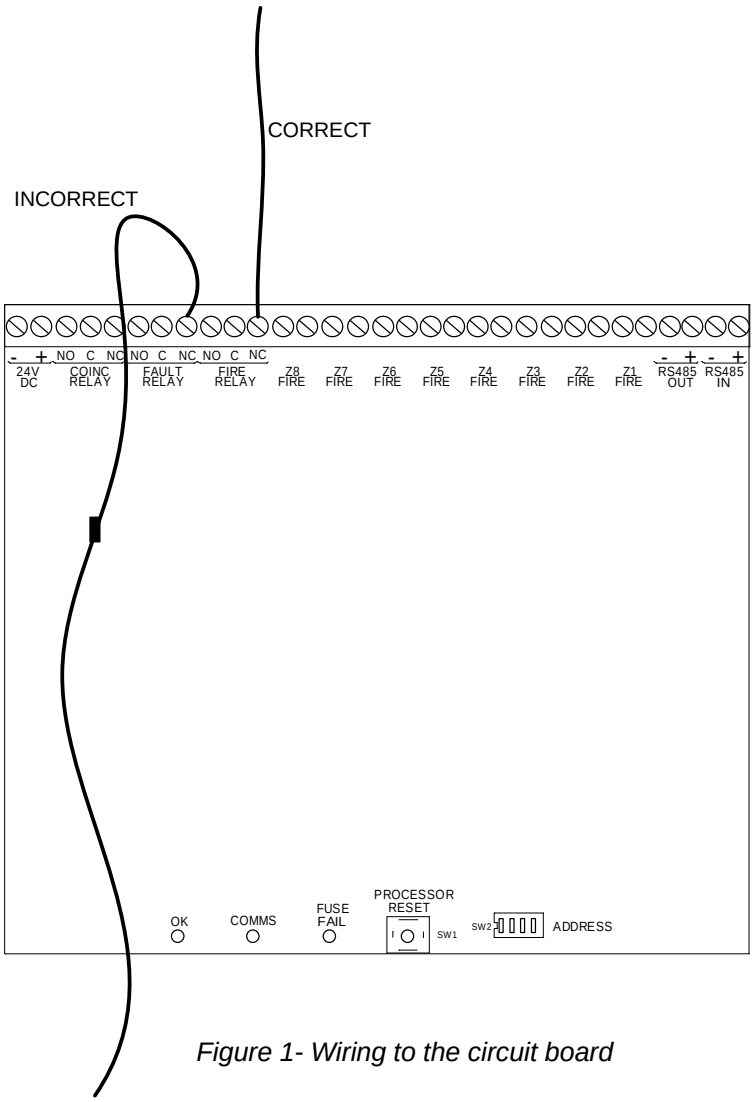


Figure 1- Wiring to the circuit board

5. Connection to relay contacts

Volt free relay contacts are provided.
These contacts are rated for switching signalling circuits only and the maximum ratings listed in table 1 on page 4 should not be exceeded under any circumstances.
If voltages or currents exceeding those in table 1 on page 4 need to be switched then a suitable relay or contactor device should be interposed between the ancillary board and the system to be controlled.

Fault relay

The fault relay is normally energised and will de-energise upon any fault condition including total loss of power.
When all faults are cleared at the control panel to which the ancillary board is connected, the fault relay will re-energise.

Alarm relay

The alarm relay will energise upon activation of a alarm condition on any of the zones at the control panel. The relay will remain activated until the control panel to which the ancillary board is connected is reset. This relay will also operate upon activation of the remote AL input on the main control panel.

Coincidence relay

The coincidence relay will operate upon activation of detection devices on zones at the control panel which have been configured to contribute to coincidence. The coincidence relay will not operate in response to call points alone.
The coincidence relay will remain operated until the control panel is reset.

Zonal relays

Zonal relays are labelled Z1 to Z8 and will operate in conjunction with the activation of zones on the control panel to which the ancillary board is connected. Zonal relays will remain activated until the control panel is reset.

6. 24V Input

The ancillary board requires a nominal 24V DC power supply to operate. This can be taken from the AUX 24V output of the panel to which the ancillary board is connected or another 24V DC source if this is more convenient.
Four power terminals are provided so that 24V DC wiring can be taken into the ancillary board and then out again onto other ancillary boards or other equipment.

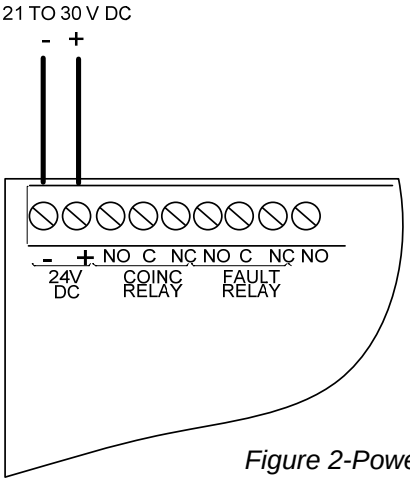


Figure 2-Power connection

7. Connection to main panel and repeater panels

If power is supplied locally to the ancillary board only two wires are required from the main panel.

Wiring can be standard alarm cable such as FP200 or shielded data cable. In either case, the shield of the cable must be securely bonded to the enclosure case at both ends.

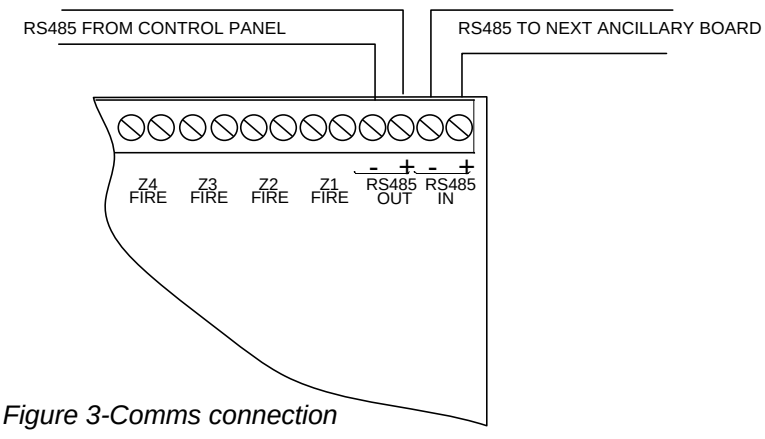


Figure 3-Comms connection

To terminate the data cable correctly, the last ancillary board or repeater connected must have jumper J2 fitted as shown below.
For the position of J2 on repeater panels see HydrosenseCP-R repeater operation and maintenance manual.

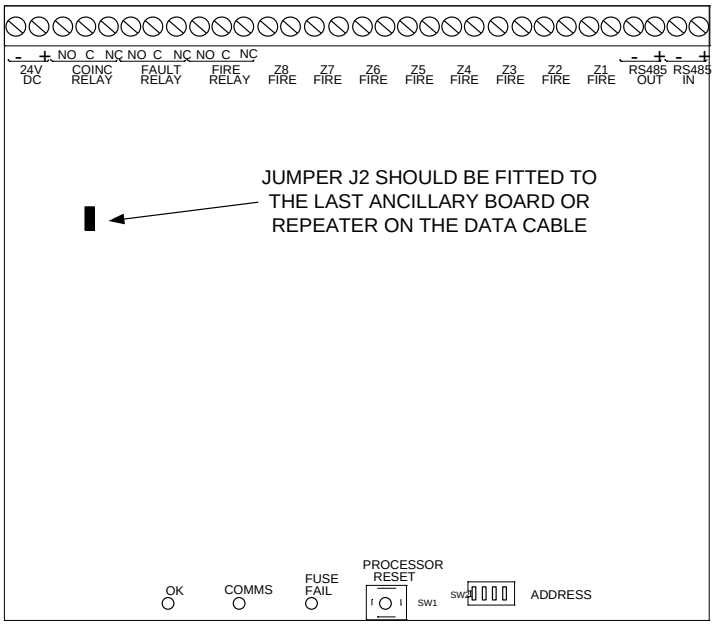
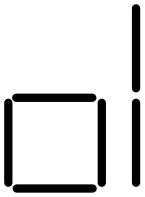


Figure 4-Comms terminating jumper

After ancillary boards have been connected to the main panel, the main panel has to “learn” how many ancillary boards it has connected to it. This is necessary so that the main panel can announce a fault condition if one or more ancillary boards become disconnected.

To “teach” the main panel how many ancillary boards are connected, ensure that all ancillary boards have the data cable connected with the correct polarity. Check that all ancillary boards are supplied with power and that the green, OK LED is lit at each one. Enable the control panel with the keyswitch and slide the Write Enable switch to the right.

Press the processor reset switch on the main panel PCB. The main panel will display the address of the first ancillary board it finds on the seven segment LED display as show below.



This indicates ancillary board 1 (o1). To accept this, the enter button on the main panel should be pressed whereupon, if more ancillary boards are found, their addresses will be displayed and must be accepted by pressing the enter button once again. This is repeated until all of the ancillary boards are recognised by the main panel. Slide the Write Enable switch back to the left.
If an ancillary board becomes disconnected after it is “learned” by the main panel, the main panel will display a comms fault and the number of the ancillary board on the seven segment LED display.
The ancillary board that has become disconnected from the main panel will also display a comms fault on its COMMS LED.

8. Operation

8.1 Normal condition
Under normal conditions, ancillary boards will have only the green, *OK* LED lit.

8.2 Alarm condition
Upon receipt of an alarm condition by activation of a detector or call point on the main control panel, the *alarm* relay will operate and the zonal relay will operate.

8.3 Coincidence operation
If more than one zone which has been configured to contribute to coincidence activates on the main panel the C*oincidence* relay will operate in addition to the zonal and common alarm relays.

8.4 Fault condition
If there is a fault condition at the main panel the Fault relay will operate.

8.5 Fuse fail
The ancillary board is fitted with a 1 Amp rated, self resetting electronic fuse. This fuse protects the electronics of the ancillary board and prevents any excessive loading of the power supply that is powering it. If this fuse operates, the yellow *Fuse* LED will light.

8.6 COMMS
If the ancillary board loses communication with the control panel to which it is connected, the COMMS LED will light.

8.7 Reset switch
Once started, the microprocessor controlling the panel should continue to run the ancillary board continuously without interruption. If the microprocessor fails to run correctly it can be reset by pressing the RESET button on the PCB.
This should not normally be necessary but should be done as a matter of course if the system is behaving abnormally. The system should resume normal operation within a couple of seconds of pressing the processor reset button.

8.8 Address switch
Ancillary boards can have an address in the range 1 to 7. The address is set in binary notation on the 4 way DIL switch. Bit 4 of the DIL switch is not used.
Address settings are shown below.

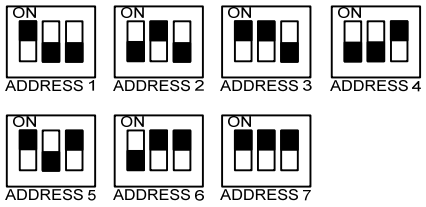


Figure 5- Address setting

9. Power requirements

The ancillary board requires a 24V DC power supply which connects to the terminal block labelled 24V DC. ”
The power supply should be capable of supplying a minimum of 250 milliamps to cater for a fully loaded board with all outputs activated.

When supplied from the Hydrosense CPpanel extra battery capacity of 0.6Ah per ancillary board connected should be allowed to give 24 Hour standby.

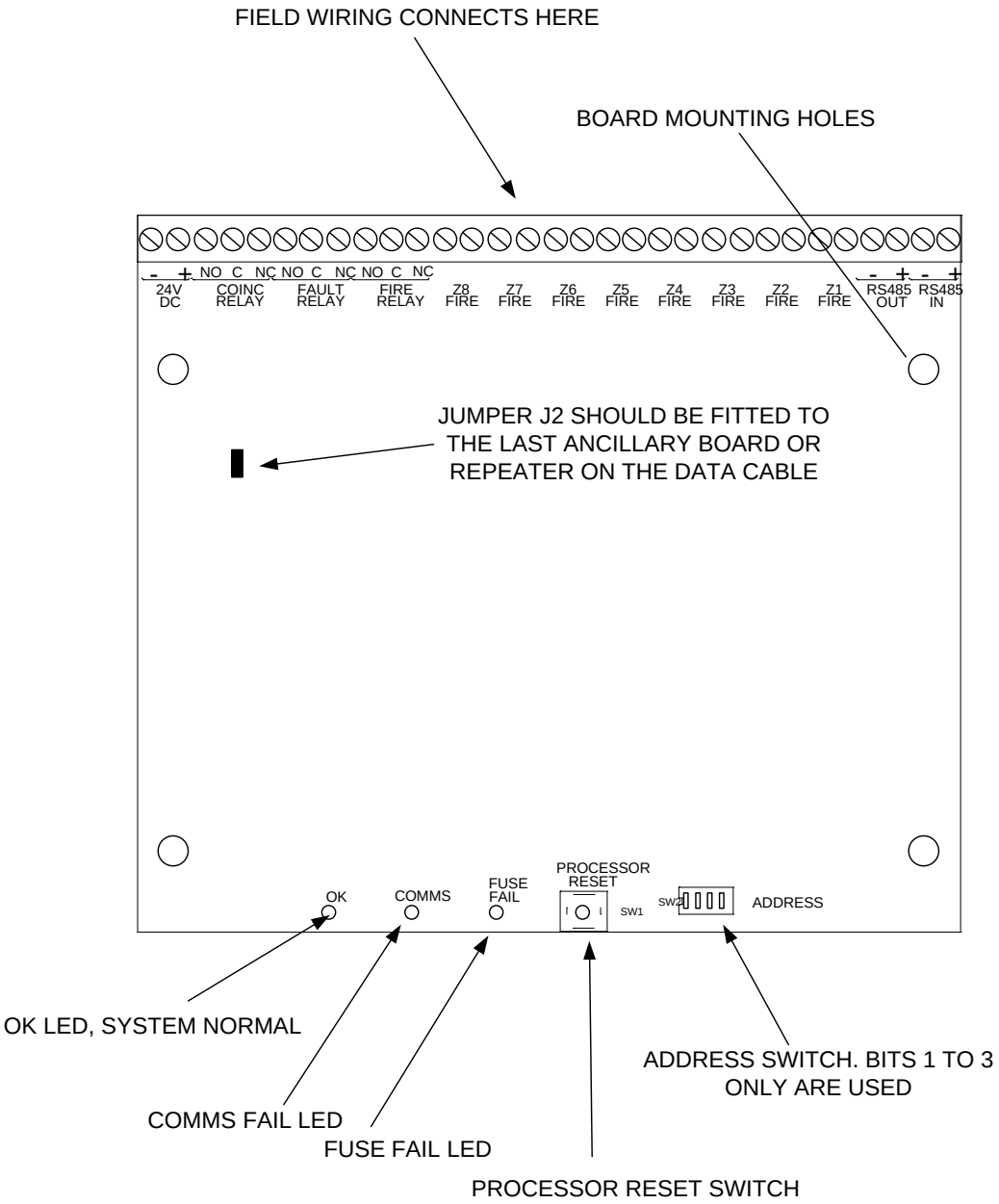


Figure 6- Overview