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1. Introduction

The **Syncro XT** is a single area analogue addressable fire detection and extinguishing control panel capable of indicating a maximum of 16 fire zones with 2 detection loops and 126 Apollo protocol devices per loop. The panel will support up to 500 fire zones by using the status LCD to display zone numbers, however only zones 1 to 16 will be indicated with zone LED indicators on the front panel.

The Syncro XT panel is designed to meet the requirements of EN12094 pt 1, which calls upon the fire elements of the panel to meet the requirements of EN54-2 and EN54-4.

Syncro XT also supports Apollo loop-powered sounders and the Syncro Si range of Addressable Status units, addressable hold off buttons, addressable mode select keys and addressable manual release switches.

Any number of devices can be allocated to any zone ensuring that any system configuration can be easily accommodated. although no more than 32 devices shall be mapped to any zone to meet EN54-2 requirements

To ensure that the system is installed and commissioned with the minimum of trouble, it should be carefully planned before the installation is begun.

This involves allocating an address to each device and allocating a message of up to 40 characters (including spaces) to each address to assist in the location of the devices.

Devices should then be grouped into zones in accordance with the appropriate fire detection & Extinguishing systems design standard.

To simplify the panel configuration process, the panel has an auto configure menu option. This allows the panel to detect and store all devices connected to the detection loops and automatically configures all automatic detection devices (smoke detectors, heat detectors and beam detectors) to contribute to the single Extinguishant area.

The **Syncro XT** control panel offers an extensive list of features and options for the control and monitoring of plant, equipment and sounders, which can be configured via a PC configuration programme or the front panel controls. Any switched input device may be configured as a fire input device or as an Extinguishant specific input, such as Hold off, released pressure switch or manual release etc.

In addition to the EN54-2 options with requirements below, the panel also supports facilities such as Day/Night sensitivity changes & programmable Function buttons on the front of the panel.

The range of compatible devices includes optical and ionisation smoke sensors, heat sensors, multi-sensors, switch monitors and relay or bell controllers. Interfaces to conventional detection systems can also be catered for using zone-monitoring devices.

Each loop offers an addressing range from 1 to 126 and supports all Apollo Series 90, XP95, Discovery and XPlorer detection devices and modules. The loops also support the Syncro Si Addressable status unit, hold off and mode select switch devices.

However, devices such as the switch monitors and sounder controllers have "Sub-addresses" in addition to their main address. Each panel can be configured to recognise up to 800 sub-addresses. These can be all on one loop or spread across both loops as required.

Therefore a switch monitor for example, may have a main address of 123, input 1 sub-address 123.1 and input 2 sub-address 123.2. (three addresses from 800 available).

The sub-addresses can be treated as if they were individual addresses i.e. each can be allocated to any zone, given an individual address message and be operated on by different cause and effect tables.

Important: This control panel is compatible only with fire system components manufactured by Apollo.

The control panel has the following options with requirements as defined in BS EN54-2 : 1997.

- 1) Fault signals from points (clause 8.3)
- 2) Delay of the actioning of inputs and outputs (clause 7.11)
- 3) Disablement of each address point (clause 9.5)
- 4) Test condition (clause 10.1 to 10.3)
- 5) Control of Fire alarm devices (clause 7.8)
- 6) Co-incidence detection (clause 7.12)

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 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 shall be incorporated in the fixed wiring.

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

3. Installation

Installation of the panel should be carried out by qualified personnel only.

The electronic components within the panel are vulnerable to physical damage and damage by electrostatic discharges.

It is advisable to wear a wrist strap designed to prevent the build-up of static charges within the body, before handling any electronic circuit boards.

Never insert or remove boards or components with the power on.

Mounting the Cabinet

The site chosen for the location of the panel should be clean and dry and not subject to shock or vibration.

The temperature should be in the range -5° to $+35^{\circ}$ C, the humidity should not exceed 95%.

Open the cover using the key provided.

Using the box as a template, mark the position of the fixing holes, ensuring that the wall is flat at the chosen location.

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

4. Cabling

Cables should be brought into the cabinet using the knockouts provided and where necessary, using couplers to maximise the space within the enclosure.

Ensure that only the numbers of knockouts are removed to meet the cable termination requirements, as any additional apertures in the enclosure will compromise the IP30 ingress protection requirements required by EN54-2

Brass inlet bushings or cable glands should be used to maintain insulation and to ensure EMC compliance to the requirements of EN54-2

The screen or drain wires should be bonded to the earth terminals provided.

NOTE - All unused clamping screws on the earth terminal block shall be tightened after all cables have been installed.

This is to ensure that they do not work loose or cause any panel failures as a result of vibration.

The maximum size of cable, which can be terminated, is 2.5 mm.

The communications protocol is highly immune to noise but sensible segregation from known noise generating sources such as mains cables is recommended.

Detection circuit cable size and type is dependant on the number and type of devices used and should be calculated for each installation. A cable length calculator application is available from Apollo.

Cabling for sounder circuits should be sized according to sounder load and cable length but 1.5mm should suffice in the majority of cases.

The control panel requires a 230V AC supply, which should be derived from a separate fused spur, labelled "**fire alarm - do not switch off**".

The mains supply must include an earth conductor connected to the fixed installation earthing system of the building.

This equipment relies on the building installation for protection and requires a 5-amp protection device. The mains supply should use cable with a minimum cross section of 1.5mm.

5. Connecting to the panel

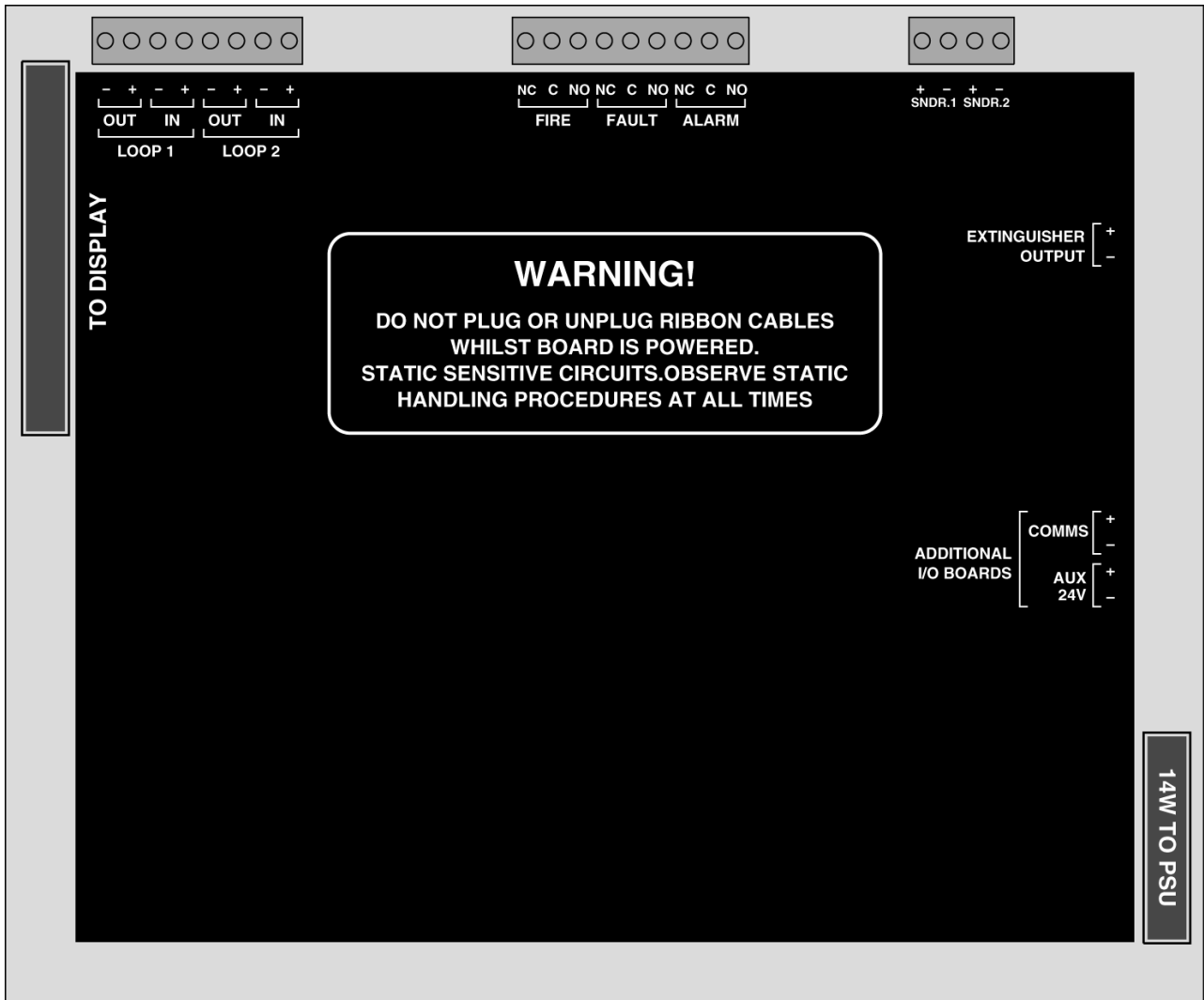
All connections to the panel are via 5mm pitch, 2.5mm capacity, spring leaf terminal blocks. Care should be taken to use the correct sized terminal screwdriver and not to overtighten the terminals.

To avoid the possibility of a confusing array of fault conditions, it is best to connect the system gradually, a loop at a time for instance, so that faults can be cleared on one circuit before connecting another.

Polarity must be observed carefully on any terminals with + or - markings and end of line devices must be fitted to all circuits which have them fitted in the terminals when the panel is supplied.

Do not connect or disconnect circuits with the power on.

Do not remove the protective cover from the terminal PCB.



6. Front panel controls

The front panel contains controls for operating and programming the panel.

The lamp test and silence buzzer buttons can be operated at any time (Access Level 1) in accordance with EN54-2 requirements.

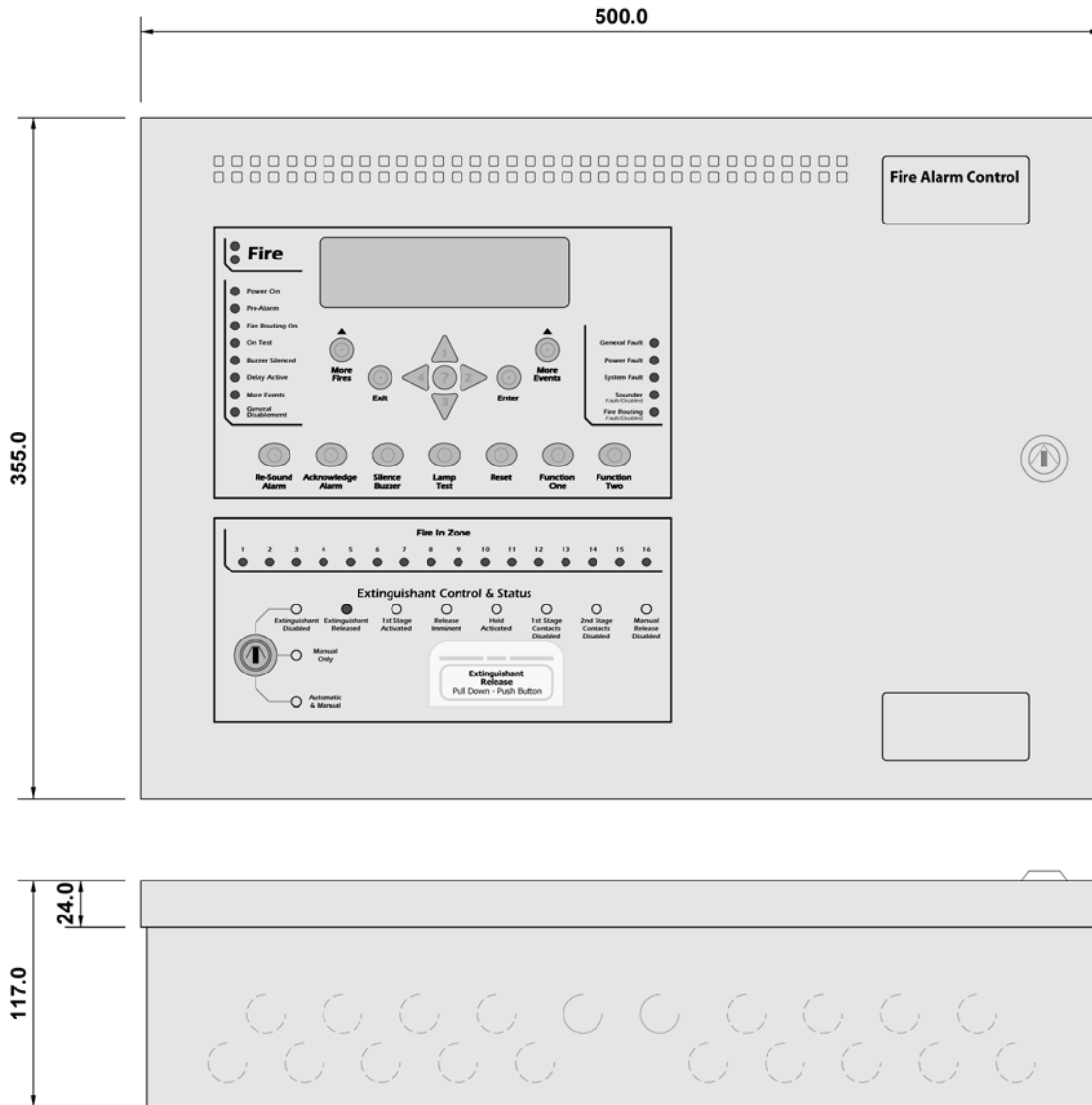
The more fires and more events buttons can be operated at any time when there are more events than can be displayed on the screen.

The menu navigation buttons can be used to enter the password to access level 2 which then enables the acknowledge alarm, resound alarm, function and reset buttons used for controlling the panel and gives the user access to the facilities available at access level 2.

The help button offers additional information relating to the current status of the control panel. e.g. if the panel is in an alarm or fault condition then advice on the recommended action will be displayed or if a menu function is being accessed then help relating to that function will be displayed.

Below the fire controls, there is a number of controls and indicators associated with the Extinguishant control element of the system. The mode selection key switch allows the panel to be selected to Automatic and Manual mode, Manual Only Mode or for all Extinguishant outputs configured in the protected area to be disabled. These controls & indicators are provided by a Syncro XT Extinguishant display card, connected to the internal RS485 communications bus and set to address 32.

There are indicators to show which mode is selected, plus additional indicators to show release imminent, Extinguishant released, hold off active, 1st stage active, manual release disabled and 1st and 2nd stage contacts disabled.



7.0 Powering the Panel

Ensure that the panel is free from swarf; wire ends, knockout discs and any other debris

The polarity of the battery connection should be checked carefully before proceeding.

Ensure that each connection to loops, sounder circuits or any other inputs or outputs being used are correct before applying the mains power.

After applying mains power, connect the batteries.

Configuring the Panel (Autolearn)

When supplied the panel will contain no configuration and when power is first applied the display will show:

AUTO LEARN IN PROGRESS, PLEASE WAIT			
LOOP	NUM. DEVICES	INIT.	PROGRESS
1	000		0%
2	000		0%

Initialisation can take a few minutes to complete. The greater the number of devices on any one loop, the longer it will take.

At the end of the initialisation process, if there are no faults, the panel will beep and the "normal" display will be shown as below.

13:05 Friday 02 February 2004
AUTO CONFIGURED PANEL
USE ARROW KEYS TO ENABLE PANEL
PRESS ? FOR HELP

On a system, which has been Auto configured, all inputs, outputs and field devices will have been configured to default settings.

In addition, **all** smoke detectors and heat detectors will be configured to contribute to the extinguishant area. The panel outputs will also be automatically configured as Extinguishant outputs in accordance with the list below;

Fire Contact	>>	1st stage contact
Alarm Contact	>>	2nd stage contact
Sounder 1	>>	1st stage sounders
Sounder 2	>>	2nd stage sounders
Extinguisher output	>>	Extinguisher (solenoid) output
Fault Contact	>>	Common fault

It is quite common for mistakes to occur when addressing large numbers of devices and it is possible that some devices have been set to the same address.

The control panel can detect devices that have been set to the same address and will announce a "Double address" fault.

Obviously it is not possible for the control panel to tell which devices have been double addressed but to help find double addressed devices, go to the view devices option in the menu and make sure that all of the devices that are expected are listed.

If there is one double address fault and one device missing from the list of expected devices then it is fairly certain that the missing one is the one that has been addressed incorrectly.

It becomes a bit more tricky when there are more than 2 devices with the same address or more than 1 double address but using the principle above it will be possible to find the errors by a process of elimination.

It is always much quicker and easier to commission a system which has been addressed correctly however and extra care taken to fit devices with the correct address to the plan will pay great dividends at this stage.

Tip: If a fairly heavily populated loop is disconnected from the panel, the panel will obviously report all of the devices disconnected. Upon re-connection of the loop, the panel will find all of the devices again but it also has to run as a fire control panel, service other parts of the system and re-initialise these devices. In the case of a large number of faults under these circumstances it is often quicker to get the system back to normal by re-initialising the whole panel by pressing SW2 (RESET) on the front panel PCB.

Configuring the Panel (from PC)

To allow configuration from a PC it is necessary to have the Loop Explorer XT configuration programme installed on the computer and for the download lead to be plugged into the serial port of the computer. The other end of the download lead should be connected to connector J5 on the control panel front PCB.

When configuring the panel from a PC it is very important to ensure that the actual configuration of devices installed matches the PC configuration.

If this is not the case then there can be a bewildering array of missing and/or unexpected devices, which can be quite confusing and difficult to diagnose.

It is also absolutely essential to ensure that all elements of the system that are to contribute to the Extinguishant Area have been configured to the Area in Loop Explorer XT – failure to do so will result in the incorrect operation of the control panel.

If the exact site configuration is not known in advance it is possible to upload an autolearned configuration to the PC, add text messages and any other changes required and then download this back to the control panel. This method ensures that the configurations match, is likely to proceed without errors and provides a quick and easy method of entering text and zone number information.

This method may also be used to add or exclude devices from the Extinguishant Area.

Panels that are configured from a PC can have default settings for devices changed (including call points) so the system should be thoroughly tested after a download to ensure that all devices respond as expected.

8. Facilities Menus

A number of facilities are provided which can only be reached at access level 2 or 3.

Access level 2 can be reached by entering the correct password (a 4 digit number) and pressing the enter button.

Access level 3 can be reached from access level 2 only by entering the correct password and pressing the enter button.

To keep things simple, when panels are supplied, they have 2222 as the password for access level 2 and 3333 as the password for access level 3.

Passwords can only be changed by using the Loop Explorer XT PC configuration programme.

Access level 2 will be required by the end user to accept and reset the system.

Any persons responsible for the fire alarm system should be aware of the access level 2 password to enable the panel controls.

Without this password it will not be possible to acknowledge or reset the system so it is most important that the responsible person knows the password.

Main menu items available at access levels 2 and 3 are as follows:

ACCESS LEVEL 2 (2222)	ACCESS LEVEL 3 (3333)
Disablements	Edit configuration
View devices	Set times
Test Zones	Event log
Set system time	System Disablements
Contamination Status	Loop Data Test
Access level 3	

*****CAUTION*****

Access level 3 enables a much higher level of control and should ideally be restricted to engineers of the fire systems company.

It is possible to re-configure the system at access level 3, therefore any changes made at this level should be done with great care and the system should be tested following any changes.

9. Detection circuits

The Syncro XT control panel is supplied with 2 detection circuits and configured to communicate with Apollo protocol devices. It is possible to mix Series 90, XP95, Discovery and XPlorer protocol devices on the same Detection loop.

Devices are connected to the detection circuits on a looped pair of cables.

Short circuit isolators must be fitted in the loop wiring such that a single short or interruption in the circuit will not prevent the indication of a fire alarm from more than 32 detectors and/or manual call points. Power is driven from the "out" terminals and is returned to the "in" terminals where it is monitored.

If the loop is broken or short-circuited then the panel will drive power from both the "out" and "in" terminals. This ensures that despite a single break or short circuit in the wiring, the majority of the devices will still remain connected to the control panel. The short circuit isolators will isolate the faulty section of the wiring.

Both the "out" and "in" connections of the panel are fitted with short circuit isolation so that a short on the cable between these terminals and the first isolator fitted to the detection circuit will be isolated, leaving the remainder of the circuit operational.

The detection circuits also supply power to operate loop-powered sounders and can provide up to 400mA on each circuit.

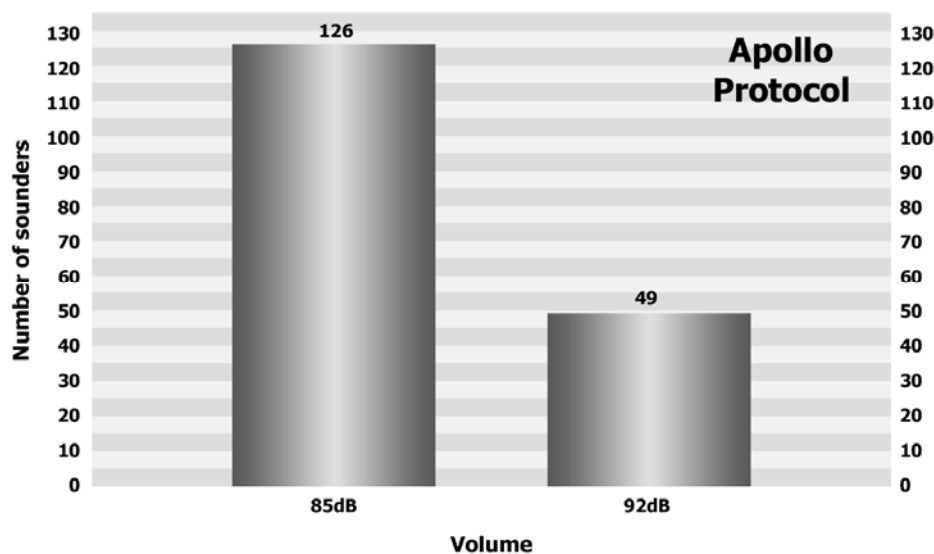
As the power required by detectors, call points and input/output units is relatively very small, most of this power is available to drive sounders but the number of sounders which may be connected will depend on their volume setting and the number of other devices fitted.

The Apollo Loop Calculator should be used to verify detection circuit loading if there is any doubt about the loading exceeding the maximum of 400mA.

10. Loop sounders & Beacons

The following graph gives an approximation of the number of sounders, which can be connected to each loop at different volumes.

10.1 Apollo Loop Sounder Quantity Chart



10.2 Apollo loop sounders

Apollo loop sounders can have two volume settings. Operating a bit on the address DIL switch on the device sets the volume.

The volume settings available are 85dB at which the current consumption is 3mA and 92dB at which the current consumption is 8mA.

The sounder can be operated with only one tone, which is 500Hz/550Hz at 250mS intervals. This can be pulsed at 1-second intervals to give an alert warning if required.

Apollo loop sounders can be used as a detector base or as a stand-alone device but either way, each sounder must be allocated a unique address in the range 1 to 126.

Each loop sounder can be configured as either a fire output sounder or as a first stage alarm output or a second stage alarm output.

Loop Sounder configured as a Fire sounder output

If configured as a fire sounder output, the sounders will operate in accordance with the flag settings for that device. If set to respond to def ring mode, then the sounder will follow the default ringing pattern for the control panel and will silence when the acknowledge alarm button is pressed.

Loop Sounder configured as a 1st Stage Alarm output

If configured to a first stage alarm output the loop sounder will operate continuously for a single fire. The sounder can be muted unless the panel has detected a second fire and the release imminent sequence is in progress.

Loop Sounder configured as a 2nd Stage Alarm output

If configured to a second stage alarm output the loop sounder will pulse when two devices in the protected area have gone to fire. Following the receipt of a pressure switch input in the protected area, the second stage sounder will change from pulsing to continuous mode. The sounders will not be capable of being silenced until the pressure switch input has operated.

11. Panel Sounder circuits

Two conventional sounder circuits are provided in the panel, each fused at 1A. The total load for all monitored outputs on the panel must not exceed 1.5A

Fitting a 10K end of line resistor monitors the circuits for open and short circuit faults.

The default setting for these Extinguishant Alarm outputs is

Sounder 1 >> **1st Stage Alarm Output** – the output will operate continuously for any single fire or manual release activation.
The Alarm output can be muted unless the panel has detected a second fire and the release imminent sequence is in progress. If two devices have gone to fire, the 1st Stage Alarm output can only be muted after the pressure switch released input has operated.

Sounder 2 >> **2nd stage alarm output** – the output will pulse when two devices in the protected area have gone to fire (when in Auto & Manual Mode) or when a Manual Release input is operated.
Following the receipt of a pressure switch input in the protected area, the output will change from pulsing mode to continuous mode. The sounders will not be capable of being silenced until the pressure switch input has operated.

12. Sounder controllers

Sounder controllers are available in the Apollo range of devices and can be used for controlling conventional sounders from the detection loop.

The wiring to the conventional sounder circuits is monitored for open or short circuit faults by fitting an end of line monitoring device.

The sounder controller outputs are fully programmable and can be configured as either fire outputs or Extinguishant 1st / 2nd stage alarm outputs. If configured as 1st or 2nd stage alarm outputs, they will operate in accordance with the sequence given above.

Sounder controllers require an additional 24V DC supply to power the conventional sounder circuits (or other equipment) and this power supply is also monitored for failure by the control panel.

13. Panel Relay outputs

Two volt-free changeover relay contacts rated at 30 Volts DC at 1 Amp are provided for extinguishing switching functions. A third relay is provided for a common fault output

Under no circumstances should voltage or current outside of this limit be used with these contacts.

The default actions of these contacts as supplied from the factory are as described below: -

FIRE Relay >> **1st Stage Contact** – the output will operate continuously for any single fire from a device in the protected area (Auto and Manual Mode) or from a manual release in the protected area.

This output will remain switched until the panel is reset.

ALARM RELAY >> **2nd Stage Contact** – the output will operate on any two fire activations from a devices in the protected area (Auto and Manual mode only) OR by the operation of a manual release input.

This output will remain switched until the panel is reset.

FAULT RELAY >> **Common Fault** – this is a “normally energised” relay and will switch off for any fault Condition or upon total power failure to the control panel

Each volt free changeover contact can be configured independently via the PC configuration programme or the front panel pushbuttons (at access level 3) as shown on the EDIT CONFIGURATION MENU description later in this manual.

14. Extinguishant output

The control panel is equipped with a monitored output, which is used to activate the Syncro XT Gas system solenoid (or explosive actuator) directly.

The default actions of this output as supplied from the factory or auto configured is as described below: -

Extinguishant >> Following the operation of two detection devices in the protected area (Auto and Manual mode) or from the operation of any Manual Release input in the protected area, the delay timer for the extinguisher output will commence. When this delay timer expires, the output will switch and will remain switched for the configured duration period.

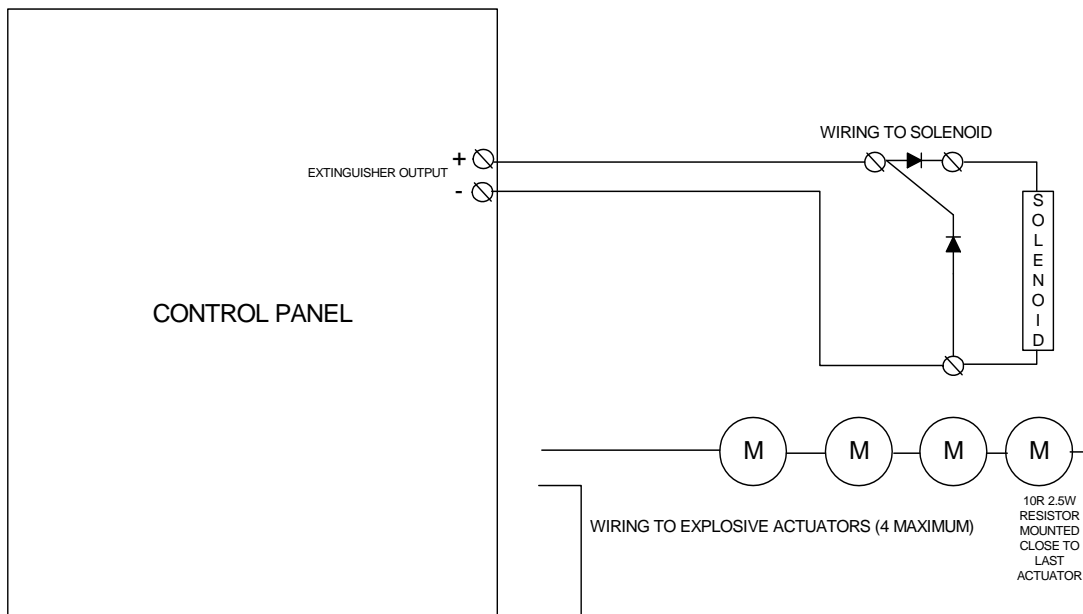
After the duration period has expired, the output will be de-energised.

The default delay is set to 30 seconds, but may be configured in 5 second steps from 0 seconds (no delay) to 60 seconds.

The default duration is 120 seconds, but may configured from 90 seconds to 300 seconds in 5 second intervals.

It is not necessary to write a cause and effect to operate the extinguisher output – the logic switching is automatically performed by the control panel when the extinguisher output is added to the protected area in the panel configuration.

The Extinguishant output is fitted with a 1.1 Amp self-resetting electronic fuse.



15. RS485 Data Port & Extinguishant Control Card

The control panel uses a RS485 communications port to interface with peripheral circuit boards. Up to 32 peripheral cards may be installed on each panel and currently the panel supports 8 way relay cards, 6 way sounder cards, 16 channel I/O cards and 4-zone conventional boards.

On the Syncro XT panel, this port is used to communicate with the Extinguishant control and display card mounted on the rear of the panel door. This circuit is preset to address 32 and is specific to this control panel.

If additional I/O capability is required then other cards may also be connected to the RS485 data bus, although care must be taken to ensure that there is adequate power available to support these cards.

Extinguishant Control Card

The Extinguishant control card is installed directly below the Syncro display card. The circuit board derives its power through the Zone LED connector on the display card. This connector also provides the serial data for the control of the 16 zone indications.

The RS485 data connection to this unit allows it to control and indicate functions associated with the Inergen Extinguishant area.

It is not possible to reconfigure the inputs and outputs or the address of this circuit board.

The Extinguishant control card has the following indicators –

Extinguishant Released	This is illuminated whenever any input configured as a “Released Pressure” has been operated. This may follow a second stage alarm or may occur following a mechanical release of the Extinguishant.
1st Stage Activated	This is illuminated following a single fire condition from a device in the protected area when the system is in Auto and Manual mode
Release imminent	This will be illuminated when either two devices in the area are in fire (Auto Mode) or a manual release is operated. This will continue to be illuminated until the released pressure input is operated.
Hold Activated	This will be illuminated whenever any “Hold off” input in the protected area is operated. Whilst this is illuminated, the extinguisher solenoid output will not operate.
1st Stage Contacts Disabled	This will be illuminated whenever any output configured as a 1 st stage contact has been disabled via the Syncro menu options.
2nd Stage Contact Disabled	This will be illuminated whenever any output configured as a 2 nd stage contact has been disabled via the Syncro menu options.
Manual Release Disabled	This will be illuminated whenever any input configured as a manual release has been disabled via the Syncro menu options.

16. Power supply

The control panel is fitted with the EN54-4 compliant S407 2.5A off-line switch mode power supply and battery charger.

The power supply provides a true 2.5A continuous output and has capacity to provide an additional 1.25A maximum battery charge current.

The battery charging output is temperature compensated to maximise the service life of the batteries. The panel will report a Charger Fault message in the event of any fault being detected on the power supply.

The power supply has LED indicators fitted to indicate the fault condition internally in addition to the indication given on the display of the control panel. These indicate
MAINS FAIL
BATTERY DISCONNECTED
BATTERY LOW

The mains fuse fitted is a T3A 250V HRC 20mm type and must be replaced upon failure with a fuse of the same type to maintain the safety rating of the power supply.

If the power supply is overloaded it will be shut down by an internal thermal protection circuit, which will not reset until the mains supply is removed for 5 minutes and then re-applied with the overload disconnected.

The power supply is fully protected against short circuits, overloads and battery reversal and can supply the full 2.5 Amp load indefinitely.

16.1 Aux. 24V supply

A separately fused and monitored auxiliary 24 Volt output is provided for powering additional equipment.

The fuse is of the self-resetting type and is rated at 500mA. Failure of the fuse is monitored by the system and announced as "Aux. 24V fuse failed".

It is essential to ensure that the load connected to this output is adequately suppressed (using a parallel diode) as excessive voltages as a result of reverse EMF can cause damage to the control panel.

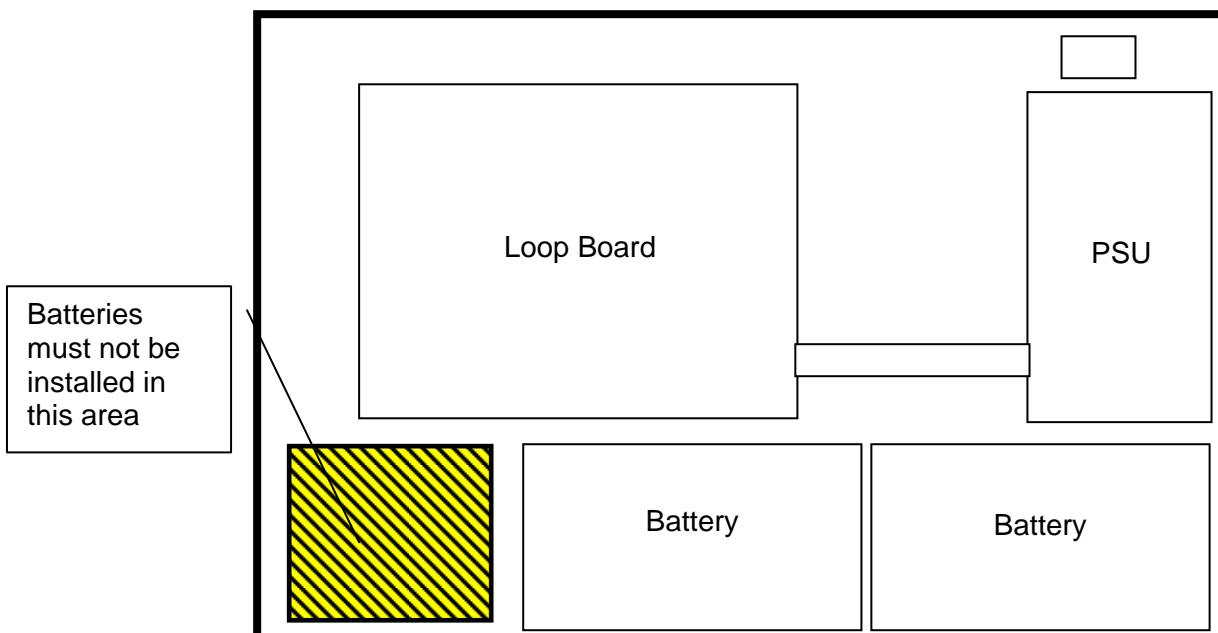
16.2 Battery

To enable the system to continue to function in the event of a failure of the mains supply, re-chargeable batteries must be fitted. These are not supplied with the control panel.

Batteries should be of the re-chargeable, sealed lead acid type. They should be new and sized according to the local codes of practice using recommended calculation methods. The battery standby capacity should be calculated from measured load currents in quiescent and alarm conditions.

The maximum size of battery, which can be fitted inside standard control panels, is 12Ah, which should be sufficient to provide 24 hours standby in most cases.

Batteries **MUST** be fitted inside the enclosure to the right hand side to ensure that they do not interfere with the rear of the mode selection key switch. Correct poisoning of the batteries is shown in the figure below;



17. Programming via a PC

Due to the use of the very latest microprocessor and memory technology, the Syncro XT fire control panel is an extremely powerful machine.

As such, it can be programmed in an almost infinite number of ways, some of which will not give the visual and audible indications expected from an extinguishing control system.

Any re-programming from the factory default settings must therefore be carried out by competent fire systems engineers and thoroughly tested against the system plans before final commissioning.

Although the Syncro XT is very powerful and can be programmed to perform some complex tasks, the principals adopted in the way that inputs and outputs are handled make it conceptually very simple.

The Syncro XT control panel may be configured using a dedicated version of the Loop Explorer XT windows configuration utility. This dedicated version allows devices to be configured to either fire or Extinguishant devices and also allows the protected area to be configured.

The standard Syncro version of Loop Explorer is not compatible with this product.

17.1 Panel settings

When panels are supplied, they are configured with the loop protocol and number of loops and zones as ordered.

There are a number of other attributes, however, which can be changed using the configuration programme as shown below.

The screenshot shows a software window titled "Configure Node" with a sub-tab "Configure Panel Settings". The window is divided into several sections:

- Panel Data:** Includes a "Details" section with "Name" (Syncro XT Panel) and "Address" (1). Below it are "Intrinsically Safe" (checkbox for "Intrinsically Safe Devices" is unchecked), "Access Level 3 Code" (four dropdowns, all set to 3), and "Access Level 2 Code" (four dropdowns, all set to 2).
- Loop Protocol:** Features the Apollo logo and a "Fitted" section with checkboxes for "Panel Modem" and "Graphics System", both of which are unchecked.
- Number Of Loops:** Radio buttons for "2 Loops" (selected) and "4 Loops".
- Loop Offset:** A checkbox for "Loops are Offset" which is unchecked.
- Default Ringing Mode:** Radio buttons for "Common" (selected), "Zonal", and "2 Stage".
- Sub Addresses:** A section showing "000 / 800 in use" and "000 Total Devices".
- Panel Text:** A dropdown menu.

At the bottom right, there are "OK" and "Cancel" buttons.

17.1.1 Panel name

The panel name can be up to 15 characters long and is used to give information on the panel location. The default is "Syncro XT Panel".

17.1.2 Panel address

The panel address will always be set to 1 and cannot be adjusted. This facility is only used on networked systems, a facility that is not supported on the Syncro XT control panel

17.1.3 Loop Protocol

The Syncro XT control panel only supports Apollo protocol devices

17.1.4 Number of loops

Syncro XT is available with 2 detection loops. It is not possible to change this selection.

17.1.5 Default ringing mode

When control panels are supplied, the default-ringing mode is set to common alarm. In this mode, any fire condition will operate all fire sounders continuously.

The mode can be changed to zonal alarm, which means that only fire sounders in the same zone as the signal that originated the alarm will operate.

A third option of 2-stage alarm is also available which causes the sounders in the same zone as the signal that originated the alarm to operate continuously and sounders in all other zones to operate intermittently.

Sounders configured as 1st and 2nd stage Alarm outputs operate independently of the default ringing mode rule

17.1.6 Access level code changes

The default access codes to level 2 and level 3 can be changed via the configuration programme only.

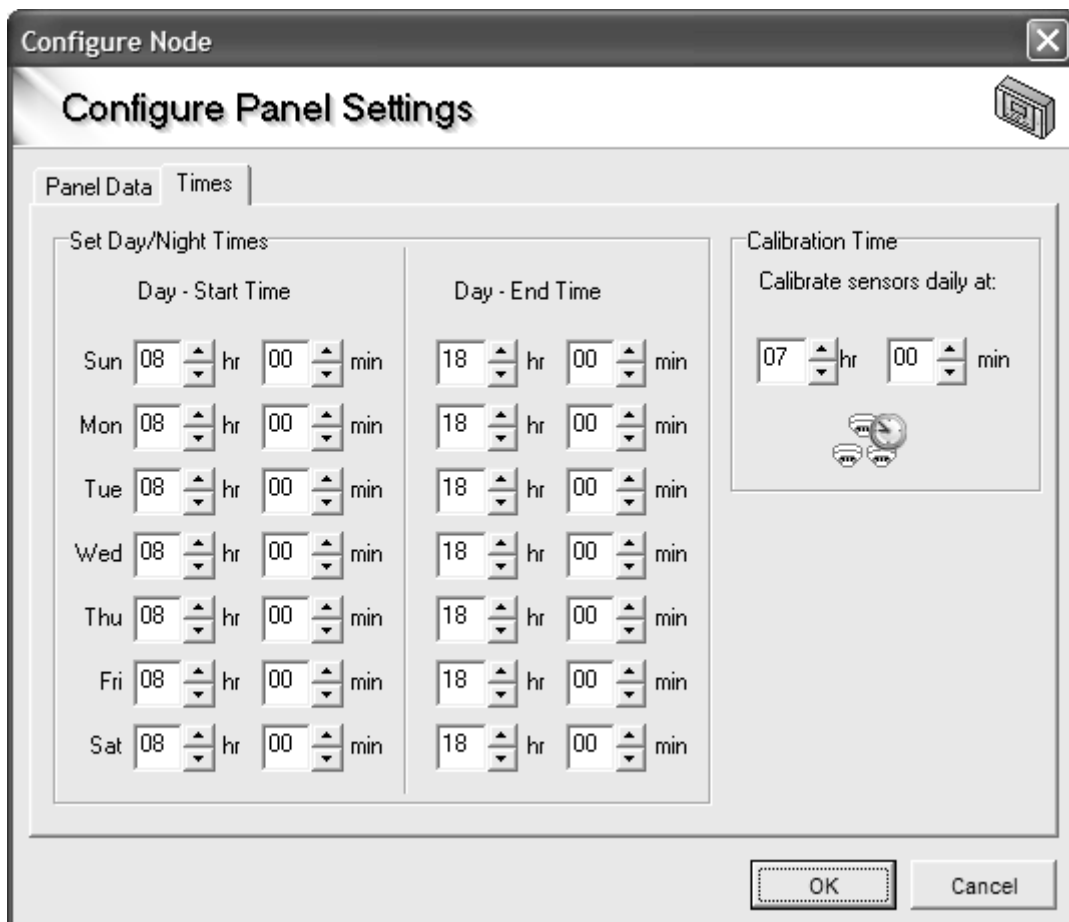
17.1.7 Intrinsically Safe Devices

In the case of multiple fire activations, only the first 5 detectors to go to fire will switch on the LED on the detectors. Subsequent devices that go to fire will still show as a fire condition on the control panel, but the device LED will not switch on.

If the Apollo Loop Translator is used to drive devices in an intrinsically safe area, then the amount of current drawn through the detection loop needs to be minimised. To do this, the number of detection device LED's that can be switched on is reduced from 5 to 2. Selecting this tick box configures this.

17.1.8 Panel text

A forty-character message can be entered which is displayed when the control panel is quiet. This may be the company name and service contact number or any other message agreed with the end user.



17.1.9 Day/Night times

The sensitivity of detectors can be varied during a 24-hour period. This is commonly known as Day/Night mode, but can be either or both as any period in any 24 hours can be selected as day or night.

Day night change times can be set for each day of the week on the additional tab on the panel settings screen.

Apollo Discovery Multi sensors may be configured so that they are changed from multi mode to heat mode using this facility.

17.1.10 Calibration time

All sensors are re-calibrated every 24 hours. So that sensors are not calibrated at a time when there is a high background pollution level, which may adjust the sensors to be less sensitive than they should be, this time is selectable.

The calibration time should be set to a time when the building is quiet with little air movement.

17.2 Inputs

The basic principle is that all available inputs are handled in exactly the same way, whether they are from a field device or one of the programmable Function pushbuttons on the front panel.

This means that any input (apart from a sensor which must always report fire) can be allotted a set of attributes, which define how the control panel will respond when the input is activated.

17.2.1 Input Type

The Syncro XT panel allows any input to be configured as either a standard Fire input (Normal Input) or as an Extinguishant Input, by choosing the appropriate input type option. The Input settings screen will change, depending upon which option is selected.

It is essential that Extinguishant related inputs are configured as such, to allow them to be mapped to the appropriate Extinguishant area in the configuration program.

Configure Settings

Configure Input Settings

XP95 Mini Switch Monitor at Address 001.01

Input Properties

Input Type

Normal Input Extinguishant Input

Input Action

Fire Security Fault Ack. Alarm Pre Alarm Reset Technical Alarm Transparent Evacuate Disablement Alert Test Mode

Select Fire Input Action

Action Message: Fire [jabl]

Input Delay: 0 Seconds

Output Delay: Bypass

Input Latch: Latching Non - Latching

Location Text: [] Zone: 1

OK Cancel

17.2.2 Input Action (Fire / Normal Input)

The key to the flexibility of Syncro XT is its ability to vary attributes for each input.

Inputs other than sensors and call points, need not simply report a fire or fault but can be used to signal all manner of other conditions and to control the system in many different ways.

Probably the most useful of these attributes is the INPUT ACTION and the following describes how the control panel will respond to each of these.

As mentioned previously, because this is fundamentally a fire system, sensors and call points cannot have their action attributes changed

For sensors the attributes, which may be altered, are as follows:

ADDRESS(1-127)
ZONE (0-500 – only 1 to 16 may be viewed by zone LEDs on the display fascia)
LOCATION TEXT (Up to 40 characters)
DAY SENSITIVITY
NIGHT SENSITIVITY
INDICATE PRE-ALARM
LOOP SOUNDER FITTED AS DETECTOR BASE
INPUT DELAY
OUTPUT DELAY BYPASS

For call points the attributes, which may be altered, are as follows:

ADDRESS (1 -127)
ZONE (0-500 – only 1 to 16 may be viewed by zone LEDs on the display fascia)
LOCATION TEXT (Up to 40 characters)
INPUT DELAY
OUTPUT DELAY BYPASS
INPUT ACTION

For all types of input however, there is an input action attribute, which empowers the system with control possibilities way beyond that of a normal fire alarm.

The following describes how the control panel will respond to each of these input actions.

17.2.2.1 Fire action

Being a fire control panel, the fire action will probably be the most widely used and a fire input will be announced by the following:

COMMON FIRE LEDS
ZONAL FIRE LED (IF USED)
PULSING BUZZER
SOUNDERS
ALARM CONTACT
FIRE CONTACT
LCD FIRE MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.2 Fault action

Inputs attributed the fault action will be announced by the control panel as follows:

GENERAL FAULT LED
CONTINUOUS BUZZER
FAULT CONTACT
LCD FAULT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.3 Pre-alarm action

Sensors or inputs can generate a pre-alarm. The control panel will respond as follows to a pre-alarm:

PRE-ALARM LED
CONTINUOUS BUZZER
LCD PRE-ALARM MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.4 Tech. alarm action (Technical alarm)

To allow a message to appear at the panel without necessarily performing any actions, technical alarm input is available which produces the following response by the panel:

CONTINUOUS BUZZER
LCD TECHNICAL ALARM MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.5 Evacuate action

The evacuate action allows all sounder outputs and sounders to be operated continuously from an input anywhere on the system with the following response at the panel:

COMMON FIRE LED's
CONTINUOUS BUZZER
PANEL SOUNDER OUTPUTS CONTINUOUS
LCD EVACUATE MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.6 Fire Alert action

The alert action allows all sounder outputs and sounders to be operated in a pulsing mode from an input anywhere on the system with the following response at the panel:

CONTINUOUS BUZZER
PANEL SOUNDER OUTPUTS PULSING
LCD FIRE ALERT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.7 Security action

The security action allows CHO-BS sounders to be operated in an alternative tone (set in the Hochiki tones setting tab for the panel configuration) as long as the Security output attribute is set for that device. The panel will display a Security response from an input anywhere on the system with the following response at the panel:
LCD SECURITY ALERT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.8 Acknowledge alarm action

An input programmed as Acknowledge Alarm displays an event message on the panel for the duration of the input being activated. The event is also stored in the event log.

17.2.2.9 Reset action

An input designated as reset will not produce any visible effect at the control panel but will reproduce the action of the reset button on the panel i.e. reset the alarms.
LCD RESET MESSAGE

17.2.2.10 Transparent action

A transparent input will have no effect at all on the panel. The only result of a transparent input is to control outputs via cause and effects configuration

17.2.2.11 Disablement action

Disablement inputs are used to disable a part or parts of the system via cause and effects configuration (normally for testing purposes).

When an input designated as a disablement is operated, the panel will display the following:

GENERAL DISABLEMENT INDICATOR

CONTINUOUS BUZZER

ADDRESS

ZONE

LCD DISABLEMENT MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.2.12 Test mode action

Inputs given the test mode attribute activate a special type of cause and effect which enables the system to be tested without activating selected parts of the system (plant shutdown relays for instance).

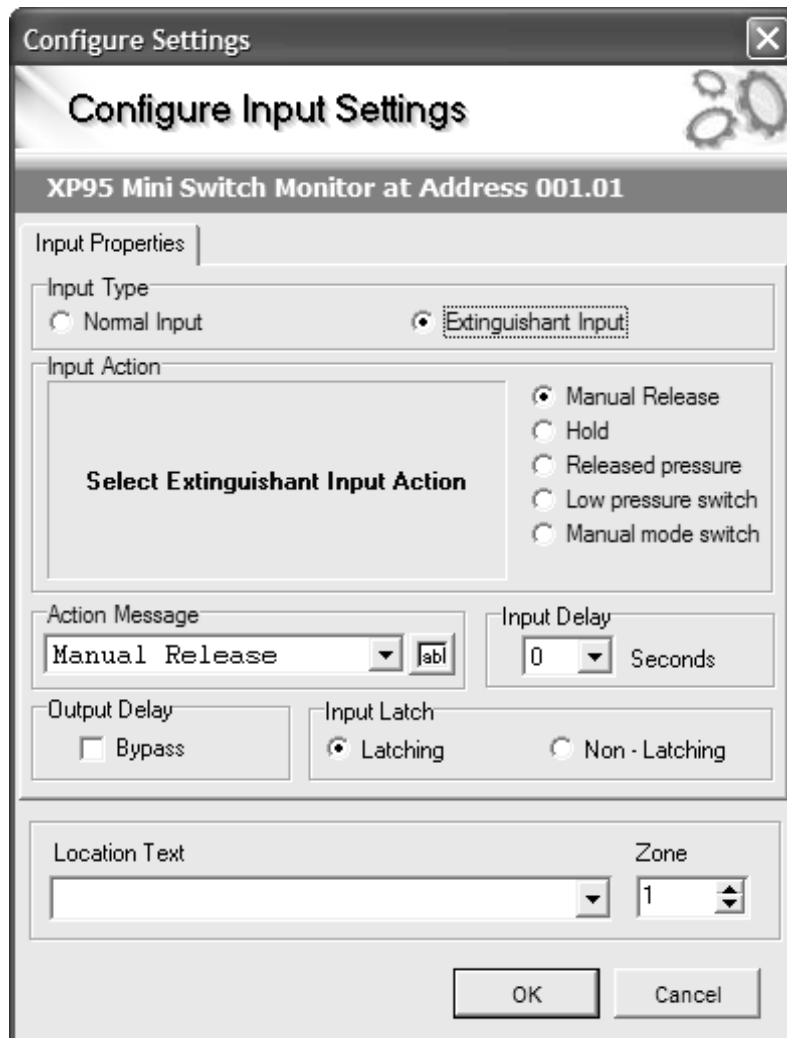
When a test mode input is operated, the panel will respond as follows:

ON TEST LED

LCD ON TEST MESSAGE, ADDRESS AND LOCATION TEXT OF INPUT

17.2.3 Input Action (Extinguishant Input)

In order to allocate switched inputs to the Extinguishant area, they will need to be configured as Extinguishant input types, using the Input Action selection. This then allows the inputs to be configured to one of five options, as shown below.



17.2.3.1 Manual Release action

When an input is configured as a Manual Release input and is configured to contribute to the Extinguishant area, then the operation of this input will cause all 1st stage alarm outputs to operate constantly, 2nd stage alarm outputs to pulse and 1st & 2nd stage contacts to operate. After the configured delay time, the extinguisher output will operate.

17.2.3.2 Hold action

When the panel has gone to a second stage condition (2 devices operated in Auto & Manual mode or a Manual Release input operated), the panel will show "Release Imminent" until the Extinguishant output delay has expired. At any time during this delay time, it is possible to operate a "Hold" input. This will cause the delay timer to be reset to the configured value. Upon release of the Hold input, the delay timer will start to count down from the configured value.

The purpose of the Hold input is to allow the protected area to be evacuated before the Syncro XT fire suppressant is released. The Hold Activated indicator will be illuminated whilst the input is active.

17.2.3.3 Released Pressure action

The Syncro XT panel does not have any monitored inputs, therefore it is necessary to configure at least one loop input as a Released Pressure input type and add this to the area configuration.

The Released Pressure input is used to confirm that the fire suppressant agent has been released. When this input is operated following the Extinguishant output solenoid activation, the 2nd Stage Alarm outputs will go from a pulsing condition to a continuous condition. The front panel "Extinguishant Released" indicator will also be illuminated and the "Release Imminent" indicator will be extinguished.

When the released pressure input is operated from a quiescent condition, then all 1st and 2nd stage contacts will operate continuously, as will all 1st and 2nd stage alarm outputs. The Extinguishant solenoid output is not operated in this condition

17.2.3.4 Low Pressure Switch action

This input action allows a fault to be reported showing that the pressure of the cylinders is below the required level.

17.2.3.5 Manual Mode Switch action

This action allows any input to be configured to switch the area from Auto & Manual mode to Manual Only mode.

Typically this would be automatically configured using the Addressable Status Unit (ASU) input; however there may be occasions where the panel is required to be put into manual mode by a proximity detector or door magnet switch.

In this case, a loop device can be configured as a Manual Mode input to allow the panel to be put into manual for the duration that the input is active.

17.2.4 Action Message

The action message is displayed in the Syncro XT LCD status screen when the input is activated. In general, the action message will follow the input type, however there is the option to select alternative action messages.

There are also 10 "User messages" in the list of Action messages. These user messages may be edited to a site-specific action message if required. This allows bespoke input types to be created, such as Water Detected & CO Level High.

17.2.5 Input Delay

Any input to the Syncro XT system may be configured to have an input delay. This input delay may be selected in 10-second steps from 0 to 120 seconds.

When an input delay is configured, the input has to be constantly operated for the duration of the delay before the event is shown on the panel. If an analogue device is configured with an input delay, the analogue value will have to be above the fire threshold for the duration of the delay before the device will show as a fire condition.

17.2.6 Output Delay Bypass

Fire Outputs on the Syncro XT panel may be configured to have a 1st and 2nd stage delay present. These delays are designed to allow a search of the affected area before the evacuation sequence commences.

For certain fire devices, it is advantageous to instigate an immediate evacuation sequence, for example if a manual call point is operated. The delay bypass flag will cause all output delays to be set to zero when the selected device is activated.

17.2.7 Input Latch

It is possible to configure switched inputs to be either a latching or non-latching action. When configured as a latched input, the event will remain present on the control panel until the panel is reset. A non-latching input event will clear from the panel as soon as the event is cleared.

It is not possible to clear a non-latching input by pressing the panel Reset button.

17.2.8 Location Text

Each input can have a 40-character message allocated using this text box

17.2.9 Zone

Each input can be mapped to one of 500 detection zones, however only the first 16 zones will be indicated by the front panel zone indicators. The zone indication is for simple device location information and should be used in conjunction with the Location Text message for detailed information.

17.3 Outputs

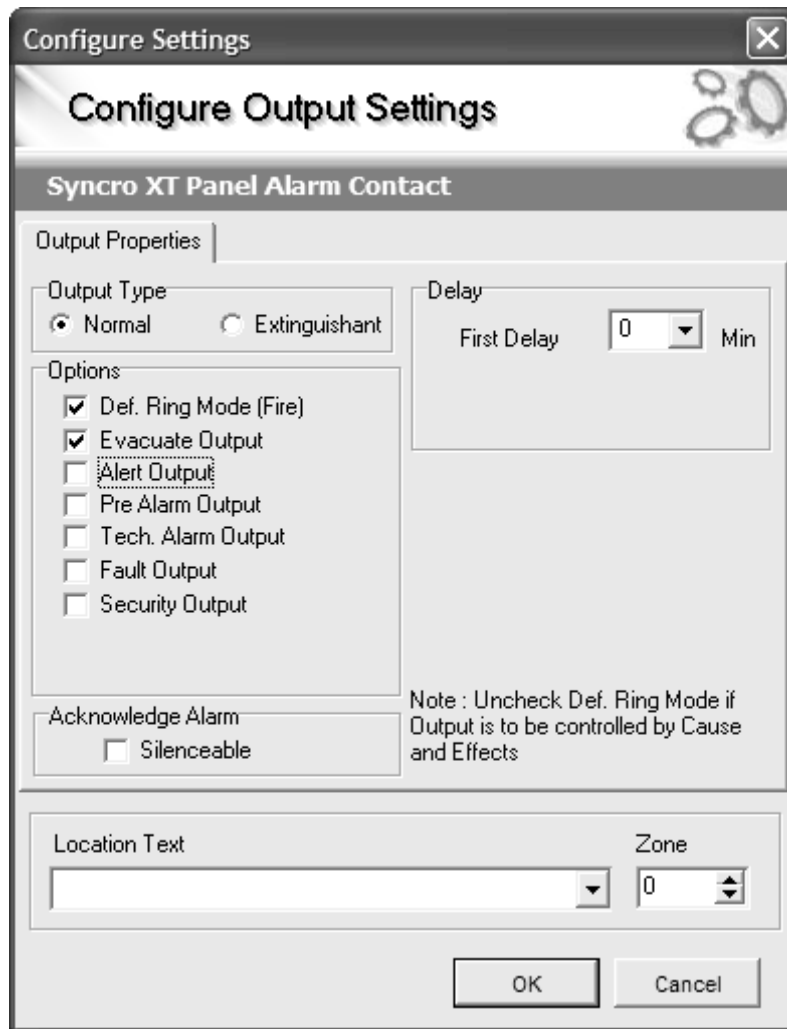
Control of outputs uses the same philosophy as that described for inputs, i.e. all outputs are treated the same, whether they are loop controlled relays, loop sounders, sounder controllers, panel sounder outputs or panel programmable relays.

Any output can be given a set of attributes, which defines, how the output will respond to input conditions.

There are of course default attributes for all types of output, which are factory set and will not change unless re-configured. This ensures that panel sounder outputs, bell controllers and loop sounders for instance, will respond to fire conditions unless the configuration for these outputs is deliberately changed.

17.3.1 Output Type (Normal / Extinguishant)

Same as for inputs, outputs can be configured as Fire (Normal outputs) or Extinguishant specific outputs



17.3.2 Output Options (Normal / Fire output)

Seven different output responses are available for any fire output on the system.

17.3.2.1 Def Ring Mode.

Normally applicable to sounders, Def. Ring Mode will turn the output on, upon a fire condition as defined by the global default ring mode set on the Panel Settings page of the PC config. programme or as set via the Edit Configuration menus on the panel.

There are three options for Def. Ring Mode:-

- Common Alarm** - All outputs operate continuously regardless of which zone they are in.
- Zoned Alarm** - Outputs in the same zone as the input, which caused the alarm, will operate continuously.
- 2 Stage Alarm** - Outputs that are in the same zone as the input, which caused the alarm, will operate continuously whilst outputs in all other zones will pulse 1 second on - 1 second off.

The factory default setting for the panel Default Ring Mode is Common Alarm.

This normally applies to sounders and would normally be accompanied by the Evacuatable and Silenceable attributes.

17.3.2.2 Evacuate Output

An Evacuate output will turn on continuously when any evacuate input is operated. This normally applies to sounders and would normally be accompanied by the Def. Ring Mode and Silenceable attributes. CHQ-BS devices will use the Evacuate tone selection from the panel tones settings.

17.3.2.3 Alert Output

An Alert output will pulse on a 1 second on – 1 second off cycle when any Alert input is operated. CHQ-BS devices will use the Alert tone selection from the panel tones settings.

17.3.2.4 Pre-Alarm Output

A pre-alarm output will operate for any pre-alarm activation by either an automatic detection device or by an input configured as a pre-alarm input. CHQ-BS devices will use the pre-alarm tone selection from the panel tones settings.

17.3.2.5 Tech-Alarm Output

A tech-alarm output will operate for any tech-alarm input activation. CHQ-BS devices will use the tech-alarm tone selection from the panel tones settings.

17.3.2.6 Fault Output

A fault output will operate for any fault activation by either an system fault or by an input configured as a fault input. CHQ-BS devices will use the Fault tone selection from the panel tones settings.

17.3.2.7 Security Output

A Security output will operate for any Security activation by an input configured as a Security input. CHQ-BS devices will use the Security tone selection from the panel tones settings.

17.3.2.8 Silenceable

Silenceable is normally applicable to sounder outputs and ensures that the output switches off when the alarm is acknowledged by the front panel pushbutton or operation of an input that is configured as silence alarm. It would normally be accompanied by the Evacuatable and Def. Ring Mode attributes.

17.3.2.9 Stage one delay

Outputs can be delayed from 0 to 5 minutes in half-minute steps by changing the default delay of zero to the desired setting.

17.3.2.10 Stage two delay

If the output is silenceable, the stage two-delay option becomes available. The stage two delay gives an additional time before the output operates after the alarm is acknowledged during the stage one delay.

17.3.3 Output Options (Extinguishant output)

In order to allocate outputs to the Extinguishant area, they will need to be configured as Extinguishant output types, using the Output Type selection. This then allows the outputs to be configured to one of five options, as shown below.

Configure Settings

Configure Output Settings

Syncro XT Panel Extinguishant

Output Properties

Output Type

Normal Extinguishant

Extinguishant

First Stage Contact

Second Stage Contact

First Stage Alarm

Second Stage Alarm

Extinguishant Output

Delay 0 Sec

Duration 120 Sec

Acknowledge Alarm

Silenceable

Note : Check Extinguishant Output to Enable Delay

Location Text

Zone 0

OK Cancel

17.3.3.1 First Stage Contact.

When selected as a first stage contact, the output will operate continuously for any single fire from a device in the protected area (Auto and Manual Mode) or from a manual release in the protected area. This output will remain switched until the panel is reset.

17.3.3.2 Second Stage Contact.

When selected as a second stage contact, the output will operate on any two fire activations from a devices in the protected area (Auto and Manual mode only) OR by the operation of a manual release input. This output will remain switched until the panel is reset.

17.3.3.3 First Stage Alarm.

When selected as a first stage alarm, the output will operate continuously for any single fire from a device in the protected area (Auto and Manual Mode) or from a manual release in the protected area.

The Alarm output can be muted unless the panel has detected a second fire and the release imminent sequence is in progress. If two devices have gone to fire, the 1st Stage Alarm output can only be muted after the pressure switch released input has operated.

17.3.3.4 Second Stage Alarm.

When selected as a second stage alarm, the output will pulse when two devices in the protected area have gone to fire (when in Auto & Manual Mode) or when a Manual Release input is operated.

Following the receipt of a pressure switch input in the protected area, the output will change from pulsing mode to continuous mode. The sounders will not be capable of being silenced until the pressure switch input has operated.

17.3.3.5 Extinguishant Output.

When selected as an Extinguishant output, the operation of two detection devices in the protected area (Auto and Manual mode) or from the operation of any Manual Release input in the protected area, the delay timer for the extinguisher output will commence. When this delay timer expires, the output will switch and will remain switched for the configured duration period.

After the duration period has expired, the output will be de-energised.

The default delay is set to 30 seconds, but may be configured in 5 second steps from 0 seconds (no delay) to 60 seconds.

The default duration is 120 seconds, but may configured from 90 seconds to 300 seconds in 5-second intervals.

17.3.6 Zoning

Each output can also be put into a zone or not as required. It is useful to put outputs into zones if the output is required to respond to default ring mode or is to be controlled by a cause and effect entry. Outputs, which are not put into a zone and are configured to respond to default ring mode will always turn on with any fire condition (i.e. common alarm).

17.3.7 Location text

Finally, each output can be given a location address. As well as being useful in identifying devices with monitored outputs and additional power, for fault conditions, the location address can be useful in identifying the device when compiling cause and effects programmes.

18. Cause and effect programming

For more complex applications, it is often a requirement to control plant, ventilation or access control systems in the event of fire situations to assist with evacuation or to provide safety escape routes.

Because the Syncro system has inherent flexibility, this is simple to achieve by applying cause and effects to inputs and outputs anywhere on the system.

Cause and effects can be started or acted upon by any part of the system.

With careful planning, this can save costs on installation by reduced wiring runs and can be changed at any time to suit changes in requirements.

Cause and effect programming requires the Loop Explorer XT software (which will run on a Windows® 95,98, 2000 or XP compatible computer) and a download lead to transfer the data to the control panels.

Using cause and effect programming it is possible to combine inputs or zones using logical operators, to operate on outputs in any manner desired.

Cause and effects can also be used to disable any outputs or groups of outputs in response to the chosen input conditions. This is particularly useful where normal operation of the fire system requires regular intervention by the end user as switches can be provided anywhere on the system to allow isolations to be performed without operating the control panel.

Also to assist the end user and encourage regular testing, a special "Test Mode" cause and effect facility is included which allows specific parts of the system to be tested without operating sounders or shutting down plant etc. This would normally have to be done by disabling individual outputs at the control panel with the risk of missing something and shutting down an important plant or process.

Full details of cause and effect programming are included with the Loop Explorer XT software, which also allows full system configurations to be created and downloaded to individual or an entire network of control panels using a simple graphical user interface.

The Loop Explorer XT programme contains comprehensive, context sensitive help files and example applications

18.1 Group Action in cause and effects

To provide complex extinguishing options, the concept of Groups has been added to the cause and effect wizard.

These Group actions allow a number of fire inputs to be mapped together using a logical operator to form a Group effect. Up to 100 groups may be defined.

When added to the Extinguishant area "Area Input" screen, the operation of any single area group will cause a first stage alarm. Any two input activations will cause a second stage alarm. In this case, single detection devices should not be included in the Area Input screen.

The concept of groups allows the Inergen panel to be configured beyond the standard "double knock" system.

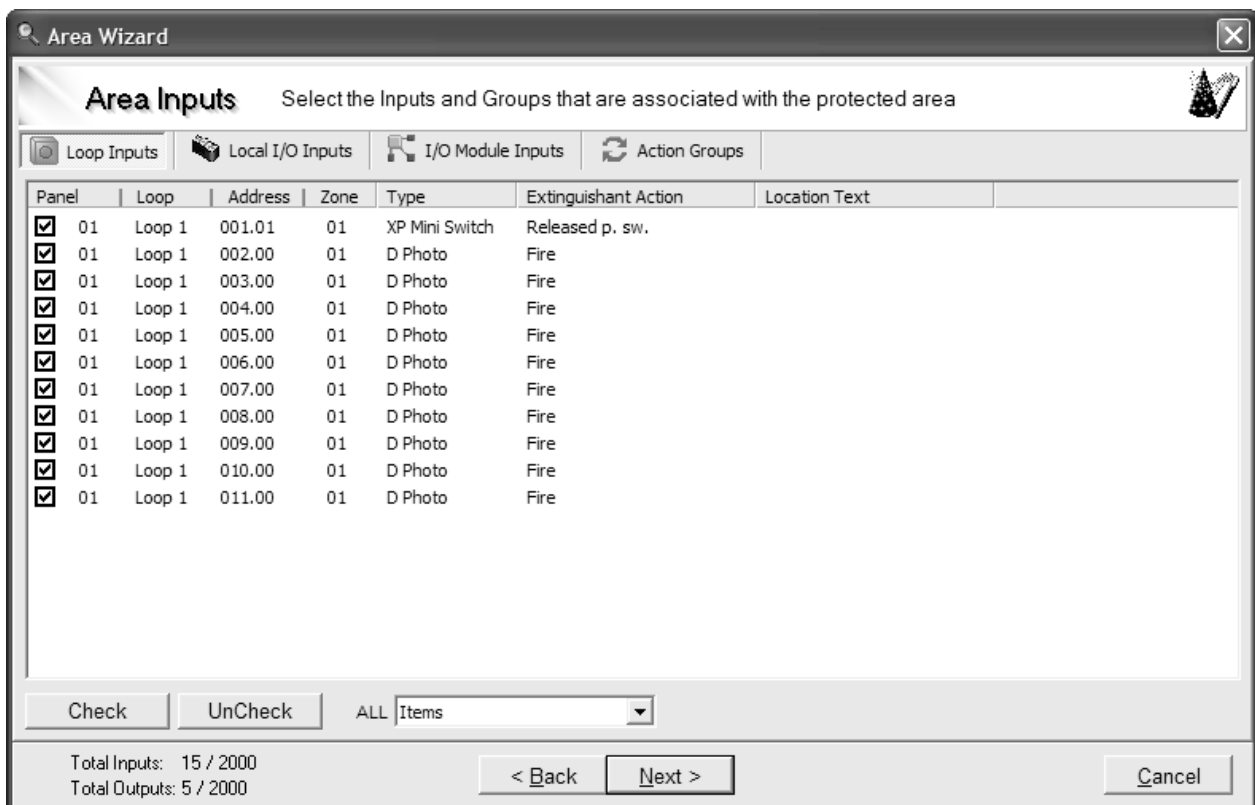
19. Extinguishant Areas

In order for the Syncro XT panel to be easily configured as an Extinguishant panel, all inputs and outputs configured as Extinguishant types need to be grouped together. This will then allow the area logic responses to be easily configured without using complex cause and effects.

Whenever any Extinguishant input or output is configured and mapped to the area, the role that the inputs and outputs play will be entirely dependant upon the input / output type and the current mode and state of the configured area.

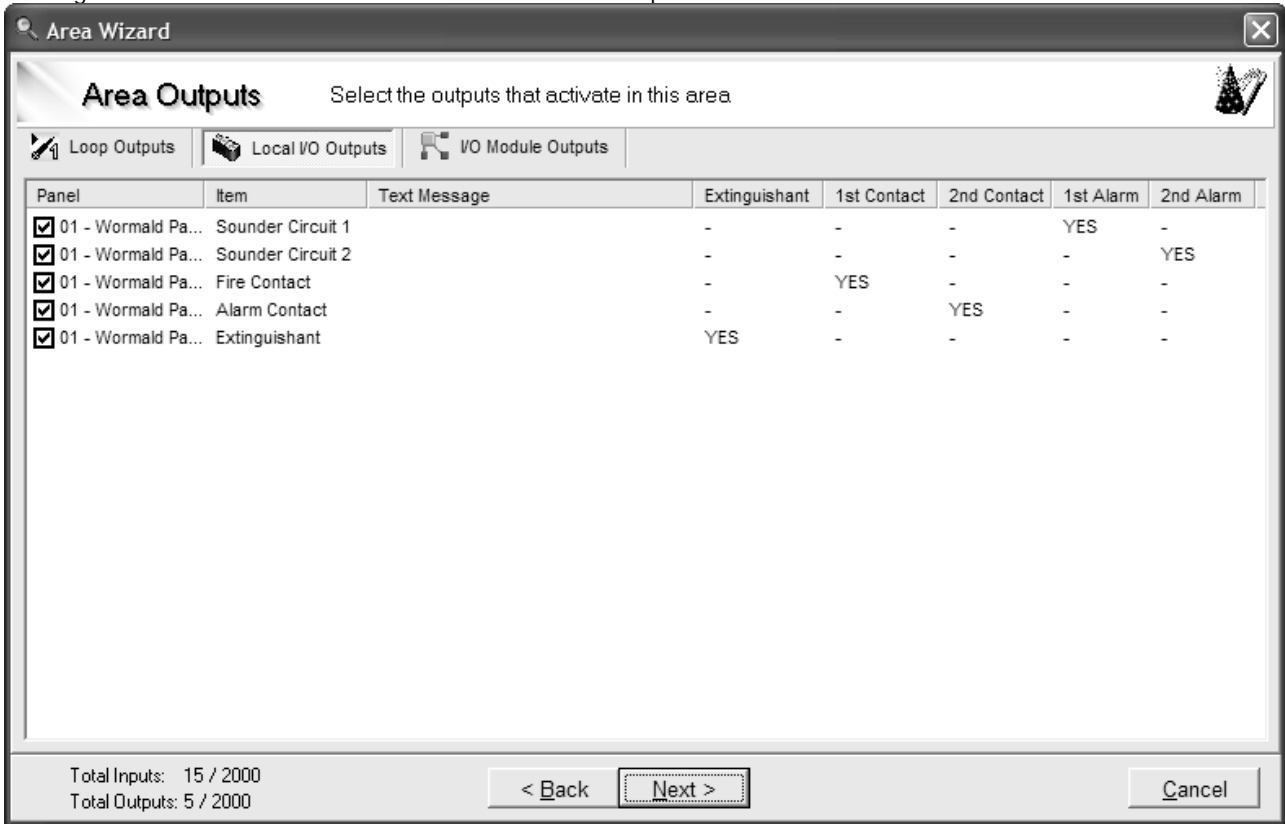
When the Syncro XT panel is auto configured, all default inputs and outputs are configured as Extinguishant devices and a default "area" is created. This area will then include all the Extinguishant inputs / outputs plus all smoke detector and heat detectors on the two loops.

The Extinguishant area is configured using the Area Wizard. This is very similar to the cause and effect wizard in its format, however there are no logical operators involved. All detection device inputs and Extinguishant inputs that are to be mapped to the Extinguishant area should be selected in this screen. As the Syncro XT panel is a single area panel, all inputs should be selected by default.



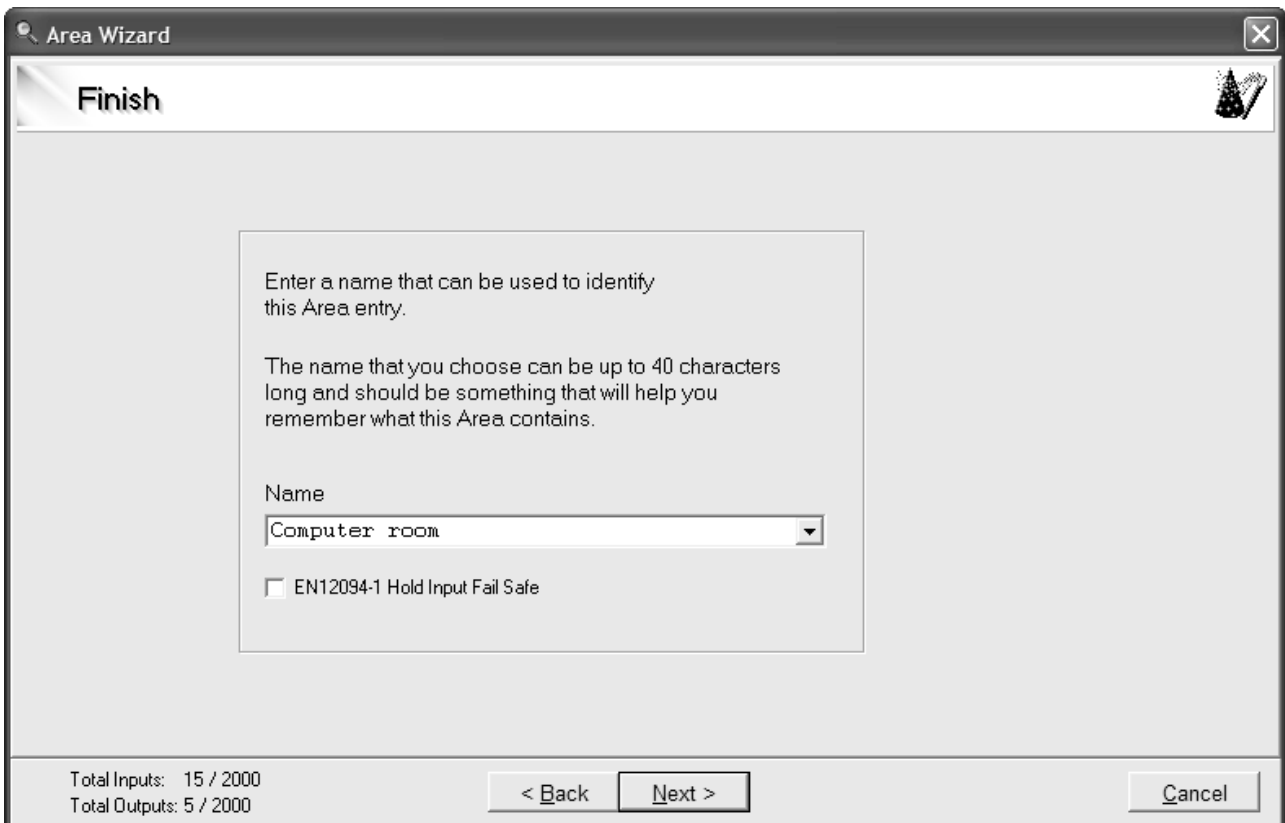
If some of the detection devices are not in the protected area, they should be deselected in the area wizard. This allows the Syncro XT panel to cover peripheral detection zones.

Clicking the "Next" button will take the user to the Area Output screen



This screen allows all outputs configured as Extinguishant output types to be included in the protected area

When all required outputs have been configured, click the "Next" button to go to the final screen.



Give the configured area a recognisable name. The EN120094-1 Hold Input Fail Safe selection box, when ticked will cause the panel to go into hold activated mode in the event that any input configured as a Hold input goes to a fault condition. This should be selected to meet EN12094-1 requirements.

19. Modem

The Syncro fire alarm system modem communications module, allows the fire alarm control panel to be interrogated from a remote location via a dial up telephone connection. This allows the status of the control panel to be viewed and the configuration data and event log to be uploaded to a PC.

The modem module fits inside the Syncro XT control panel in the space allocated for an I/O module and requires a 24V DC supply which may be taken from the adjacent AUX 24V connections.

A telephone connection socket (type RJ45) is fitted at the top of the module to allow connection to an RJ11 telephone point using the connection cable supplied.

The modem fits in the space between the power supply and the loop driver board. When retrofitting a modem a kit is supplied which contains all necessary cables and instructions.

For detailed information on the modem, see the Syncro Modem Communications Module manual.

20. Panel Settings

20.1. Contrast Adjust

The viewing angle / contrast of the Syncro XT front panel display may be adjusted by turning the "DISPLAY CONTRAST ADJUST" potentiometer on the display PCB.. The location of this potentiometer in relation to the PCB is shown in Appendix B.

WARNING: Under no circumstances should any adjustments be made to potentiometer VR2 in the top left location of the display PCB.

21. Panel specification summary

21.1 Recommended cables

All field wiring should be installed using fire rated cables such as FP200, MICC or Fire Tuff types. The minimum cross sectional area should be 1mm although in the case of the detection loops this depends upon the length of the cable and the number and type of devices fitted. Loop length calculators for various cable types are available for both Hochiki and Apollo protocol systems. Drain wires of any field wiring should be maintained throughout the length of the cable and terminated at the panel earth block, via brass cable glands.

21.2 Sounder Load

Panel Sounder - Two 24 volt sounder circuits, each fused with a 1.0A self-resetting electronic fuse. Each sounder circuit is monitored using reverse polarity and a 10k ohm end of line resistor.

Loop sounders – each loop is capable of delivering up to 400mA for devices and loop sounders & beacons.

The total monitored output load (loop & panel sounders, extinguishing & aux 24V output) must not exceed 1.5 Amps.

21.3 Current consumption

Panel current consumption with mains fail = 255mA **(provisional)**,
Panel current in alarm (no sounder load) = 400mA **(provisional)**
Modem current consumption 50mA

21.4 Power supply

Part reference - S407 EN54-4 2.5Amp switch mode power supply
Supply Voltage - 230V AC nominal (+10% / 15%)
Battery Charger- Charges up to 12Ah sealed lead acid batteries with temperature compensation over the range -5 to +50 degrees Celsius.
Battery Charge Current -1.25 Amps max,
Load Current - 2.5 Amps (with flat battery)

21.5 Field devices

Apollo	126 devices per loop - S90, XP95, XPlorer and Discovery ranges.
Per 2 loop panel	252 Apollo devices
Sub-address total	800 addresses and sub-address limit per panel.

NOTE – To meet the requirements of clause 13.7 of EN54-2, the total number of detection devices and call points (including any conventional devices fitted to zone monitors) must not exceed 512 devices.

21.6 Relay ratings

All relays are rated at 30V DC and 1 Amp carrying current maximum. Under no circumstances should voltages or currents outside of these limits be connected.

21.7 Zones

Panels are available only with 16 zone LED indicators fitted. Any device can be configured to any one of 500 zones in the configuration software.

Care should be taken to ensure that no more than 32 devices should be affected by a single short or break in any detection circuit.

21.8 Extinguishing monitored output

24 volt output operating only when configured using the panel configuration software, protected by a 1.1A self-resetting electronic fuse. Monitored using reverse polarity and a 1N4004 end of line diode.

21.9 Auxiliary 24 Volt monitored output

Permanent 24 volt output protected by a 500mA self-resetting electronic fuse, monitored for fuse failure.

21.10 Fuse ratings

All panel power supplies, monitored outputs and auxiliary power outputs are protected by non-serviceable self-resetting electronic fuses.

Detection circuits are protected using digital current monitoring circuits and FET switching techniques.

The Syncro panel has only one serviceable fuse to protect the incoming mains supply. This fuse is a T3A 250HRC 20mm type and must be replaced with a fuse of the same type only.

Appendix A– EN54 Configuration Requirements

In order to meet the requirements of EN54, the panel must be configured with the settings stated below. References refer to EN54 Part 2 1997 section numbers.

Section 7 – Fire Alarm Condition

Section 7.1.4

Input delay must be set to zero for all manual call points. Call points must not be configured to any event type other than Fire.

Section 7.2.c / 7.4 / 8.2.1.c / 8.6

The panel buzzer must be enabled. The system disablements menu option must not be used.

Section 7.8

If the panel sounder circuits are to be used to meet the requirement of “transmission of fire alarm signals to fire alarm devices”, then the Def Ring, Silence and Evacuate properties must be selected. The sounder circuits must also be mapped to Zone 0.

Section 7.11.a

To select delays to outputs at access level 3, use the Edit Configuration / Edit Panel I/O / Panel Outputs to select the sounder outputs or fire routing output. Select the output and configure the 1st stage delay to the required amount.

Section 7.11.d

All call points must be configured with the “Bypass delay” attribute set.

Section 7.12 – Coincidence Detection Programming

In order to meet the EN54-2 requirements for coincidence detection, the following TWO cause and effects are required to configure a particular zone for coincidence mode.

- The first cause and effect has all detection devices in the required zone selected (by address) and the ‘COINCIDENCE’ logical operator used to switch the required outputs in the effect screen.
- The second cause and effect as all call points in the required zone selected (by address) and the ‘OR’ logical operator used to switch the same outputs (as above) in the effect screen.
- All outputs controlled by the above two cause and effects must have the Def Ring output flag deselected to ensure compliance

Section 8 – Fault Warning Condition

Section 8.2.4.c

Earth fault monitoring must be enabled. The system disablements menu option must not be used.

Section 8.8

The fault relay output must be configured to respond only to fault events.

Section 9 – Disabled Condition

Section 9.1.2

If a disablement input type is used as the cause a disablement cause and effect, this input must be configured so that it is only available at Access level 2, by use of a key input or some other access restriction.

Section 9.1.2

Timed disablements shall not be used, as disablements must be re-enabled by manual operations at access level 2.

Section 9.1.4

If a disablement input is used as a cause for a disablement cause and effect, this input must be configured to be non-latching and should not reset when the system reset is selected.

Section 10 – Test Condition

Section 10.1.b

If a test input type is used as the cause in a test mode cause and effect, this input must be configured so that it is only available at Access level 2, by use of a key input or some other access restriction. This input must be configured as non-latching and cannot be cleared by the panel reset operation.

Section 10.1.e

Panel outputs must not be configured to operate when a zone is selected into test mode.

Section 12.5 – Integrity of Transmission Paths**Section 12.5.2**

A short circuit isolator must be fitted to the detection circuit at a maximum interval of 32 detection devices and manual call points.

Section 12.6 – Accessibility of indications and controls**Section 12.6.6**

The panel door must be locked and the key removed.

Appendix B – Internal Layout

