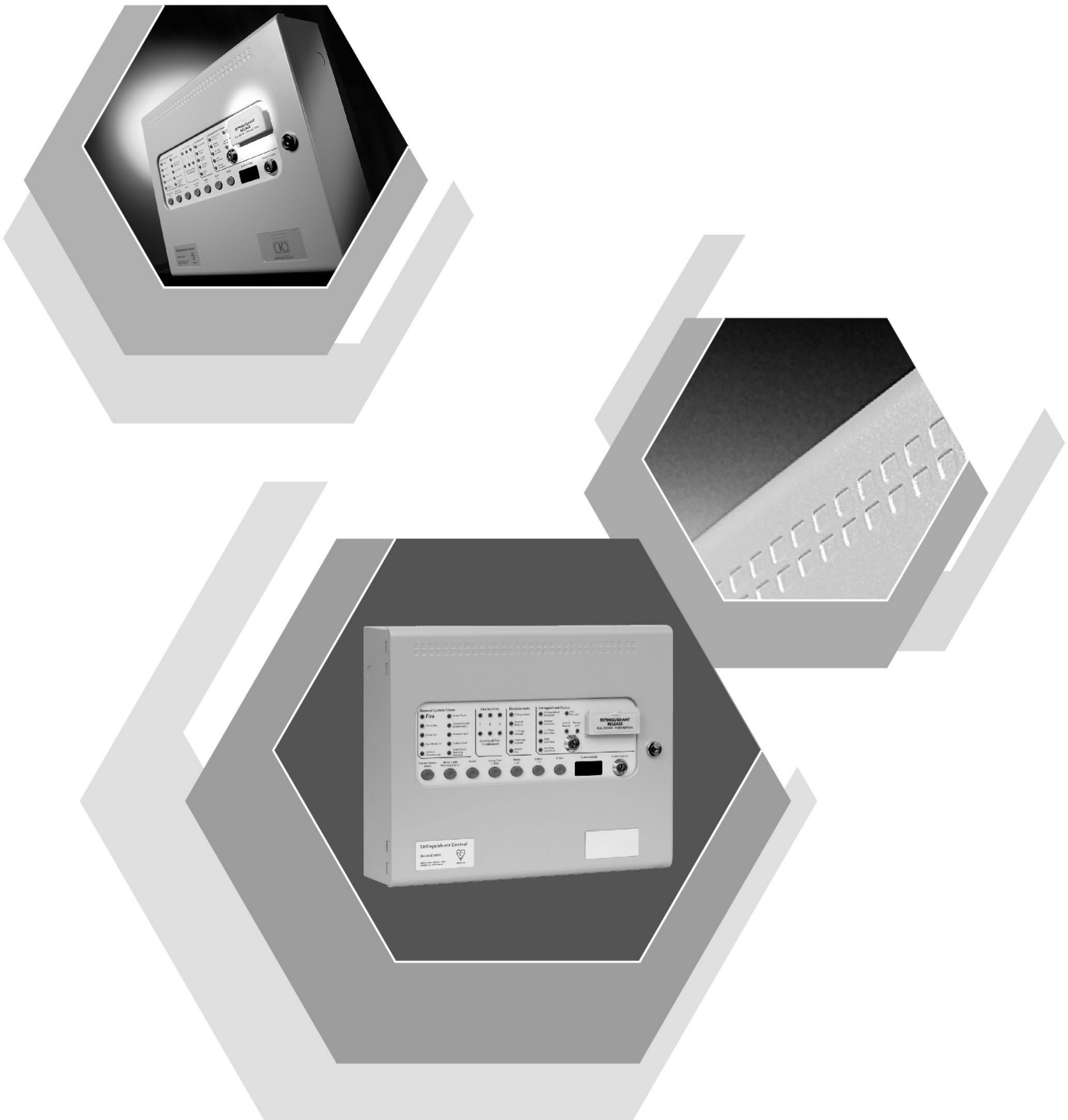
Sigma XT

Extinguishant Control Panel

(K11031M2, K11031F2)

Operation and Maintenance Manual

Man-1088 Issue 30 April 2025



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1. Introduction

The SIGMA XT control panel is designed in accordance with European standards EN54-2 and EN54-4 Fire Detection and Fire Alarm systems - Control and Indicating Equipment and EN12094-1 Fixed firefighting systems - Components for gas extinguishing systems - Part 1: Requirements and test methods for electrical automatic control and delay devices.

The control equipment is a combined fire alarm control panel and extinguishing system and has three detection zones, any or all of which are capable of contributing to the extinguishant release decision.

Control panels have an integral, mains powered battery charger and power supply designed in accordance with the requirements of EN54-4.

In addition to the requirements of EN54-2 the control panel has the following facilities:

Test condition to allow the automatic resetting of zones in alarm for testing purposes. EN54-2 Section 10 option with requirements.

Delay of the actioning of fire alarm devices (sounders) so that an alarm may be verified before a premises is evacuated. EN54-2 Section 7.11 option with requirements.

Fire alarm devices to enable an audible warning to be sounded throughout premises upon the detection of a fire condition or the operation of a manual call point. EN54-2 Section 7.8 option with requirements.

In addition to the requirements of EN54-2, all control panels have voltage free relay contacts for fire and local fire which operate upon a fire condition. These are to be used for local control and signalling.

In addition to the requirements of EN12094-1 the control panel has the following facilities:

Delay of extinguishing signal of up to 60 seconds. EN12094-1 Section 4.17 option with requirements.

Signal representing the flow of extinguishing agent to indicate the released condition. EN12094-1 Section 4.18 option with requirements.

Monitoring of the status of components by way of a low pressure switch input. EN12094-1 Section 4.19 option with requirements.

Emergency hold device to enable the extinguishant delay time to be extended. EN12094-1 Section 4.20 option with requirements.

Control of flooding time to deactivate the releasing output after a set period of time. EN12094-1 Section 4.21 option with requirements.

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Manual only mode to disable the release of extinguishant via automatic detection devices.EN12094-1 Section 4.23 option with requirements.

Triggering of equipment outside the system by way of first and second stage contacts, extract fan output etc. EN12094-1 Section 4.26 option with requirements

Activation of alarm devices with different signals to indicate pre-discharge and released warnings using different sounds. EN12094-1 Section 4.30 option with requirements.

2. Safety and mounting

2.1 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 equipment is designed to operate from 230V 50Hz mains supplies and is of class 1 construction. As such it **must** be connected to a protective earthing conductor in the fixed wiring of the installation and a readily accessible double pole disconnect device meeting the requirements of EN60950/IEC950 which disconnects live and neutral simultaneously shall be incorporated in the fixed wiring.

Switch disconnect devices such as MK Sentry 63A or similar are suitable for this.

Failure to ensure that all conductive accessible parts of this equipment are adequately bonded to the protective earth will render the equipment unsafe.

This control panel is environmental class A and is designed for indoor use only at temperatures between -5^0C (+/- 3) and $+40^0$C (+/- 2) and with a maximum relative humidity of 95%.

The IP rating for the enclosure is IP30.

Operation outside of these limits may render the equipment unsafe.

2.2 Mounting

The control panel should be mounted on a dry, flat surface, at eye height to the display and in a level position such that the enclosure is not distorted.

Screws or bolts of a minimum of 5mm diameter must be used to mount the enclosure in all three mounting positions.

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 control panel is securely mounted and is not liable to move once fixed.

The control panel 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 to the panel.

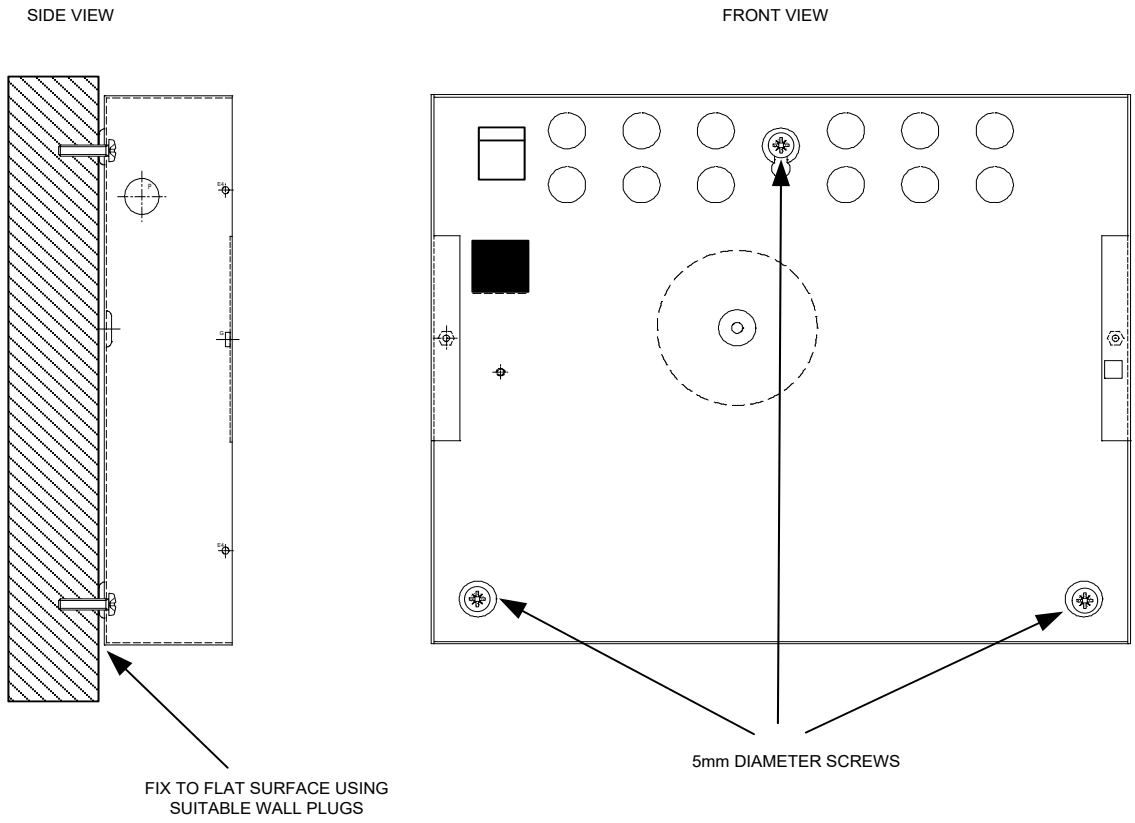


Figure 1. Mounting

3. Technical specification

Table 1 - Electrical specifications

ITEM	ELECTRICAL RATING	*COMMENT*	*COMMUNICATION PARAMETERS*
Mains supply	230V AC, 50Hz +10% - 15% (100 W maximum)		*Standard European mains connection*
Mains supply fuse	1.6 A (F1.6A L250V)	*Replace only with similar type*	
Power supply rating	3 A total including battery charge 28V +/- 2V		
Maximum ripple voltage	450 mV		
Battery type (Yuasa NP)	Two 12 Volt sealed lead acid in series, Flame retardant UL94:V-0	*7Ah maximum*	
Battery charge voltage	27.6 V DC nominal (temperature compensated)	*See chart below*	*Modulated DC*
Battery charge current	0.7 A maximum		*Modulated DC*
Battery fuse	20 mm, 3.15A glass	*Replace only with the same type*	
Imax a	400 mA		
Imax b	2.3 A		
Imin	65 mA		
Current draw in mains fail condition	95 mA	*With buzzer sounding*	
Current draw in second stage alarm	235 mA	*Two zones in fire (470 Ohm in circuit)*	
Current draw in post discharge condition	310 mA	*Second stage and solenoid outputs active*	
Maximum current draw from batteries	3 A	*With main power source disconnected*	
R0V output	Fused at 500 mA with electronic fuse	*200 mA maximum load*	
Sounder outputs	21 to 28 V DC Fused at 500mA with electronic fuse	*1.6 A total load over <u>all</u> circuits*	*Voltage reversing DC*
Fault, Fire, Local Fire, First Stage, Second Stage, Extract relay contact rating	5 to 30 V DC 1 A maximum for each	*Maximum ratings not to be exceeded*	*Volt free changeover contact*
Zone quiescent current	0 mA minimum, 2 mA maximum	*See tables 2 and 3 for detector types*	
Terminal capacity	0.5 mm^2 to 2.5 mm^2 solid or stranded wire		
Number of detectors per zone	*Dependent on type*	*See table 2*	
Number of sounders per circuit	Dependent on type and current consumption	*See table 4 for sounder types*	
Detection circuit end of line	6K8 +/- 5% ½ W resistor	*Supplied in terminals*	
Monitored input end of line	6K8 +/- 5% ½ W resistor	*Supplied in terminals*	
Sounder circuit end of line	10K +/- 5% ¼ W resistor	*Supplied in terminals*	
Extinguishant output end of line	1N4004 Diode	*Supplied in terminals*	
No. of detection circuits	Three. 21 to 28 V DC		
No. of sounder circuits	Three. 21 to 28 V DC	*2 x first stage, 1 x second stage*	
Extinguishant release output	21 to 28 V DC. Fused at 1 A	*1 A maximum load –for 5 minutes*	*Voltage reversing DC*
Extinguishant release delay	Adjustable 0 to 60 seconds (+/- 10%)	*5 second steps*	
Extinguishant release duration	Adjustable 60 to 300 seconds	*5 second steps*	
SIL, AL, FLT, RST inputs	Switched -ve, min resistance 0 ohms, max resistance 100 Ohms	*Only to be used with Aux ROV terminal*	*Switched DC*
Zone normal threshold (Allowable EOL)	10K to 2K Ohms	*Use 6K8 end of line resistor*	
Detector alarm threshold	1K to 390 Ohms	*Nominal trigger resistance 470 Ohms*	
Call point alarm threshold	370 to 150 Ohms	*Nominal trigger resistance 270 Ohms*	
Short circuit threshold	130 to 0 Ohms		
Head removal condition	15.5 to 17.5 V +/- 5%	*2-wire detector base or schottky diode base*	
Cabling	FP200 or equivalent (max. capacitance 1uF max inductance 1 mH)	*Metal cable glands must be used*	
Monitored inputs normal threshold (Allowable EOL)	10K to 2K Ohm		
Monitored inputs alarm threshold	2K to 150 Ohms +/- 5%		
Monitored inputs Short circuit threshold	140 to 0 Ohms +/- 5%		
Status unit/Ancillary board connection	Two wire RS485 connection (EIA-485 specification)	*Maximum of 7 units- RS485 data cable*	(EIA-485 specification)
Status unit power output	21 to 28V DC,Fused at 500mA with electronic fuse	*300 mA maximum load*	

Table 2 - Compatible detectors

Model	Type	Manufacturer	Maximum Number per zone
SLR-E/SLR-E3	OPTICAL	Hochiki	32
SIJ-E/	IONISATION	Hochiki	32
DCD-1E/DCD-AE3	HEAT	Hochiki	*32*
DCD-2E	HEAT	Hochiki	*32*
DCD-1RE/DCD-CE3	HEAT	Hochiki	*32*
DFG-60E	HEAT	Hochiki	*32*
DFJ-60E/DFJAE3	HEAT	Hochiki	*32*
DFJ90-E/DFJCE3	HEAT	Hochiki	*32*
SPB-ET	BEAM	Hochiki	*8*
SRA-ET	BEAM	Hochiki	*5*
55000-200/210 - SERIES 60	IONISATION	Apollo	*32*
55000-300 - SERIES 60	OPTICAL	Apollo	*32*
55000-100 - SERIES 60	HEAT	Apollo	*32*
55000-101 - SERIES 60	HEAT	Apollo	*32*
55000-102 - SERIES 60	HEAT	Apollo	*32*
55000-103 - SERIES 60	HEAT	Apollo	*32*
55000-104 - SERIES 60	HEAT	Apollo	*32*
55000-215 -SERIES 65	IONISATION	Apollo	*32*
55000-216 - SERIES 65	IONISATION	Apollo	*32*
55000-217 - SERIES 65	IONISATION	Apollo	*32*
55000-218 - SERIES 65	IONISATION	Apollo	*32*
55000-219 - SERIES 65	IONISATION	Apollo	*32*
55000-220 - SERIES 65	IONISATION	Apollo	*32*
55000-315 - SERIES 65	OPTICAL	Apollo	*32*
55000-316 - SERIES 65	OPTICAL	Apollo	*32*
55000-317 - SERIES 65	OPTICAL	Apollo	*32*
55000-120 - SERIES 65	HEAT	Apollo	*32*
55000-121 - SERIES 65	HEAT	Apollo	*32*
55000-122 - SERIES 65	HEAT	Apollo	*32*
53541-151 - SERIES 30	IONISATION	Apollo	32
53541-152 - SERIES 30	IONISATION	Apollo	32
53551-101 - SERIES 30	OPTICAL	Apollo	32
53531-221 - SERIES 30	HEAT	Apollo	28
53531-211 - SERIES 30	HEAT	Apollo	28
53531-212 - SERIES 30	HEAT	Apollo	28
53531-213 - SERIES 30	HEAT	Apollo	28
53531-214 - SERIES 30	HEAT	Apollo	28
ORB-OP-12001-APO	Optical	Apollo	15
ORB-OH-13001-APO	Multisensor	Apollo	15
ORB-HT-11001-APO	A1R Heat	Apollo	15
ORB-HT-11002-APO	A2S Heat	Apollo	15
ORB-HT-11003-APO	BR Heat	Apollo	15
ORB-HT-11004-APO	BS Heat	Apollo	15
ORB-HT-11005-APO	CR Heat	Apollo	15
ORB-HT-11006-APO	CS Heat	Apollo	15
NID-58	IONISATION	Nittan	32
2KC/2KD	OPTICAL	Nittan	32
2SA-LS/2SA-70T-LS	HEAT	Nittan	32
TCA-70-LS	HEAT	Nittan	32
NFD-18-2/NFD-18-5	FLAME	Nittan	3
NID-48F	IONISATION	Nittan	32
NS-12-7	HEAT	Nittan	32
NC-9C-70T	HEAT	Nittan	32
EVC-P	OPTICAL	Nittan	36
EVC-H-A2	HEAT	Nittan	45
EVC-H-C	HEAT	Nittan	45
Z630-2	OPTICAL	Ziton	27
Z620	HEAT	Ziton	27
Z610	IONISATION	Ziton	27
MPT950	MULTISENSOR	COOPER	57
MID810	IONISATION	COOPER	114
MPD820	OPTICAL	COOPER	123
MFR830	HEAT	COOPER	76
MHT890	HEAT	COOPER	89
MMT860	HEAT	COOPER	89

CT3000 O	OPTICAL	DETECTOMAT	19
CT3000 T	HEAT	DETECTOMAT	19
ECO1002	HEAT/PHOTO	System Sensor	21
ECO1003	PHOTO	System Sensor	26
ECO1005	HEAT	System Sensor	22
ECO1005T	HEAT	System Sensor	22

Although the current consumption of many detection devices would allow more than 32 to be connected to a zone, this number should be limited to 32 to ensure that a short or open circuit on the wiring does not prevent the indication of a fire alarm from more than 32 fire detectors and/or call points as required by European standard EN54-2.

No more than 32 devices (detectors and call points) should be fitted to any one zone.

Table 3 - Compatible detector bases and call points

Model	Type	Manufacturer	Comments
YBN-R/6	STANDARD WITH REMOTE LED	Hochiki	
YBO-R/4(IS)	STANDARD WITH REMOTE LED (I.S.)	Hochiki	
YBN-R/6SK	DIODE BASE	Hochiki	*Must be used with LCMU*
YBO-R/6R	STANDARD LATCHING RELAY	Hochiki	
YBO-R/6RN	STANDARD NON-LATCHING RELAY	Hochiki	
YBO-R/6RS	DIODE BASE WITH LATCHING RELAY	Hochiki	*Must be used with LCMU*
YB0-R/6PA	2 WIRE BASE	Hochiki	
ECO1000R	STANDARD	System Sensor	
ECO1000BRSD	DIODE BASE	System Sensor	*Must be used with LCMU*
456821-200	STANDARD BASE	Apollo	
456821-201	DIODE BASE	Apollo	*Must be used with LCMU*
ORB-MB-00001-APO	Timesaver Base	Apollo	
ORB-DB-00003-APO	Timesaver Diode Base	Apollo	
ORB-RB-10004-APO	Timesaver Relay Base	Apollo	
ORB-SW-10005-APO	Sav-Wire Base	Apollo	
Z6-BS5	STANDARD	ZITON	
ZC6-CP1	CALL POINT	ZITON	
	470 OHM MCP1 CALL POINT	KAC	
CX	470 OHM CALL POINT	Fulleon	
NCP-T	CALL POINT	Nittan	
	ELECTRONICS FREE BASES	ALL	

Note: LCMU (Line Continuity Monitoring Device) part number K1406 allows call points mounted down line of detectors that have been removed from diode bases to continue to operate.

Table 4 - Compatible sounders

Model	Type	Manufacturer	Comments
BANSHEE	ELECTRONIC	VIMPEX	
WAFER	ELECTRONIC	VIMPEX	
FIRECRYER RANGE	ELECTRONIC VOICE	VIMPEX	
KOBELL	MOTORISED	VIMPEX	
ASKARI	ELECTRONIC	FULLEON	
ROSHNI	ELECTRONIC	FULLEON	
SQUASHNI	ELECTRONIC	FULLEON	
SYMPHONI	ELECTRONIC	FULLEON	
ELECTRONIC BELL	ELECTRONIC	FULLEON	
CFB BELLS	MOTORISED	FULLEON	
B6 AND B8 BELLS	SOLENOID	FULLEON	

Table 5 - Compatible I.S. barriers

Model	Type	Manufacturer
MTL5561	DETECTION ZONE GALVANIC ISOLATOR	MTL
MTL7778ac	ALL SOUNDER CIRCUITS	MTL

Note: Use galvanic isolator with Hochiki or Apollo detectors only

4. Control panel fascia

In addition to the mandatory controls and indications required by the EN54-2 and EN12094-1 standards, three, seven segment LED displays and MODE, SELECT and ENTER buttons are provided to allow easy entry and storage of codes to configure the control panel to suit the requirements of the installation. The Lamp Test, Mode and Select buttons also have a sub-script (+100, +10 and +1) that allows easy entry of numbers.

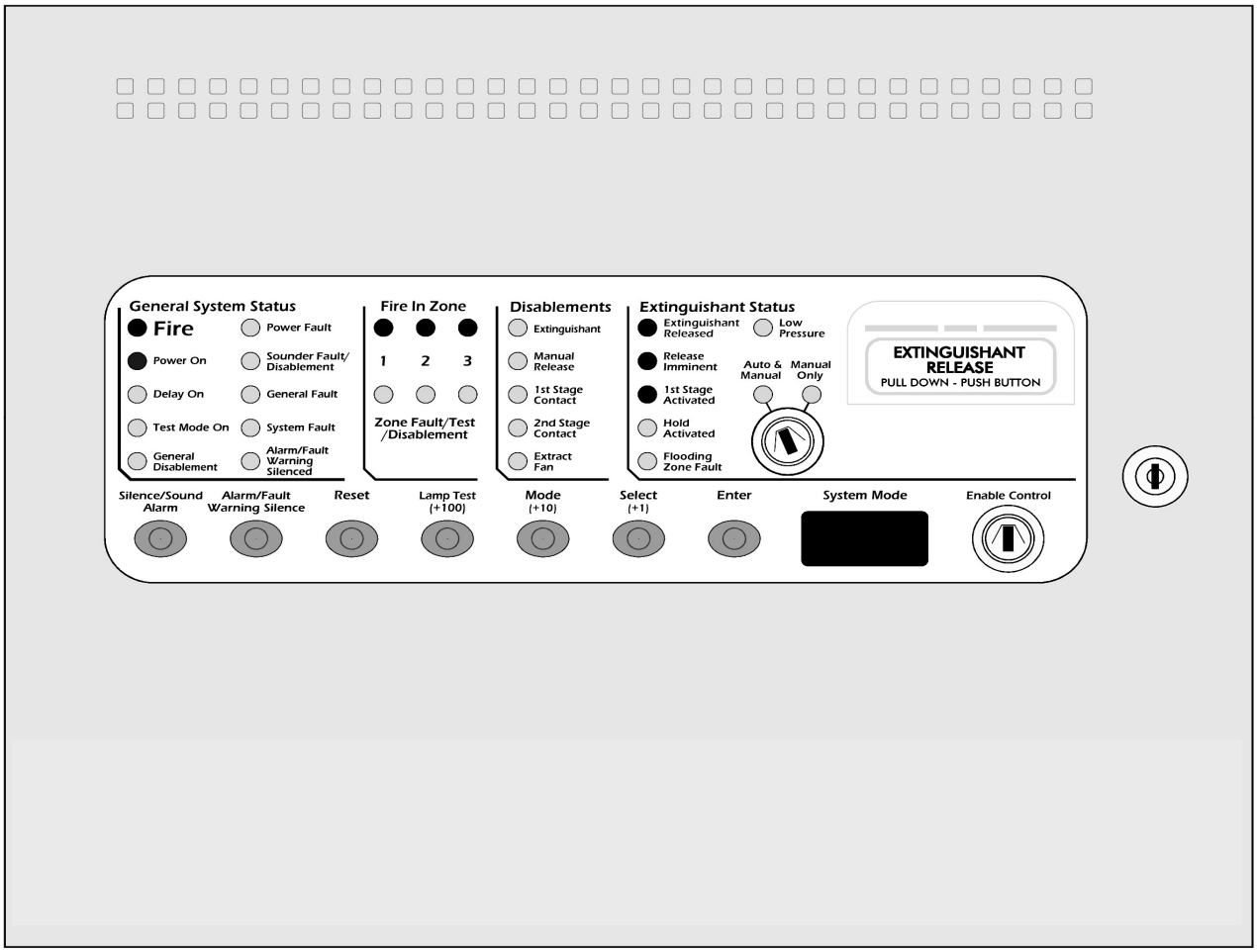


Figure 3. Front panel fascia

The fascia is divided into two sections. A standard EN54-2 control and indicating equipment section with three zones and an EN12094-1 extinguishant system section with extinguishant status and disablements separated for clarity.

The pushbutton controls and programming facilities are common for both sections.

4.1 Removing the fascia

Open the control panel lid using the 801 lock key.

Before the fascia can be removed it will be necessary to disconnect the power connector terminal block on the left hand side of the PCB. This is fitted on pins and can be pulled towards you to remove it. Do not remove the wires from the terminals.

The fascia of the control panel is held in place by two screws. Undo the two screws and lift the fascia gently away from the box towards you.

With the fascia removed there is much more room inside the panel for making off and dressing cables.

When cabling work is complete the fascia can be re-fitted with the two countersunk screws and the terminal block plugged back onto the pins on the board.

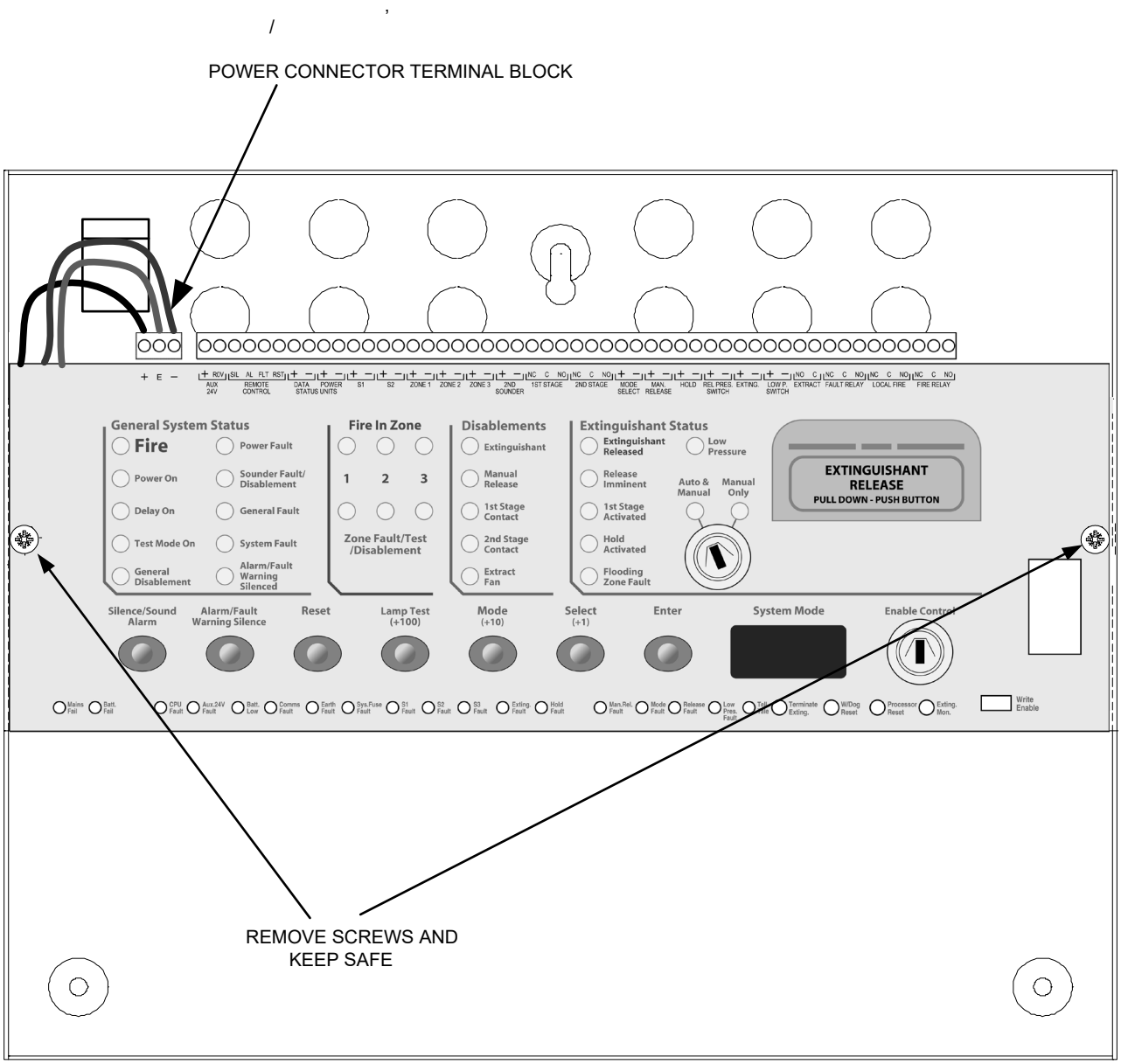


Figure 4. Removing the fascia

5. Connecting to the circuit board

All connections for field wiring are to a single row of terminals along the top of the circuit board. Shielded fire alarm cable such as FP200 and metal cable glands must be used for all connections to the panel. The resistance of any core of any cable must not exceed 25 ohms. The shield of the cable must be bonded securely to the enclosure via the metal gland.
Wiring should enter the enclosure at the top or back of the panel using the knockouts provided 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 behind and well away from the surface of the circuit board.
The space at the bottom of the enclosure is largely occupied by the standby batteries so this must be borne in mind when considering cable entries.

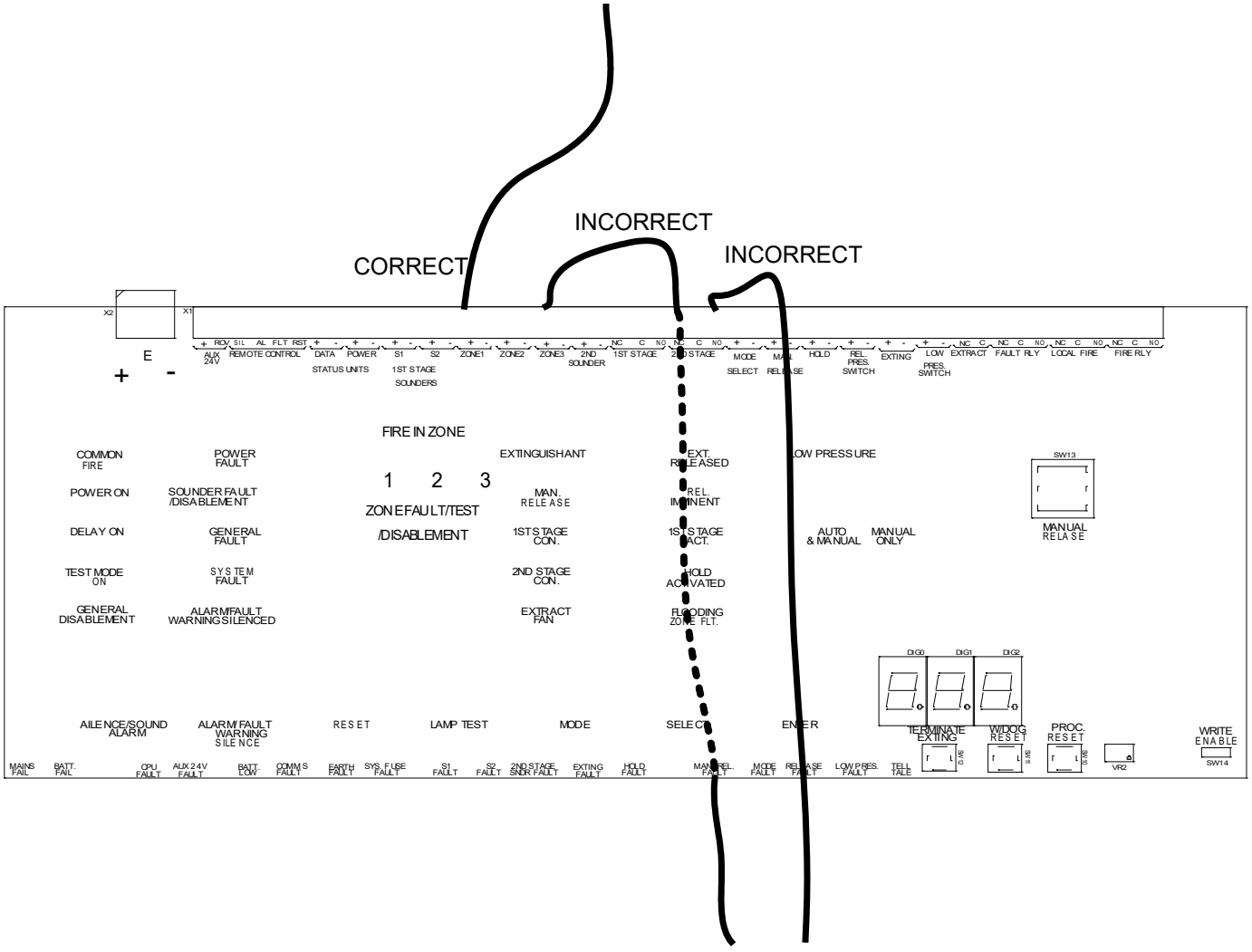


Figure 5 Wiring to the circuit board

6. Detection zone wiring

The detection zones provide a nominal 20V DC to power conventional detectors and call points as listed in the compatibility tables 2 and 3.
The wiring is monitored for open and short circuit fault conditions by removing the 6K8 end of line monitoring resistors that are supplied fitted to the control panels' terminals and placing them across the last device that is wired to the zone circuit.

Detection zone circuits must be wired as a single, radial circuit with no spurs or T junctions to enable the monitoring circuit to work correctly.

For systems that are required to comply with BS5839 Part1:2002 detector removal requirements, either detector bases fitted with a Schottky diode should be used and the end of line resistor replaced with an LCMU active end of line monitoring device or zener clamping bases such as Hochiki PA6 or Apollo Savwire used.

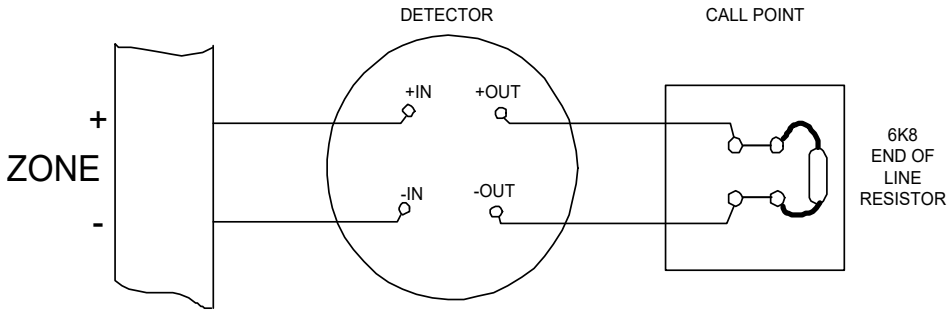


Figure 6. Detection zone wiring

7. Sounder circuit wiring

All sounders must be of the polarised type. If non-polarised sounders are used the control panel will permanently show a fault condition. See table 4 for a list of compatible sounder types.
Sounder circuits are monitored for open and short circuit faults by placing a 10K end of line monitoring resistor across the last device on the circuit.

Sounder circuits must be wired as a single, radial circuit with no spurs or T junctions to enable the monitoring circuit to work correctly.
A maximum of 1.6 Amps is available for powering sounders with a maximum load of 0.5 Amps on any one circuit.

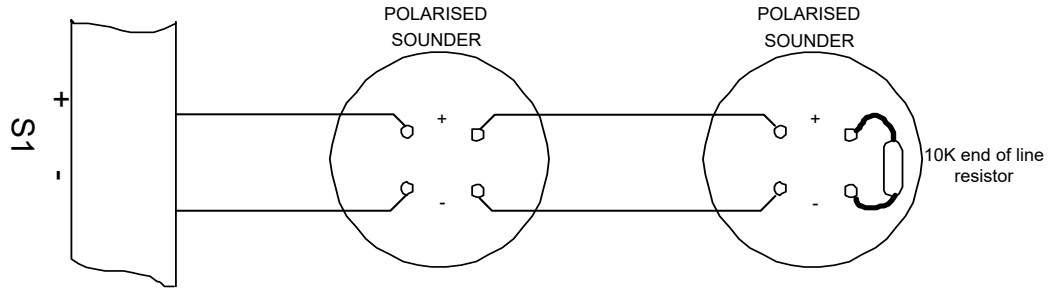


Figure 7. Sounder circuit wiring

8. Using intrinsically safe barriers

SIGMA XT control panels support the use of I.S. barriers for connecting to equipment in hazardous areas.
Only certified detectors, call points and sounders may be used in hazardous areas and these must be connected to the control panel via a compatible I.S. barrier as listed in table 5.

Connection of the I.S. barrier changes the characteristics of the detection circuit so zones that have I.S. barriers connected must be adjusted to work with them.
Programmable options C61 to C63 allow each zone to operate with I.S. barriers.

The amount of detectors and call points that can be connected to a zone is limited by the I.S. approval system diagram which should be supplied by the detector manufacturer. The power rating of the end of line resistor will be dependent upon the Zone classification rating (Gas class) this will be specified on the system diagram.

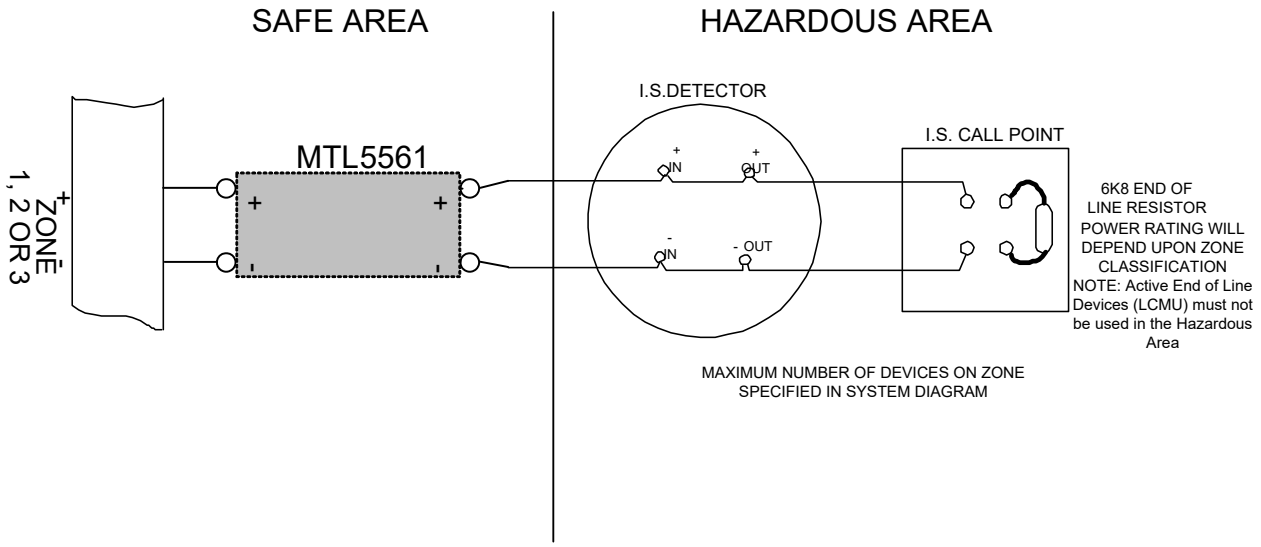


Figure 8. Detection zone wiring through an MTL5561 I.S .barrier

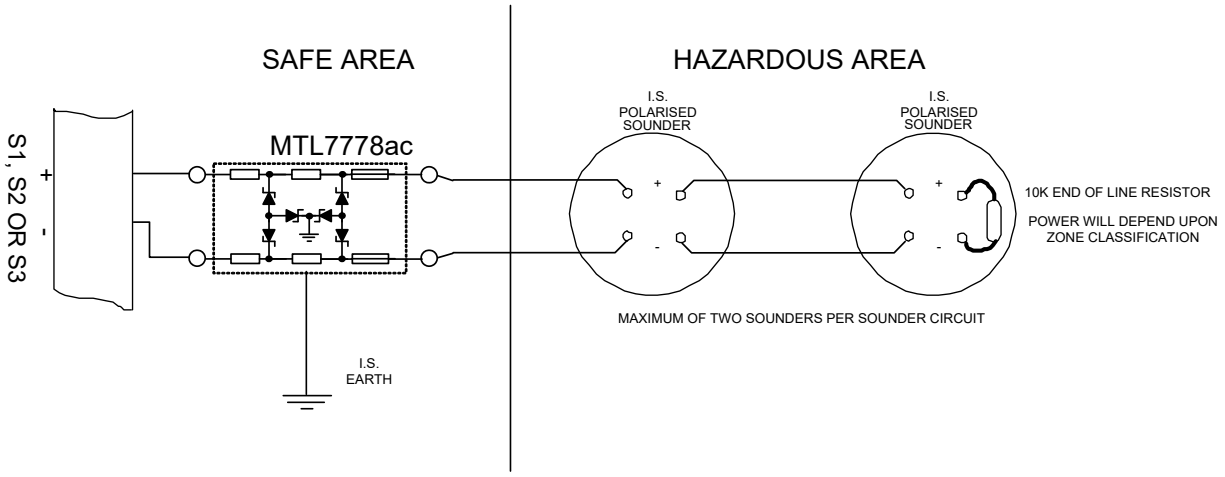


Figure 9. Sounder circuit wiring through an MTL7778ac I.S. barrier

9. Connection to monitored inputs

Monitored inputs (Mode select, manual release, Hold, Released pressure switch and Low pressure switch) have the same characteristics as detection zone inputs and require a 6K8 end of line monitoring resistor and a nominal, 470 ohm trigger resistor.

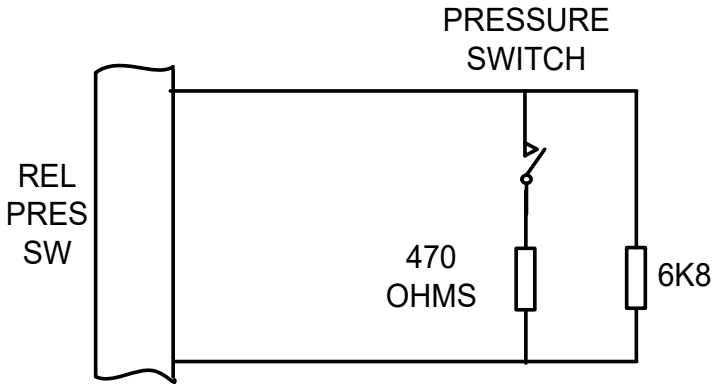


Figure 10. Example of wiring to a monitored input

10. Connection to extinguishant output

The extinguishant output is capable of supplying up to 1 Amp for the maximum duration to a solenoid or 3 Amps for 20 milliseconds to an igniting actuator.

The wiring for solenoids and igniting actuators is different as shown below. Igniting actuators of different types or from different manufacturers should not be mixed on the same circuit.

10.1 Solenoid wiring

Solenoids must have a resistance of greater than 30 ohms to ensure that the maximum current rating of the extinguishant output is not exceeded.
Solenoids should be fitted with a suppression diode to prevent EMF generated by the solenoid when it de-energises from causing interference to the operation of the control panel. This diode also acts as the end of line monitoring device.

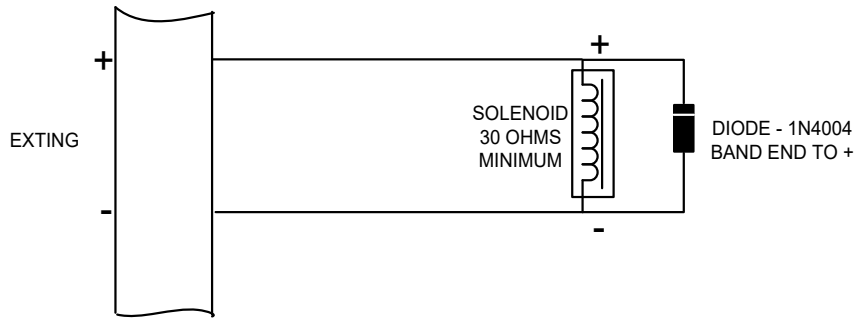
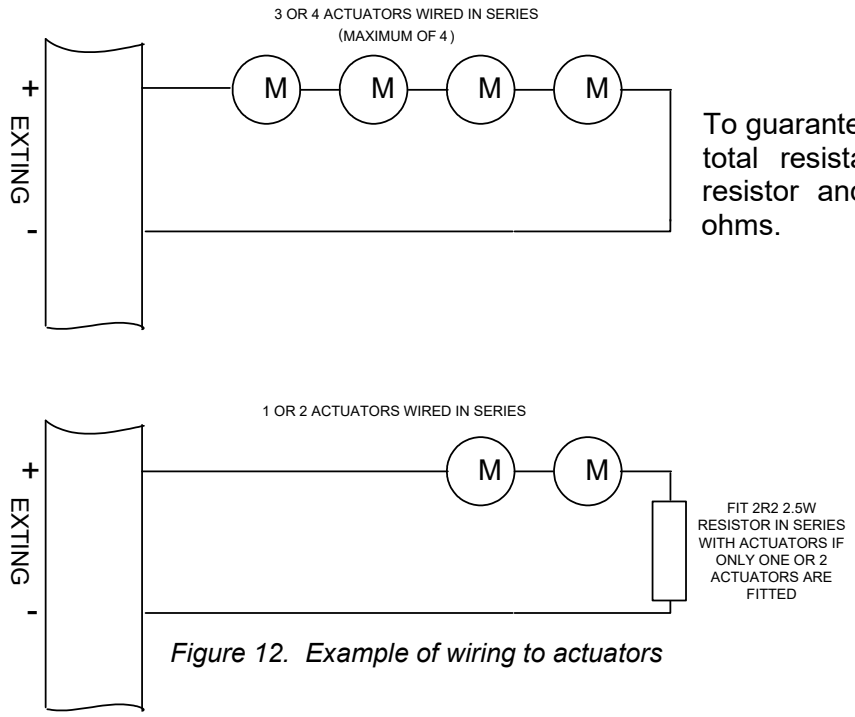


Figure 11. Example of wiring a solenoid

10.2 Igniting actuator wiring

A maximum of four igniting actuators can be wired in series. If only one or two actuators are fitted, a 2R2, 2.5 Watt resistor must be wired in series with them to provide the correct monitoring resistance. The end of line diode can be discarded when igniting actuators are used.



To guarantee firing under all conditions, the total resistance of actuators, monitoring resistor and cable should not exceed 7 ohms.

Figure 12. Example of wiring to actuators

10.3 Setting up extinguishant monitoring circuit

All control panels are supplied with end of line diodes for the connection of solenoids. It should not be necessary to adjust the fault monitoring circuit in this configuration, unless the panel fails to report a short circuit fault when tested by shorting the end of line device. If igniting actuators are to be used, then the set up procedure detailed here should be followed.
To enable monitoring of circuits that have a very low resistance which varies according to the number of actuators fitted and cable length, it is necessary to adjust the monitoring level once the actuators have been fitted.
This is done using a variable resistor which is accessible through the front of the control panel

Make sure the extinguishant output **is not** active and no other faults are displayed when carrying out this setting up procedure i.e. panel is in the quiescent state.

Adjustment

Rotate the extinguishant adjust control anticlockwise to illuminate the Fault lamp - anticlockwise > ON

Rotate the extinguishant adjust control clockwise to extinguish the Fault lamp - clockwise > OFF

For 3 or more actuators

Rotate the extinguishant adjust control until the Fault lamp lights. By rotating the extinguishant adjust control back and forth the Fault lamp can be toggled on and off, this is usually between ¼ and ½ a turn. Establish these points and leave the extinguishant adjust control set with the Fault lamp just off.

Check the Fault lamp lights when shorting the extinguishant output end of line device and the lamp goes out when the short is removed. Repeat several times to check for reliable operation. If the fault lamp is delayed going off or doesn't go off, then slightly adjust VR2 clockwise and repeat this paragraph

If nuisance tripping occurs then adjust the extinguishant adjust control clockwise in steps of 5 minutes (as per a clock face) until the nuisance tripping stops. **Be sure to check** after each adjustment that shorting the extinguishant end of line device will illuminate the Fault lamp and removing the short extinguishes the Fault lamp

For 1 or 2 actuators

Values between 2 ohms and 5 ohms can be detected and a fault level set but the adjustment is very fine and may be difficult to set, the lower the value, the finer the adjustment.

Rotate the extinguishant adjust control until the fault lamp lights. By rotating the extinguishant adjust control until back and forth, the fault lamp can be toggled on and off, this is usually about ½ a turn of the extinguishant adjust control until. Establish these points and leave the extinguishant adjust control until set with the Fault lamp just off.

Short circuit the Extinguishant end of line device and wait for up to 20 seconds for the Fault lamp to light, if it doesn't, remove the short and tweak the extinguishant adjust control until anticlockwise about 2 minutes (as per a clock face) or less and then reapply the short. Keep doing this until the fault lamp lights. Once it lights, check that removing the short Extinguishes the Fault lamp, if it doesn't, turn the extinguishant adjust control slightly clockwise.

Apply the short several times and make sure the fault lamp lights each time reliably, if it doesn't repeat the above paragraph until it does.

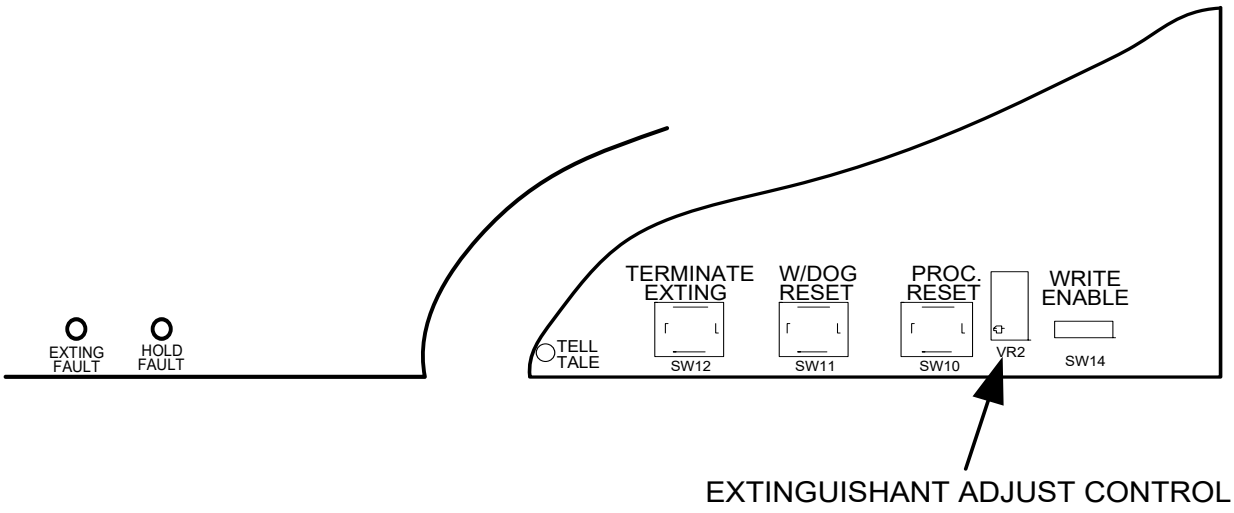


Figure 13. Extinguishant adjust control and Exting fault LED

11. Connection to remote control terminals

Some functions of the control panel can be controlled externally from the panel if required. The external equipment operating inputs **must be restricted by an access level 2 control** as defined in EN54-2 The functions are abbreviated at the terminals block as follows:

a) Remote 0 V supply – ROV
b) Silence Alarm – SIL (Silences sounder outputs S1 &S2 only)
c) Sound Alarm – AL (Operates sounder outputs S1 & S2 and not S3)
d) Fault – FLT (Generates a general fault and operates the fault relay)
e) Reset – RST (Resets the system back to normal condition)

To activate these inputs, the remote 0 Volt (R0V) supply must be connected to the input via a normally open switch or contact and via a resistance of no greater than 100 ohms.
All of the remote control inputs are non-latching.

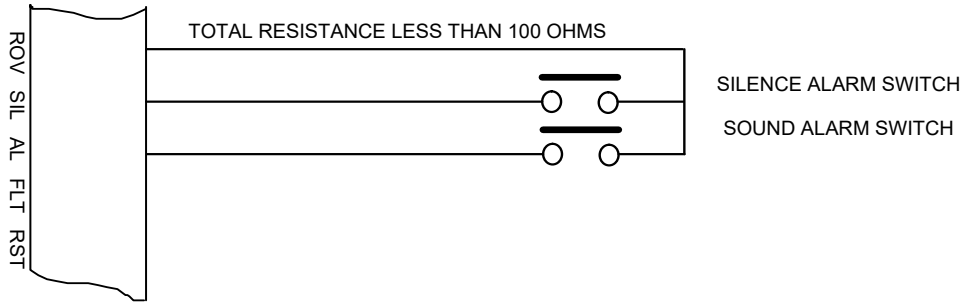


Figure 14 - Example connections to remote control inputs

12. Aux 24V DC supply

An auxiliary 24V DC supply is provided to enable local signalling or control of ancillary systems such as door release controllers.
The terminals for the Aux 24V supply are labelled Aux 24V and ROV. The ROV terminal is the negative terminal and is the same terminal that should be used to switch the remote control terminals.
It is possible to make the ROV terminal pulsing so that by connecting it to the AL terminal via a remote, volt free contact, it can be used to pulse the dedicated sounder circuits in response to a signal from another system for example to give an alert. See programming code C25.
The supply is fitted with an electronic, self resetting fuse rated at 0.5 Amps to protect the control panel's 24V supply in the event of a wiring fault.
Any standing load on the Aux 24V supply must be taken into account when calculating battery standby times as standby time will be significantly affected by even modest standing loads. It is recommended that the Aux24V output is **not** used to power standing loads.
Where the Aux 24V supply is used to power electromechanical devices such as relays or door retainers it is imperative that a suppression diode is fitted across the coil of the device to prevent the generation of high voltage transients back to the control panel power supply.

13. Connection to relay contacts

Volt free changeover relay contacts are provided for local control and signalling if required. These contacts are rated for switching signalling circuits only and the maximum ratings listed in table 1 should not be exceeded under any circumstances.
Typically, the Aux 24V output of the control panel is switched through these relays and used to control other systems.

13.1 Fault relay

The fault relay is normally energised and will de-energise upon any fault condition including total loss of power. These also include the following inputs and monitored circuits:
Low Pressure Input Active
Low Pressure Fault
Zone Fault
Sounder Fault
Ext Output Fault
Fault – FLT Remote Input Active
Battery Fault

13.2 Local fire relay

The fire relay will energise upon activation of a fire condition on any of the zones or pressing of the sound alarm button on the front panel. The relay will remain activated until the alarm is silenced or the panel is reset. This relay will not operate upon activation of the remote AL input.

13.3 Fire relay

The fire relay will energise upon activation of a fire condition on any of the zones or pressing of the sound alarm button on the front panel. This relay will not operate upon activation of the remote AL input. The relay will remain activated until the panel is reset.

13.4 1st stage alarm

The first stage alarm will operate upon activation of a zone that has been configured to contribute to the extinguishant release decision and will de-activate only when the panel has been reset.
This relay will also operate upon activation of the panel mounted or a remote manual release switch.

13.5 2nd stage alarm

The second stage alarm relay will operate when the panel enters the activated condition (i.e. the release countdown timer has started) and will de-activate only when the panel has been reset from the released condition.

13.6 Extract relay

The extract relay will operate when option `Ac` is selected at access level 2.
This provides a means to vent a room of extinguishant gases but prevents the gases from being vented during a discharge.

14. Connection and configuration of status units and ancillary boards

The control panel should not be powered during the connection of status units or ancillary boards.

Status units and ancillary boards require a four-wire connection from the panel, which drops into each unit and connects to the corresponding data and power, in and out terminals. Two of the cables carry power to the units (24V) and the other two carry data. A four core cable suitable for carrying RS485 data should be used. If this is a twisted pair cable then one twisted pair should be used for the data connections and the second pair used for the power connections

Each status unit has a 3-bit DIL switch and must be allocated a unique address between 1 and 7.
Each ancillary board has a 3-bit DIL switch and must be allocated a unique address between 1 and 7.

Status Unit Address	DIL Switch Number		
	1	2	3
1	●	○	○
2	○	●	○
3	●	●	○
4	○	○	●
5	●	○	●
6	○	●	●
7	●	●	●

● = Switch ON/UP

Ancillary Board Address	DIL Switch Number		
	1	2	3
8	●	○	○
9	○	●	○
10	●	●	○
11	○	○	●
12	●	○	●
13	○	●	●
14	●	●	●

● = Switch ON/UP

The address switch is located on the bottom left hand corner of the status unit or ancillary board PCB. Note: The address is only read when the boards are first powered so address switches should not be altered on a system that has power applied.

If a double address occurs on the system then the system will illuminate the General fault and Hold indicators and the buzzer will sound.
The panel display will show the status unit or ancillary boards that have the same address.

14.1 Adding new status units/ancillary boards

When the system is powered, it will search for connected status units and/or ancillary boards.
When new or additional status units/ancillary boards are added to the system, these will be shown on the display when the system is first powered.
Status units are shown as **Pux** and ancillary boards are shown as **Pox** (where **x** is the address of the unit found).
The select key can be used to view all of the status units/ancillary boards that the system has found.
These should be checked to ensure that the same number of devices that have been fitted are found by the system.

For the system to accept these into its memory, the procedure below must be followed.

1. Operate the Enable Controls keyswitch.
2. Enable the Write Enable Switch (push to the right) – Access level 3.
3. The display will show **Pux** for status units and **Pox** for ancillary boards that are found (where x is the address of each unit) and the dot in the display will be flashing. Operate the Enter button which will accept the displayed unit and step through to the next unit found.
4. When the Enter button does not step on to any other units, all devices have been accepted.
5. Disable the Write enable switch (push to the left).
6. Disable the Enable controls keyswitch.
7. The panel should return to the normal, quiescent condition.

14.2 Removing status units/ancillary boards

When status units/ancillary boards are to be removed from the system, the system must be powered down first and the status units/ancillary boards removed. The system should then be powered. When the system starts it will be in fault and the units removed will be shown on the display. Status units are shown as **`Fux`** and ancillary boards are shown as **`Fox`** (where **`x`** is the address of the unit). The Select button can be used to view all of the status units/ancillary boards that the system expects to be found but are now missing.
For the system to accept the removal of these devices from its memory the following procedure must be carried out.

1. Operate the Enable Controls keyswitch.
2. Enable the Write Enable Switch (push to the right) – Access level 3.
3. Wait for the General fault LED to illuminate
4. Disable the Write enable switch (push to the left)
5. Disable the Enable controls keyswitch
6. The panel should return to the normal quiescent condition.

If the panel fails to receive messages from a status unit or ancillary board after it has been stored in the configuration memory, the internal “comms fault” LED will light and a fault condition will be displayed on the panel fascia. The seven segment display on the panel will show the number of the unit that is disconnected and all LEDs on the status unit that is disconnected will flash.

Full details of status units and ancillary boards can be found in document K7247-02 (Sigma XT Status unit and Ancillary board operation and maintenance manual).

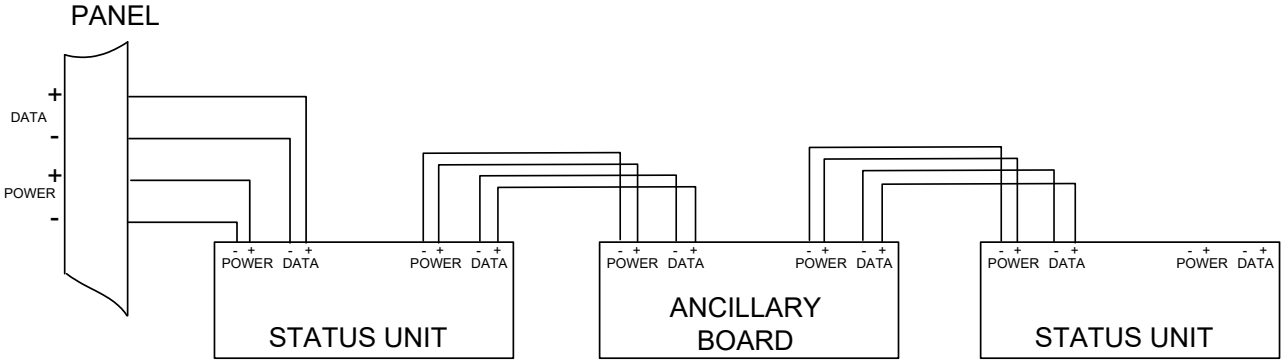


Figure 15. – Wiring to status units and ancillary boards

15. Panel operation

15.1 Normal condition

Under normal conditions, control panels will have only the green, *Power On* LED lit and either the Manual Only or Automatic and Manual LED lit. The display will be blank.
The control panel has 3 access levels. Access level 1 allows unrestricted access, Access level 2 allows access only after operation of the front panel mounted “Enable controls” keyswitch and Access level 3 allows access after operation of the “Write enable” switch behind the front cover.

15.2 Single zone Fire condition

Upon receipt of a fire condition by activation of a detector or call point, the *Common Fire* indicator will light and the zonal *Fire* indicators will flash at around 2Hz.
The fire and local fire relays will also operate and signal any systems to which they are connected. Any sounders connected to the sounder circuits S1 & S2 will operate.
If the zone that has activated is contributing to the extinguishant release sequence, the First stage activated LED will light and the first stage relay contact will operate.

15.3 Double zone Fire condition

Upon receipt of a second fire condition when the control panel is switched to Automatic and Manual mode, the Hold input is not active, and the Disable Extinguishant Sub-system function has not been invoked, the control equipment will respond as above and as listed below:

a) The second stage alarm output will operate. (Sounder circuit S3)
b) The 2nd stage contact will operate.
c) The release imminent indicator will operate
d) The seven segment LED displays will indicate the time remaining until release in seconds.
e) The extinguishant output will operate after the configured delay time and for the configured duration after which it shall de-activate.

When detection zones have activated and the activated condition is reached (i.e.
the release imminent indicator is lit) it shall not be possible to reset the extinguishant section of the panel until the discharge duration timer has elapsed.

15.4 Manual Release

Upon operation of the front panel mounted manual release button, monitored manual release input or a manual release input from a status unit and when the control panel is switched to Automatic and Manual mode, the Hold input is not active, and the Disable Extinguishant has not been invoked, the control equipment will respond as above.

In addition to the “No extinguishant delay option” (setting the option –00 at access level 3), it is possible to set a delay for the automatic detection and no delay when a manual release input is operated. This is done by setting option 28 at access level 3.

15.5 Silence/sound alarms

The *Silence/Sound alarm* button can only be operated at access level two which means that the *Enable Control* key must be inserted and turned to the right.
To silence the sounders, insert the Enable Control key, turn to the right and press the Silence/Sound alarm button.
When the sounders have been silenced, the Zone Fire LEDs will change from flashing to a steady state.
Pressing the *Silence/Sound alarm* whilst the control panel is in this silenced condition, will cause the sounders to operate again.
The sounders can be toggled on and off with the *Silence/Sound alarm* button as required.

15.6 Reset

To reset the panel, insert the Enable key, turn to the right then press the Reset button.
Latched inputs associated with extinguishant section will reset only after the
duration timer has elapsed once the activated condition has been established.

15.7 Zone fault

Removal of a detector from it’s base or a fault on any of the zone wiring will cause the *Fault* LED and *Zone Fault* LEDs to flash, indicating the zone in which the fault has occurred.

15.8 Sounder fault

A fault on the wiring to sounder circuits will cause the *Fault* and *Sounder Fault* LEDs to flash, indicating a fault on the wiring to the sounder circuits.

15.9 Power fault

Failure of the mains power or disconnection of the standby battery will cause the *Fault* and *Power Fault* LEDs to light indicating an abnormality in the power supply to the control panel.

Note: Indication of a mains failure may be delayed by 30 minutes by setting configuration option 2d

15.10 System fault

The *System Fault* LED will light if the configuration memory has not been set or has become corrupt.

15.11 General fault

Will illuminate under any fault condition.
This LED will also light if the configuration option jumper (see figure 18) has been left in the access level 3 position and the enable controls key has been removed from the front panel.

15.12 Lamp test

All LED indicators can be tested at any time by pressing the *Lamp Test* button. The *Enable Control* key does not need to be inserted to test the indicators.
The buzzer can be silenced at any time by pressing the *Buzzer Silence* button. The enable key does not need to be inserted to silence the buzzer.

15.13 Hold condition

Activation of the hold input at the connections inside the panel or at a remotely mounted status unit will cause the Hold Activated indicator to light and the buzzer to sound.
If the control panel is in the 2nd stage alarm condition (i.e. it is in Automatic mode and detection circuits are activated or it is in either Automatic or Manual mode and a manual release input is operated) then the extinguishant release sequence shall be halted and the pulsing, 2nd stage sounders shall change to 1 second on, 2 seconds off.
Release of the Hold input shall re-start the countdown release timer from maximum.

15.14 Released condition

The released pressure switch input is connected to a pressure switch mounted on the extinguishant cylinder which operates when the extinguishant has been released. This will activate the released indicator on the control panel. If the extinguishant has been released by mechanical means i.e. the control panel is not in the activated condition, operation of the released pressure switch input will cause the second stage sounders and second stage relay to operate.

15.15 Low pressure switch

The low pressure switch input on the panel is connected to a pressure switch on the extinguishant cylinder which will operate if the pressure in the cylinder falls below a set point. This will happen after the extinguishant has been released but may happen before release through a leak. When this input is operated the Low Pressure Indicator will light, The Fault Relay will operate and the flooding zone fault indicator will light and the buzzer will sound.
The pressure switch input can be configured as normally open or normally closed via configuration option C2C (software version 1.2 and above only).

15.16 Test mode

Fire alarm systems must be tested regularly to ensure that they are functioning correctly. The system can be tested single handed by using a test mode. When in test mode, activation of a fire alarm will be automatically reset after a few seconds to eliminate the need to return to the control panel to reset after every activation.
Test mode is entered in a similar way to disablements. With the *Enable Control* key inserted, press the *Mode* button until “t” appears in the first of the seven segment displays. Then press the *Select* button until the required zone number appears. Pressing the *Enter* button will cause the *Test* and *Zone Fault* LEDs to illuminate indicating the zones which are in test mode.

Disablements and zone tests are cleared by repeating the sequence that is used to select them, i.e. the "db" function (for example) toggles between sounders disabled and sounders enabled.

Note: The panel will automatically exit test mode if there are no fire activations for 15 minutes.

15.17 Change mode

The mode of the system can be toggled between Manual Only and Automatic & Manual by operating the keyswitch in the extinguishant status area of the panel.
When the system is in Manual Only mode, the extinguishant cannot be released by the operation of automatic detectors.
Note: The mode can also be changed to manual by the external mode select input or the keyswitch on any status unit. Any mode select input to manual mode will override any keyswitches switched to Automatic and Manual mode.

15.18 Extract fan

When the extract function is selected by access level 2 option `Ac`, the extract contact in the panel and at all ancillary boards will operate.
When active the display shows a flashing dot after the Ac.display. If the panels enable control key is switched off when the extract output is active, the display will show "ccc". Turning on the Enable Control key will not automatically display the menu options if the "ccc" message is present. The Ac. display can be shown by pressing the Mode button, followed by the Enter button to clear the event.

15.19 Disablements

It is possible to disable parts of the system. This may be required if there are works going on in a building which may cause the fire alarm system to operate in error.

15.20.1 Disable zones

To disable zones, the *Enable Control* key should be inserted and the mode button pressed until “d” appears in the first of the two seven segment LED displays. The *Select* button should then be pressed to select the number of the zone which is to be disabled in the second of the two seven segment displays. Once the desired zone is displayed, the enter button should be pressed to confirm the disablement.
The *Disable* LED will light and the *Zone Fault* LED will light for each disabled zone.

Note: When viewing disabled zones, if the digit representing the zone number is flashing, it means that there are activated devices in that zone and re-enabling it will put the control panel into the fire condition.
The panel should be Reset before enabling any zone with a flashing digit on the seven segment display disablement indication

15.20.2 Disable sounders

To disable sounder outputs, press the mode button to select “db” on the seven segment display. Pressing enter will disable all sounders and cause the *Disable* and *Sounder Fault* LEDs to light.

15.20.3 Activate delays

To activate delays on zones as set in configuration options 31 to 33 and 41 to 43, press the mode button until Ad appears on the seven segment LED display. When the enter button is pressed any zones that are set as delayed will have their alarm outputs delayed by the time set in configuration options C00 to C09.

15.20.4 Disable fault contact

The fault relay can be disabled by selecting configuration option C23. See section 16.

15.20.5 Disable extinguishant subsystem

The 2nd stage relay, 2nd stage alarm output and extinguishant release output can be disabled together by selecting “`dE`” from the access level 2 options. See section 16.

15.20.6 Disable 1st stage contact

The first stage contact can be disabled by selecting configuration option “`dP`”. See section 16.

15.20.7 Disable 2nd stage contact

The Second stage contact can be disabled by selecting configuration option “`dA`”. See section 16.

15.20.8 Disable manual release

The Manual release facility can be disabled by selecting configuration option "dT". See section 16.

15.20.9 Disable extract fan

The extract fan output can be disabled by selecting configuration option "dc". See section 16.

16. Access level 2 configuration options

Turn enable keyswitch to get to access level 2.

OPERATION

Press Mode button until the required function as detailed below appears in the 7 segment displays.

For zonal tests or disablements, press the Select button to scroll to the required zone number then press enter. The "select" dot at the bottom of the display will flash to indicate a test or disablement is active.

For sounder disablements and other functions, press the Select button until the required function is displayed then press enter to activate that function. The "select" dot will flash to confirm the setting as above.

[t1 - 3]	**Test Zone 1 – 3**
[d1 - 3]	**Disable Zone 1 – 3**
[db]	**Disable 1st Stage sounders**
[dP]	**Disable Preactivated (1st stage) relay**
[dA]	**Disable Activated (2nd stage) relay**
[dc]	**Disable Extract Fan output**
[dt]	**Disable Manual Release inputs**
[dE]	**Disable Extinguishant sub-system**
[Ad]	**Activate sounder Delays**
[Ac}	**Activate extract output**

16.1 [t1 - 3] Test zone

Selecting [t1], [t2] or [t3] puts zones 1, 2 or 3 respectively into test mode. Zones that are in test mode shall automatically reset 3 seconds after they have operated. The Test Mode On and zonal fault/test disablement indicators shall illuminate while any zone is in test mode.

16.2 [d1 – 3] Disable zone

Selecting [d1], [d2] or [d3] disables zones 1, 2 or 3 respectively. Disabled zones shall not report fire or fault conditions. The General Disablement and zonal fault/test disablement indicators shall illuminate while any zone is disabled.

16.3 [db] Disable first stage sounders

Selecting [db] will disable the first stage sounder outputs. The General Disablement and Sounder fault/ Disablement indicators shall illuminate while the first stage sounders are disabled.

16.4 [dP] Disable (pre-activated) first stage relay contact

Selecting [dP] shall disable the Preactivated (1st stage) relay output. The 1st Stage Contact disabled and General Disablement indicators shall illuminate whilst the Preactivated relay is disabled.

16.5 [dA] Disable (activated) second stage relay contact

Selecting [dA] shall disable the Activated (2nd stage) relay output) The 2nd Stage Contact disabled and General Disablement indicators shall illuminate whilst the Activated relay is disabled.

16.6 [dc] Disable extract fan relay

Selecting [dc] shall disable the Extract fan output. The Extract Fan Disabled and General Disablement indicators shall illuminate while the Extract Fan output is disabled.

16.7 [dt] Disable manual triggering device (manual release)

Selecting [dt] shall disable the Manual Release input. The Manual Release Disabled and General Disablement indicators shall illuminate while the Manual Release input is disabled.

16.8 [dE] Disable extinguishant release

If the extinguishant release is disabled, the pre-release timer is never started and the extinguishant output is never asserted.

Note: Extinguishant output faults are ignored while the extinguishant release is disabled.

16.9 [Ad] Activate delays

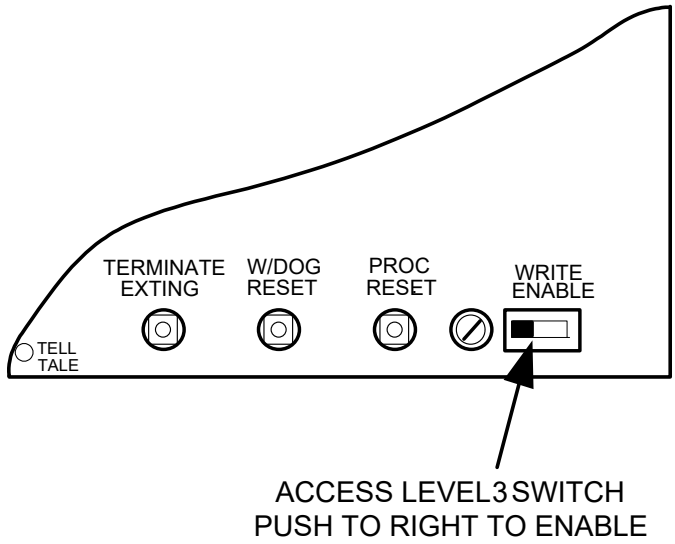
Selecting [Ad] shall make delays configured by access level 3 options C00 to C09 active.

16.10 [Ac] Operate extract fan output

Pressing the enter button with Ac selected will toggle the extract output on and off.

17. Access level 3 configuration options

The SIGMA XT control panel has many configuration options which can be set at the time of commissioning to suit the requirements of the installation. These options are normally set once and will rarely need to change. The configuration options are only available at access level 3. To enter access level 3, CAREFULLY slide the Write Enable switch (located behind the aperture in the panel plate) to the right position, using a small screwdriver or similar.



Configuration options are simple to enter using the codes in table 8 below. When the control panel is at access level 3, the sub-text of the *Mode* and *Select* buttons is used to enter a number using hundreds, tens and units. When the required code number is displayed, pressing the ENTER button will cause the dot on the units, seven segment display to flash. This indicates that a configuration option has been set. To review which configuration options have been set previously, simply scroll through numbers 1 to 99, A1 to A8 and those with a flashing dot indicate which options have been set.

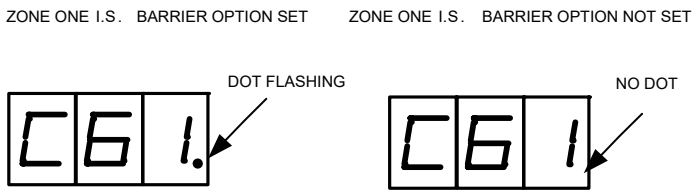


Figure 17 – Display showing option set and not set.

Table 5 – Configuration codes

NOTE: Setting the options marked with asterisks does not comply with EN54-2

CODE	FUNCTION	COMMENTS
UXX	CONFIGURATION UPDATE COUNT	Number incremented each time access level 3 config changed. Counter resets to 00 when 99 is reached.
C00	SOUNDER DELAY TIME = 30 SECONDS	Introduces a time delay before sounders operate. Note: Only one delay period can be selected. Delays will only be activated by selecting the "Ad" option in the Access Level 2 (User) menu
C01	SOUNDER DELAY TIME = 1 MINUTE	
C02	SOUNDER DELAY TIME = 2 MINUTES	
C03	SOUNDER DELAY TIME = 3 MINUTES	
C04	SOUNDER DELAY TIME = 4 MINUTES	
C05	SOUNDER DELAY TIME = 5 MINUTES	
C06	SOUNDER DELAY TIME = 6 MINUTES	
C07	SOUNDER DELAY TIME = 7 MINUTES	
C08	SOUNDER DELAY TIME = 8 MINUTES	
C09	SOUNDER DELAY TIME = 9 MINUTES	
C11	Z1 & Z2 DETECTORS TRIGGER AUTOMATIC RELEASE	Coincidence detection selection options. Only one option can be selected.
C12	Z2 & Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C13	Z1 &Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C14	Z1 & Z2 OR Z2 & Z3 OR Z1 & Z3 DETECTORS TRGGER AUTOMATIC RELEASE	
*C15	Z1 & Z2 & Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C16	Z1 OR Z2 OR Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C17	Z1 DETECTORS TRIGGER AUTOMATIC RELEASE	
C18	Z2 DETECTORS TRIGGER AUTOMATIC RELEASE	
C19	Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C21*	DISABLE FIRE BUZZER	
C22*	DISABLE FIRE OUTPUT	Fire relay.
C23	DISABLE FAULT OUTPUT	Fault relay.
C24	DISABLE EARTH FAULT MONITORING	
C25	PULSE R0V OUTPUT	
C26	REMOVE AUX 24V ON SYSTEM RESET	To enable resetting of systems using panels Aux supply.
C27	INDICATE EXTING RELEASED WHEN EXTING OUTPUT IS ACTIVE	Rather than upon receipt of signal from flow switch.
C28	NO ACTIVATION DELAY UPON MANUAL RELEASE	Delay remains active on automatic detection.
C29	EXTINGUISHANT OUTPUT CAN BE RESET DURING IMMINENT PHASE	Allows extinguishant output to be reset before countdown timer has expired for testing/commissioning
C2A	LOCAL FIRE RELAY OPERATES UPON RELEASED SIGNAL	Local fire relay operates only when extinguishant is released rather than upon a fire condition
C2b*	EXTINGUISHING OUPUT ON TILL RESET	Extinguishant output remain on after release until panel is reset. (from software version 1.2 onwards only)
C2C	LOW PRESSURE SWITCH NORMALLY CLOSED	Low Pressure switch input normally looks for open contact closing on activation, enables normally closed switch to be used. (from software version 1.2 onwards only)
C2d	DELAY MAINS FALI INDICATION BY 30 MINUTES	Cancelled if battery Low fault is indicated
C31	ZONE 1 ALARM FROM DETECTOR DELAYED	Sounder outputs will be delayed by time set at options 0-9 when selected zone(s) triggered by detector only. Note: Any combination can be selected.
C32	ZONE 2 ALARM FROM DETECTOR DELAYED	
C33	ZONE 3 ALARM FROM DETECTOR DELAYED	
C41	ZONE 1 ALARM FROM CALL POINT DELAYED	Sounder outputs will be delayed by time set at options 0-9 when selected zone(s) triggered by call point only. Note: Any combination can be selected.
C42	ZONE 2 ALARM FROM CALL POINT DELAYED	
C43	ZONE 3 ALARM FROM CALL POINT DELAYED	
C61	ZONE 1 OPERATES THROUGH I.S. BARRIER	Select only when detectors are connected via compatible I.S. barriers. Note: Any combination can be selected.
C62	ZONE 2 OPERATES THROUGH I.S. BARRIER	
C63	ZONE 3 OPERATES THROUGH I.S. BARRIER	
C71*	ZONE 1 SHORT CIRCUIT INDICATES ALARM	Changes the trigger threshold of the zone so that the control panel can be used on older systems that had no short circuit monitoring. Note: Any combination can be selected.
C72*	ZONE 2 SHORT CIRCUIT INDICATES ALARM	
C73*	ZONE 3 SHORT CIRCUIT INDICATES ALARM	
C81*	ZONE 1 NON-LATCHING	Renders the zone self-resetting so that it can be used to receive signals from other systems and will reset when the input is removed. Note: Any combination can be selected.
C82*	ZONE 2 NON-LATCHING	
C83*	ZONE 3 NON-LATCHING	
CA1	Z1 DEVICE ALARM MUST BE PRESENT FOR 30 SECONDS	Input delay. Note: Any combination can be selected.
CA2	Z2 DEVICE ALARM MUST BE PRESENT FOR 30 SECONDS	

CA3	Z3 DEVICE ALARM MUST BE PRESENT FOR 30 SECONDS	
E00	PANEL CAN BE RESET IMMEDIATELY DISCHARGE OUTPUT HAS OPERATED	To allow reset of the panel to be prohibited before the extinguishant discharge has fully completed.
E01 TO E29	PANEL CAN BE RESET 1 MINUTE TO 29 MINUTES AFTER DISCHARGE OUTPUT HAS OPERATED	
E30	PANEL CAN BE RESET 30 MINUTES AFTER DISCHARGE OUTPUT HAS OPERATED	
-00	NO EXTINGUISHANT DELAY	Time delay between activation and extinguishant release output operating. This menu is accessed using the lamp test (+100) button. The time is adjusted using the Mode button for 10's and the Select button for 5's. Once the time is selected the Enter button is used to store the value.
-05	5 SECONDS EXTINGUISHANT DELAY	
-10 TO -55	INCREMENT EXTINGUISHANT DELAY IN FIVE SECOND STEPS	
-60	60 SECONDS EXTINGUISHANT DELAY	
060	EXTINGUISHANT DURATION TIME IN SECONDS	Time that extinguishant release output is activated. Note: Panel can not be reset until this time has expired except by operating the terminate extinguishant switch located under the front cover. This menu is accessed using the lamp test (+100) button. The time is adjusted using the Mode button for 10's and the Select button for 5's. Once the time is selected the Enter button is used to store the value.
060 TO 295	INCREMENT EXTINGUISHANT DURATION IN FIVE SECOND STEPS	
300	EXTINGUISHANT DURATION TIME IN SECONDS	

NOTE: Setting the option C15 and those marked with asterisks does not comply with EN12094-1

Once the required configuration options have been set, the Access level 3 switch **must** be returned to its normal position. The General fault indicator will remain lit if the Access level 3 switch is not turned off.

18. Internal Controls

18.1 Watchdog reset

If for any reason the microprocessor in the control panel fails to carry out its operation correctly it will attempt to restart itself. This process is called a “watchdog” and the control panel must record and indicate these events.
If a watchdog event occurs, the control panel will show the FAULT and SYSTEM FAULT LEDs on the front panel, the CPU fault LED inside the panel and the buzzer will sound. This fault can only be cleared by pressing the WATCHDOG RESET button on the PCB inside the control panel. This is a serious failure and the control panel buzzer will continue to sound until the watchdog activation is reset.

18.1 Processor reset

Once started, the microprocessor controlling the panel should continue to run the panel continuously without interruption. If the microprocessor fails to run correctly it can be reset by pressing the PROCESSOR RESET button on the PCB inside the control panel.
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.

18.3 Terminate extinguishant

Once the release output has been initiated it can not be stopped using the reset button until after the extinguishant duration timer has elapsed. For test purposes a terminate extinguishant button is provided at access level 3 which will terminate an already running extinguishant flooding and allow the system to be reset to normal.

18.4 Commissioning

Changes to the configuration as listed in table 5 require that the changes be stored in the control panel memory. To enable the memory to be written to it is necessary to operate the Write Enable slide switch.

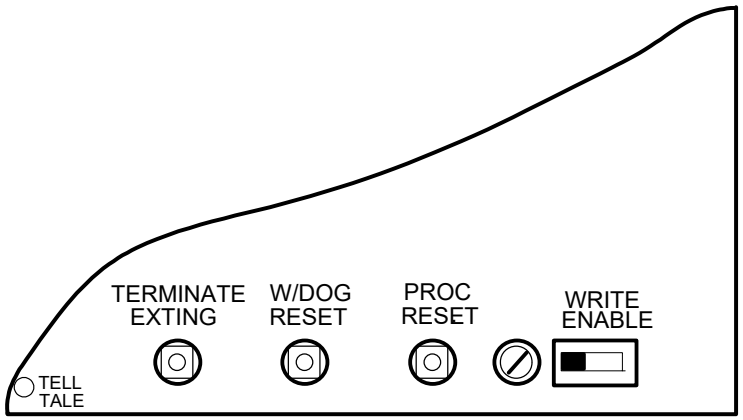


Figure 18 – Terminate Extinguishant, Watchdog reset, Processor Reset and Write enable switches

19. Internal indications – troubleshooting

To assist in identifying fault conditions which are not detailed on the front of the control panel, a number of internal indicators are visible with the front cover removed as follows:

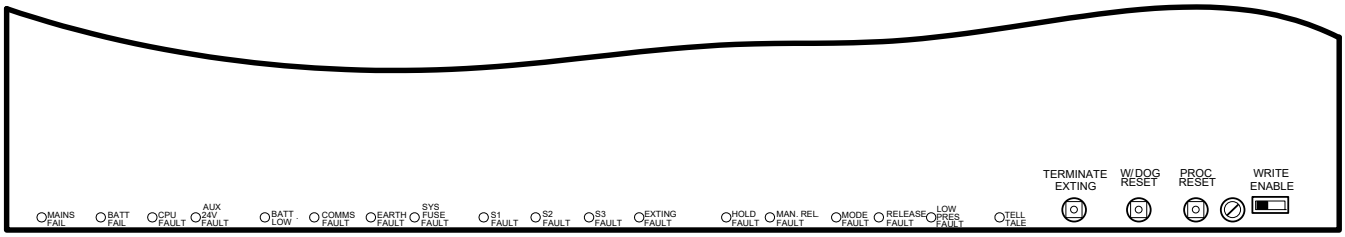


Figure 19. Internal fault LED

19.1 Mains fail

Indicates that the 230V AC supply is not present and the system is running on standby batteries. If there is not a power cut, check the panels mains fuse.

19.2 Batt fail

Indicates that the standby battery has become disconnected or that the charging circuit of the control panel has failed. Check that both batteries are connected and linked together. Test battery. Disconnect battery and ensure that 28 Volts can be measured on battery charger leads.

19.3 CPU fault

Indicates that the central processor unit has failed to correctly execute code and has been re-started by the system watchdog. The watchdog reset switch must be pressed to clear the CPU fault condition.
Press watchdog reset. If system does not return to normal then the panel is probably damaged and needs the circuit board replacing. (See maintenance section 21).

19.4 Aux 24V fault

The Aux 24V and R0V terminals provide a 500 milliamp, 24V DC power supply for power fire alarm ancillary equipment. This LED indicates that fuse protecting the R0V output has operated and the rating of this output has been exceeded. The fuse is a self resetting type and the supply will resume when the fault condition is removed.

19.5 Batt low

Illuminates when the system is running on batteries and the battery voltage is between 21.5 V and 20.5 V (the minimum battery voltage).

19.6 Comms fault

Indicates that communication has been lost with a repeater panel or Ancillary board. Check for comms fault at all repeaters and ancillary boards to identify the source of the problem.
The comms fault LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.7 Earth fault

Indicates that part of the system wiring is connected to earth. Remove all system wiring and re-connect cables one at a time until the earth fault returns. This will indicate which cable the earth fault is present on.

19.8 Sys fuse fault

Indicates that the total power rating of the power supply has been exceeded and that the system fuse has come into operation. Remove and review all loads and re-connect one at a time until over rated circuit trips fuse to identify troublesome circuit.

19.9 S1, S2 and S3 fault

Indicates a short or open circuit on sounder outputs. Remove wiring and refit end of line resistors. Check sounder circuit wiring.
The S3 LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.10 Exting fault

Indicates a short or open circuit on extinguishant output. Remove wiring and refit end of line resistors. Check extinguishant circuit wiring.
The Exting fault LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.11 Hold fault

Indicates a short or open circuit on the hold switch input. Remove wiring and refit end of line. Check hold circuit wiring.
The Hold fault LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.12 Manual release fault

Indicates a short or open circuit on the manual release switch input. Remove wiring and refit end of line. Check manual release circuit wiring.
The Manual release fault LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.13 Mode fault

Indicates a short or open circuit on the mode switch input. Remove wiring and refit end of line. Check mode circuit wiring.
The Mode fault LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.14 Release fault

Indicates a short or open circuit on the released pressure switch input. Remove wiring and refit end of line. Check released pressure switch circuit wiring.
The Released fault LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.15 Low pres fault

Indicates a short or open circuit on the low pressure switch input. Remove wiring and refit end of line. Check low pressure switch circuit wiring.
The Low pres fault LED will be accompanied by the front panel Flooding zone fault LED to indicate a common fault condition within the extinguishant section of the control panel.

19.16 Tell tale

Indicates that either panel mounted or remote manual release button has been pressed.
Can only be reset by pressing processor reset and W/DOG reset or powering down the control panel.

20. Power supply

The control panel requires a 230V (+10%/-15%), 50/60Hz, AC mains power supply which connects to the fused terminal block labelled “230V”.
The fused terminal block contains a 20mm, F1.6A L250V fuse which should only be replaced with a similar type.
The output voltage of the power supply is 28V DC +/- 2V and the total current rating including a maximum 0.7A for battery charging is 3 Amps. Fuse F12 mounted on the circuit board is a self-resetting electronic fuse rated at 4 Amps.
The incoming mains cable should be routed well away from other lower voltage wiring by a distance of at least 50mm.
Mains wiring should include an earth conductor, which is securely bonded to the building earth and should enter the enclosure as close as possible to the mains terminal block. Mains wires should be kept very short inside the enclosure and secured together close to the mains terminal block with a cable tie.
The control panel can accept sealed lead acid rechargeable batteries of up to 7Ah maximum capacity.
The maximum current drawn from the batteries when the main power source is disconnected is 3 Amps.
Battery leads are supplied wired to the PCB along with a link to connect the two batteries in the accessory pack.

It is most important that the polarity of the batteries is carefully observed when connecting. Wrongly connected batteries could cause damage to the control panel.

Caution: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

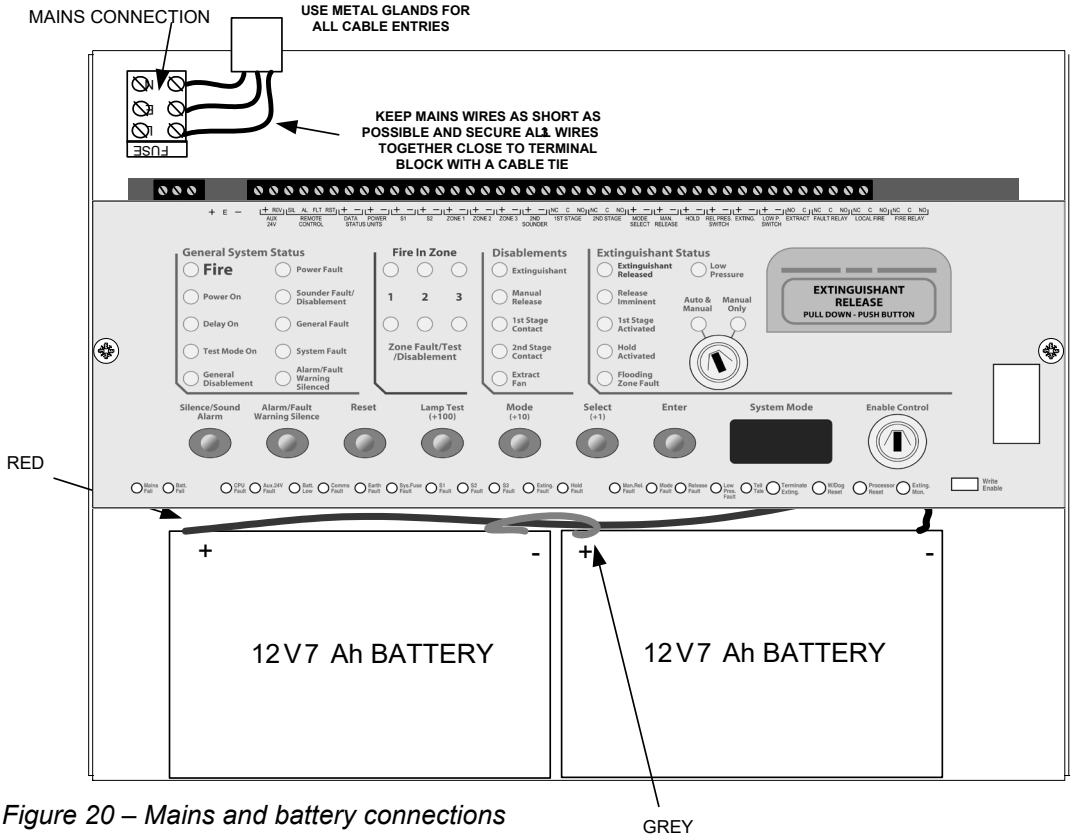


Figure 20 – Mains and battery connections

21. Maintenance

SIGMA XT control panels do not require any specific maintenance but should the control panel become dirty it can be wiped over with a barely damp cloth. Detergents or solvents should not be used to clean the panel and care must be taken that water does not enter the enclosure.

The control panel contains sealed lead acid batteries to provide standby power in the event of mains failure.
These batteries have a life expectancy of around 4 years. It is recommended that these batteries be tested in accordance with the battery manufacturer's recommendations annually to determine their suitability for continued standby applications.

Testing of the extinguishant system should only be carried out by trained personnel and must be done with appropriate isolation measures in place to ensure that accidental discharge of the extinguishant agent is avoided.

Should the control panel become faulty the complete electronic assembly and front plate can be replaced.

To do this, any configured options should be noted then both mains and battery power should be removed before the work is started.

The field wiring should be carefully labelled and removed from the terminals. The power terminal block can be unplugged from the PCB by pulling it towards you.

The PCB can now be taken out of the panel by removing the 2 screws.
Fitting the new PCB is the reverse of the procedure for removing the board.

22. Record of configuration

Use the table below to record the configuration codes that have been set on the control panel for future reference. Place a tick in the box for any configuration options that are set.
It is recommended that a copy of this table is left with the control panel under the supervision of the person responsible for the fire protection system.

NOTE: Setting the options marked with asterisks does not comply with EN54-2

CODE	FUNCTION	TICK SET OPTIONS
C00	SOUNDER DELAY TIME = 30 SECONDS	
C01	SOUNDER DELAY TIME = 1 MINUTE	
C02	SOUNDER DELAY TIME = 2 MINUTES	
C03	SOUNDER DELAY TIME = 3 MINUTES	
C04	SOUNDER DELAY TIME = 4 MINUTES	
C05	SOUNDER DELAY TIME = 5 MINUTES	
C06	SOUNDER DELAY TIME = 6 MINUTES	
C07	SOUNDER DELAY TIME = 7 MINUTES	
C08	SOUNDER DELAY TIME = 8 MINUTES	
C09	SOUNDER DELAY TIME = 9 MINUTES	
C11	Z1 & Z2 DETECTORS TRIGGER AUTOMATIC RELEASE	
C12	Z2 & Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C13	Z1 &Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C14	Z1 & Z2 OR Z2 & Z3 OR Z1 & Z3 DETECTORS TRGGER AUTOMATIC RELEASE	
*C15	Z1 & Z2 & Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C16	Z1 OR Z2 OR Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	
C17	Z1 DETECTORS TRIGGER AUTOMATIC RELEASE	
C18	Z2 DETECTORS TRIGGER AUTOMATIC RELEASE	
C19	Z3 DETECTORS TRIGGER AUTOMATIC RELEASE	

C21*	DISABLE FIRE BUZZER	
C22*	DISABLE FIRE OUTPUT	
C23	DISABLE FAULT OUTPUT	
C24	DISABLE EARTH FAULT MONITORING	
C25	PULSE R0V OUTPUT	
C26	REMOVE AUX 24V ON SYSTEM RESET	
C27	INDICATE EXTING RELEASED WHEN EXTING OUTPUT IS ACTIVE	
C28	NO ACTIVATION DELAY UPON MANUAL RELEASE	
C29	EXTINGUISHANT OUTPUT CAN BE RESET DURING IMMINENT PHASE	
C2A	LOCAL FIRE RELAY OPERATES UPON RELEASED SIGNAL	
C2b*	EXTINGUISHING OUPUT ON TILL RESET	
C2C	LOW PRESSURE SWITCH NORMALLY CLOSED	
C2d	DELAY MAINS FALI INDICATION BY 30 MINUTES	
C31	ZONE 1 ALARM FROM DETECTOR DELAYED	
C32	ZONE 2 ALARM FROM DETECTOR DELAYED	
C33	ZONE 3 ALARM FROM DETECTOR DELAYED	
C41	ZONE 1 ALARM FROM CALL POINT DELAYED	
C42	ZONE 2 ALARM FROM CALL POINT DELAYED	
C43	ZONE 3 ALARM FROM CALL POINT DELAYED	
C61	ZONE 1 OPERATES THROUGH I.S. BARRIER	
C62	ZONE 2 OPERATES THROUGH I.S. BARRIER	
C63	ZONE 3 OPERATES THROUGH I.S. BARRIER	
C71*	ZONE 1 SHORT CIRCUIT INDICATES ALARM	
C72*	ZONE 2 SHORT CIRCUIT INDICATES ALARM	
C73*	ZONE 3 SHORT CIRCUIT INDICATES ALARM	
C81*	ZONE 1 NON-LATCHING	
C82*	ZONE 2 NON-LATCHING	
C83*	ZONE 3 NON-LATCHING	
CA1	Z1 DEVICE ALARM MUST BE PRESENT FOR 30 SECONDS	
CA2	Z2 DEVICE ALARM MUST BE PRESENT FOR 30 SECONDS	
CA3	Z3 DEVICE ALARM MUST BE PRESENT FOR 30 SECONDS	
E00	PANEL CAN BE RESET IMMEDIATELY DISCHARGE OUTPUT HAS OPERATED	
E01 TO E29	PANEL CAN BE RESET 1 MINUTE TO 29 MINUTES AFTER DISCHARGE OUTPUT HAS OPERATED	
E30	PANEL CAN BE RESET 30 MINUTES AFTER DISCHARGE OUTPUT HAS OPERATED	
-00	NO EXTINGUISHANT DELAY	
-05	5 SECONDS EXTINGUISHANT DELAY	
-10 TO -55	INCREMENT EXTINGUISHANT DELAY IN FIVE SECOND STEPS	
-60	60 SECONDS EXTINGUISHANT DELAY	
060	EXTINGUISHANT DURATION TIME IN SECONDS	
060 TO 295	INCREMENT EXTINGUISHANT DURATION IN FIVE SECOND STEPS	
300	EXTINGUISHANT DURATION TIME IN SECONDS	

NOTE: Setting the option C15 marked with asterisks does not comply with EN12094-1

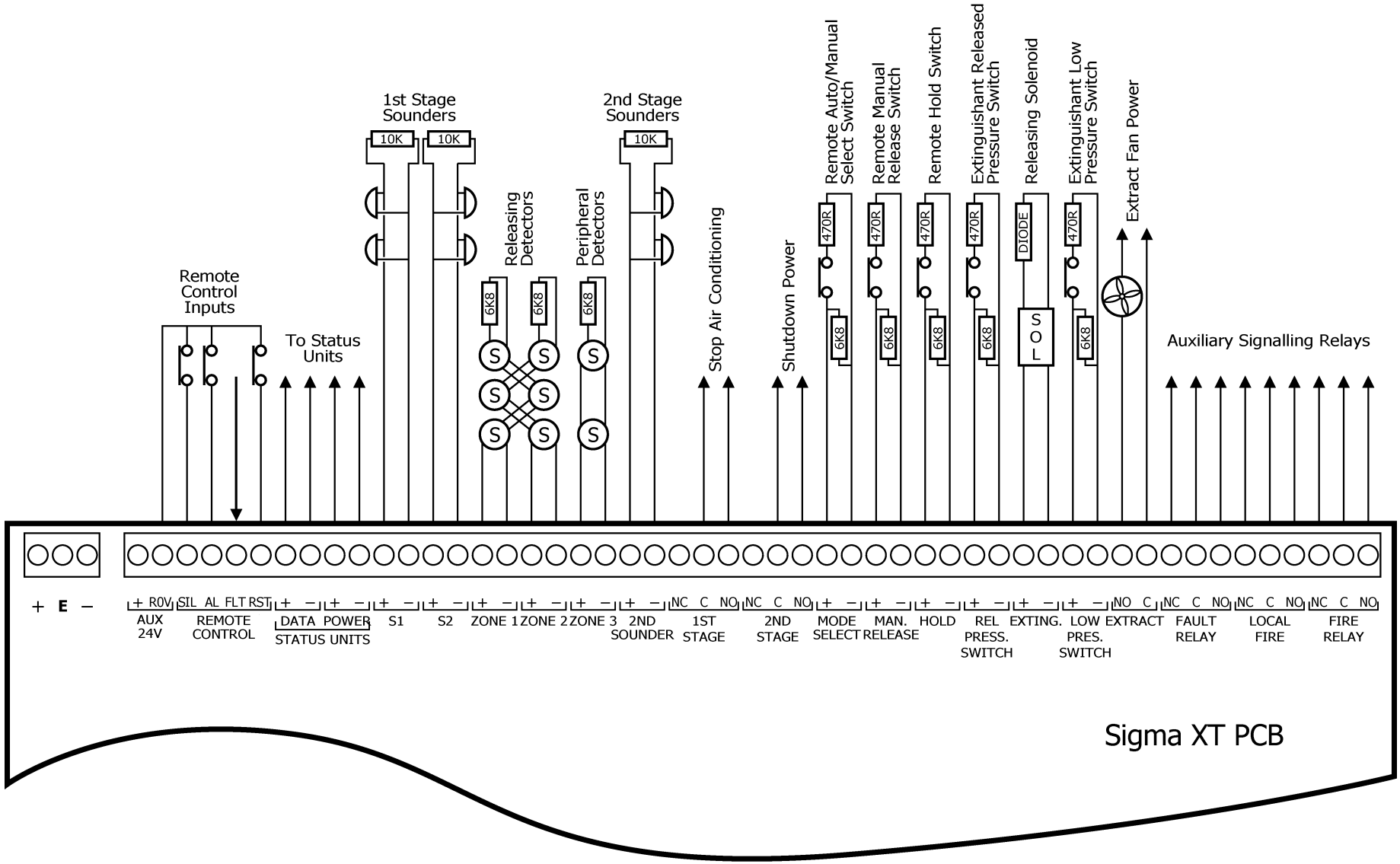
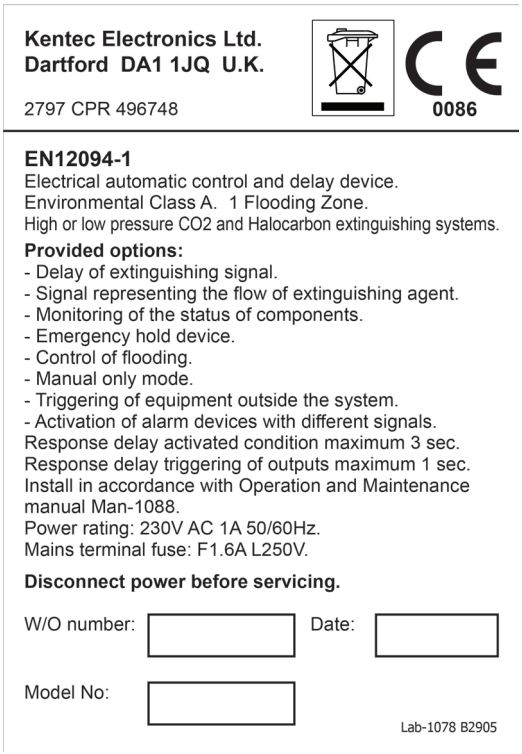


Figure 22 – System Schematic

23. CE Mark

All control panels have a label affixed to the inside of the lid as shown below.
This label should not be removed under any circumstances.



24. Commissioning instructions

24.1

Before applying power to the panel, the extinguishant device (solenoid or igniting actuator) must be physically isolated from the system by disconnecting both wires to it. This will prevent any accidental release of extinguishant.

24.2

When power is applied, if all connections are correct, only the green Power On and either the Automatic and Manual or Manual Only indicators should be lit.
If any fault indicators are lit the wiring to the appropriate input or output should be checked an all faults cleared before proceeding.

24.3

Once the panel is fault free, it can be configured with the desired options as described in section 17.

24.4

Once the panel has been configured the system should be thoroughly tested to ensure that the control panel responds as expected and required.

24.5

After satisfactory testing, any final connections should be made (such as to the extinguishant release actuator).

24.6

A record of the configuration options that have been set should be recorded in the table on section 22 and this manual provided as part of the documentation recommended by BS5839:Part 1:2002 section 40.2 b).