FusionRLM

PROGRAMMING MANUAL

TSD062-99 (Issue 8) 01/04/2025 AJM

Contents

Introduction

This manual provides a programming guide for the fusion loop module.

The Fusion loop module comprises of a radio transceiver, capable of receiving 31 radio devices. An LCD display is provided along with function buttons to allow programming and diagnostics to be carried out for associated devices.

The fusion loop module is capable of connection to a fire alarm control panel's loop via its loop in and loop out connection terminals. The Fusion loop module is addressed on the loop, via it's on board 8 way dip switch. A total of 5 Fusion loop modules can be fitted on to a fire alarm control panel's loop.

The Fusion loop module is compatible with the full range of FireCell devices.

System design

All installation work should be carried out in accordance with the survey and system design.

It is recommended that the Fusion loop module's peripheral devices are located in accordance with the radio survey and system design. This should be established before installation work commences.

Note: on systems with multiple loop modules, radio channel spacing must be observed to ensure optimum performance. Refer to the 'Radio Channels' section for details.

Handling precautions

General: care should be taken when handling the Fusion loop module. Avoid dropping any of the parts onto hard surfaces, as damage may occur to the case and internal circuitry.

ESD precautions: the fusion loop module includes components that are susceptible to damage from electro-static discharge (ESD). Permanent damage may be caused to these components through routine handling if precautions are not observed. To reduce the risk of damage from ESD, the following precautions should be observed.

Minimise the handling of PCBs which contain static sensitive devices.

Where handling is unavoidable, always ensure that you have taken adequate earthing precautions. An earthed wrist strap is recommended.

When storing or transporting a "loose" PCB, always use a container, which has been designed and manufactured with ESD protective properties.

Avoid placing static sensitive devices on plastic surfaces, which may increase the risk of a static discharge.

Packaging

All products should be kept in their packaging until they are due to be installed, to minimise the risk of damage. Retain all packaging until the installation activities have been completed. Should any product be found to be surplus to requirements, or require returning to EMS, the original packaging should be used.

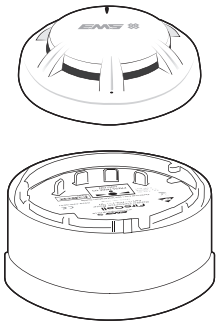
Equipment identification

It is important to establish which devices have been supplied for the installation. Examples of each wireless device are shown below:

Wireless detectors

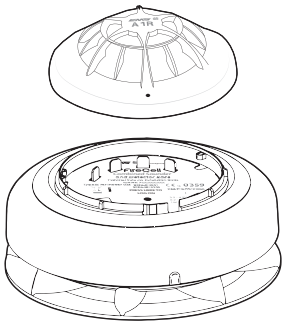
Note: detector and detector wireless bases shown below, can be mixed and matched as required.

Optical detector



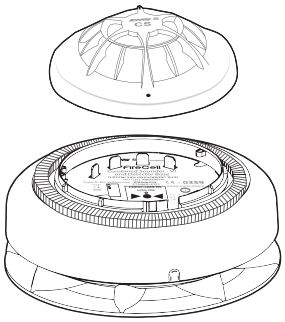
Detector wireless base

Rate of rise A1R heat detector



Sounder detector wireless base

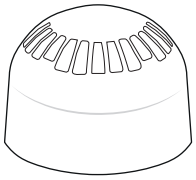
Fixed CS heat detector



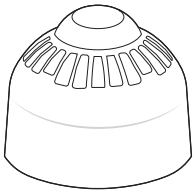
Sounder detector with visual indicator wireless base

Audio visual devices

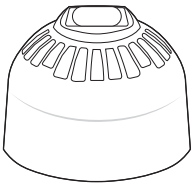
Note: all audio visual elements shown below, can be fitted to the sounder wireless base as required.



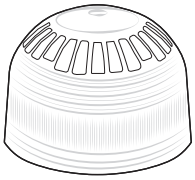
Sounder



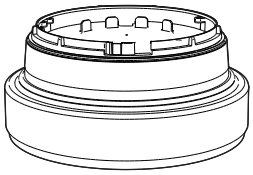
Ceiling sounder beacon



Wall sounder beacon



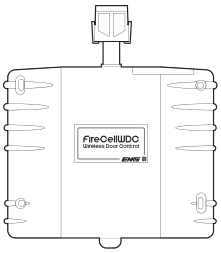
Sounder / visual indicator



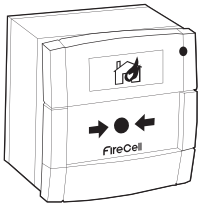
Sounder wireless base

Other wireless devices

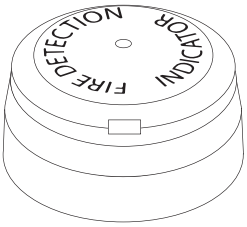
Wireless input / output unit



Wireless door control *(WDC)*

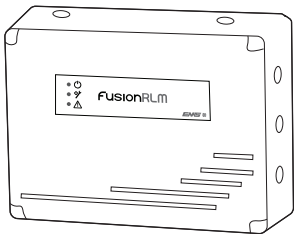


Wireless call point



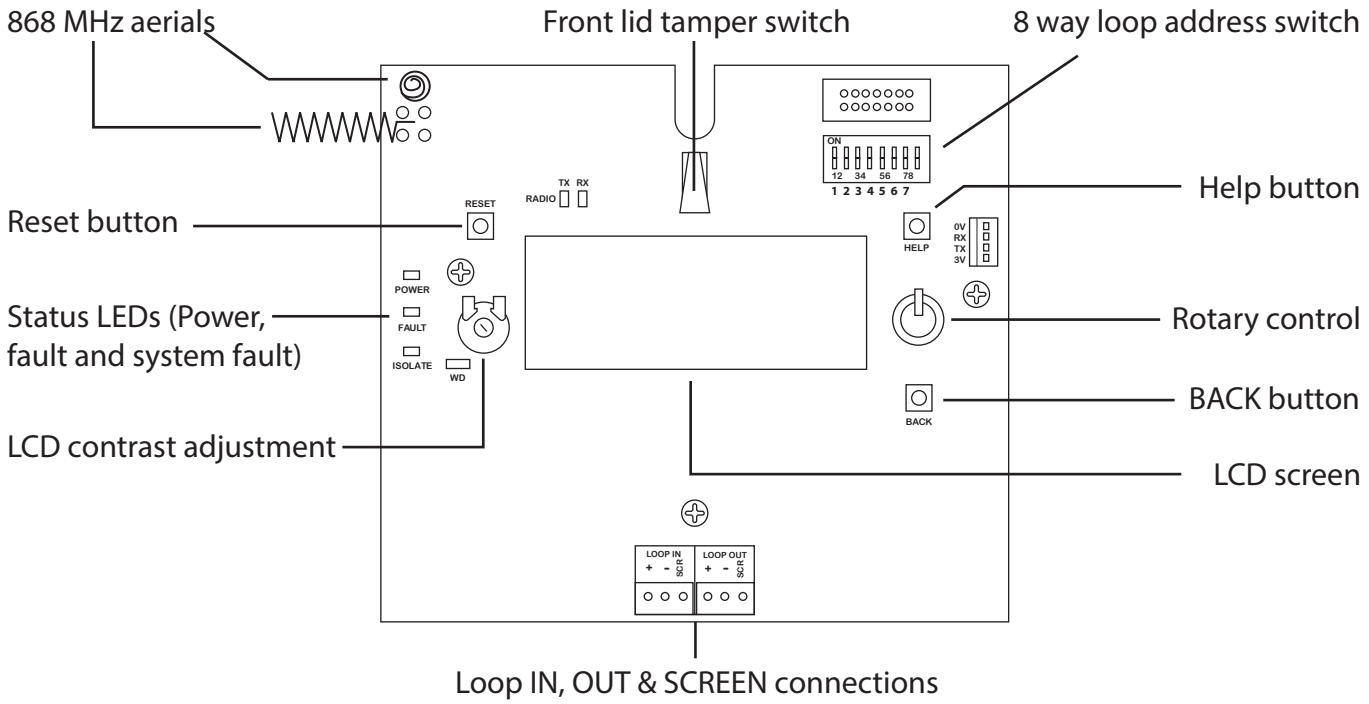
Wireless remote indicator module *(RIM)*

Wireless infrastructure



Fusion loop module

Loop module overview



The front display of the loop module will show the number of devices that are allocated to the interface along with the total number of alarms and faults currently outstanding for devices allocated to the module. An example display will show:

DEV05 = total number of devices on the system, between 00 & 31.

AL00 = total number of devices in alarm condition, between 00 & 31.

FT00 = total number of devices in fault condition, between 00 & 31.

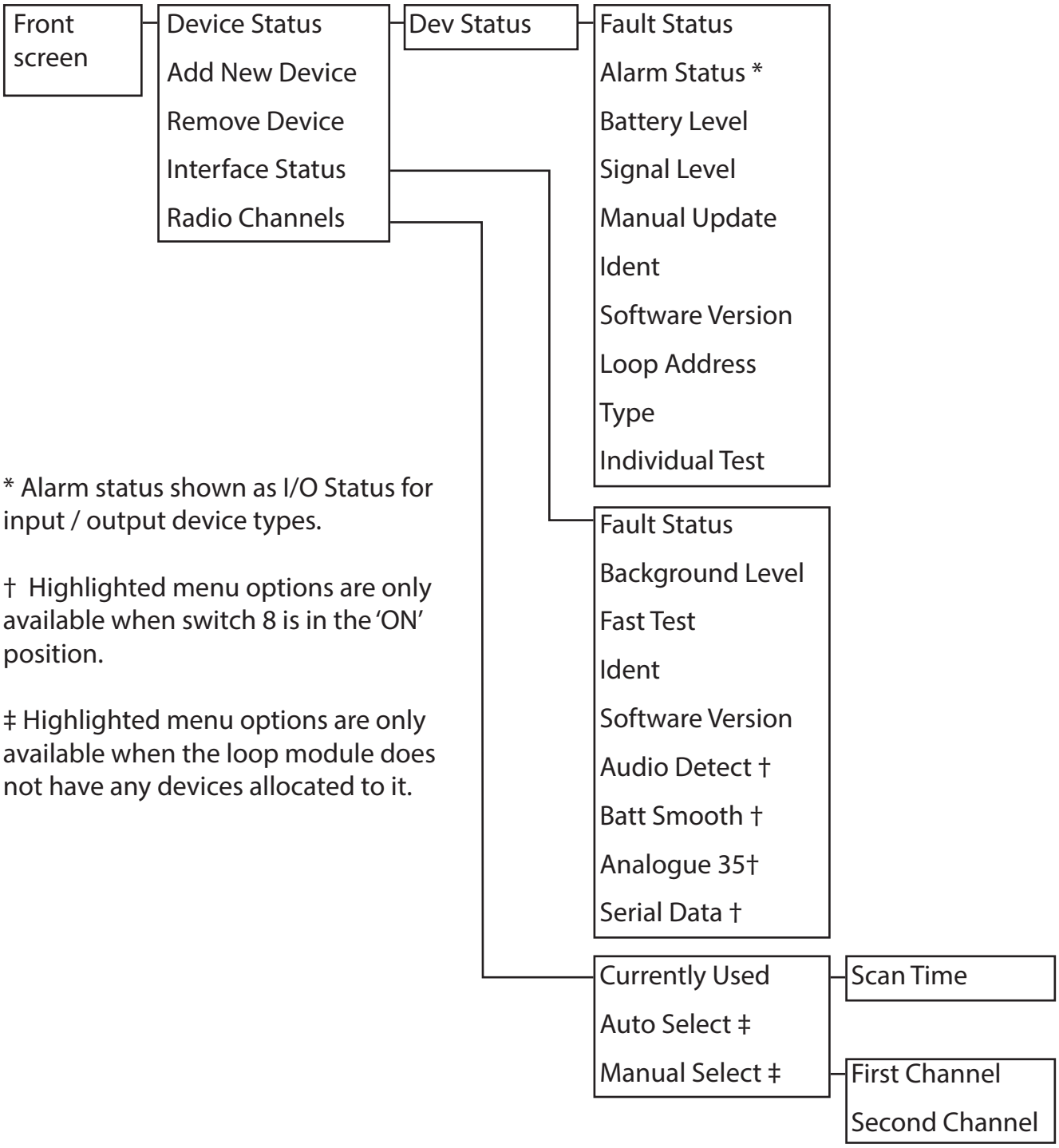
Menu entry

To access the user menus from the front display screen, follow the steps listed below:

Press the rotary control. The display will change to show:

The menu structure can be viewed by scrolling through the menu by turning the rotary control. Entry into the required menu is achieved by locating the required menu on the display and pressing the rotary control. Exiting from a menu option is achieved automatically after 30 seconds or by pressing the 'BACK' button located on the loop module.

Menu structure



* Alarm status shown as I/O Status for input / output device types.

† Highlighted menu options are only available when switch 8 is in the 'ON' position.

‡ Highlighted menu options are only available when the loop module does not have any devices allocated to it.

Loop module address

The address number is set using the on board 8 way switch. Available selections are shown below:

	DIL switch setting		DIL switch setting		DIL switch setting		DIL switch setting		DIL switch setting
addr.	1 8	addr.	1 8	addr.	1 8	addr.	1 8	addr.	1 8
1	10000000	11	11010000	21	10101000	31	11111000	41	10010100
2	01000000	12	00110000	22	01101000	32	00000100	42	01010100
3	11000000	13	10110000	23	11101000	33	10000100	43	11010100
4	00100000	14	01110000	24	00011000	34	01000100	44	00110100
5	10100000	15	11110000	25	10011000	35	11000100	45	10110100
6	01100000	16	00001000	26	01011000	36	00100100	46	01110100
7	11100000	17	10001000	27	11011000	37	10100100	47	11110100
8	00010000	18	01001000	28	00111000	38	01100100	48	00001100
9	10010000	19	11001000	29	10111000	39	11100100	49	10001100
10	01010000	20	00101000	30	01111000	40	00010100	50	01001100
51	11001100	61	10111100	71	11100010	81	10001010	91	11011010
52	00101100	62	01111100	72	00010010	82	01001010	92	00111010
53	10101100	63	11111100	73	10010010	83	11001010	93	10111010
54	01101100	64	00000010	74	01010010	84	00101010	94	01111010
55	11101100	65	10000010	75	11010010	85	10101010	95	11111010
56	00011100	66	01000010	76	00110010	86	01101010	96	00000110
57	10011100	67	11000010	77	10110010	87	11101010	97	10000110
58	01011100	68	00100010	78	01110010	88	00011010	98	01000110
59	11011100	69	10100010	79	11110010	89	10011010	99	11000110
60	00111100	70	01100010	80	00001010	90	01011010	100	00100110
101	10100110	106	01010110	111	11110110	116	00101110	121	10011110
102	01100110	107	11010110	112	00001110	117	10101110	122	01011110
103	11100110	108	00110110	113	10001110	118	01101110	123	11011110
104	00010110	109	10110110	114	01001110	119	11101110	124	00111110
105	10010110	110	01110110	115	11001110	120	00011110	125	10111110
								126	01111110

Loop module menu options

Device status

This function allows the current status of the allocated devices on the loop module to be viewed *(maximum of 31 devices)*. The devices are shown in the menu indicating their loop address number, it's logged on status and the device type. Further information on the device can be obtained by pressing the rotary control. This enables the following details to be viewed:- 'Fault Status', 'Alarm Status', 'Battery Level', 'Signal Level', unique 5 digit ident number and also allows a manual signal level update to take place.

A typical display is shown below:

Addr 067 = device loop address,
between 00 & 126.

L = device is logged on and in normal condition.

Alternative device statuses are as follows:

! = Fault present.
= Fire present.
= Pre alarm present.

Optic = indicates the device type.
Available options are as follows:

Optic = optical detector
Sound = sounder device
I/O = input / output device
Radio = loop module
Multi = multisensor detector
Heat = heat detector
H Temp = high temperature detector
MCP = manual call point
Cmb = combined sounder / detector
??? = unknown device

Note: A combined sounder / detector utilises two sequential addresses on the system. The first address is for the sounder and the second address is for the detector head.

An example is shown on the display:

Further device status information on the displayed device is available by pressing the rotary control . This allows the following menus to be viewed *(see overleaf)*.

Fault status

This menu shows detailed information on the fault status of the device. If multiple faults are outstanding for a device then by turning the rotary control they can be individually viewed. The available fault descriptions are shown below:

No Fault Present – this description indicates that no fault condition is present and that the device is operating correctly. The analogue value seen on the fire control panel from the device in normal status will vary depending on the signal strength readings. The range of values are shown below:

	Signal strength GOOD	Signal strength MEDIUM	Signal strength LOW	Signal strength CAUTION
Detector	25	20	14	13
Manual call point	16	16	14	13
Sounder	16	16	14	13
Input / output device	16	16	14	13

In Tamper – this description indicates that the device's tamper switch is not currently making contact against the ceiling or wall mounting plate. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	4
Manual call point	4
Sounder	4
Input / output device	4

Head Missing – this indicates that the detector (head) is not currently fitted to the detector's wireless base. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	2
Manual call point	N/A
Sounder	N/A
Input / output device	N/A

Sounder Missing – this indicates that the sounder, beacon only or sounder / beacon (head) is not currently fitted on the sounder's wireless module. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	N/A
Manual call point	N/A
Sounder	3
Input / output device	N/A

Signalling Fault – this indicates that there has currently not been any communication between the device and the loop module for 300 seconds. This is indicated as an analogue value of 0 on the fire alarm control panel.

This will be shown on the fire control panel as if the device had been removed from the system, as it does not respond to polls on the loop, I.e. disconnect fault. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	0
Manual call point	0
Sounder	0
Input / output device	0

Battery Fault – this indicates that the device has either a low battery and has a minimum operational life of 7- 30 days or has a battery missing. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	7
Manual call point	7
Sounder	7
Input / output device	7

The analogue value seen on the fire control panel for devices with a battery missing is:

	Analogue value
Detector	0
Manual call point	0
Sounder	0
Input / output device	0

This will not be shown on the fire control panel as if the device had been removed from the system like the signalling fault previously described, therefore differentiating between the two states.

Head Dirty – this shows that the device has a detector head reading which is deemed as dirty/contaminated. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	35
Manual call point	N/A
Sounder	N/A
Input / output device	N/A

No Sndr Audio – this indicates that a sounder device has given no audio output or a low audio output when sounding. This is selectable via a DIP switch on the sounder head and must be disabled when using beacon only devices. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	N/A
Manual call point	N/A
Sounder	1
Input / output device	N/A

Head Fault – this indicates that a detectors head has a fault, I.e. no communication between the head and the wireless module. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	1
Manual call point	N/A
Sounder	N/A
Input / output device	N/A

Short Circuit – this indicates that an input has a short circuit wiring fault. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	N/A
Manual call point	N/A
Sounder	N/A
Input / output device	4

Open Circuit – this indicates that an input has an open circuit wiring fault. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	N/A
Manual call point	N/A
Sounder	N/A
Input / output device	4

Alarm Status

This menu shows information on the current alarm status of the device. The available alarm descriptions are described below:

No Alarm Present – this indicates the device is currently not in an alarm or pre-alarm condition.

In Fire – this indicates the device is currently in a fire alarm condition. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	85
Manual call point	64
Sounder	N/A
Input / output device	N/A

In Pre-Alarm – this indicates the device is currently in a pre-alarm condition. The analogue values seen on the fire control panel for devices in this state are shown below:

	Analogue value
Detector	50
Manual call point	N/A
Sounder	N/A
Input / output device	N/A

I/0 Status – this menu replaces the alarm status menu for input/output devices and shows information on the current status of the device's two inputs and the two outputs. The available status descriptions are described below:

IN: 0-0 – this indicates that inputs 1 and 2 are in the open (normal) state.
IN: 1-0 – this indicates that input 1 is in the closed (activated) state.
IN: 0-1 – this indicates that input 2 is in the closed (activated) state.
IN: 1-1 – this indicates that inputs 1 and 2 are in the closed (activated) state.
OUT: 0-0 – this indicates that outputs 1 and 2 are in the open (normal) state.
OUT: 1-0 – this indicates that output 1 is in the closed (activated) state.
OUT: 0-1 – this indicates that output 2 is in the closed (activated) state.
OUT: 1-1 – this indicates that outputs 1 and 2 are in the closed (activated) state.

The analogue values seen on the fire control panel for devices with inputs in a normal state are shown below:

	Analogue value
Detector	N/A
Manual call point	N/A
Sounder	N/A
Input / output device	16 *

The analogue values seen on the fire control panel for devices with inputs in a closed state are shown below:

	Analogue value
Detector	N/A
Manual call point	N/A
Sounder	N/A
Input / output device	16 *

* The analogue value for the normal and closed input status is shown in relation to the devices signal strength. Therefore this can vary between 16, 14 or 13.

Battery Level

This menu shows information on the battery pack status for a device. A device has 2 packs. The status of each of these can be viewed from this menu. The status of the pack is updated whenever there is a status change or automatically updated every 6 hours. The available battery descriptions are described below:

Pack 1 OK – this indicates a good battery voltage is present in pack 1. This is represented by displaying a full battery icon.

Pack 1 Warning – this indicates the battery voltage is low in pack 1 and is a 30 day warning indication. The batteries must be changed on the device within 30 days for continued reliable operation. This is represented by displaying a half full battery icon.

Pack 1 Low – this indicates the battery voltage is low in pack 1 and is a 7 day warning indication. The batteries must be changed on the device within 7 days for continued reliable operation. This is represented by displaying an empty battery icon.

Pack 1 Missing – this indicates a battery from pack 1 is missing. The battery must be inserted on the device for continued reliable operation. This is represented by displaying an 'X' symbol.

Pack 2 OK – this indicates a good battery voltage is present in pack 2. This is represented by displaying a full battery icon.

Pack 2 Warning – this indicates the battery voltage is low in pack 2 and is a 30 day warning indication. The batteries must be changed on the device within 30 days for continued reliable operation. This is represented by displaying a half full battery icon.

Pack 2 Low – this indicates the battery voltage is low in pack 2 and is a 7 day warning indication. The batteries must be changed on the device within 7 days for continued reliable operation. This is represented by displaying an empty battery icon.

Pack 2 Missing – this indicates a battery from pack 2 is missing. The battery must be inserted on the device for continued reliable operation. This is represented by displaying an 'X' symbol.

Signal Level

This menu shows information on the two signalling channels used by the loop module in both directions, as the devices are bi-directional.

To check the signal levels for a device on the loop module, follow the steps below:

With the loop module in its normal state the screen will display:

Press the rotary control and the screen will now display:

Press the rotary control and the screen will display the first device, I.e.

Turn the rotary control until the device in question is displayed and press the rotary control. The display will show:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

Turn the rotary control to view signals from the device to the loop module (LI <- Dev) and from the loop module to the device (LI -> Dev):

When all levels have been checked, press the BACK button to return to the normal front screen display.

The received signal strength at the loop module from the device is shown as an LI <- Dev level, indicating the signal that has been sent from the device to the loop module. The LI <- Dev level is updated on every poll response (123 seconds). The forward signal strength received at a device from the loop module is shown as an LI -> Dev level, indicating the signal that has been sent from the loop module to the device. The LI -> Dev level is updated every 6 hours, or when requested manually by selecting the 'Manual Update' option from the menu.

Ch 1 LI <- Dev – this indicates the received signal strength at the loop module from the device on the first frequency channel used by the system. A level from 0 - 45 dB is shown to indicate the levels. A table with additional signal level details is shown at the end of this section.

Ch 2 LI <- Dev – this indicates the received signal strength at the loop module from the device on the second frequency channel used by the system. A level from 0 - 45 dB is shown to indicate the levels. A table with additional signal level details is shown at the end of this section.

Ch 1 LI -> Dev – this indicates the forward signal strength received at the device from the loop module on the first frequency channel used by the system. A level from 0 - 45 dB is shown to indicate the levels. A table with additional signal level details is shown at the end of this section.

Ch 2 LI ->Dev – this indicates the forward signal strength received at the device from the loop module on the second frequency channel used by the system. A level from 0 - 45 dB is shown to indicate the levels. A table with additional signal level details is shown at the end of this section.

The individual devices have signal levels available for both of their operating channels (Ch1 and Ch2) and also for both directions (loop module to device (LI -> Dev) and device to loop module (LI <- Dev) as the devices are bi-directional. The signal levels shown range from 0 - 45 dB with 45 being the highest signal to 0 where no signal is being seen, as shown below;

20dB or greater	Indicates a GOOD signal level
13 to 19dB	Indicates a MEDIUM signal level
8 to 12dB	Indicates a LOW signal level
1 to 7dB	Indicates a CAUTION signal level
0dB	Indicates NO SIGNAL level is being received

An algorithm incorporating both channels and the channels background is employed to indicate the analogue values displayed at the associated control panel and therefore determining the devices signal strength. This is shown in the table below.

Analogue value	**Device Type**	**Device signal level strength**
0	All devices	NO SIGNAL level received - device missing
13	All devices	Radio signal level CAUTION
14	All devices	Radio signal level LOW
16	Call point, sounder and I / O device	Radio signal level GOOD/MEDIUM
20	Detector	Radio signal level MEDIUM
25	Detector	Radio signal level GOOD

The device to loop module information is updated every time the device responds to a poll which is every 123 seconds. The loop module to device information is automatically updated every 6 hours or if a manual update is requested.

The minimum recommend level is 20 dB on each channel.

Manual Update

This menu when entered will automatically send signals from the loop module to the individual device and ask for its current signal level status to be transmitted back to the loop module. This will then automatically update the signal level fields for the device. If a signal level field is still awaiting an update from a channel 0 will be shown in the field. Viewing signal levels is covered in the 'Signal Level' section of this manual.

To manually update the signal levels for a device on the loop module, follow the steps below:

With the loop module in its normal state the screen will display:

Press the rotary control and the screen will now display:

Press the rotary control and the screen will display the first device, I.e.

Turn the rotary control until the device in question is displayed and press the rotary control. The display will show:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

The display will automatically return the 'Manual Update' screen:

To check the latest signals received for the individual device enter the signal level menu as described in previous section.

When all levels have been checked, press the 'BACK' button to return to the normal front screen display.

Ident

This menu shows the device's unique 5 digit identification number.

Software version

This menu shows the device's current software version.

Device address

This menu allows you to view and change the device address numbers, if required.

To change the device address on the loop module, follow the steps below:

With the loop module in its normal state the screen will display:

Press the rotary control and the screen will now display:

Press the rotary control and the screen will display the first device, I.e.

Turn the rotary control until the device in question is displayed and press the rotary control. The display will show:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

Turn the rotary control until the desired address is shown, then click the rotary control confirm selection:

When all levels have been checked, press the 'BACK' button to return to the normal front screen display.

Type

This menu option displays the device type.

For combined sounder detectors, the type of sensor fitted is shown. Variants are 'Optical' for optical detectors, 'Htemp' for class CS (fixed temp) heat detectors, 'Heat' for class AIR (rate-of-rise) detectors and 'Multi' for multisensor detectors.

Individual test

When entered, it is possible to send individual sounder device commands to turn their sounder elements 'ON' and 'OFF'. It is also possible to select individual output devices and send commands to turn the unit's relay outputs 'ON' and 'OFF'. Note: If the unit is a dual output device, both outputs will operate.

Add new device - Add by logon

The function allows the device to be added using the device's log on button. Alternatively, the device can be added by entering the device's unique ident number into the loop module. See page 19 for details.

A total of 31 wireless devices can be added to the loop module. Devices must be powered prior to adding them to the system. I.e. batteries inserted and power links in place.

The location of device log on buttons, power jumper connections and confirmation LEDs are shown in the Equipment familiarisation section.

Note: loop module radio channels can only be changed whilst there are no devices added to the system. See the 'Radio Channels' section for more info.

With the loop module in its normal state the screen will display:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

Press the rotary control and the screen will now display:

Press the device's log on button for 2 seconds (the device's confirmation led will illuminate). The screen will now display:

If the ident shown does not match the ident of the new device to be added then press the rotary control when the above 'Add Dev xxxxx N?' display is shown. This will return the display to the previous menu.

If the device ident shown is correct, turn the rotary control until the screen displays:

Press the rotary control and the screen will display:

Followed by:

Turn the rotary control, until the desired device address is shown:

Press the rotary control to confirm the device address. The screen will display:

Press the 'BACK' button, to return to the front display:

Add new device - Add by ident

The function allows the device to be added by entering the device's unique identification number into the loop module via the rotary controls. Alternatively, the device can be programming using the device's log on button. See page 18 for this alternative method.

This menu allows a total of 31 wireless devices to be added to the loop module. The devices must be powered prior to adding them to the system, I.e. batteries inserted and power links in place.

The location of device ident number and power jumper connections are shown in the Equipment familiarisation section.

Note: loop module radio channels can only be changed whilst there are no devices added to the system. See the 'Radio Channels' section for more info.

To add a device onto the loop module, with the device at the loop module, follow the steps below:

With the loop module in its normal state the screen will display:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays the correct device type. Press the rotary control.

Enter the device's ident number by turning to toggle through the characters, and clicking the rotary control to enter each character.

Check that the device ident number has been entered correctly. If an incorrect number is shown, press the 'BACK' button to return to the previous display.

If the device ident displayed is correct, turn the rotary control until the screen displays:

Continued overleaf.

Press the rotary control and the screen will display:

Followed by:

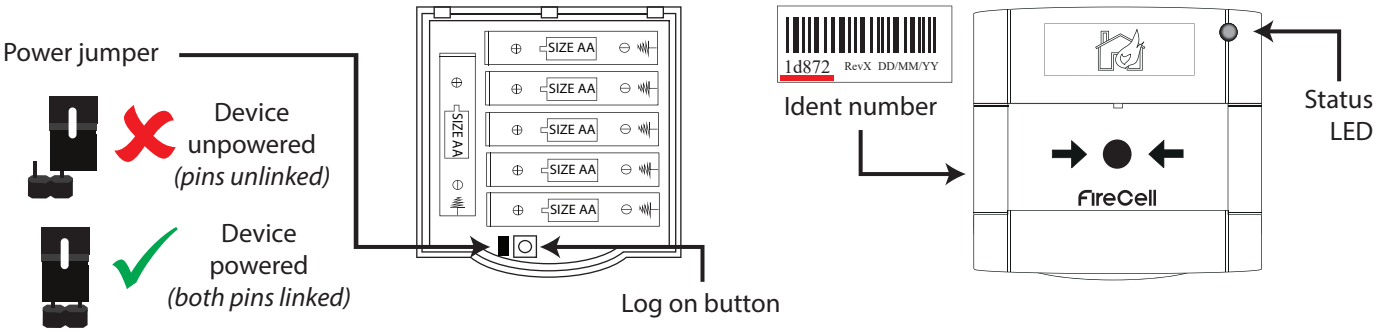
Turn the rotary control, until the desired device address is shown:

Press the rotary control to confirm the device address. The screen will display:

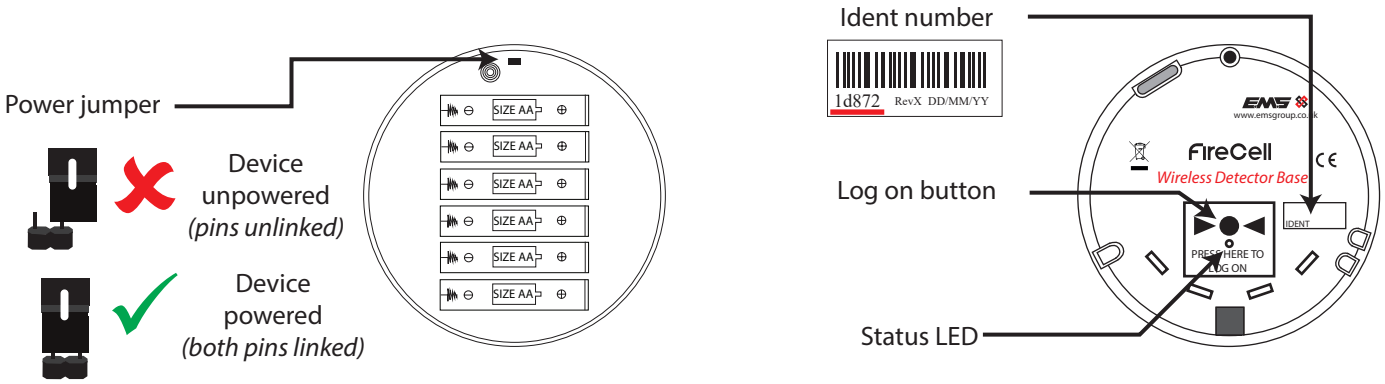
Press the 'BACK' button, to return to the front display:

Equipment familiarisation

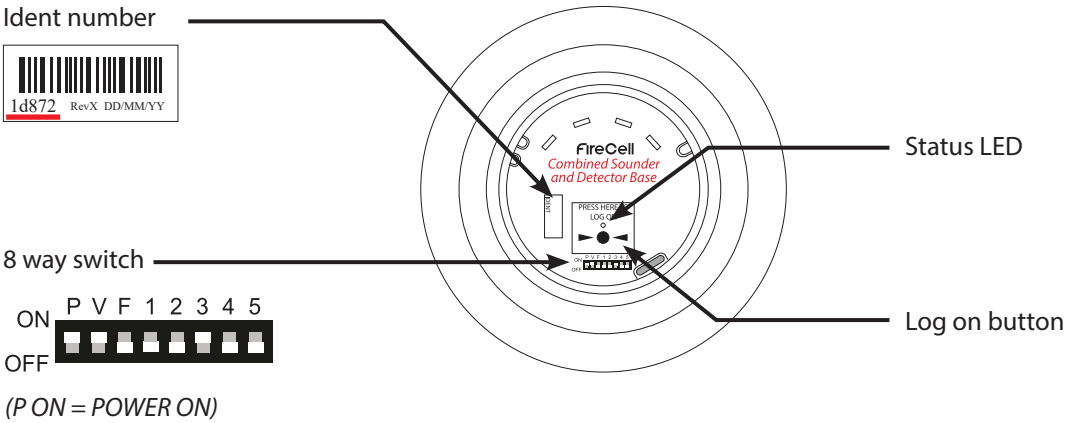
Wireless call point



Wireless detector base

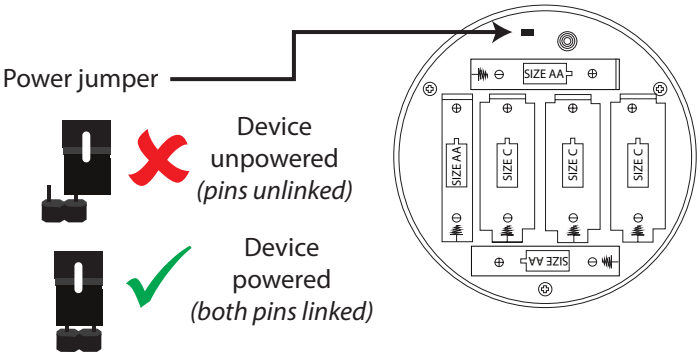


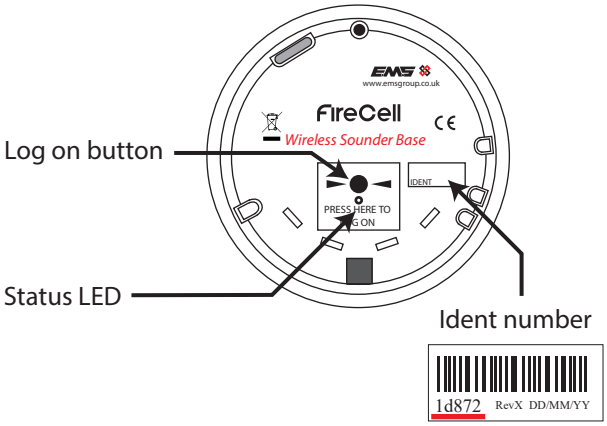
Wireless sounder & detector base



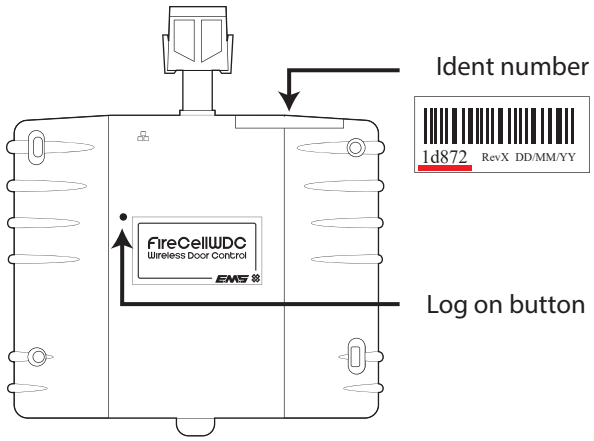
(P ON = POWER ON)

Wireless sounder base



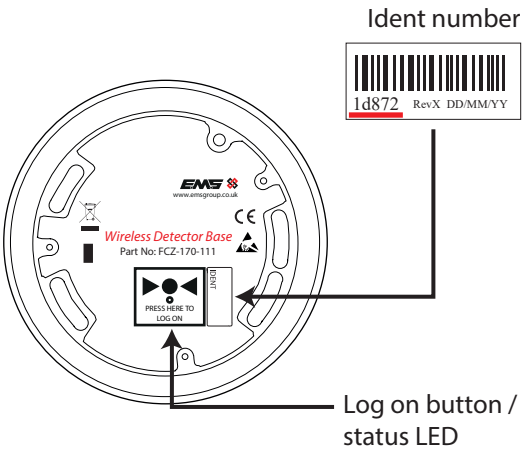


Wireless door control (WDC)



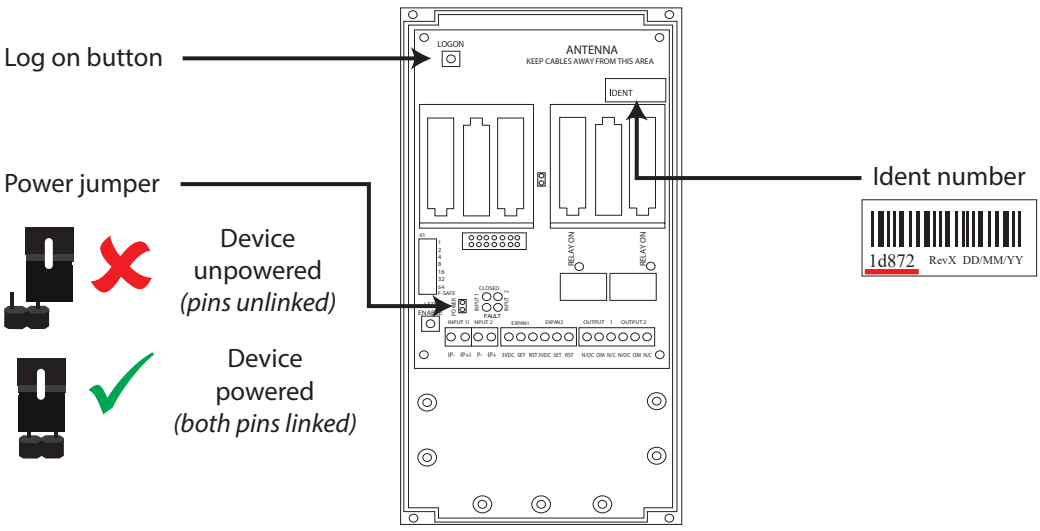
Note: the WDC is logged on to the system is an input/output device type

Wireless remote indicator module (RIM)



Note: the Wireless RIM is logged on to the system is an input / output device type

Wireless input / output unit



Remove device

This menu allows removal of devices from the loop module.

To change the device address on the loop module, follow the steps below:

With the loop module in its normal state the screen will display:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will display the first device, I.e.

Note: pressing the 'HELP' button at this point displays the device ident, for identification purposes.

Turn the rotary control until the screen displays the device that is to be removed and press the rotary control. The screen will now display:

Note: If the ident shown does not match the ident of the device to be removed, press the rotary control when the above 'Remove xxxxx N?' message is shown. This will return the display to the previous menu.

Confirm the device ident number displayed is the same as located on the device. If correct, turn the rotary control until the screen displays:

Press the rotary control and the screen will now show confirmation of the device removal, I.e.

Press the 'BACK' button, to return to the normal front screen display:

Interface status

This function allows the current status of the loop module to be viewed. Available options are;

'Fault Status', 'Background Level', 'Fast Test', 'Unique Ident Number' and 'Software Version'.

Additional options are available by the selection of address switch 8 *(see the 'Menu Structure' section)*. More details on these options is available by pressing the rotary control on the required item. This allows the following menus to be viewed:

Fault Status

This menu when entered shows detailed information on the fault status of the loop module. If multiple faults are outstanding for the interface then by turning the rotary control they can be individually viewed. The available fault descriptions are described overleaf:

No Fault Present – this indicates that the loop module is not in any fault and is operating normally. The analogue values seen on the fire control panel for devices in this state is shown below:

	Analogue value
Loop module	16

Aerial Tamper – this indicates that the aerial on the loop module is not attached or damaged. The analogue values seen on the fire control panel for devices in this state is shown below:

	Analogue value
Loop module	4

Ch1RFI Det – this indicates that a radio frequency interference signal has been detected on radio channel 1 that the system is operating on.

Ch2 RFI Det – this indicates that a radio frequency interference signal has been detected on radio channel 2 that the system is operating on.

The analogue value seen on the fire control panel for when both channel 1 and channel 2 are in this state, is shown below:

	Analogue value
Loop module	5

Background Level

Ch1RFI Det – this indicates that a radio frequency interference signal has been detected on radio channel 1 that the system is operating on.

Ch2 RFI Det – this indicates that a radio frequency interference signal has been detected on radio channel 2 that the system is operating on.

The analogue value seen on the fire control panel for when both channel 1 and channel 2 are in this state, is shown below:

5	Indicates HIGH background level
13	Indicates CAUTION background level
14	Indicates MEDIUM background level
16	Indicates GOOD background level

Fast Test

This option allows detectors to be put into their fast test mode. When the fast test mode is selected, the detectors mode is changed and their sensitivity is raised, therefore allowing them to be more easily tested. A LED on the unit will flash every second to indicate the detector is in this mode. The test is time limited, with time options ranging from 1 minute to 30 minutes, whilst a timer is present on the display, showing the time remaining. If a fire alarm is seen during this period, the time reverts back to the selected time duration. If no fire events are seen within this time duration, the fast test mode is automatically cancelled and the detectors return to their normal mode of operation.

To enable fast test facility on the loop module, follow the steps below:

With the loop module in its normal state the screen will display:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays:

Press the rotary control and the screen will now display:

Turn the rotary control until the screen displays the time-out duration required and press the rotary control. The display will show:

Press the 'BACK' button, to return to the front display:

Ident – This menu shows the unique identification number for the device.

Software Version – This menu shows the software version currently installed in the device.

Audio Detect - This option allows the 'No Sndr Audio' fault reporting to be selectable between 'ON' and 'OFF' on the loop module and the control panel. If ON is selected, the analogue value 1 which is the 'No Sndr Audio' fault description will be displayed on the loop module and the control panel, if this fault type occurs on a sounder device. If 'OFF' is selected, the above fault will not be displayed on the loop module or the control panel. The default is set to 'OFF', as there are no requirements to display this message type.

Batt Smooth - This option allows battery low fault reporting to be selectable, so verification of the low battery can be ascertained before an analogue value 7 fault type is displayed on the loop module and the control panel. Available smoothing options are ; 'OFF' (no smoothing), and 1-5 days smoothing (in one day increments). If this feature is implemented, the systems performance is not compromised and the 30 day battery low warning is still achieved. The default is set to 'OFF', so no smoothing is implemented and the fault type is displayed instantly.

Analogue Value 35 Mode - This option allows an analogue value 35 message from a detector, which is a 'head dirty/ compensation' fault to be a selectable option for displaying on the system. The reporting of this status does not compromise the performance of the sensor and or the sensitivity. It is not a requirement for detectors to report contamination events, hence this selectable mode. The default is to 'OFF', which will not display these status message types.

Serial Data - This option enables serial data to be seen on a terminal programme via the on-board serial port. If enabled, it is important NOT to leave the loop module in this mode.

Radio Channels

This menu allows the two frequency channels currently used by the loop module to be viewed and also allows the channels used to be selected either manually or automatically.

In the majority of installations, the radio channels will not require changing. 32 channels are available for use on the system as shown below:

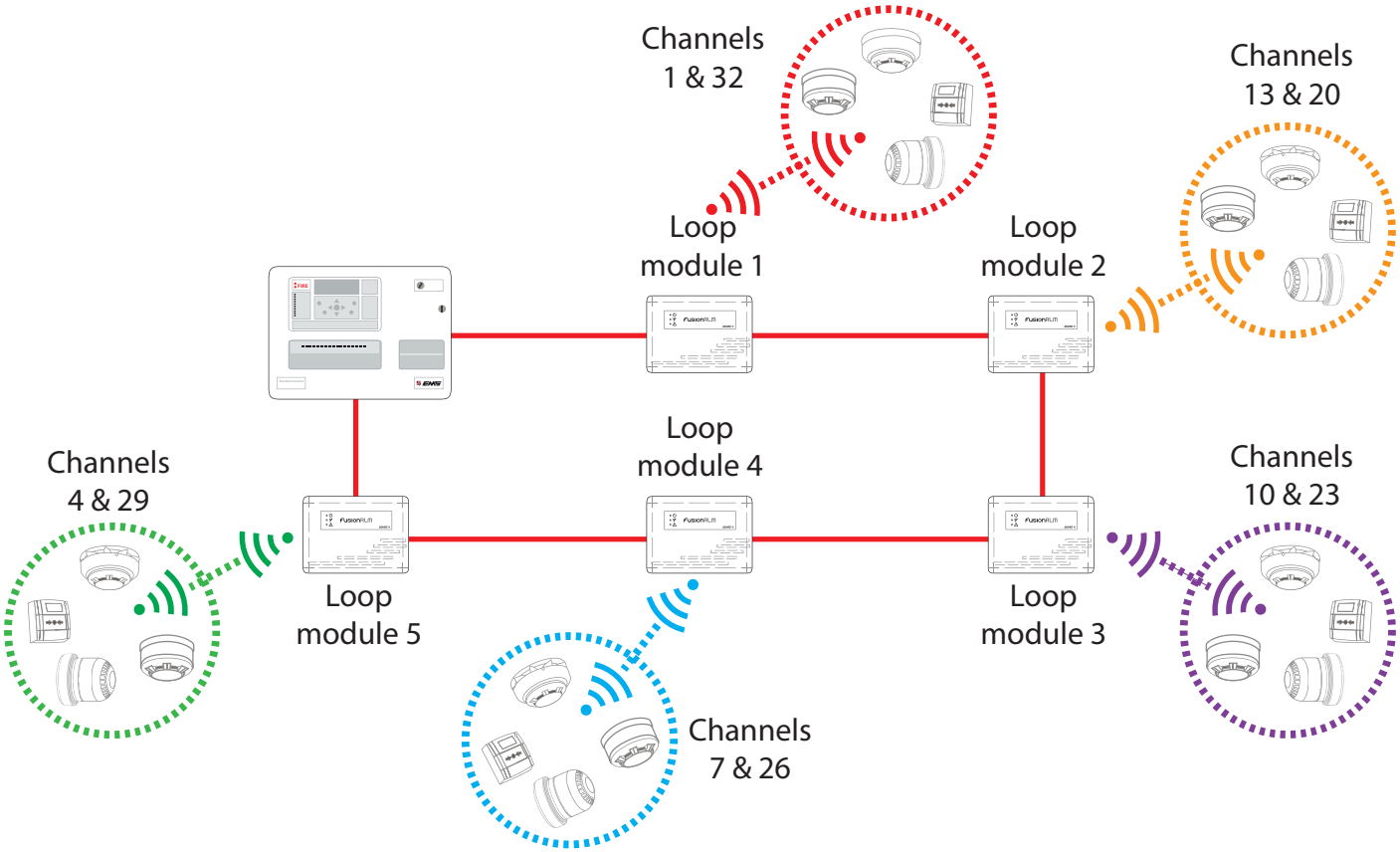
Ch1: 868.048 MHz		Ch9: 868.248 MHz		Ch17: 868.749 MHz		Ch25: 868.950 MHz	
Ch2: 868.073 MHz		Ch10: 868.273 MHz		Ch18: 868.774 MHz		Ch26: 868.975 MHz	
Ch3: 868.098 MHz		Ch11: 868.298 MHz		Ch19: 868.800 MHz		Ch27: 869.000 MHz	
Ch4: 868.123 MHz		Ch12: 868.323 MHz		Ch20: 868.825 MHz		Ch28: 869.025 MHz	
Ch5: 868.148 MHz		Ch13: 868.349 MHz		Ch21: 868.850 MHz		Ch29: 869.050 MHz	
Ch6: 868.173 MHz		Ch14: 868.374 MHz		Ch22: 868.875 MHz		Ch30: 869.075 MHz	
Ch7: 868.198 MHz		Ch15: 868.399 MHz		Ch23: 868.900 MHz		Ch31: 869.100 MHz	
Ch8: 868.223 MHz		Ch16: 868.424 MHz		Ch24: 868.925 MHz		Ch32: 869.125 MHz	

Note: when using a single loop module, no changes to the radio channels are required.

When using multiple loop modules, the radio channels should be checked to ensure the same channels are not used on loop modules that are in range of each other. For further assistance, follow the channel spacing guidance overleaf, or contact EMS technical support.

Channel spacing

The example below shows a multiple loop module installation using different frequency channels. The channels used in the example are colour coded and also shown in the table below. Having a system setup in this way ensures the two device channels used for each loop module are taken from the low and from the high band and are not duplicated.



Low bands			High bands		
Low band 1			*High band 1*		
Ch1: 868.047 MHz	Loop module 1		Ch17: 868.749 MHz		
Ch5: 868.147 MHz			Ch21: 868.849 MHz		
Ch9: 868.248 MHz			Ch25: 868.949 MHz		
Ch13: 868.348 MHz	Loop module 2		Ch29: 869.049 MHz	Loop module 5	
Low band 2			*High band 2*		
Ch2: 868.072 MHz			Ch18: 868.774 MHz		
Ch6: 868.173 MHz			Ch22: 868.874 MHz		
Ch10: 868.273 MHz	Loop module 3		Ch26: 868.974 MHz	Loop module 4	
Ch14: 868.373 MHz			Ch30: 869.075 MHz		
Low band 3			*High band 3*		
Ch3: 868.097 MHz			Ch19: 868.799 MHz		
Ch7: 868.198 MHz	Loop module 4		Ch23: 868.899 MHz	Loop module 3	
Ch11: 868.298 MHz			Ch27: 869.000 MHz		
Ch15: 868.398 MHz			Ch31: 869.100 MHz		
Low band 4			*High band 4*		
Ch4: 868.122 MHz	Loop module 5		Ch20: 868.824 MHz	Loop module 2	
Ch8: 868.223 MHz			Ch24: 868.924 MHz		
Ch12: 868.323 MHz			Ch28: 869.024 MHz		
Ch16: 868.423 MHz			Ch32: 869.125 MHz	Loop module 1	

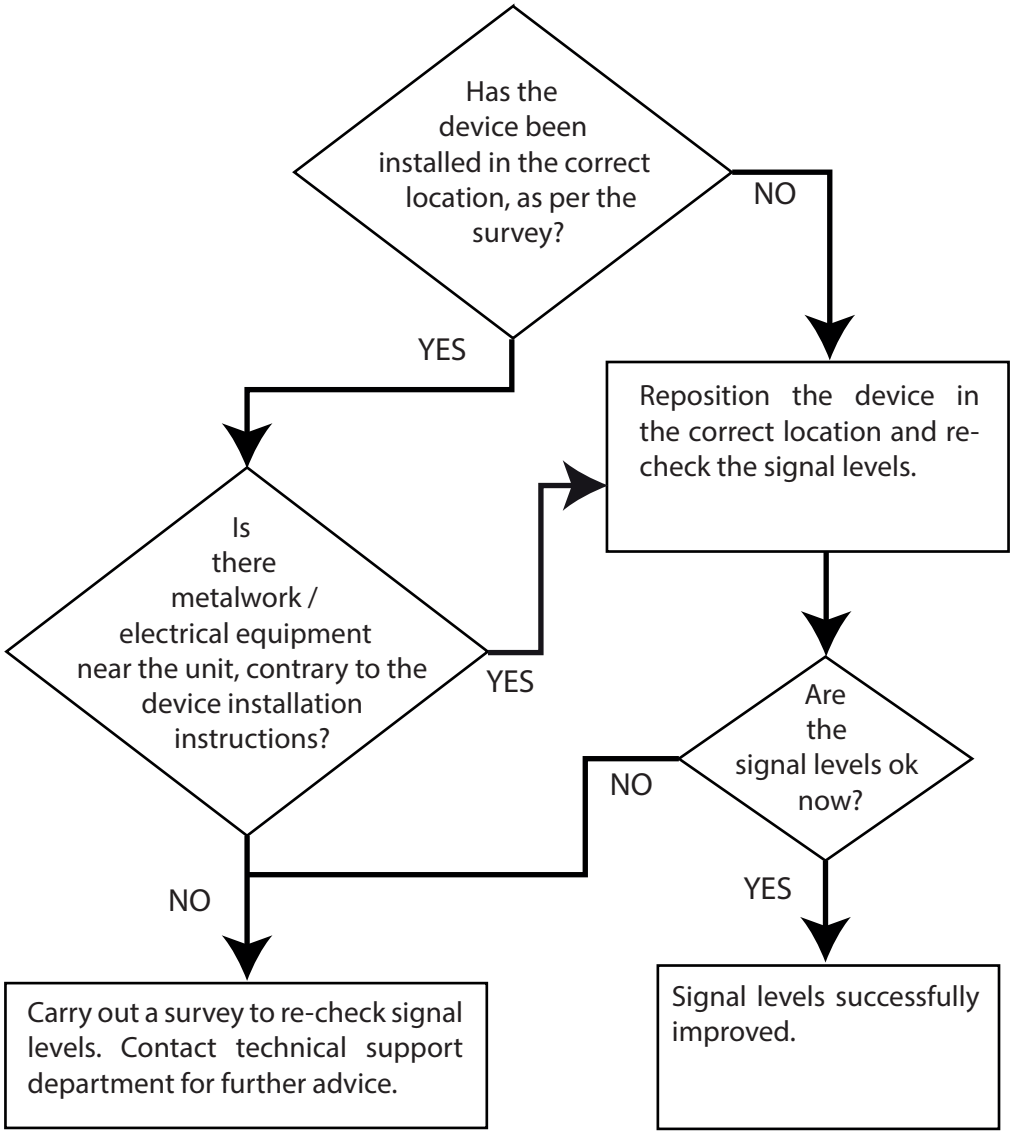
Manual channel selection

Channels can only be manually changed whilst no devices are on the loop module. Care must be taken to select one channel from the high band and one from the low band as previously outlined within the 'Radio Channels' section:

Front Display **Radio Channels** **Manual Select**

How to improve signal levels

Device signal levels can be improved by following the flowchart below:



Analogue value table

Analogue value	Device Type	Symptom
0	All	Battery missing
1	Detector	Head fault
1	Sounder	No audio output
2	Detector	Head missing
3	Sounder	Head missing
4	All	Tamper
4	Input / output	Input open / short circuit
4	Loop module	Aerial tamper
5	Loop module	Background level high
7	All	Batteries low - *replace within 30 days*
13	All devices	Radio signal strength caution
13	Loop module	Background level caution
14	All devices	Radio signal strength low
14	Loop module	Background level medium
16	Call point, sounder & input / output	Radio signal strength good or medium
16	Loop module	Background level good
20	Detector	Radio signal strength medium
25	Detector	Radio signal strength good
35	Detector	Detector head dirty
50	Detector	Pre-alarm
64	Call point	Alarm condition
85	Detector	Alarm condition

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SCAN ME