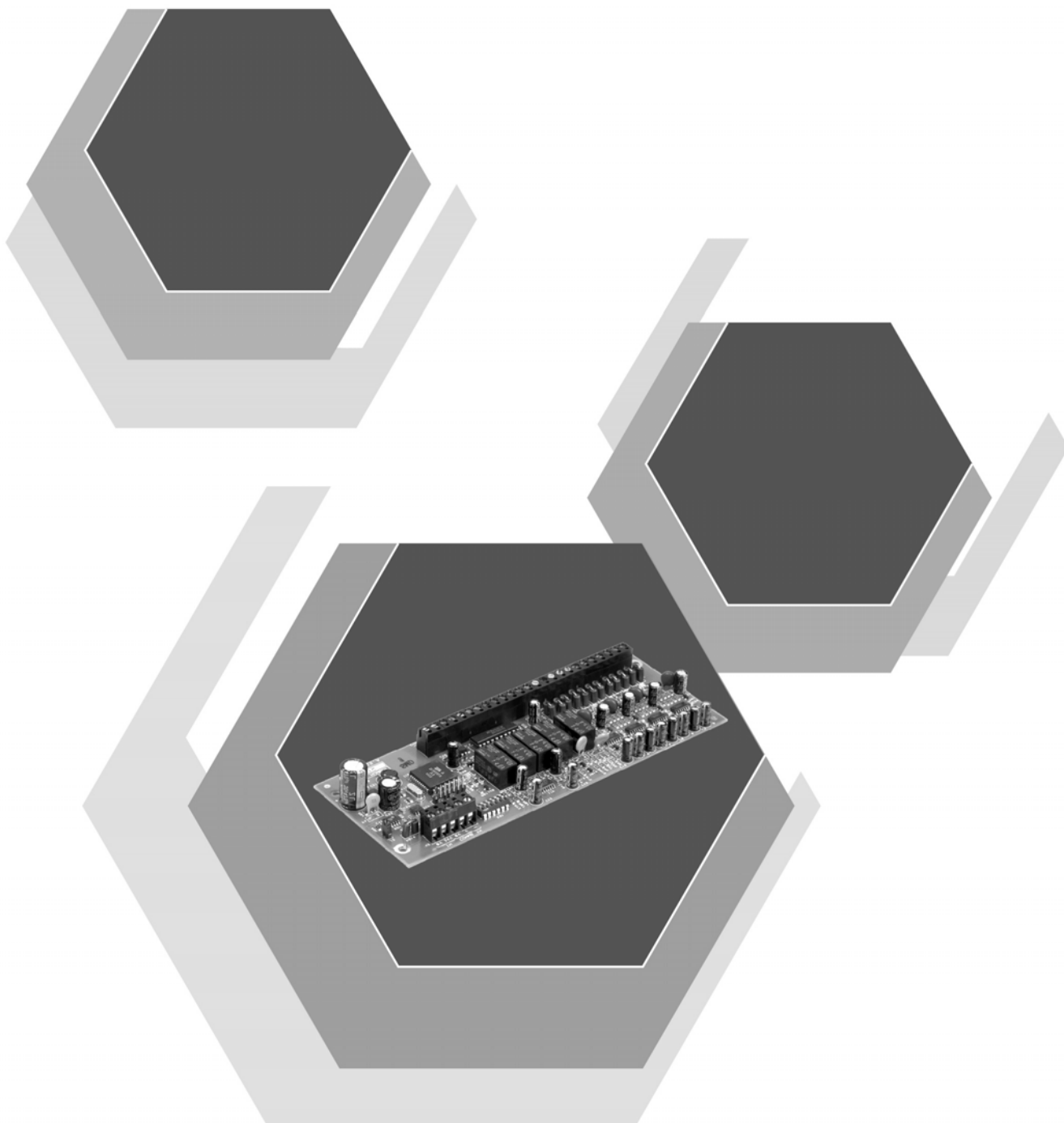


Syncro

Multi Loop Analogue Addressable Fire Control Panel

Conventional Detection Board Manual

Man-1077 Issue 06 April 2014



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1. General

To further enhance the versatility of the Syncro fire alarm system, conventional detectors or call points can be connected and integrated using the conventional detection board.

These boards have 4 monitored detection inputs, each of which can support up to 30 conventional detectors and call points.

In addition to the detection inputs each board has two monitored sounder outputs and two volt-free changeover contact outputs, one for fire and one for fault.

Up to 32 of these boards can be connected to the dedicated RS485 communications bus in the control panel giving the capability of 128 conventional detection circuits and 64 sounder outputs.

The Conventional detection boards may be mixed on the RS485 bus with 6 way sounder boards, 16 channel I/O boards or 8 way relay boards to provide a very flexible system of I/O to satisfy almost any requirement.

Detection inputs and sounder outputs are configurable in the same way as devices connected to the loops and all may contribute to, or be acted upon, by cause and effect logic.

Standard Syncro control panels contain fixings for one Conventional detection board, Sounder board, Relay board or I/O board, which can easily be connected using four small signal wires to the power and comms bus connectors within the panel.

2. Detection Inputs

Detection inputs provide current limited, resetting power suitable for most types of conventional detectors. Monitoring is achieved by fitting a 6K8 end of line resistor at the last device on the detection line. Power is removed from all detection lines for 5 seconds when the reset button at the main fire control panel is pressed, thus resetting any activated detectors.

Each detection input has a red and a yellow LED associated with it. The red LED illuminates when the detection input is activated by a detector or call point and the yellow LED illuminates if the wiring to the detection circuit becomes short circuited or if the end of line resistor becomes disconnected.

The inputs of the Conventional detection board are not suitable for the connection of intrinsically safe barriers. If intrinsically safe barriers are required, these can be connected via loop modules manufactured by the suppliers of loop devices.

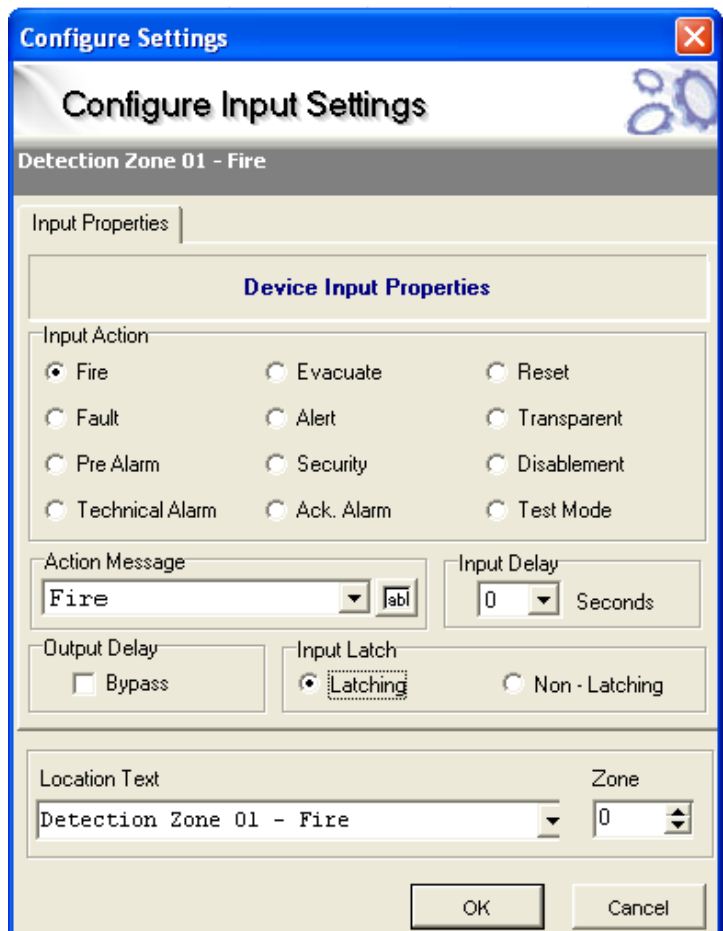
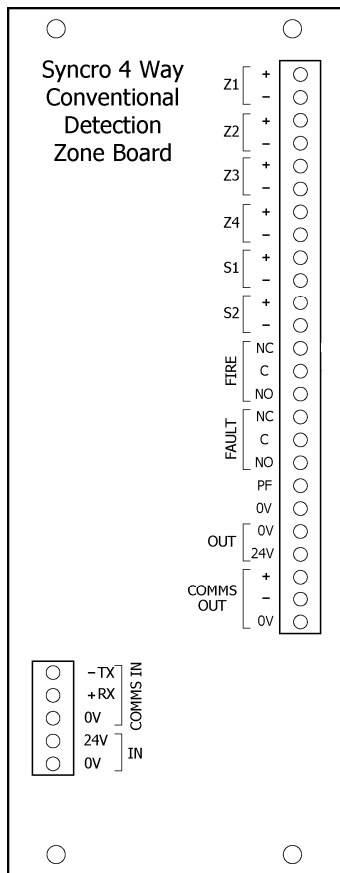
A maximum load of 1.6 milliamps may be connected to each detection input which allows around 30 detectors of most types to be fitted. For an accurate calculation of the numbers of detectors that can be fitted this calculation may be used :

$(1600/\text{quiescent current of detector in microamps}) - 1 = \text{number of detectors that can be connected.}$

The characteristics of the detection zone inputs have been designed to carefully match those of Kentec K3000 series conventional control panels and as such can be used as direct replacements for these or in any situation where K3000 control panels would be suitable.

The trigger resistance required to activate the zone is nominally 470 Ohms. The actual range of resistance that will activate the zone is around 100 to 800 Ohms.

Detection inputs may be re-configured via the Loop Explorer configuration programme in the same way as all other input devices. They cannot be made non-latching, but this should not be used when monitoring smoke or heat detectors as the zone voltage is not removed when the panel is reset and therefore these conventional detectors will not reset from the fire state.



3. Sounder Outputs

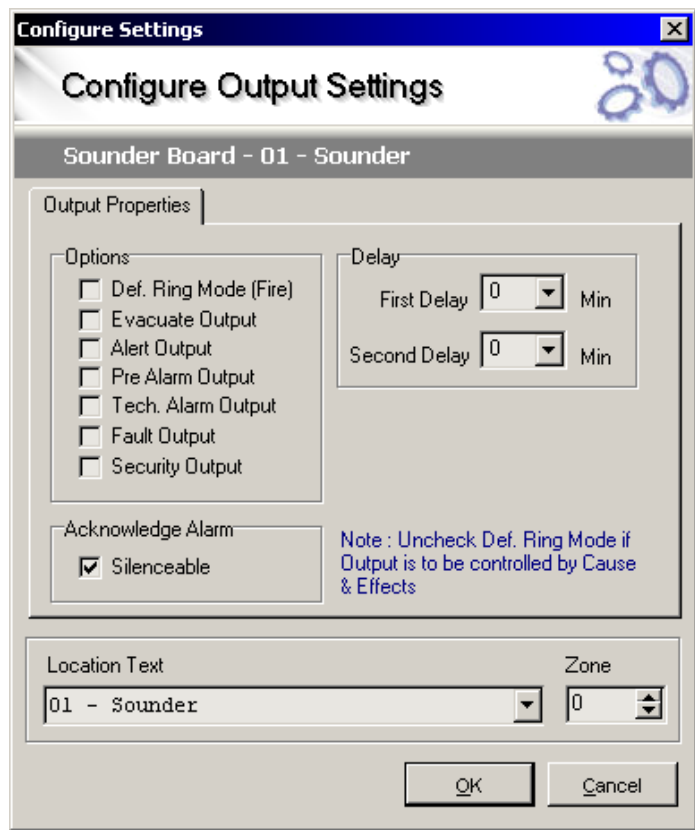
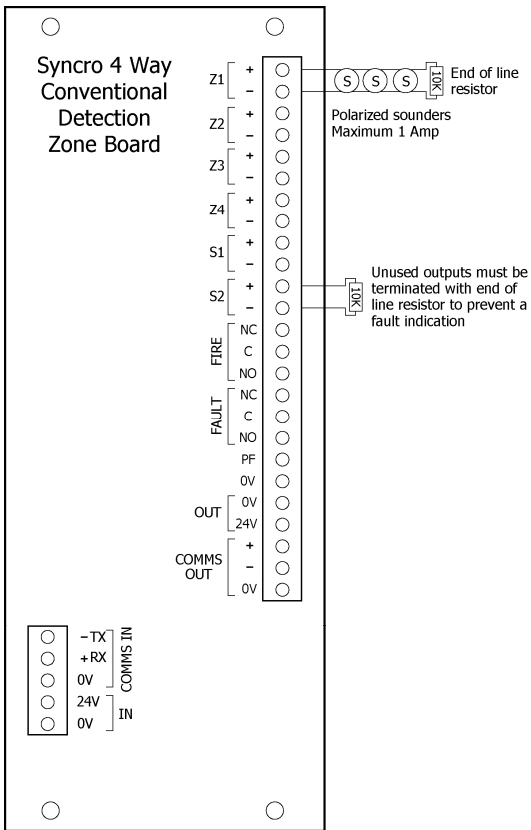
The two sounder outputs are open and short circuit monitored by fitting a 10K 0.25W resistor across the last device fitted to the field wiring.

Each output is protected by a 1 Amp, self resetting electronic fuse. A short circuit or overload on one of the outputs will not prevent the other outputs from operating.

All sounder devices used with the board must be polarised. Connecting non-polarised devices to the circuit will result in a fault indication on the board and at the control panel.

Although each of the sounder outputs is fused at 1 Amp, consideration should be given to the rating of the power supply that is powering the board.

When using many sounder outputs or high power sounder outputs, use a separate power supply (see power supply section).



Sounder outputs can be used to provide monitored outputs for other events using the Loop Explorer configuration programme.

4. Fire contact

A volt free changeover contact is provided which by default will operate upon any fire condition from one of the four detection inputs. The contact can be re-programmed to operate upon other conditions using the Loop Explorer configuration programme but will revert to operation in response to any of the detection zone inputs activating if communication is lost to the Syncro control panel via the RS485 bus. The contact is rated at 1 Amp, 30 Volts DC maximum.

5. Fault contact

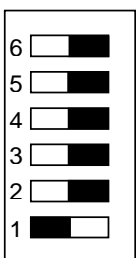
A volt free changeover contact is provided which by default will operate upon any fault condition on the monitored inputs or outputs on the detection board. The contact can be re-programmed to operate upon other conditions using the Loop Explorer configuration programme. The fault contact will operate if communication is lost to the Syncro control panel via the RS485 bus and upon total power failure. The contact is rated at 1 Amp, 30 Volts DC maximum.

6. Addressing

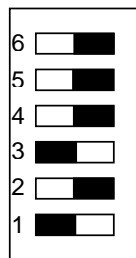
Up to 32 Conventional detection, Sounder, Relay or I/O boards may be connected to a control panel and in order for the panel to recognise them individually; each board must be allocated an address.

This is done via a DIL switch (as is used on many field devices) and setting a binary number. Care should be taken where more than one board is used to give each board a unique address setting.

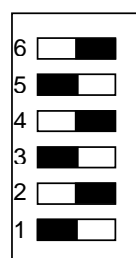
Some example address number settings are shown below



ADDRESS 1



ADDRESS 5



ADDRESS 21

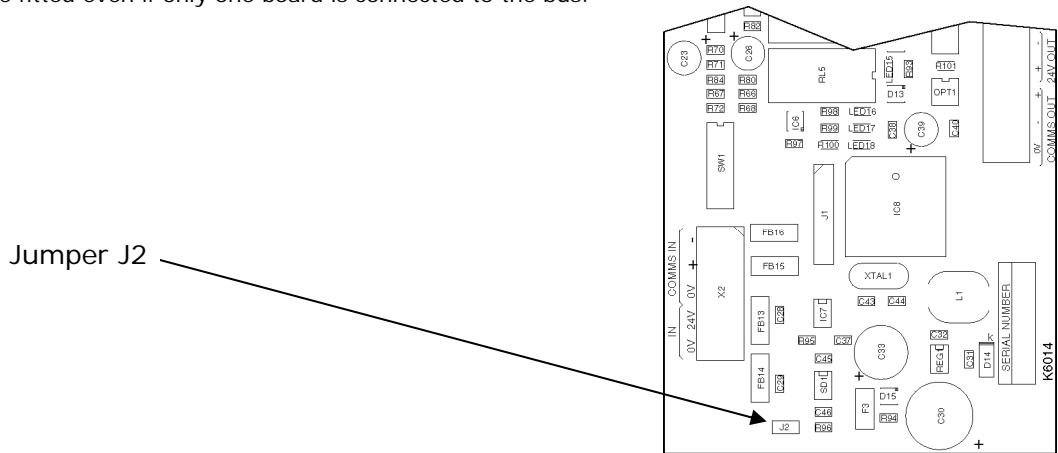
Shows switch actuator in the ON position.
For Address 32 all switches must be off.

Switch Number – 1 2 3 4 5 6
Value – 1 2 4 8 16 not used

7. Jumper connection

The last board connected to the RS485 communications bus, must have a terminating jumper fitted at position J2 as shown here. Only one board connected to the RS485 bus should have a jumper fitted.

This jumper should be fitted even if only one board is connected to the bus.



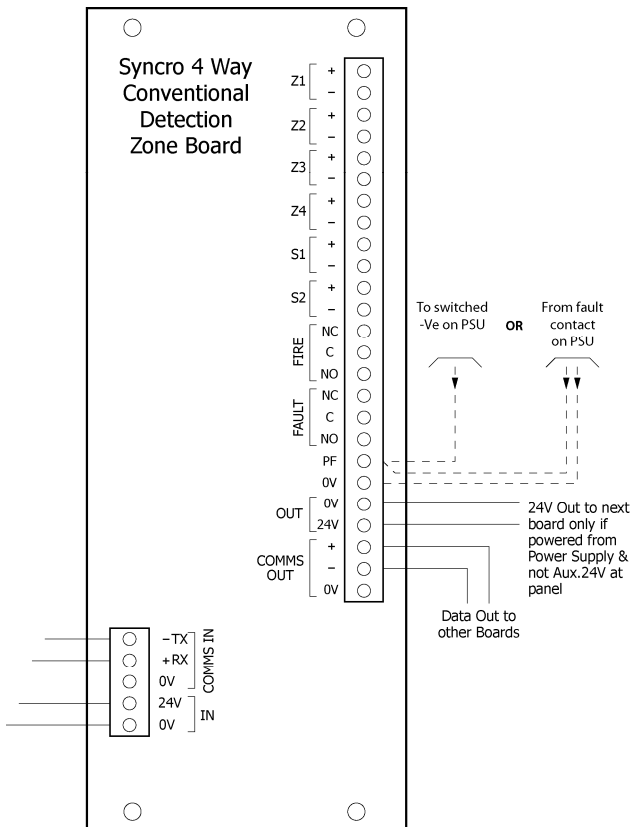
8. Power connections

The Conventional detection board requires a nominal 24V DC supply. This can be between 21 and 30 volts DC, a voltage range, which suits battery-backed systems.

The total power consumption of the boards must be considered when connecting a power supply. Each sounder output is fused at 1 Amp which gives a potential current consumption of 2 Amps and each activated input will typically consume 30 milliamps which could be another 120 milliamps.

If the total load connected to the panel (including any sounders connected to the loops or the standard sounder outputs in the panel) exceeds the maximum available from the Syncro panel power supply, a separate power supply of suitable rating should be connected to the power terminals of the conventional detection board.

Connections are provided for both incoming and outgoing power as shown below.



When using an additional power supply, a volt free contact or open collector signal which operates to signal power fault should be connected to the PF input on the detection zone board.

9. Power consumption – battery standby

The power consumption of detection boards must be carefully considered when calculating battery standby. Each detection board has a current consumption of 69mA and potentially 4X 0.0016 detector load which will require $24 \times 75\text{mA} + 25\% = 2.25\text{Ah}$ of battery capacity per 24 hour standby period.

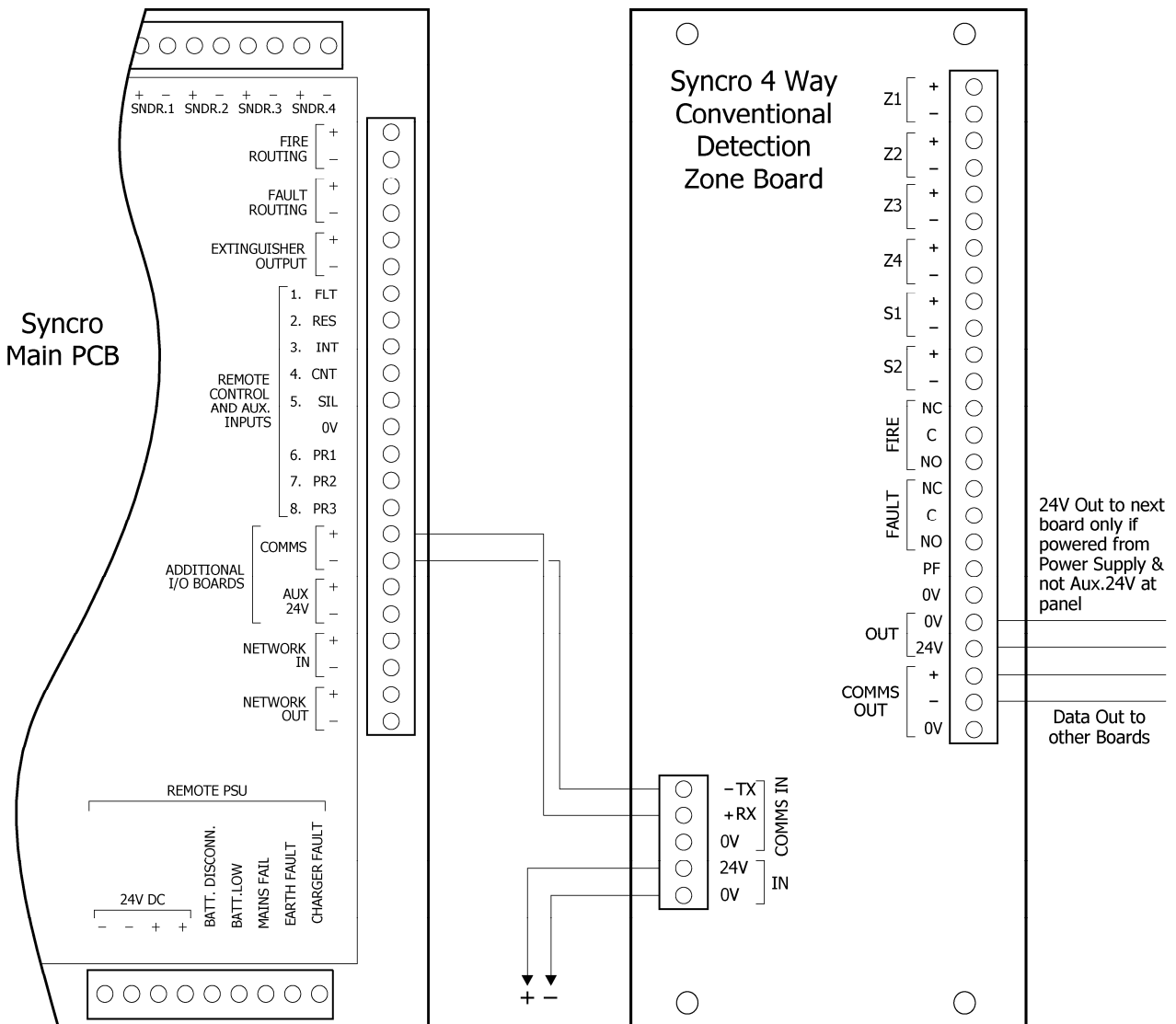
The unit should be able to be in full alarm state for half an hour at the end of the 24 hour standby period. Each input when activated by a nominal 470 Ohm resistor will consume 30 milliamps so this will require $(4 \times .03) \times 0.5 = 0.06 \text{ Ah}$. The sounders must be able to operate for half an hour at the end of the standby period so additional capacity of $0.5 \times$ total sounder load in Amps + 2.25Ah (consumption of board in full alarm) should be added to the required battery capacity to cover this. Assuming a full sounder load this will be $0.5 \times (2 + 0.2) \text{ Ah}$.

10. Comms connections

The panel communicates with the boards using a 2 wire RS485 data bus. This bus is available on the main termination board in the control panel.

Connections to the boards within the control panel can be made with small gauge equipment wire. Connections to boards mounted outside of the control panel should be made using a suitable RS485 data communications cable such as Belden 9271.

Connections are provided for both incoming and outgoing comms as shown below.



11. Indications

LED indicators on the zone board give some simple diagnostic information and show that the boards are communicating with the control panel.

The red LED (LED18) is used to show serial data communication is being received from the control panel.

This LED should be flickering at around 1 second intervals.

If this LED is not lit, then the board is not receiving data from the control panel and the comms connection should be checked.

The yellow LED (LED17) will flicker briefly at around 1 second intervals when the board responds to the main panel.

If this LED does not flicker then it is not responding to the control panel and the comms connection should be checked.

These simple indications are not designed to provide detailed diagnostic help but should assist in establishing whether boards are communicating correctly with the control panel.

Red and yellow LEDs are provided for each of the four detection zones and the two sounder outputs. The yellow LED indicates an open or short circuit fault on the input or output and the red LED indicates that the input or output is operated. Faults on the outputs are transmitted to the main control panel.

Each of the two volt free relay outputs has a red LED to indicate when the output is operated.

12. Specifications

Part number – S545

Supply voltage range – 21 to 30 Volts DC

Detection input end of line resistor value – 6K8 5%

Sounder output end of line resistor value – 10K 5%

Quiescent current consumption (power fault condition) – 69 milliamps

Full alarm current consumption (assuming 470R trigger resistance on all inputs) – 200 milliamps

Current per sounder output – 1 Amp maximum

Output contact rating – 30 V DC 1 Amp

Communications – RS485 two wire

Maximum distance from control panel – 1200 metres (subject to correct type of cable)

PCB size – 190mm X 74mm

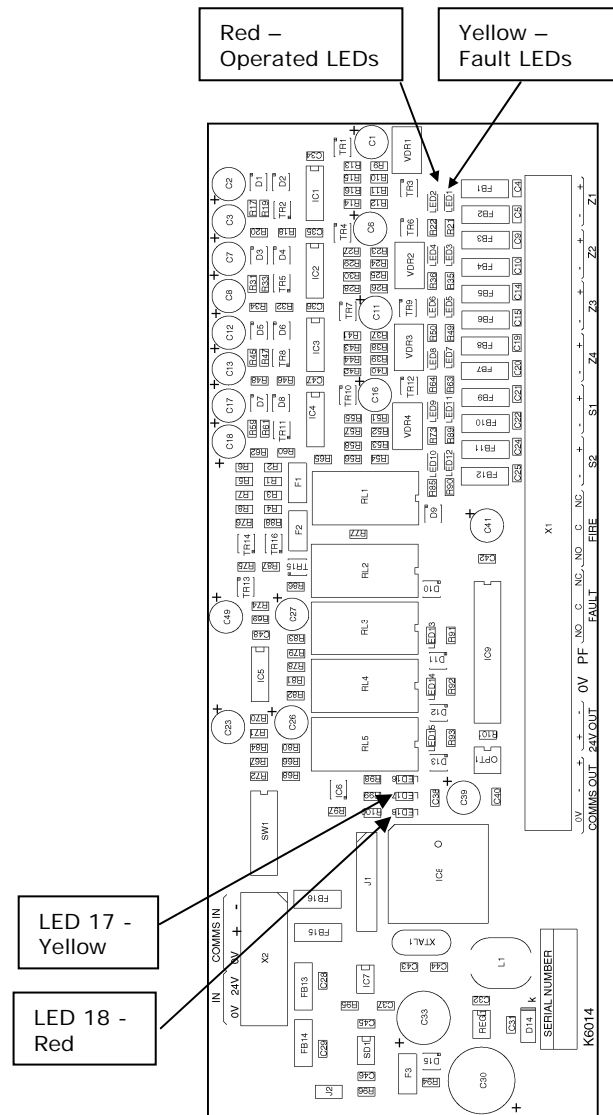
Fixing centres – 51.5mm X 180mm

Cable capacity – 2.5mm² per terminal

Operating temperature - -5° to +50° Celsius

Operating humidity - <95% non-condensing

Control panel compatibility – Compatible with control panels fitted with software version 3.96 upwards



13. Typical wiring scheme

