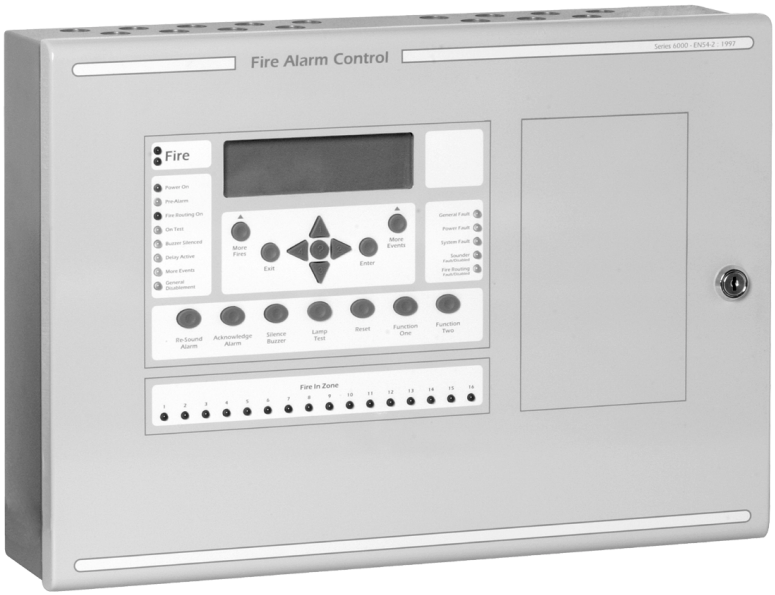
Syncro Lite

2 Loop Economy Analogue Addressable Fire Control Panel

Operation Manual



Issue 02 May 2004

Index

1. Introduction

The **Syncro Lite** is an analogue addressable fire detection and alarm control panel capable of indicating a maximum of 16 zones with 2 detection loops and 126 devices per loop for Apollo protocol and 127 devices per loop for Hochiki protocol. The panel will support up to 500 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.

Syncro Lite also supports loop-powered sounders.

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 systems design standard and building plans.

The control panel can be configured using the “Edit Configuration Menu” as described in the menu descriptions at the back of this manual or more comprehensively, using the Loop Explorer PC configuration utility and download lead which is available as a separate item.

A fire alarm call point should be located near the panel.

The **Syncro Lite** 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.

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 127 (Hochiki) or 1 - 126 (Apollo).

However, devices such as the switch monitors and bell 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 should be used only with compatible fire system components. i.e. Apollo & Hochiki ESP.

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 be operated 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.

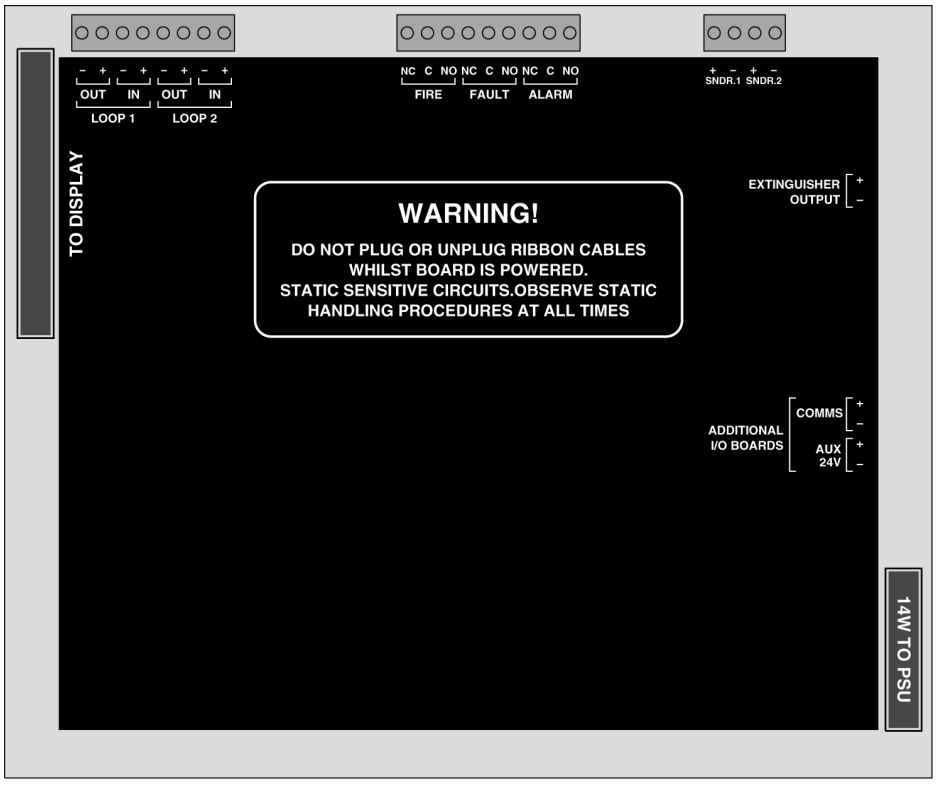
Mounting the Cabinet

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° 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. Cable length calculators are available for both Hochiki ESP and Apollo protocols.
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.
A ferrite ring is fitted to the control panel to suppress high voltage transients. The incoming mains cable **must** be passed through this ring twice before it connects to the power supply terminals therefore tails should be left long enough to cater for this.
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.

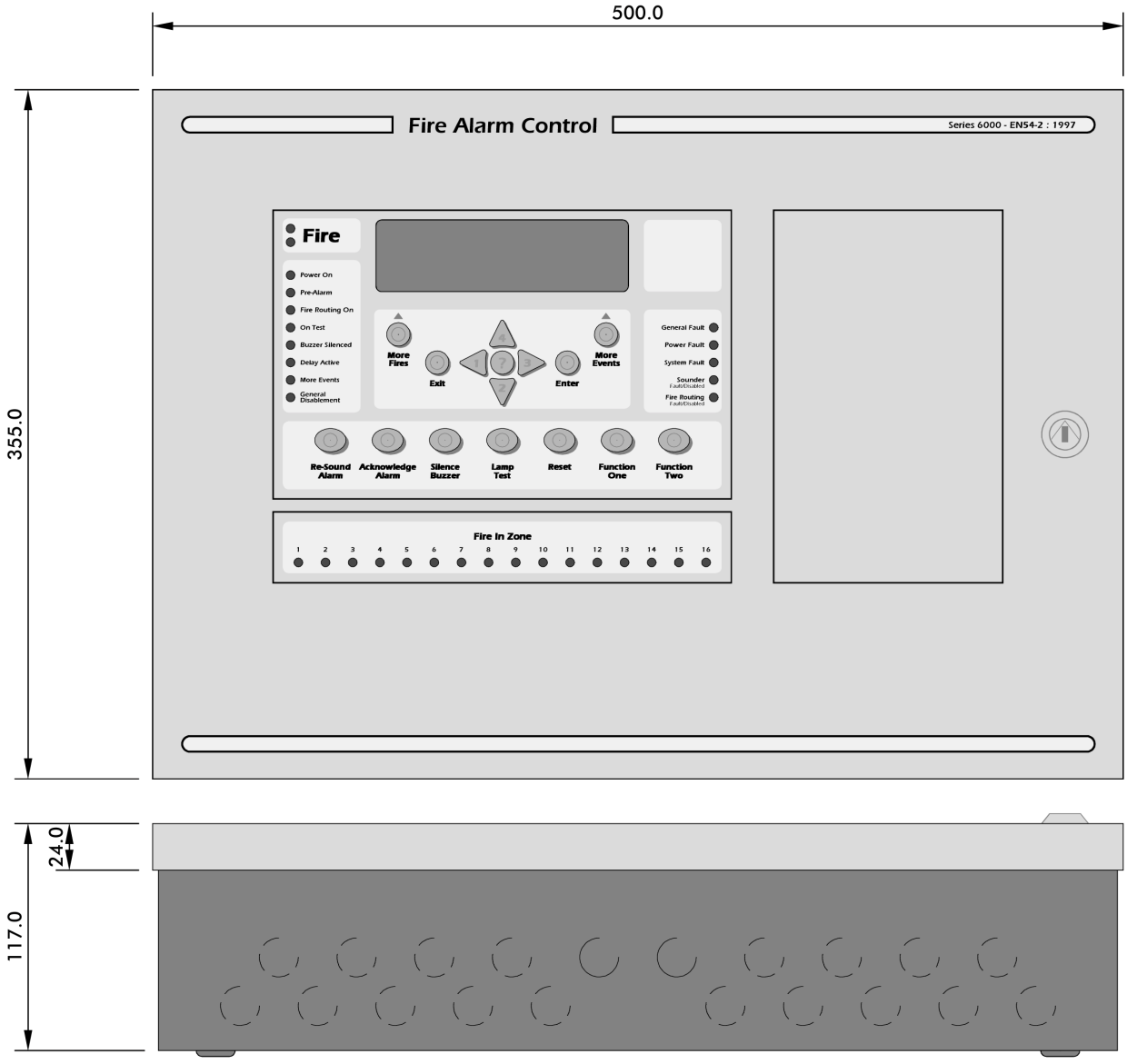
Polarity must be observed carefully on any terminals with + or - markings and end of line devices must be fitted to all circuits which have them fitted in the terminals when the panel is supplied.

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.
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.



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 and the larger the number of devices on any one loop the longer it takes.
Panels fitted with Hochiki protocol will take significantly longer to initialise than those fitted with Apollo protocol.
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 2002
            AUTO CONFIGURED PANEL


        USE ARROW KEYS TO ENABLE PANEL
              PRESS ? FOR HELP
```

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

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 is 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 configuration programme installed on the computer and for the Syncro Lite 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.

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.

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.

For detailed information on the facilities offered by the Loop Explorer configuration programme refer to the help files contained in the Loop Explorer programme.

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 re-configuring using the Loop Explorer 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	View 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

Syncro Economy control panels are supplied with 2 detection circuits and configured to communicate using either Hochiki or Apollo protocol. It is not possible to mix protocols on the same control panel.

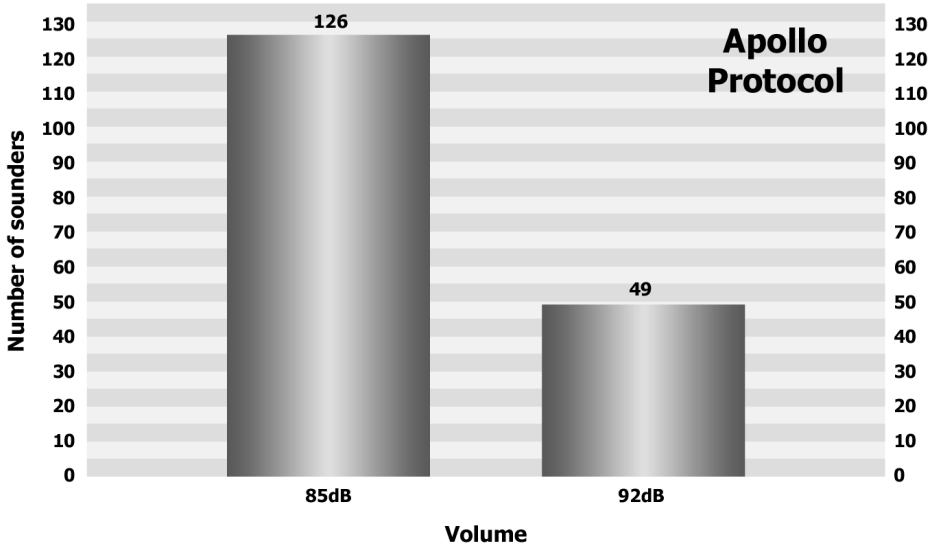
Devices are connected to the detection circuits on a looped pair of cables.
Short circuit isolators must be fitted in the loop wiring such that a single short or interruption in the circuit will not prevent the indication of a fire alarm from more than 32 detectors and/or manual call points.
Power is driven from the “out” terminals and is returned to the “in” terminals where it is monitored.

If the loop is broken or short-circuited, 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 and the faulty section of the wiring will be isolated by the short circuit isolators.
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.
Calculators are available for both Apollo and Hochiki detection circuit loading and these should be used if there is any doubt about the loading exceeding the maximum of 400mA.

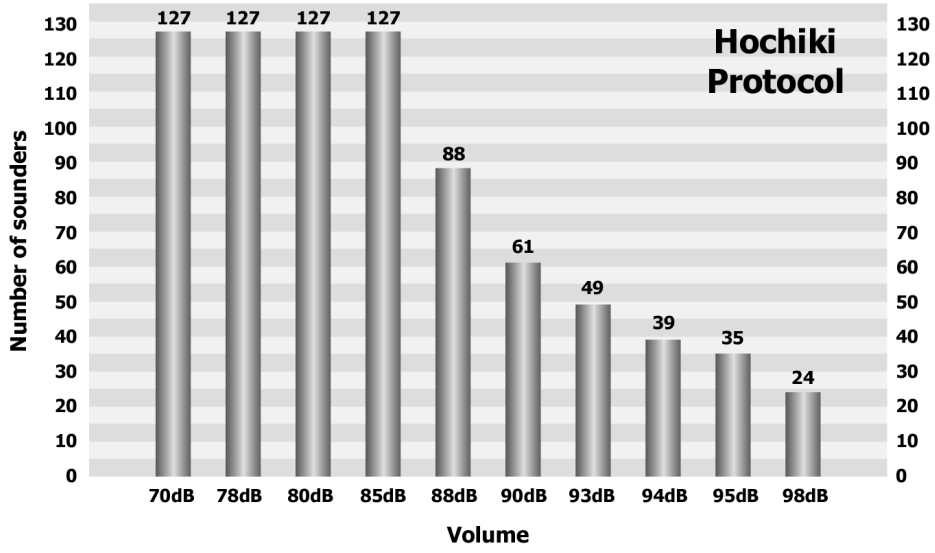
10. Loop sounders & Beacons

The following graphs give 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 Hochiki Loop Sounder Quantity Chart



10.2.1 Hochiki Volume settings

From the graph above, it can be seen that Hochiki sounders can have 10 volume settings.
Each sounder can have its volume set independently or all sounders can have the same volume setting by changing the default volume on the panel settings page of the PC configuration programme.

Unless this default volume setting is changed, all sounders will have a volume setting of 85dB.
This table shows the volume levels available and the current consumption at each volume setting.

VOLUME	CURRENT
70dB	0.8mA
78dB	1.5mA
80dB	2.0mA
85dB	3.0mA
88dB	4.5mA
90dB	6.5mA
93dB	8.0mA
94dB	10mA
95dB	11mA
98dB	16mA

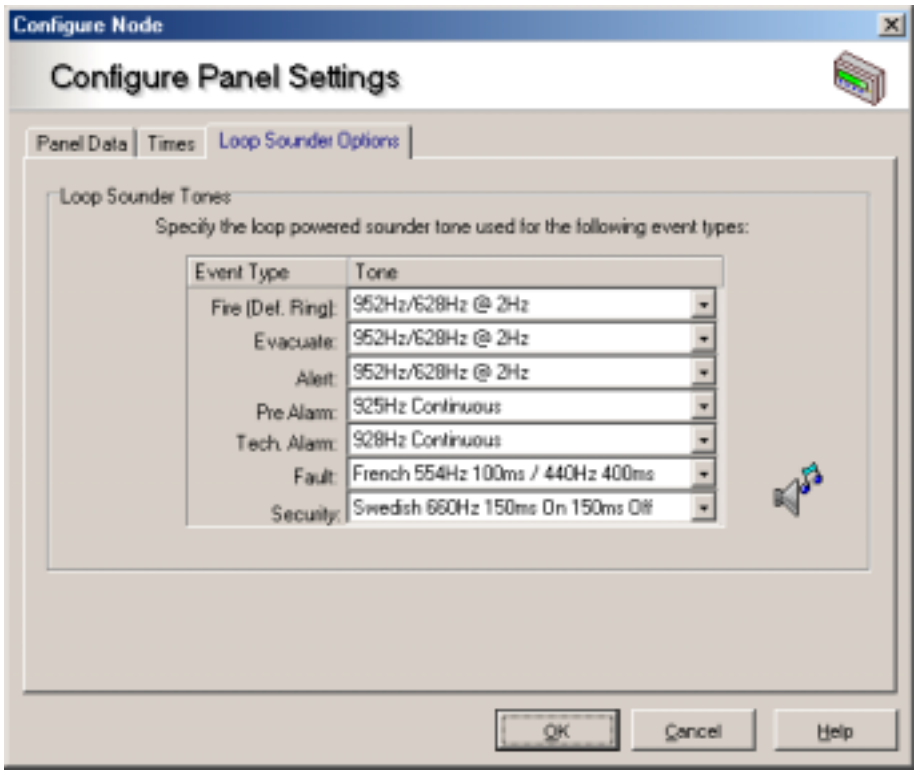
Loop sounders that are used as a detector base, do not need to be allocated an address in the range 1 - 127 as they automatically address themselves by adding 127 to the address of the detector to which they are connected at initialisation. This means that it is possible to fit 127 detectors and 127 base sounders to a loop.

It is possible to alter the address of base sounders but the address will revert to 127 above the host sensor address at calibration time (which is every 24 hours) or at every re-initialisation so there is no point in doing this.
Wall sounders however must be addressed using a hand held programmer and will retain their address setting at all times.

Because each loop sounder has its own address, it is possible using the PC configuration programme (Loop Explorer) to perform cause and effects on each sounder or groups of sounders as required. This gives great scope for controlling the annunciation of the fire alarm for all types of building.

10.2.2 Hochiki Tone settings

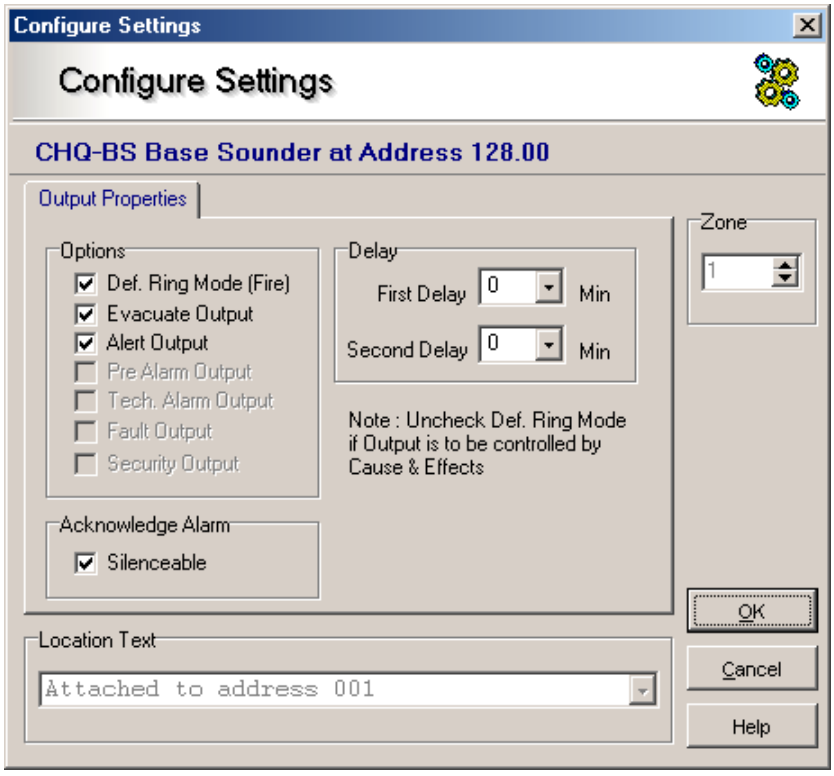
It is possible to change the tone of all or individual, Hochiki loop sounders, to one of seven different tones.
Each event type has been allocated a separate default tone and these may be changed from the default by selecting the loop sounder options tab from the panel settings window.



The window above shows all of the event types and their default tones. All or any of these may be changed to another tone and it is possible for more than one event type to use the same tone.
Loop sounders will default to operation upon a fire condition. It is possible however, to operate loop sounders upon any of the seven event types. It is also possible to operate loop sounders upon more than one event although under these circumstances a hierarchy exists as follows:

EVACUATE
FIRE
ALERT
TECH ALARM *(includes sounders controlled by Cause & Effects)*
SECURITY
PRE-ALARM
FAULT

As can be seen from the above, a loop sounder which is sounding a TECH ALARM will change its tone in the event of EVACUATE, FIRE or ALERT events if it is programmed to respond to all of these.
Loop sounders can be programmed to operate upon any of the event types using the configure settings window as shown below. This window also allows the volume of the sounder to be changed from the default value, stage 1 and stage 2 delays to be set and the sounder to be selected silenceable or not as required.



The possibility to change tones allows the fire alarm infrastructure to be utilised to a much greater extent for other types of audible signalling than simple pulsing or steady sounder systems.
For class change applications as an example, different tones could be used to signal class change and break times. This could also apply to the factory environment to signal break and shift changes.
The ability to operate individual sounders from dedicated inputs also allows the system to be used for fire door monitoring such that a tone can be emitted by the sounder nearest the door if it is opened in a non-emergency situation.

10.3 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.

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.
Both circuits are configured to activate upon any fire condition and to de-activate when the acknowledge alarm button is pressed on the front panel or a silence input is operated.
Each sounder circuit can be configured independently via the PC configuration programme or the front panel pushbuttons (at access level 3).
This allows sounder circuits to be operated by different methods such as zonal alarm or via cause and effects.

11.1 Stage one and stage two delays

The two sounder circuits can have a single or two-stage delay if required. The first stage of delay allows up to 5 minutes for the alarm to be acknowledged.
If the alarm is not acknowledged before the first stage delay expires, then the sounders will operate.
If the alarm is acknowledged during the first stage delay, the second stage delay (again up to 5 minutes) will start.
If the alarm is acknowledged during the first stage delay and the second stage delay is zero then the sounders will not operate.
If the Alarm is acknowledged during the second stage delay, the second stage delay (up to 5 minutes) will start and the sounders will operate at the end of the delay unless the panel is reset.
Activation of two or more devices producing a fire action, a call point or an input configured to override output delays, will override the delays and operate the sounders immediately.

12.Sounder controllers

Sounder controllers are available in both the Hochiki and 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 used for control of other parts of the system where monitored outputs are needed. The default setting for all sounder controllers ensures that they operate according to the rules normally expected for sounders.

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. Relays

Volt free changeover relay contacts rated at 30 Volts DC at 1 Amp are provided for ancillary switching functions in all panels.
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: -

NAME	ACTION
FIRE	Activates on any fire condition and remains active until the panel is reset
FAULT	Activates on any fault and clears when faults are cleared
ALARM	Activates on any alarm, de-activates when alarm acknowledged

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.
This includes delays as described for the sounder circuits above.

14. Extinguishant output

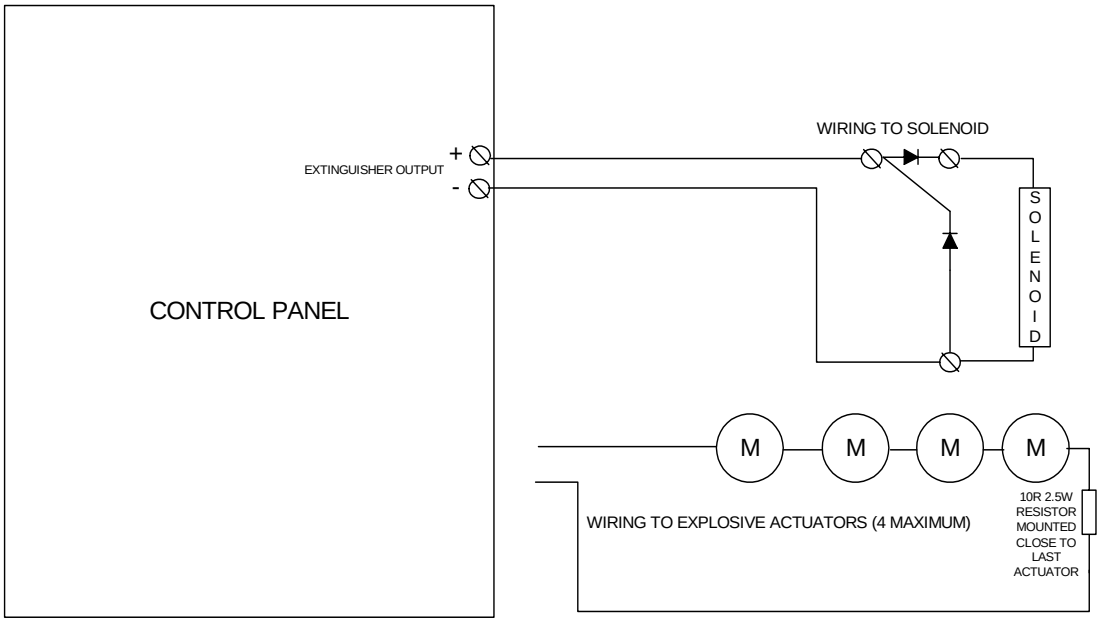
The control panel is equipped with a monitored output, which may be used to activate an Extinguishant system solenoid or explosive actuator directly.

The output is not configured to operate at all when the panel is supplied (for safety reasons) but may be configured via the PC configuration programme to operate in response to cause and effects.

This would typically be coincidence from a group of detectors in a particular room or area, which is being protected by Extinguishant agent.

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

By using the programmable LED's and switches, status indication and control can be set up so that the panel has the same facilities as an Extinguishant control panel.



15. Power supply

The control panel is fitted with a S405 70 Watt (2.5 Amp) off-line switch mode power supply and battery charger.

The power is split between the charging circuit and power supply such that 0.7 Amps is available to charge the batteries when required which leaves 1.8 Amps to run the control panel and peripherals. If the batteries are fully charged and do not require any power, the full 2.5 Amps is available to run the control panel.

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.

The incoming mains cable must pass through the ferrite ring fitted to the control panel before being connected to the mains terminals of the power supply.
Failure to do this will render the control panel vulnerable to mains borne high voltage transients which may upset the operation of the system.

15.1 Aux. 24V supply

A separately fused auxiliary 24 Volt output is provided on the terminal board for powering additional I/O boards or other equipment connected to the fire alarm system.

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".

The impact on battery standby duration must be carefully considered when using the Aux 24 volt output. Constant use of the full 500mA capability of this output for instance would require an additional 15Ah of battery capacity.

Ideally, use of the Aux. 24V output should be restricted to powering additional I/O boards or switching equipment when an alarm condition occurs,

The impact on battery standby should be considered in all cases.

15.2 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 standby period required as shown in the table below.

The maximum size of battery, which can be fitted inside standard control panels, is 7Ah, which should be sufficient to provide 24 hours standby in most cases.

Any additional load connected to the system through the Aux. 24V output should be catered for by additional capacity using the formula below:

Load (mA)+25% X Standby period (hours) = Ah.

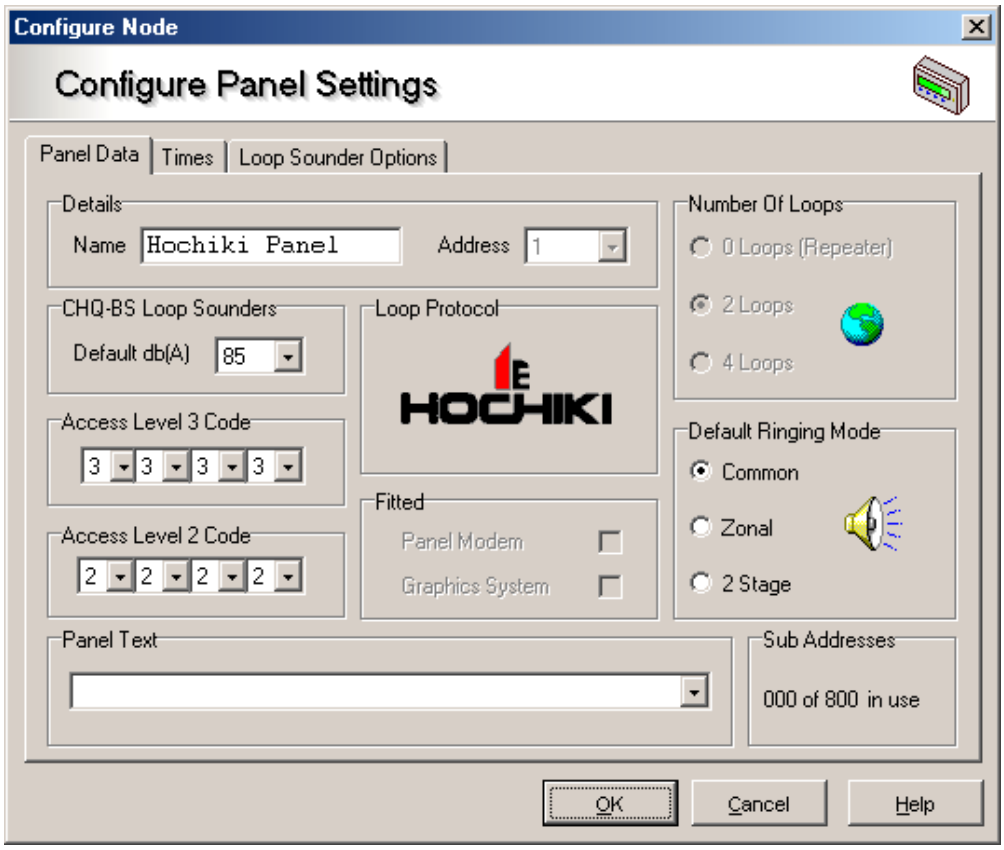
This figure should be added to the battery capacity required and the next available size selected.

16.Programming via a PC

Due to the use of the very latest microprocessor and memory technology, the Syncro Lite 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 a fire 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 Lite 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.

16.1 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.



16.1.1 Panel name

The panel name can be up to 15 characters long and is used to give information on the panel location.

16.1.2 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 Lite control panel

16.1.3 Loop Protocol

Control panels are supplied as either Hochiki compatible or Apollo compatible.
The label inside the control panel showing the part number identifies which protocol is being used by starting with either an H (Hochiki) or an A (Apollo).
When making a configuration file, the correct protocol must be selected here.

16.1.4 Number of loops

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

16.1.5 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 sounders continuously.
The mode can be changed to zonal alarm, which means that only 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.

16.1.6 Access level code changes

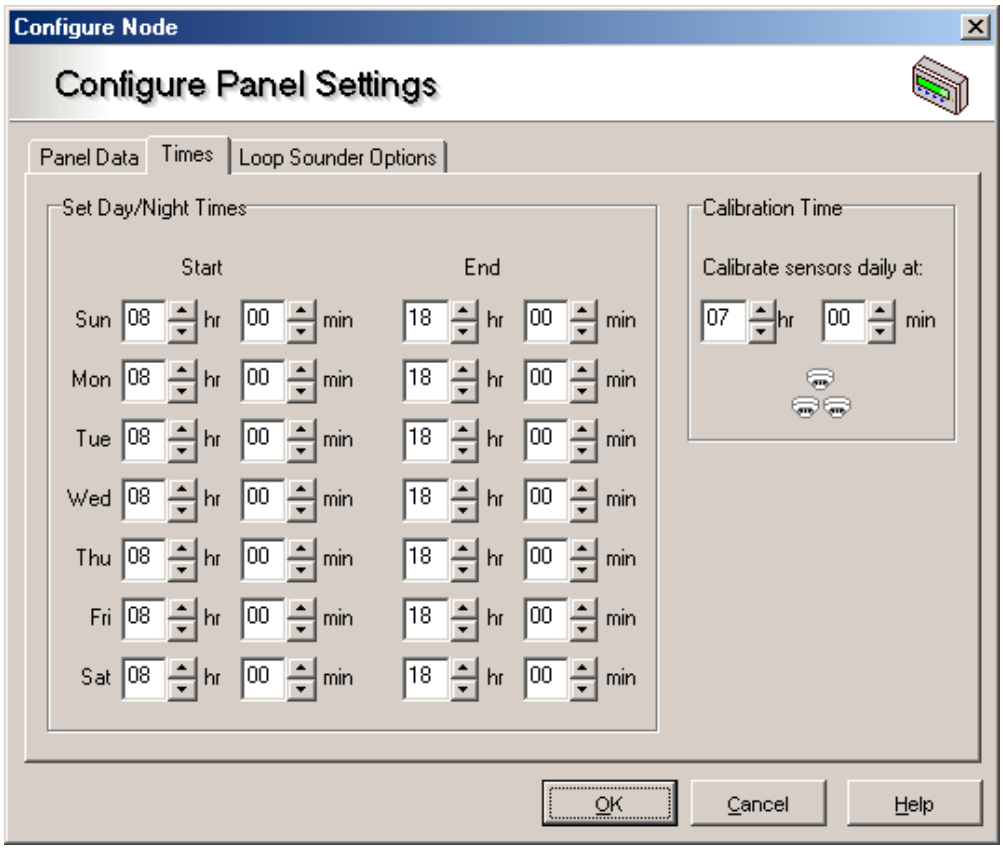
The default access codes to level 2 and level 3 can be changed via the configuration programme only.

16.1.7 CHQ-BS Loop Sounders

For Hochiki systems, it is possible to change the default volume of loop powered sounders.
This option is not available for Apollo systems as the volume can be adjusted only by setting a switch on the device.

16.1.8 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.



16.1.9 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.

16.1.10 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.

16.1.11 Network Interface

The network facility is not available on the Syncro Lite panel and therefore this option is disabled.

16.1.12 Loop Sounder Tones

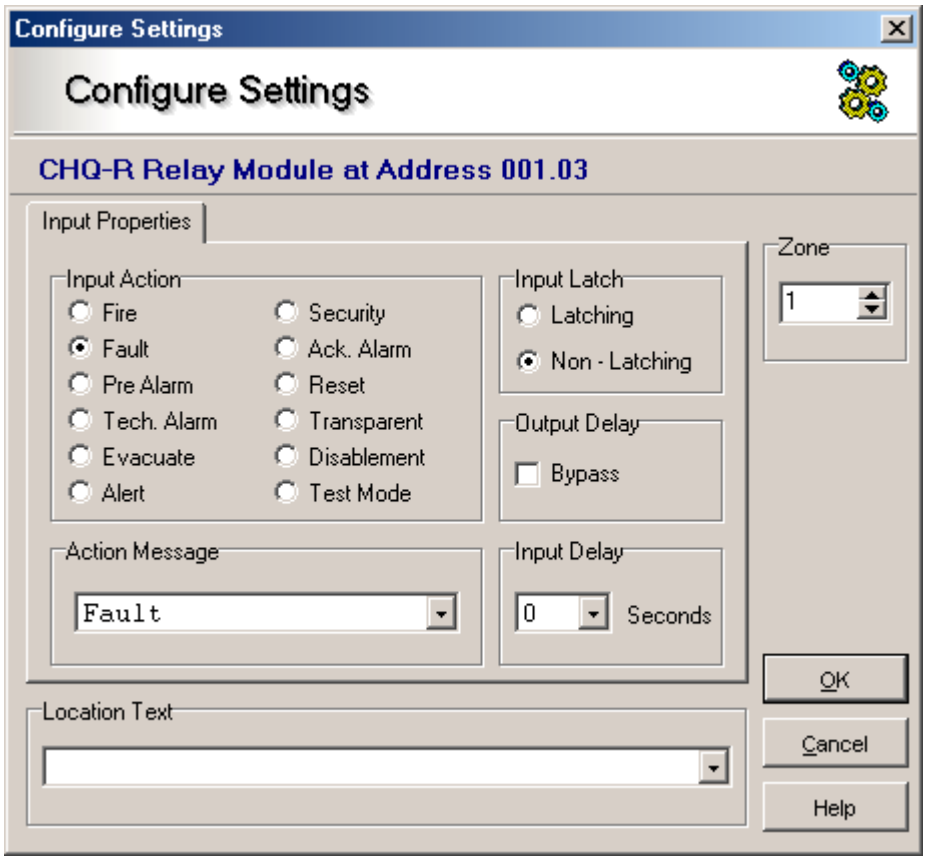
For the Hochiki CHQ-BS sounder, 7 tone options are available. These tones may be mapped to event types using the Loop Sounder Options settings for the control panel. Use the drop down box to select the tone for the event type.
See Section 10.2.2 for more information.

16.2 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.

As can be seen from the screen capture of the PC configuration programme below, there are many attributes to choose from for each input.



The key to the flexibility of Syncro Lite is its ability to vary these 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.

16.2.1 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

16.2.2 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

16.2.3 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

16.2.4 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

16.2.5 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

16.2.6 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

16.2.7 Security action

The security action allows CHQ-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

16.2.8 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.

16.2.9 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

16.2.10 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

16.2.11 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

16.2.12 Test mode action

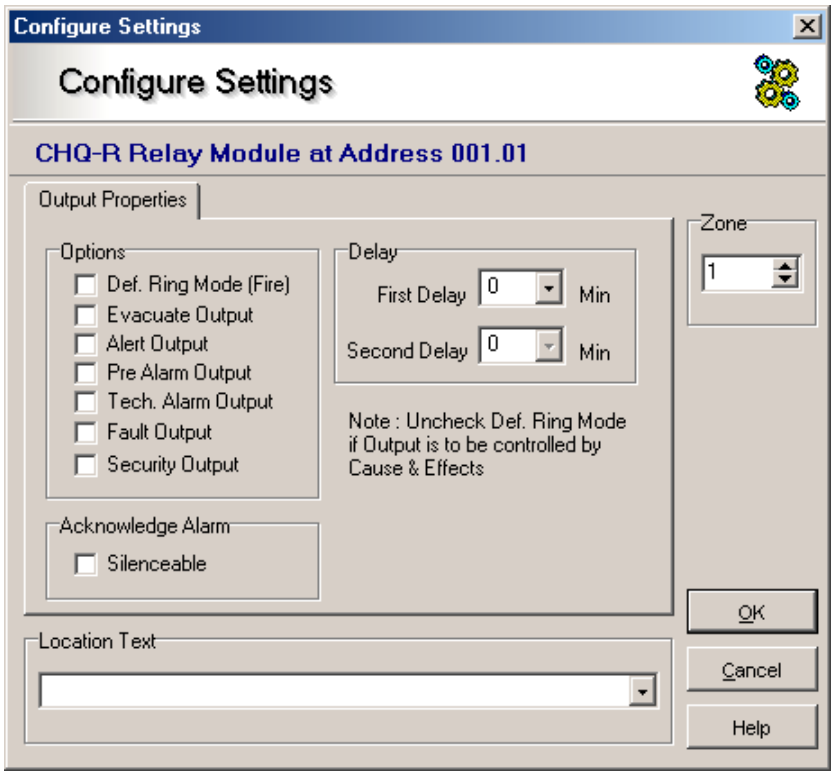
Inputs given the test mode attribute activate a special type of cause and effect which enables the system to be tested without activating selected parts of the system (plant shutdown relays for instance).

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

16.3 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.
Although this may appear to be nonsense in some cases, (a loop controlled sounder which doesn't operate upon a fire condition in its own zone for instance), this approach does provide a simplicity of understanding and a versatility and flexibility which would not exist if there were a different set of rules for each output.
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.
The editable attributes are as shown below in this screen capture from the PC configuration programme.



The following describes how each of these attributes affects the operation of the output.

16.3.1 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 Sileceable attributes.

16.3.2 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.

16.3.3 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.

16.3.4 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.

16.3.5 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.

16.3.6 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.

16.3.7 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.

16.3.8 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.

16.3.9 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.

16.3.10 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.

16.3.11 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).

16.3.12 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.

16. 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 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 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 programme contains comprehensive, context sensitive help files and example applications

17. 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.

To enable modem configuration and connection, the user **must** be in possession of registered and dongle protected Loop Explorer Version 3 (or later) software. The Syncro display PCB must be Issue 6 or later to support the modem hardware and will need to be loaded with panel operating system Version 3 or higher.

The modem module fits inside the Syncro control panel in the space allocated for an I/O module and requires a 24V DC supply which can 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.

18. Panel Settings

18.1. Contrast Adjust

The viewing angle / contrast of the Syncro front panel display may be adjusted by turning the “DISPLAY CONTRAST ADJUST” potentiometer on the display PCB. On older control panels, it will be necessary to remove the display PCB cover in order to gain access to this potentiometer. 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.

19. Panel specification summary

19.1 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.

19.2 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.

19.3 Current consumption

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

S560 I/O board current consumption	20mA (quiescent), 100mA per output
Modem current consumption	50mA
8 way relay card current consumption	10mA (quiescent), 250mA in full alarm
6 way sounder card current consumption	30mA (quiescent), 260mA in full alarm + sounder load

19.4 Power supply

Part reference	S405 EN54-4 2.5Amp switch mode power supply
Supply Voltage -	230V AC nominal (+10% / 15%)
Supply rating -	Switch mode power supply delivering a total of 70 Watts.
Battery Charger	Charges up to 7Ah sealed lead acid batteries with temperature compensation over the range -5 to +50 degrees Celsius.
Output current split	Battery 0.7 Amps max, load 1.8 Amps min.
Battery low indication	21V,
Battery disconnect	19V.
Earth fault indication	< 30Kohms +28V or 0V to earth.

19.5 Field devices

Hochiki	127 devices per loop- ESP protocol
Apollo	126 devices per loop - S90, XP95, XPlorer and Discovery ranges.
Per 2 loop panel	254 Hochiki ESP devices, 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.

19.6 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.

19.7 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 affected by a single short or break in any detection circuit.

19.8 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.

19.10 Auxiliary 24 Volt monitored output (see also Section 18.1)

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

19.11 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.

20. Version 4 Panel Enhancements

Panels fitted with operating system version 4.0 or later have a number of new features available since V2.62. To view the version of code in the panel, press the “?” (help) button on the panel whilst the panel is in a fault free condition. Alternatively, select the Access Level 2 Menu and the version will be listed in the menu title.

New device types supported in version 4 panels require Loop Explorer Version 4.0 (or later) to allow these devices to be configured.

20.1 Loop Data Test

The data signalling between the control panel and detection devices has some level of data error checking built into the protocol. The purpose of this data checking is to ensure that any spurious signals received by the control panel are not incorrectly interpreted as fire signals, thus resulting in an unwanted activation.

There are a number of sources of signalling errors. The most common is due to electrical interference resulting in current spikes induced on the detection circuit. Other possible causes are poor loop wiring connections, earth leakage between loops, cross- talk between circuits, defective devices installed on the detection circuit and incorrect devices connected on the detection circuit.

In general, the user is unaware of problems on the detection circuit, as the panel has some “software filtering” built in, to reject invalid data returned from devices. However, if a single devices returns invalid data on four consecutive polls, the panel will report a bad data fault for that device. If a single device returns invalid data for three polls, followed by a single good poll, then the panel will report no faults for that device.

The purpose of the system diagnostics facility is to see what level of invalid data signalling is occurring on the loops, to get a “feel” for the quality of the signalling and to predict any potential problems that may affect the end user.

The diagnostics facility comprises of two counters for each loop. These counters have a maximum value of 9,999,999. There is a “good” counter, which is incremented for every successful detection device poll and a “bad” counter, which is incremented every time there is an error in the signalling when a device is polled.

This good/bad counter selection allows an engineer to see the proportion of bad readings versus good readings, and compare these between loops for a system. From this information, it should be possible to make a judgement on the signalling quality for each detection circuit on any control panel.

To activate the diagnostics, select the Loop Data Test menu option at Access Level 3. This menu will then allow the user to start the testing for each loop in turn. When started, the user may view the good and bad counters, plus the time that the test was started.

At any time it is possible to view the counters or cancel the testing.

When either of the two counters reaches the maximum value, the test for that loop is halted.

20.2 Contamination Status

The Syncro control panel calibrates all detection devices every 24 hours, at a time specified by the panel configuration settings.

The calibration procedure checks a number of parameters for each device to ensure that the device will meet the performance specification, as defined by the device manufacturer. If any devices fail to meet this calibration procedure, then the device will be announced as a calibration fault and will need to be replaced.

When devices exceed 85% of their calibration fault limits, they are added to the “Contamination Status” log. At this point, the control panel will not report a fault for the device.

The Contamination Status menu option allows the maintenance engineer to view these devices, to replace them and therefore prevent contamination faults between service calls.

This menu option is available across panels on a networked system, allowing the contamination status for any panel to be viewed from any panel.

20.3 Analogue value transfer

If a connection to the Syncro panel is made using the “Connect” screen of Loop Explorer Version 3 (or later), it is possible to transfer the analogue levels, zero calibration and fire calibrations points for each detection device to the PC.

Using Loop Explorer, it is possible to save this information into a Comma Separated Values (csv) file format for later analysis.

20.4 Modem Support

Panel code version 3 or higher has support for the panel modem facility, as described in section 23.

20.5 Hochiki Loop beacon support

This version of panel code supports the Hochiki CHQ-AB Loop Beacon device. These devices are auto configured onto the Syncro system with the same attributes as a loop sounder (they respond to default ring, evacuate and silence commands as default).

20.6 Apollo Loop beacon support

The Apollo Loop beacon has the same type code as the XP95 Loop Sounder. Using Loop Explorer V4.0 or later, it is possible to reconfigure these devices as a Loop Bacon device type when viewed on the panel

20.7 Apollo XP95 Ancillary Base Sounder & XPlorer base sounder support

The Apollo Ancillary Base sounder devices (and Apollo XPlorer Base sounders) do not take an address on the detection loop and therefore the Syncro panel does not see these devices when auto configured. However, detection devices may have an Ancillary (XPlorer) Base sounder allocated to them in Loop Explorer V4 (or later). When this configuration is then transferred to the panel, the base sounder then adopts a phantom address on the loop 126 higher than the host detection device. Therefore an Ancillary Base Sounder fitted to detection device 005 will show as address 131 and may be fully configured to any output device attributes.

20.8 Apollo Intelligent Reflective Beam Detector support

The Apollo Intelligent Reflective Beam Detector is a loop driven device with a unique type code and is only supported on version 4 panels.

20.9 Apollo Truncated Protocol

The Apollo XP95 Base sounders do not support group switching. Therefore the time to switch a number of these devices would be in excess of the 3 seconds required by BS5839 pt 1:2002. In order to speed up the sounder response, Version 4 panels use truncated protocol commands to quickly switch the sounders, followed by verification commands to check that the sounders have switched as expected. This allows the requirements of BS5839 pt 1:2002 to be met in most cases.

NOTE – This requires the Loop drive micro-controllers to be programmed with Apollo V1.3 (or later) to allow truncated protocol commands to work.

20.10 Technical Alarm Tone

The Technical Alarm event on pre-version 4 panels is announced with a 5-second audible indication. On version 4 panels, this is changed so that the audible indication is a permanent sound until either the event is cleared or the panel “Silence Buzzer” button is pressed.

20.11 500 Cause and Effect entries permitted

The number the of cause and effect entries allowed has been increased from 300 to 500 on version 4 panels. Therefore, using Loop Explorer Version 4, it is possible to write 500 cause and effects, using up to 2000 inputs to control 2000 outputs.

20.12 View Devices “Normal” state

When using the “View Devices” menu option, any inputs that are not activated or any outputs that are not switched re shown as “Normal”. Older panels showed these as “Off” which led to confusion that the devices were disconnected.

20.13 RS485 module support

Since Version 3.0, the Syncro Lite panel has been updated to fully support;

- 6-way sounder card
- 8-way relay card
- 4-zone conventional panel module

Appendix A – Syncro Lite Panel Restrictions

The Syncro Lite panel has a number of optional and mandatory facilities removed, compared with the Syncro control panel. These restrictions are listed in this section.

If any of these facilities are required, then the full Syncro panel will need to be used.

A1 – Detection Loops

The Syncro Lite panel only supports 2 detection loops. It is not available in a 4-loop version, nor does it support a loop less version panel.

A2 – Zone Indicators

Only 16 zone indicators are available on the Syncro Lite panel. The zero, 48 and 96 zone indication options are not available.

A3 – Sounder Circuits

This panel has only two of the four panel sounder circuits fitted. Sounder circuits 3 & 4 are not populated.

A4 – Panel Relays

Panel relays Relay 1 and Relay 2 are not populated on this product.

A5 – Fire and Fault Routing Outputs

Syncro Lite does not support fire routing and fault routing outputs.

A6 - Remote control inputs

Syncro Lite does not support the 8 programmable panel inputs (PR1-3, FLT, RES, INT, CNT and SIL).

A7 – External Charger Connections

Power for this product can only be provided using the internal 2.5A power supply. It does not support connection to remote power supplies, therefore large standby battery sizes are not supported.

A8 – Panel Printer

This facility is not available on this product.

A9 – Networking & Repeaters

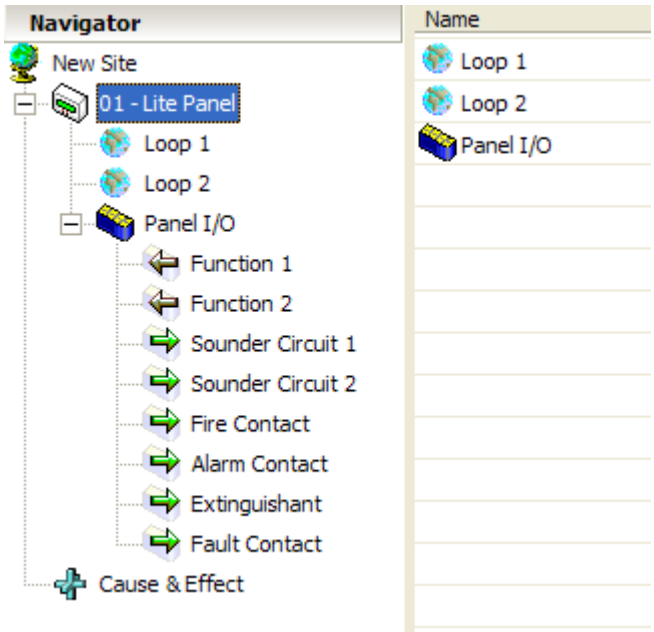
The Syncro Lite panel does not have the facility for connection to the Syncro Network and therefore cannot be connected to other Syncro panels, Syncro Response or Syncro Focus repeaters.

A10 – Programmable LEDs

The three programmable display LED outputs are not available on this product.

A11 – Graphics Interface

This is not available on this product.



Loop Explorer Panel Configuration for Syncro Lite

Appendix B – 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 C – Internal Layout