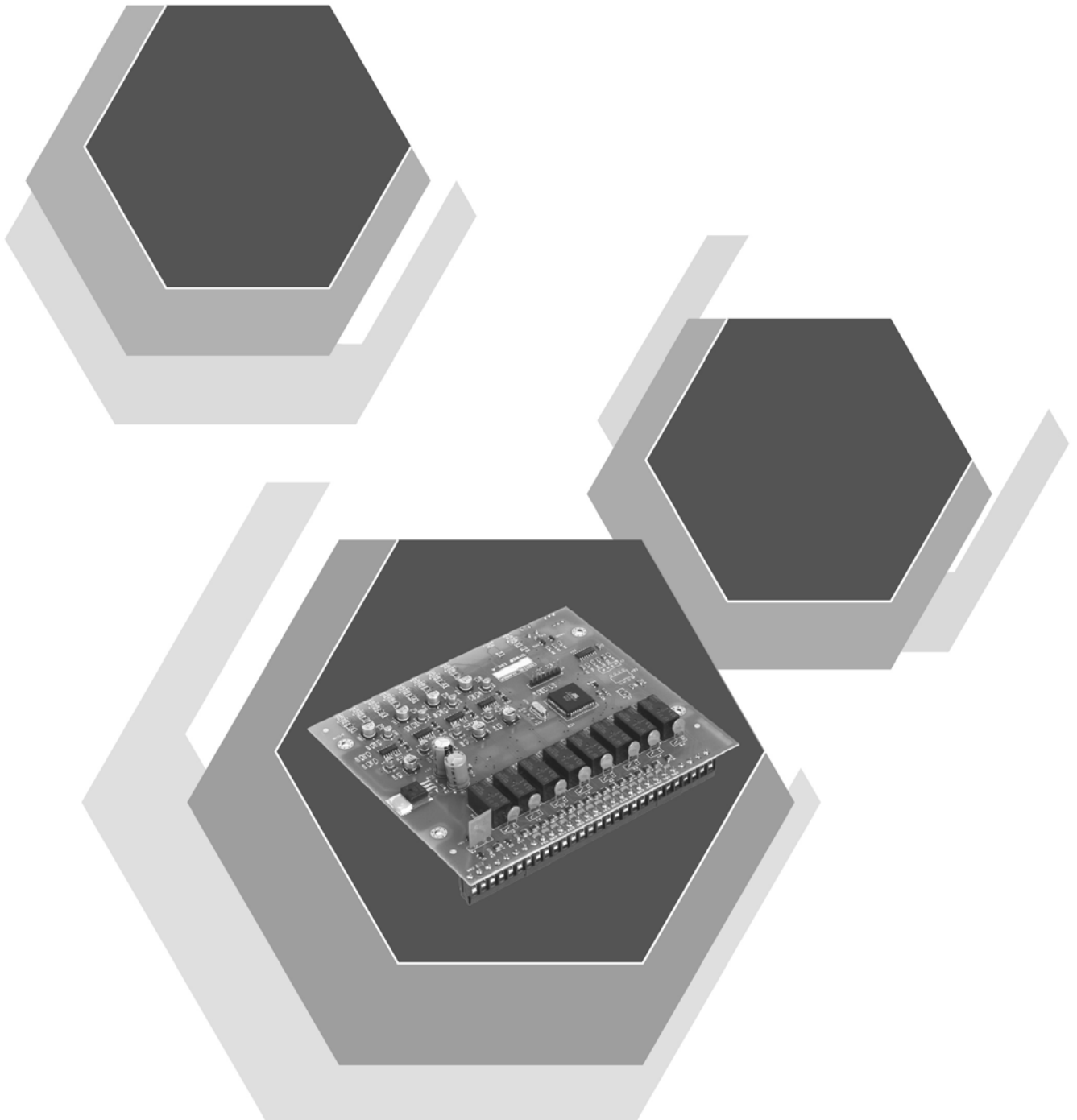


Sigma CP Sounder Board (K461)

Operation and Maintenance Manual

Man-1098 Issue 04 June 2013



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1. Introduction

The Sigma CP Sounder board can provide up to 8 additional sounder outputs from Sigma CP conventional fire panels via a 2 core data bus and an additional power supply.

Sounder outputs are configurable as common, zonal or two stage alarm.

The Sounder board is compatible with all Sigma CP control panels with software versions Sigma242.hex onwards.

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

All sounder outputs are voltage reversing and monitored for open and short circuit faults using a 10K end of line monitoring resistor.

The Sigma CP control panel power supply is not suitable for powering these sounder boards.

2. Safety

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 Sounder board is designed for indoor use only and at temperatures between -5°C and $+40^{\circ}\text{C}$ and with a maximum relative humidity of 95%.

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

3. Mounting

3.1 S461 PCB

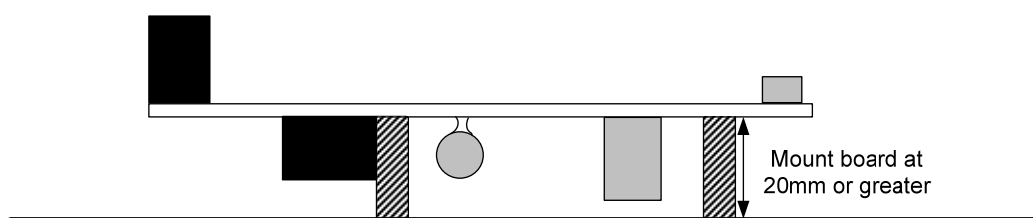
If not fitted inside a Sigma CP panel, the board should be mounted in a suitable enclosure with an IP rating of at least IP30 such that it is protected from ingress of water, or foreign bodies.

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.

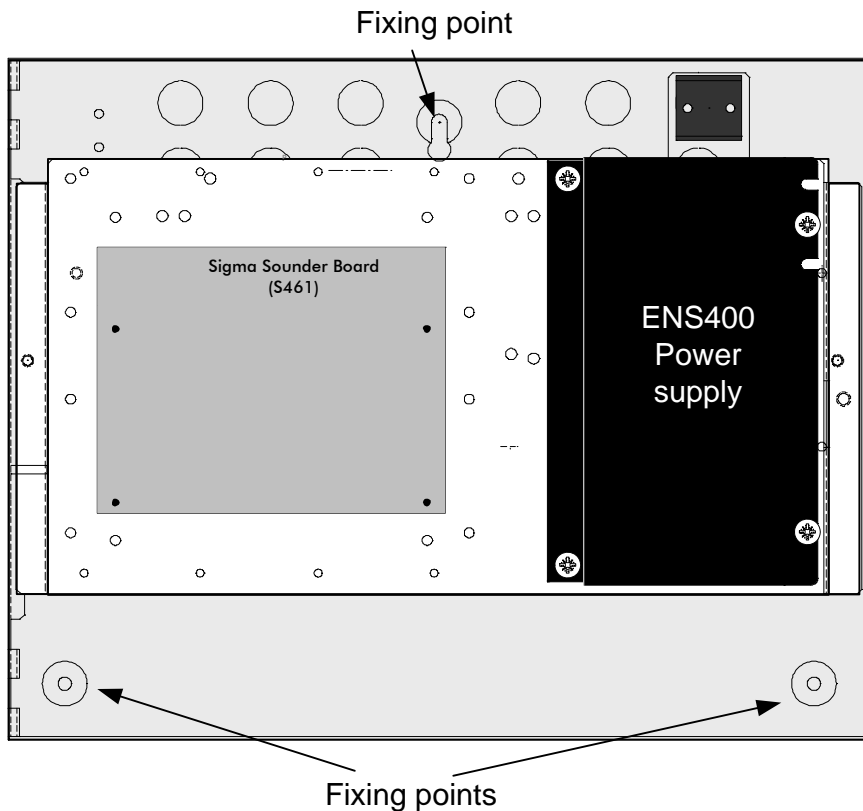


3.2 K04000 and K04400 enclosures

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

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

Cables should be connected using suitable cable glands fitted to the knockouts provided. If additional cable entry points are required, all swarf and debris caused by drilling of additional cable entries must be cleared before power is applied. Mains power should be fed through the supplied ferrite ring in the top right of the enclosure.



4. Technical specification

Table-1 - Electrical specifications

Power supply	21 to 30 V DC	Nominal 24V DC
Maximum ripple current	200 millivolts	
Maximum current draw	4 Amps	In full alarm
Mains failed current consumption (quiescent)	37 milliamps	In standby mode
Mains failed current consumption (alarm)	240 milliamps	All outputs in alarm
Individual Sounder output rating	1 A	Maximum ratings not to be exceeded
Total sounder load across all sounder outputs	4A	Maximum ratings not to be exceeded
End of line monitoring resistor	10K 1/4W	Supplied in terminals
Terminal capacity	0.5mm ² to 2.5mm ² solid or stranded wire	
Class change input	Via normally open contact	< 100 ohms resistance
Power fault input	Switched -ve	< 100 ohms resistance
Cabling - power	FP200 or equivalent	Metal cable glands to be used
Cabling - communication	RS485 data cable or FP200	Maximum total cable distance 1200 metres.
Size (S461 board only)	155 X 135 X 30	Millimetres
Size in enclosure (K04000 and K04400)	385 X 310 X 90	Millimetres
Board Fixings	Four 4mm holes	One in each corner of the board

5. Connecting to the circuit board

All connections for field wiring are to rows of terminals along the top of the circuit board.

Shielded fire 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 2.5mm².

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.

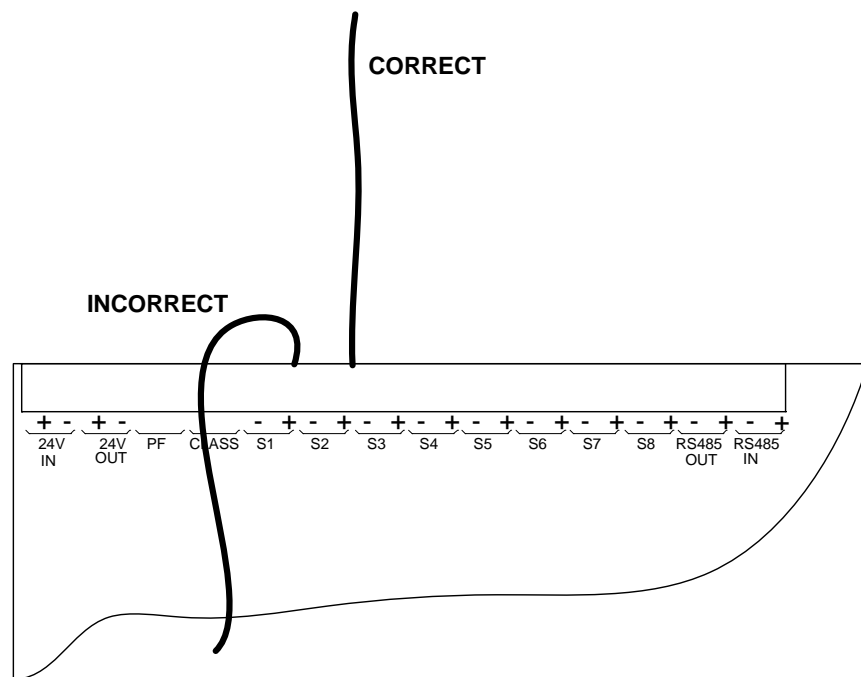


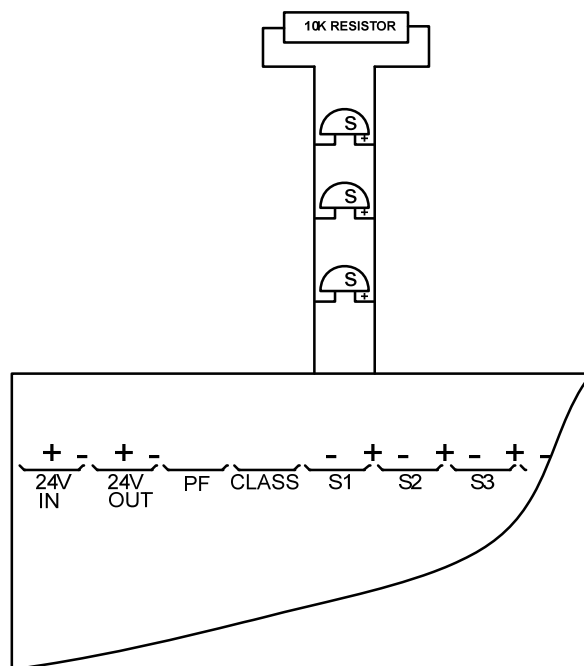
Figure 1- Wiring to the circuit board

6. Connection to Sounder outputs

Sounder outputs are monitored for open and short circuit fault. All sounders fitted to the sounders outputs should be polarised such that no current flows through them when they are connected with reverse polarity.

Each sounder output is fitted with a 10K resistor. This resistor should be removed from the terminals and fitted in parallel with the last sounder on all sounder outputs that are in use.

Each sounder output is fitted with a 1 Amp rated, self resetting electronic fuse. If the fuse trips due to excessive current on the sounder output then the cause of the excessive current must be removed before the fuse will reset.



If connecting to intrinsically safe sounders then a maximum of 2 sounders should be connected to each sounder output via an MTL7778ac zener barrier.

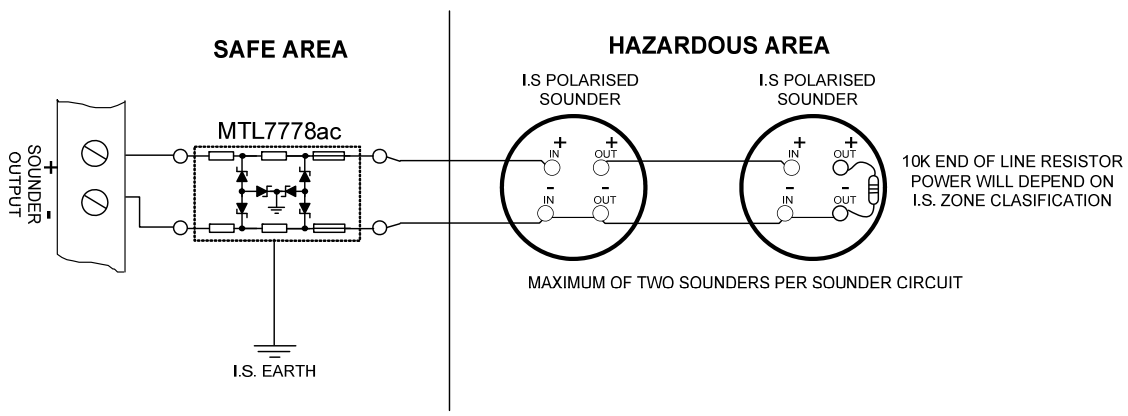


Figure 1-Connection to sounder outputs

The Sounder board requires a nominal 24V DC power supply to operate (21 to 30V). This power supply should be suitably rated to be able to supply sufficient power for the number of sounders that are connected to the sounder board. This will be a maximum of 4A but may be considerably less.

Four power terminals are provided so that 24V DC wiring can be taken into the Sounder board and then out again onto other Sounder or ancillary boards or other equipment.

The sounder board has an input which can send a signal to the fire panel if the remote power supply has a fault (such as mains failure or battery disconnection). This input should be from a normally open contact closing under a fault condition.

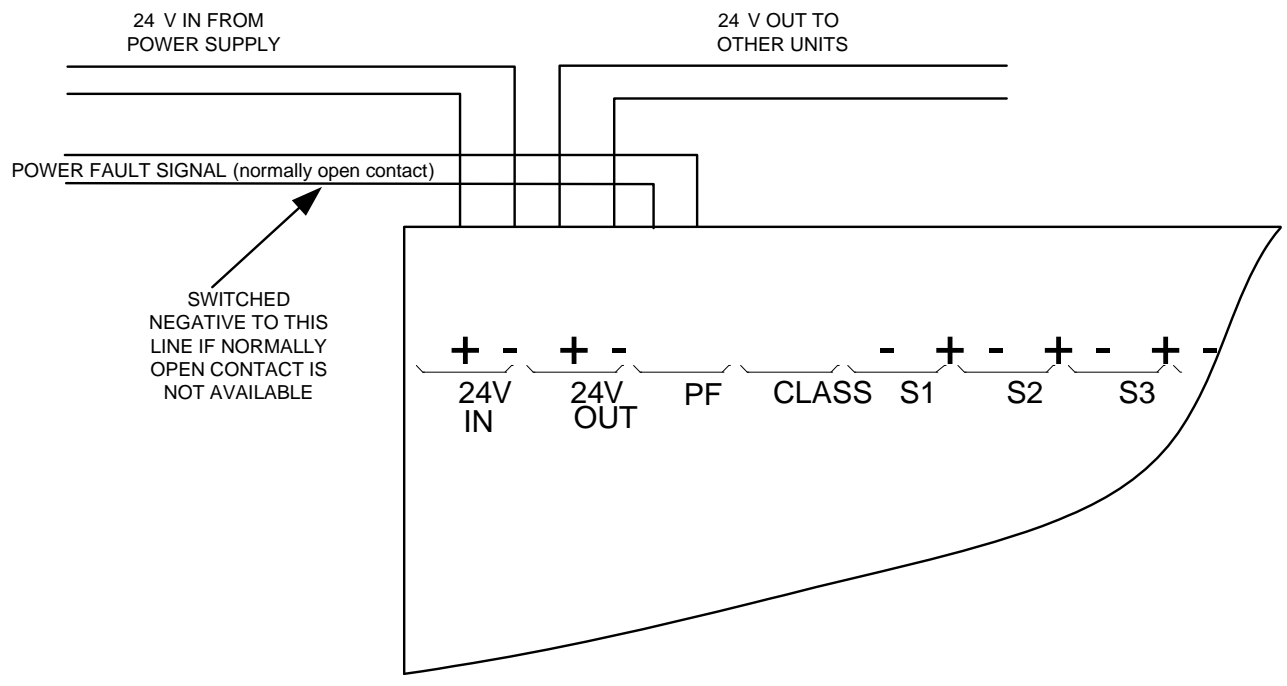


Figure 2-24V Power connection

The power supply should have a suitable battery back up system such that the sounder board will continue to be supplied with power in the event of a mains failure for the duration required for the system (normally 24Hours).

For each sounder board with maximum load (4A) the following battery capacity should be allowed.

- 24 hours – 3.6Ah
- 48 hours – 4.8Ah
- 72 hours – 5.8Ah

8. Class change input

The sounder board has a “class change” input which operates all sounder outputs continuously while the input is activated and switches the sounder outputs off when the input is de-activated.

This input must be activated via a normally open contact, closing upon alarm. The total resistance of the cabling and contact to activate this input should be less than 100 ohms.

Operating the class change input on any given sounder board will not operate the sounders at the panel or any other Sounder boards.

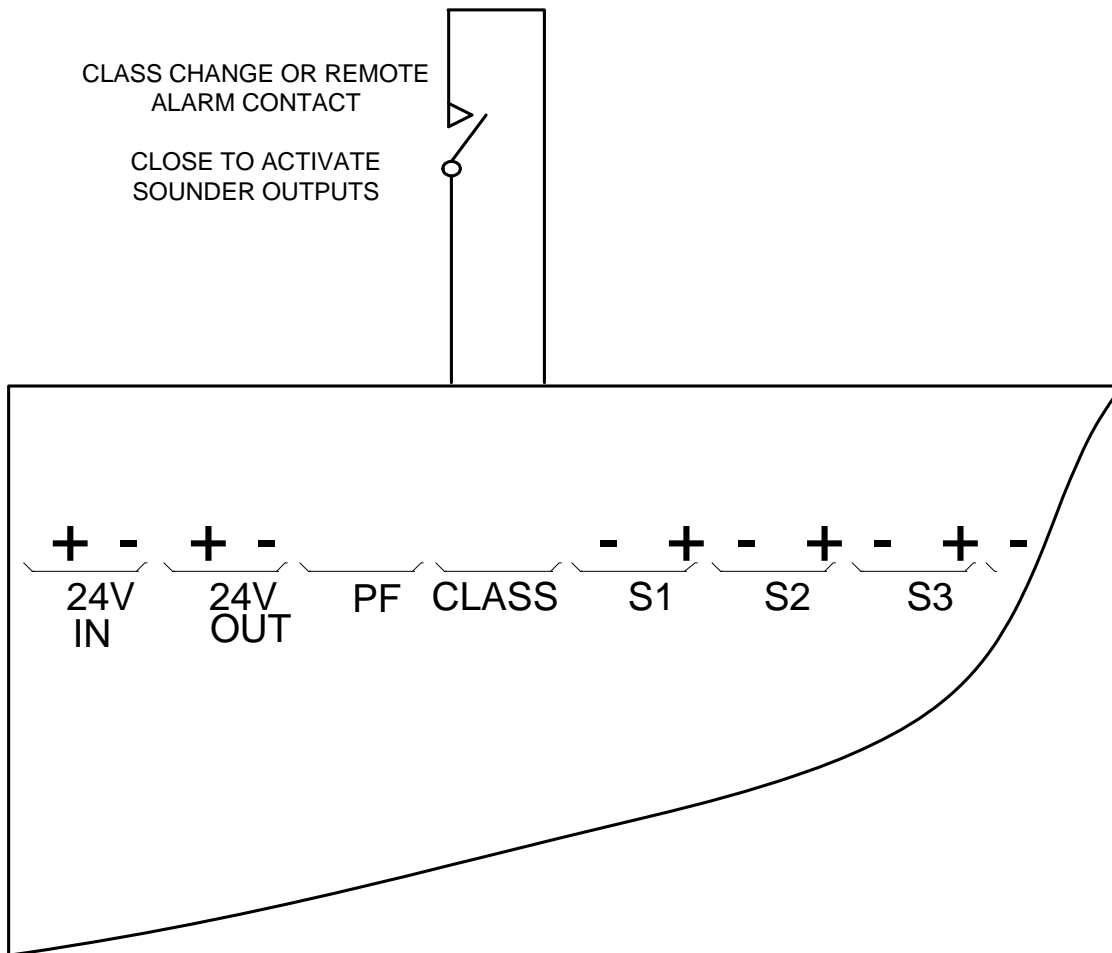


Figure 3-Class change input

9. Connection to the panel and other Sigma CP serial bus devices

Only two wires are required from the main panel.

Wiring can be standard fire 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.

It is important to observe the polarity of the connections for correct operation. + should be connected to + and - should be connected to -

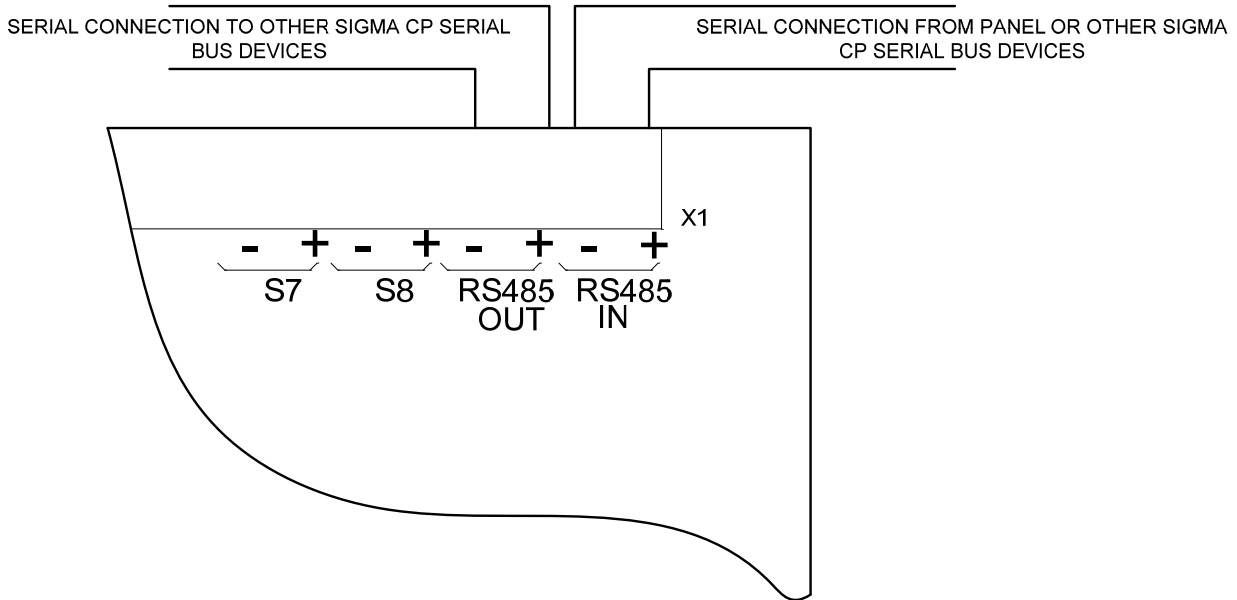
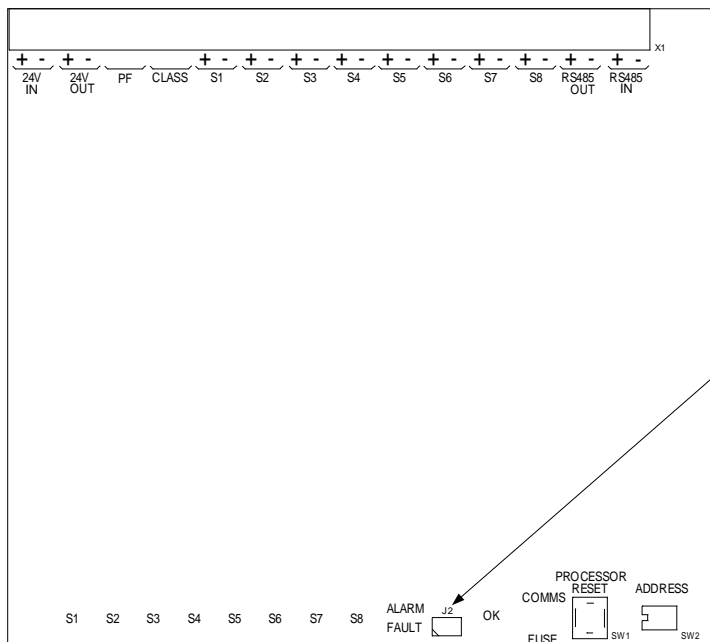


Figure 3-Comms connection



To terminate the data cable correctly, the last Sounder board, ancillary board or repeater connected must have jumper J2 fitted as shown below.

J2

For the position of J2 on repeater panels and ancillary boards see Sigma CP-R repeater and Sigma CP ancillary board O & M manuals respectively.

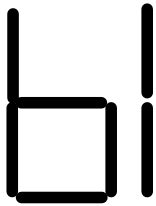
Figure 4-Comms terminating jumper

10. Initialising the Sounder board

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

To “teach” the main panel how many Sounder boards are connected, ensure that all Sounder boards have the data cable connected with the correct polarity. Check that all Sounder boards are supplied with power and that the green, OK LED is lit at each one.

At access level 3, (write enable switch on) press the processor reset switch on the main panel PCB. The main panel will display the address of the first Sounder board it finds on the seven segment LED display as show below



This indicates a Sounder board with address 1 has been found. To accept this, the enter button on the main panel should be pressed whereupon, if more Sounder boards are found, their addresses will be displayed and must be accepted by pressing the enter button again. This is repeated until all of the Sounder boards are recognised by the main panel.

If a Sounder board becomes disconnected after it is “learned” by the main panel, the main panel will display a comms fault and the number of the Sounder board on the seven segment LED display. The Sounder board that has become disconnected from the main panel will also display a comms fault on its COMMS LED.

11. Operation

11.1 Normal condition

Under normal conditions, Sounder boards will have no indicators lit.

11.2 Fire condition

When the main panel enters the Fire condition the outputs of the sounder boards will switch on in accordance with the alarm output settings of the main control panel. The alarm settings are;

Common alarm (setting 10 on fire panel. All alarms operate upon any fire condition).

Two stage alarm (setting 11 on fire panel. Continuous alarm in activated zone, pulsing elsewhere).

Zoned alarm (setting 12 on fire panel. Only sounders connected to zone in alarm operate).

The board has red LED indicators associated with each sounder output which light when the sounder outputs are switched on.

11.3 Sounder fault condition

Each sounder output is monitored for open or short circuit fault. An open or short circuit fault condition will be indicated by yellow LED indicators associated with each sounder output. A Sounder fault and a General fault will also be indicated by the fire panel.

11.4 Fuse fail

The Sounder board is fitted with a 4 Amp rated, self resetting electronic fuse. This fuse protects the electronics of the Sounder board and prevents any excessive loading of the power supply that is powering it. If this fuse operates, the yellow FUSE LED will light.

11.6 COMMS

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

11.7 Reset switch

Once started, the microprocessor controlling the Sounder board should continue to run 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.

11.8 Address switch

Sounder 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.

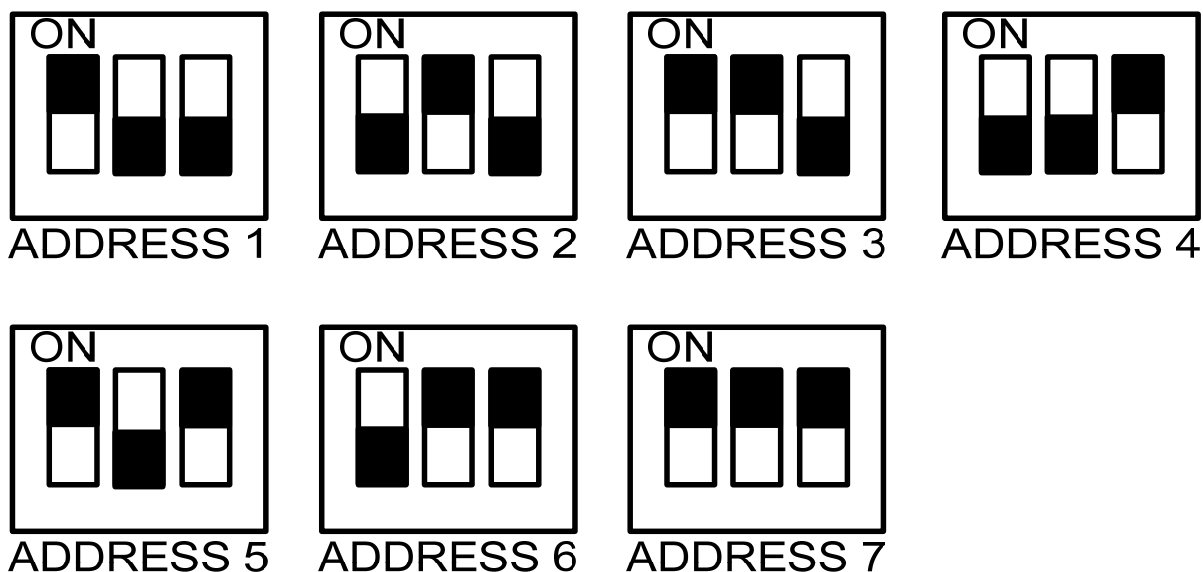


Figure 5- Address setting

12. Overview

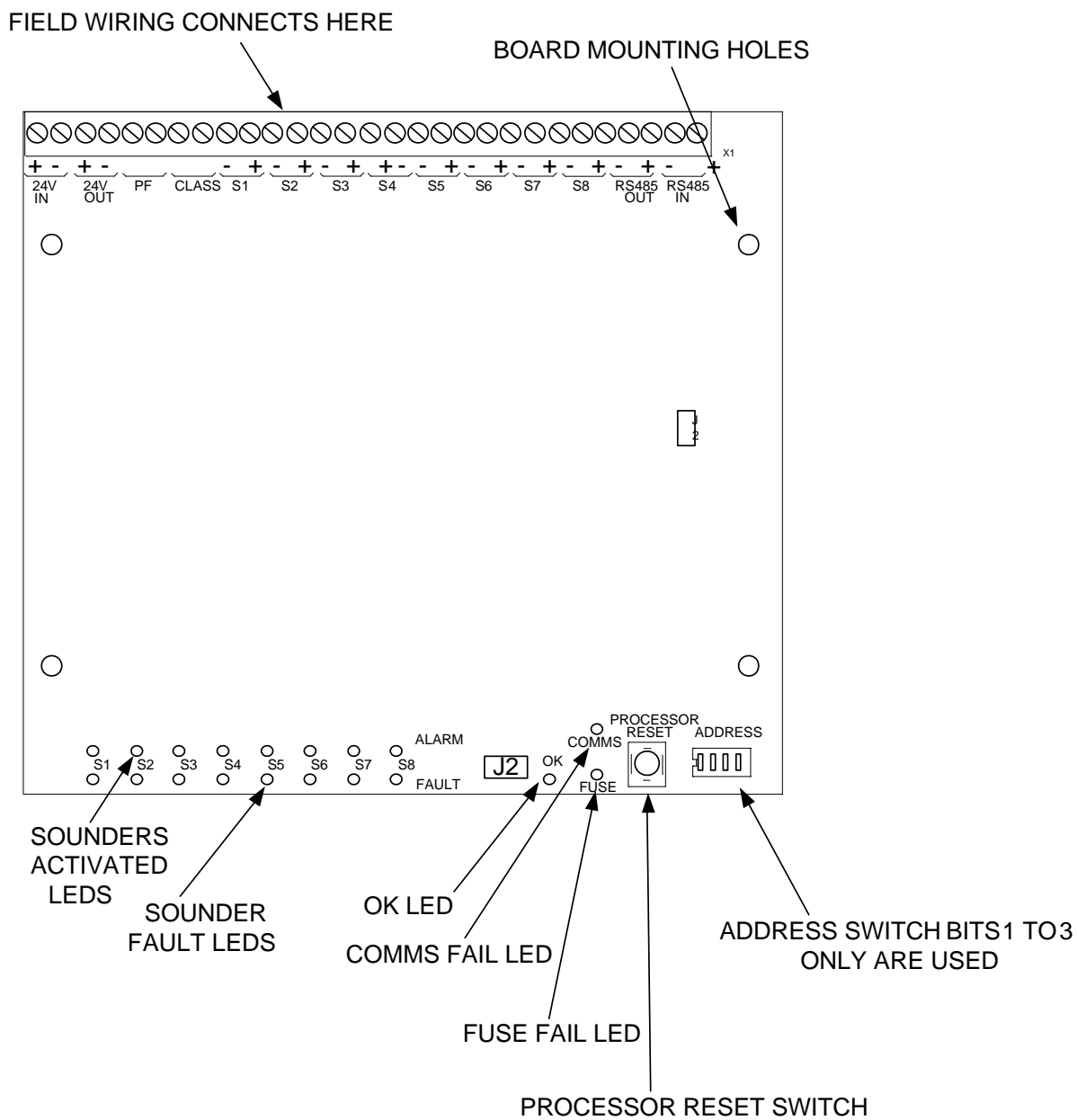


Figure 6 – Overview of Sounder Board

13. System wiring

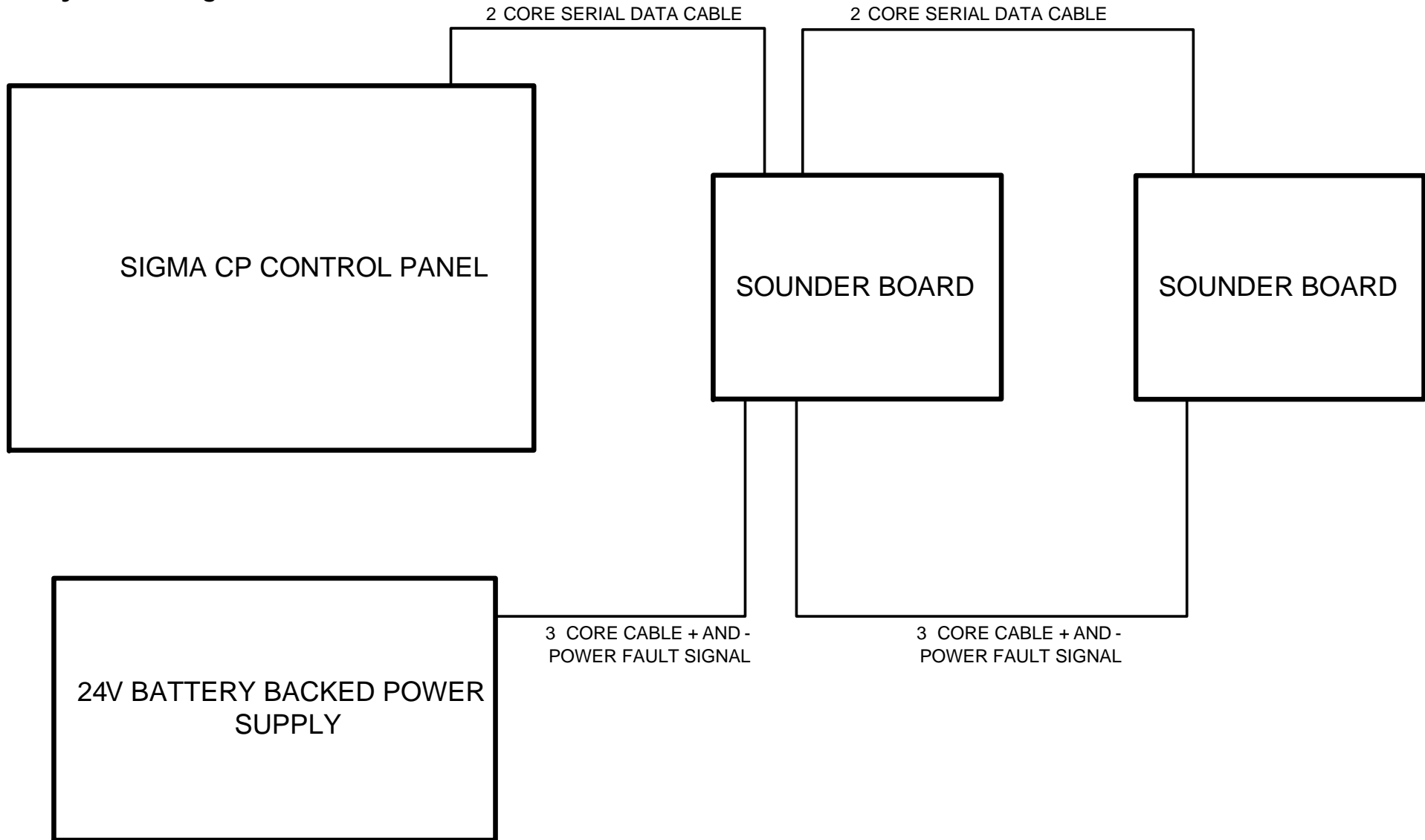


Figure 7- System wiring