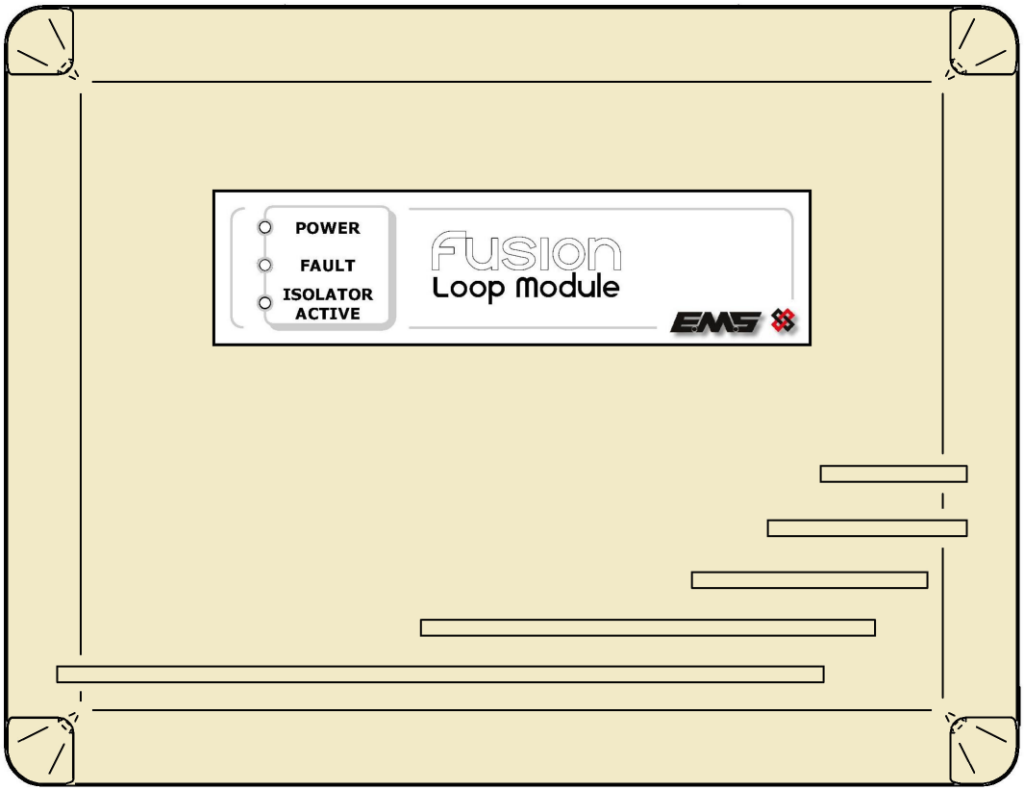
Fusion

Loop Module



Engineers Guide

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1.0 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 Panels Loop via its Loop in and out connection terminals. The interface is addressed on the loop via its onboard 8 way DIP switch. A total of 5 Fusion Loop Modules can be fitted onto a Fire Alarm Control Panels Loop.
- The Fusion Loop Module is compatible with the full range of EMS FireCell devices.

1.1 System Design

- All installation work should be carried out in accordance with the survey and system design.
- It is recommended that the Loop Modules peripheral devices are located in accordance with the radio survey and system design. This should be established before installation work commences.

1.2 Handling Precautions

- General: Care should be taken when handling Loop Module. Avoid dropping any of the parts onto hard surfaces, as damage may occur to the case and internal circuitry.
- ESD Precautions: 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 PCB's 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

1.3 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.

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1.4 Equipment Familiarisation

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

Optical Smoke Detector

Heat High Temp CS Detector/Heat A1R Detector

Combined Sounder/ Visual Indicator /Detector

Multisensor Smoke Detector

Radio Sounder

Sounder Beacon

Radio Call Point

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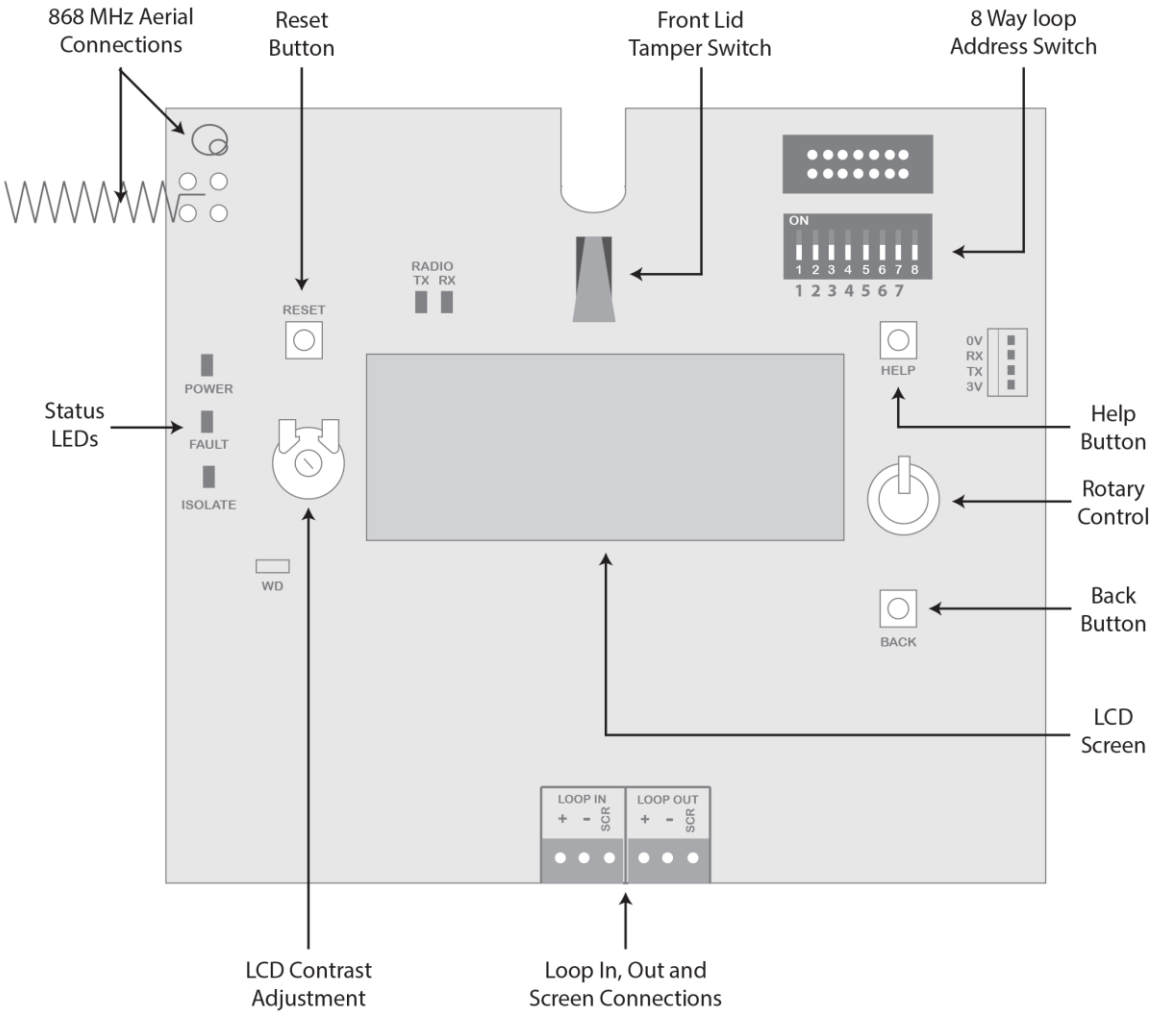
2.0 FUSION LOOP MODULE



2.1 Loop Module Controls

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. The DEV field shows the total number of devices allocated between 00-31. The AL field shows the amount of devices currently with outstanding Alarms and Pre-alarms ranging between 00-31. The FT field shows the amount of devices currently with outstanding Faults ranging between 00-31. An example display will show;

DEV 01 AL00 FT00

2.2 Accessing The Loop Modules Menus

- To access the Users menu's from the front display screen , follow the steps listed below:

DEV 01 AL00 FT00

- Press the rotary control. The display will change to show;

Device Status

- 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.

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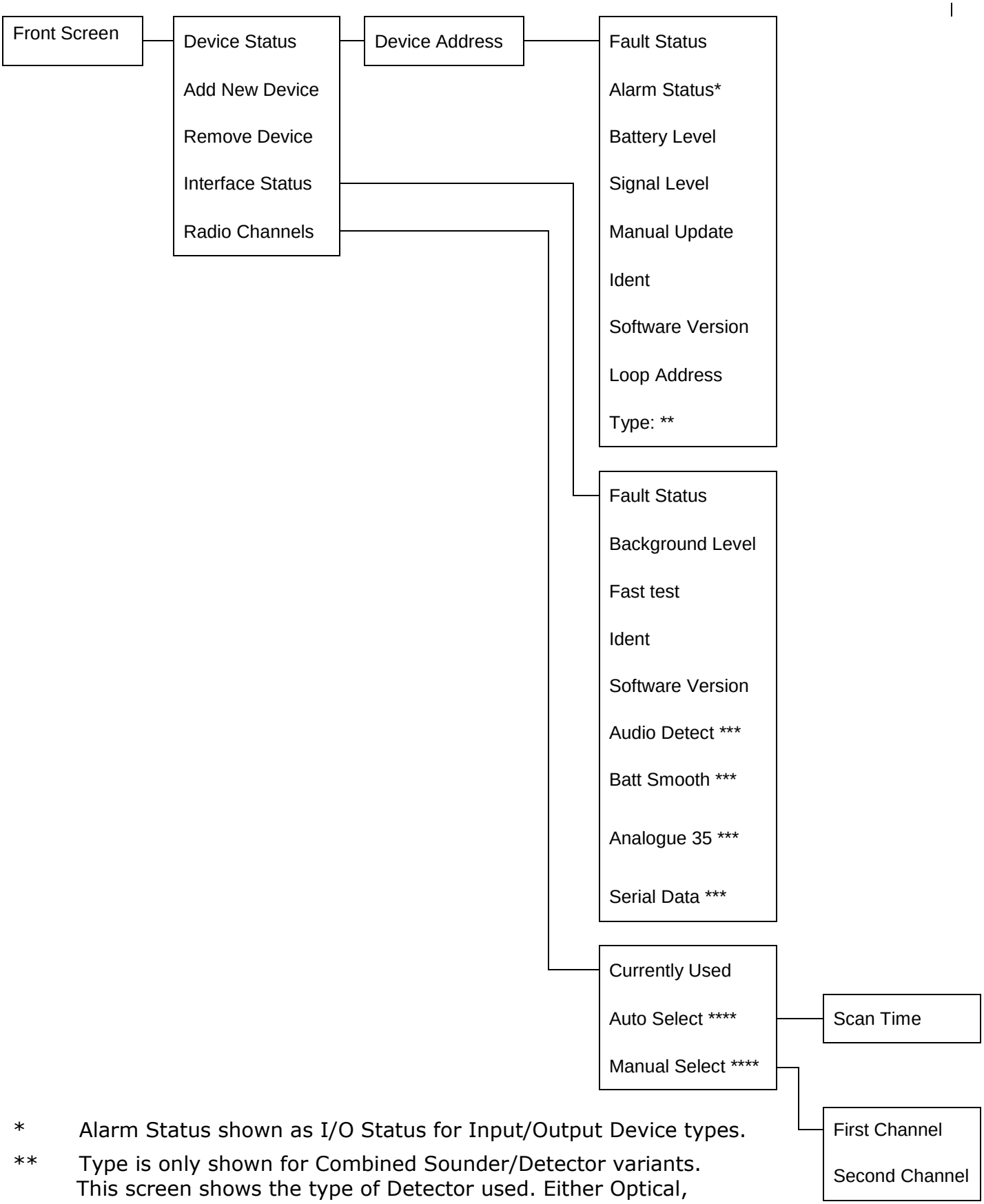
2.3 Menu Structure Layout



* Alarm Status shown as I/O Status for Input/Output Device types.

** Type is only shown for Combined Sounder/Detector variants. This screen shows the type of Detector used. Either Optical, Htemp, Heat or Multi will be shown.

*** Highlighted menu options are only available when switch 8 is ON.

**** Menu Options only available when loop interface does not have

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any devices allocated to it.

2.4 Fusion Loop Module Address Setting

The address number is set using the onboard 8 way switch. Available selections are shown in the Table below;

addr	DIL switch setting 1.....8	addr	DIL switch setting 1.....8	addr	DIL switch setting 1.....8	addr	DIL switch setting 1.....8	addr	DIL switch setting 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

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3.0 LOOP MODULES MENU OPTIONS

3.1 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 button. 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 L Optic

The descriptions for the shown display are as follows;

Addr 067 – In this example this indicates the devices loop address number. Available options are between 1 and 126.

L – In this example this field indicates the devices logged on or fault status.
Available options are;

L= Logged On in a normal condition.
ʟ = Combined Sounder/Detector in a normal condition.
Note: this device will hold and show two loop addresses.
(The first for its Sounder and the next for its Detector).
! = Fault present.
= Fire present.
= Pre alarm present.

Optic – This field indicates the device type.
Available options are:

Optic = Optical Detector
Sound = Sounder Device
I/O = Input/Output Device
Radio = Loop Interface Module
Multi = Multi-sensor Detector
Heat = Heat Detector
H Temp = High Temperature Detector
MCP = Manual Callpoint
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;

Addr 002ʟ003 Cmb

Further Device Status Information on the displayed device is available by pressing the Rotary Control button. This allows the following menus to be viewed;

3.11 Fault Status – this menu when entered 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 described overleaf;

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No Fault Present – this description indicates that the device is not in any fault condition and is operating correctly.

The analogue value seen on the Fire Alarm Control Panel in their normal status will vary depended upon the signal strength readings. The range of values is shown below

	Analogue Value Signal Strength GOOD	Analogue Value Signal Strength MEDIUM	Analogue Value Signal Strength LOW	Analogue Value Signal Strength CAUTION
Detector	25	20	14	13
Manual Call Point	16	16	14	13
Sounder	16	16	14	13
Input/Output	16	16	14	13

In Tamper – this indicates that the devices tamper switch is not currently making contact against the ceiling or wall mounted base plate.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	4
Manual Call Point	4
Sounder	4
Input/Output	4

Head Missing – this indicates that the detectors head is not currently fitted on the detector base.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	2
Manual Call Point	N/A
Sounder	N/A
Input/Output	N/A

Sounder Missing – this indicates that the sounder, strobe only or sounder/strobe head is not currently fitted on the sounder base.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	N/A
Manual Call Point	N/A
Sounder	3
Input/Output	N/A

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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 Alarm 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 value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	0
Manual Call Point	0
Sounder	0
Input/Output	0

Battery Fault – this shows 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 value seen on the Fire Alarm Control Panel for devices with low batteries is;

	Analogue Value
Detector	7
Manual Call Point	7
Sounder	7
Input/Output	7

The analogue value seen on the Fire Alarm Control Panel for devices with a battery missing is;

	Analogue Value
Detector	0
Manual Call Point	0
Sounder	0
Input/Output	0

This will not be shown on the Fire Alarm 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 viewed currently has a head reading which is deemed as dirty/contaminated.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	35
Manual Call Point	N/A
Sounder	N/A
Input/Output	N/A

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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 strobe only devices.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	N/A
Manual Call Point	N/A
Sounder	1
Input/Output	N/A

Head Fault – this indicates that a detectors head has a fault i.e no communication between the head and the radio base.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	1
Manual Call Point	N/A
Sounder	N/A
Input/Output	N/A

Short Circuit – this indicates that an input has a short circuit wiring fault.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	N/A
Manual Call Point	N/A
Sounder	N/A
Input/Output	4

Open Circuit – this indicates that an input has a short circuit wiring fault.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	N/A
Manual Call Point	N/A
Sounder	N/A
Input/Output	4

3.12 Alarm Status – this menu when entered 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.

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The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	85
Manual Call Point	64
Sounder	N/A
Input/Output	N/A

In Pre-Alarm – this indicates the device is currently in a Pre-alarm condition.

The analogue value seen on the Fire Alarm Control Panel for devices in this state is;

	Analogue Value
Detector	50
Manual Call Point	N/A
Sounder	N/A
Input/Output	N/A

I/O Status – this menu replaces the Alarm Status menu for Input/Output devices. When entered this shows information on the current status of the two inputs and the two outputs for the device. The available status descriptions are described below;

IN: 0-0 – this indicates that input 1 and 2 is 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 input 1 and 2 is in the closed (activated) state.

OUT: 0-0 – this indicates that output 1 and 2 is 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 output 1 and 2 is in the closed (activated) state.

The analogue value seen on the Fire Alarm Control Panel for devices with inputs in the normal state is;

	Analogue Value
Detector	N/A
Manual Call Point	N/A
Sounder	N/A
Input/Output	16 *

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The analogue value seen on the Fire Alarm Control Panel for devices with inputs in the closed state is;

	Analogue Value
Detector	N/A
Manual Call Point	N/A
Sounder	N/A
Input/Output	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.

3.13 Battery Level – this menu when entered 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.

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3.14 Signal Level – this menu when entered shows information on the two signalling channels used by the loop interface in both directions, as the devices are bi-directional.

To check the signal levels for a device on the loop module the following actions are required.

Step No	Action	Screen Display
1	With the Interface in its normal state the screen will display:	**DEV01 AL00 FT00**
2	Press the Rotary Control and the screen will now display:	**Device Status**
3	Press the Rotary Control and the screen will now display the first device (i.e):	**Addr 067 L Optic**
4	Turn the Rotary Control until the device in question is displayed and press the Rotary Control. The display will show:	**Fault Status**
5	Turn the Rotary Control until the screen displays:	**Signal Level**
6	Press the Rotary Control and the screen will now display:	**Ch1 LI ← D 100**
7	Turn the Rotary Control to view both channels received and forward signal levels:	**Ch2 LI→D 100**
8	When all levels have been checked press the Back Button to return to the normal front screen display.	**DEV01 AL00 FT00**

The received signal strength at the loop interface from the device is shown as an LI ← D level, therefore indicating the signal that has been sent from the device to the loop interface. The LI ← D level is updated on every poll response (123 seconds). The forward signal strength received at a device from the loop interface is shown as an LI → D level, therefore indicating the signal that has been sent from the loop interface to the device. The LI → D level is updated every 6 hours or when requested manually by selecting the Manual Update Option from the menu.

Ch 1 LI ← D – this indicates the received signal strength at the loop interface from the device on the first frequency channel used by the system. A level from 100 -0 is shown to indicate the levels, a table of which is shown at the end of this section.

Ch 2 LI ← D – this indicates the received signal strength at the loop interface from the device on the second frequency channel used by the system. A level from 100 -0 is shown to indicate the levels, a table of which is shown at the end of this section.

Ch 1 LI→ D – this indicates the forward signal strength received at the device from the loop interface on the first frequency channel used by the system. A level from 100 -0 is shown to indicate the levels, a table of which is shown at the end of this section.

Ch 2 LI→ D – this indicates the forward signal strength received at the device from the loop interface on the second frequency channel used by the system. A level from 100 -0 is shown to indicate the levels, a table of which is shown at the end of this section.

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The individual devices have signal levels available for both of their operating channels (Ch1 and Ch2) and also for both directions (Loop interface to Device (LI → D) and Device to Loop Interface (LI ← D)) as the devices are bi-directional. The signal levels shown range from 100 - 0 with 100 being the highest signal to 0 where no signal is being seen, as shown below;

100	Shown indicates Good Signal Level
90	Shown indicates Good Signal Level
80	Shown indicates Good Signal Level
70	Shown indicates Good Signal Level
60	Shown indicates Good Signal Level
50	Shown indicates Good Signal Level
40	Shown indicates Medium Signal Level
30	Shown indicates Low Signal Level
20	Shown indicates Caution Signal Level
10	Shown indicates Caution Signal Level
0	Shown indicates No Signal Level 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 Displayed at Control Panel	**Radio Device Type**	**Device Signal Strength Level**
0	All Device Types	No Radio Signal received. Device Missing
13	All Device Types	Radio Signal strength caution.
14	All Device Types	Radio Signal strength low.
16	Callpoint, Sounder and I/O Unit	Radio Signal strength good or medium.
20	Detector	Radio Signal strength medium.
25	Detector	Radio Signal strength good.

The device to loop interface 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 50 points or above on each channel.

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3.15 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 the following actions are required.

Step No	Action	Screen Display
1	With the Interface in its normal state the screen will display:	**DEV01 AL00 FT00**
2	Press the Rotary Control and the screen will now display:	**Device Status**
3	Press the Rotary Control and the screen will now display the first device (i.e):	**Addr 067 L Optic**
4	Turn the Rotary Control until the device in question is displayed and press the Rotary Control. The display will show:	**Fault Status**
5	Turn the Rotary Control until the screen displays:	**Manual Update**
6	Press the Rotary Control and the screen will now display:	**Updating**
7	The display will automatically return to the Manual Update screen.	**Manual Update**

To check the latest signals received for the individual device enter the signal level menu as described in previous section (10).

When all levels have been updated/ checked press the Back Button to return to the normal front screen display.

DEV01 AL00 FT00

3.16 Ident – this menu shows the unique 5 digit identification number for the device.

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

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3.18 Device Address – This menu allows you to view and change the devices address number if required.

To change the devices address on the loop module the following actions are required.

Step No	Action	Screen Display
1	With the Interface in its normal state the screen will display:	**DEV01 AL00 FT00**
2	Press the Rotary Control and the screen will now display:	**Device Status**
3	Press the Rotary Control and the screen will now display the first device (i.e):	**Addr 003 L Optic**
4	Turn the Rotary Control until the device in question is displayed and press the Rotary Control. The display will show:	**Fault Status**
5	Turn the Rotary Control until the screen displays:	**Loop Address: 003**
6	Press the Rotary Control and the screen will now display:	**New Address: 004**
7	Turn the Rotary Control until the desired address is shown then click to select.	**Loop Address: 005**
8	Press the back button to return to the front screen display:	**DEV01 AL00 FT00**

3.19 Type – This menu option is available for combined sounder detectors are shows the type of detection head fitted onto the device. Options are Optical for an Optical detector, Htemp for a CS High temperature detector, Heat for a Heat AIR rate of rise detector or Multi for a Multisensor detector.

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3.2 Add New device

This menu allows you to add a total of 31 radio devices to the Loop Module. The devices must be powered i.e batteries inserted and power link in place prior to adding the units. The Loop Module must be in the correct operating menu and then the device log on button pressed until the red confirmation led lights next to the button (Note on the call point the alarm led is utilised for this feature). The location of the log on button and power jumper connection is shown in the following sections diagrams. A confirmation of the devices ident is then requested, this unique ident number can be located on the device and is also shown in the following diagrams. The device is then associated with an Address number for recognition by the control panel.

Note: The Loop Modules Radio Channels can only be changed whilst there are no devices added to the system. See the 'Changing Radio Channels' section for more info.

Note: Device Log on button orientations are shown over leaf.

To add a device onto the Loop Module, take the device in front of the panel.

Step No	Action	Screen Display
1	With the Module in its normal state the screen will display:	**DEV00 AL00 FT00**
2	Press the Rotary Control and the screen will now display:	**Device Status**
3	Turn the Rotary Control until the screen displays:	**Add New Device**
4	Press the Rotary Control and the screen will now display:	**Press Dev Log On**
5	Press the devices log on button for 2 secs (confirmation led will light on device) The screen will now display:	**Add Dev xxxxx N ?**

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.

6	Confirm the Dev ident number displayed is the same as located on the device. If correct turn the Rotary Control until the screen displays:	**Add Dev xxxxx Y ?**
7	Press the Rotary Control and the screen will now display:	**Adding**
8	Then the screen will display:	**Address 002**
9	Turn the Rotary Control until the desired Address is shown;	**Address 007**
10	Now select the address by pressing the rotary control. The screen should now display;	**Detector Added**
11	Press the Back Button to return to the normal front screen display.	**DEV01 AL00 FT00**

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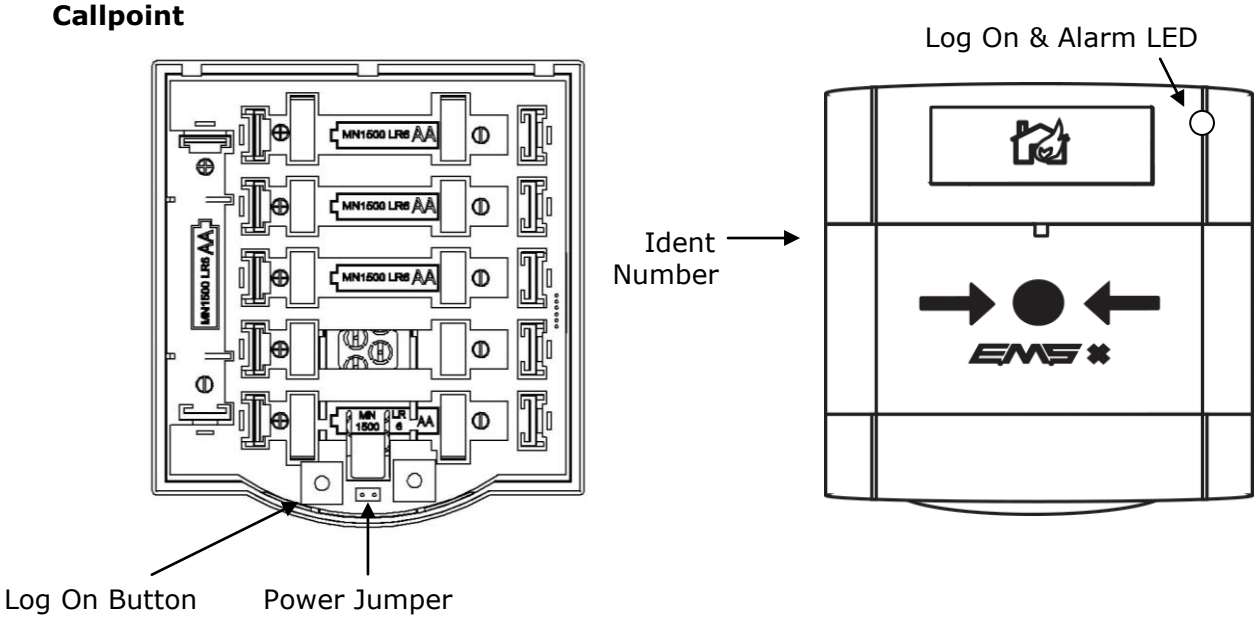
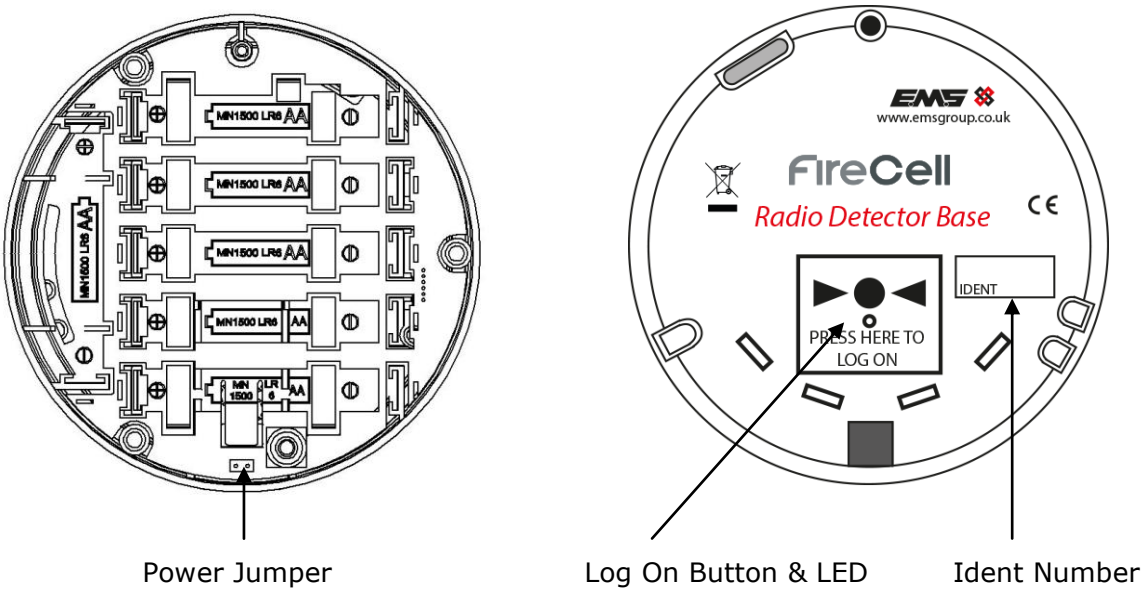
Device Log On Button Orientations are shown below:

Callpoint



Detector



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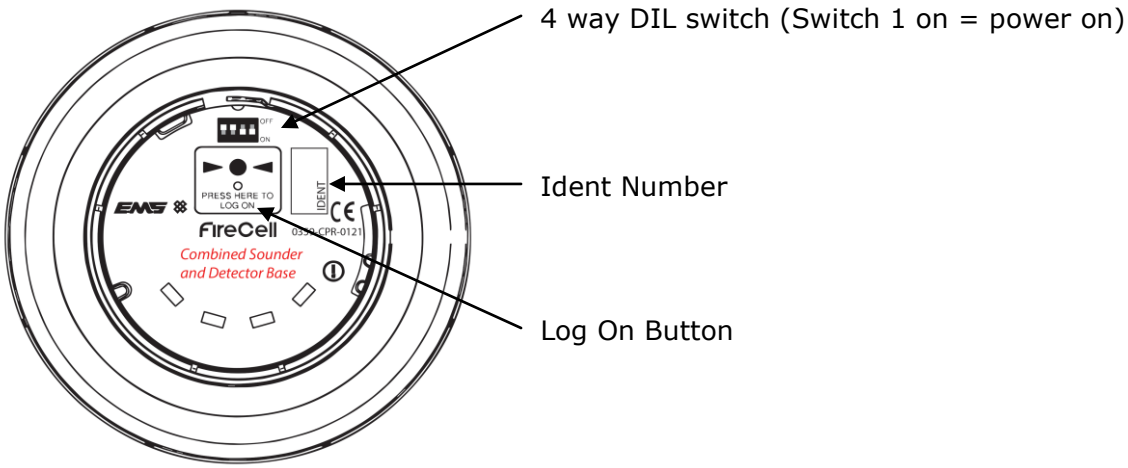
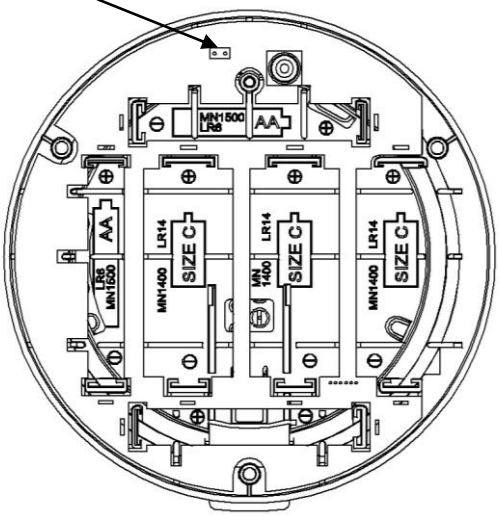
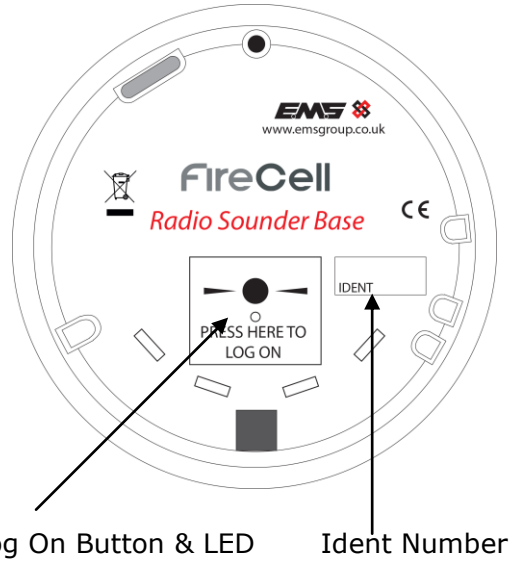
Combined Sounder/Detector



Sounder

Power Jumper

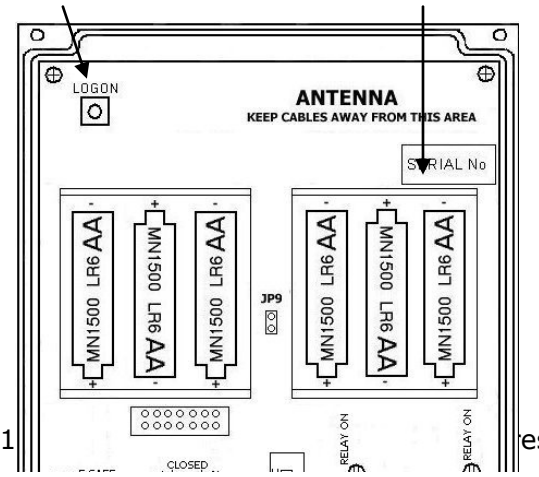




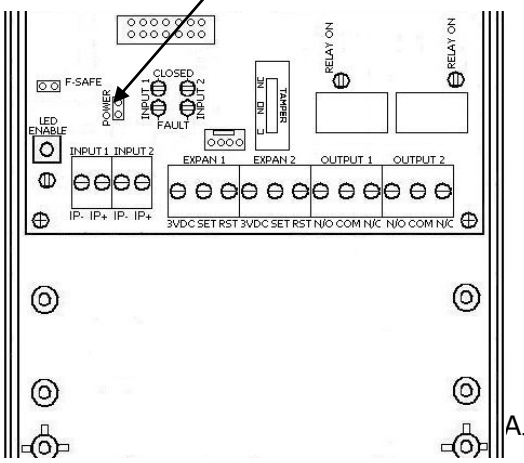
Input/Output Unit

Log On Button & LED

Ident Number



Power Jumper



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3.3 Remove device

This menu allows removal of devices from the loop module. To remove a device:

Step No	Action	Screen Display
1	With the Interface in its normal state the screen will display:	**DEV02 AL00 FT00**
2	Press the Rotary Control and the screen will now display:	**Device Status**
3	Turn the Rotary Control until the screen displays:	**Remove Device**
4	Press the Rotary Control and the screen will now display the first device (i.e):	**L 01 12345 Optic**

Note: Pressing the 'HELP' button at this point displays the devices loop address for identification purpose.

5	Turn the Rotary Control until the screen displays the device that is to be removed and then press the Rotary Control. The screen will now display:	**Remove xxxxx N ?**

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

6	Confirm the Dev ident number displayed is the same as located on the device. If correct turn the Rotary Control until the screen displays:	**Remove xxxxx Y ?**
7	Press the Rotary Control and the screen will now show confirmation of the device remove (i.e):	**01 Removed Optic**
8	Press the Back Button to return to the normal front screen display.	**DEV01 AL00 FT00**

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3.4 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 Menu Structure layout). More details on these options is available by pressing the Navigation button on the required item. This allows the following menus to be viewed;

3.41 Fault Status – this menu when entered shows detailed information on the fault status of the interface. 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 below;

No Fault Present – this description indicates that the interface is not in any fault and is operating normally.

The analogue value seen on the Fire Alarm Control Panel for this state is;

	Analogue Value
Loop Interface	16

Aerial Tamper– this description indicates that the aerial on the loop module is not attached or damaged.

The analogue value seen on the Fire Alarm Control Panel for this state is;

	Analogue Value
Loop Interface	4

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

Ch2 RFI Det– this description 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 Alarm Control Panel for when both Ch 1and Ch2 are in this state is;

	Analogue Value
Loop Interface	5

3.42 Background Level – this menu when entered shows the background radio signal level on the two signalling channels used by the loop module. The available background level descriptions are described below;

Ch 1 – this indicates the background level at the loop interface on the first frequency channel used by the system. A range from 100 – 0 is shown to indicate the levels, a table of which is shown at the end of this section.

Ch 2 – this indicates the background level at the loop module on the second frequency channel used by the system. A range from 100 – 0 is shown to indicate the levels, a table of which is shown at the end of this section.

100 shown indicates VERY HIGH
75 shown indicates HIGH
50 shown indicates MEDIUM
25 shown indicates LOW
0 shown indicates GOOD.

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3.43 Fast Test – This option allows detectors to be put into their fast test mode. This can be used when testing detector type devices. When the fast test mode is selected the detectors mode is changed and their sensitivity is raised, therefore allowing them to be tested easier. A led on the unit will flash every second to indicate the detector is in this mode. The test is time limited, time options range from 1 minute to 30 minutes and a timer is present on the display showing the time remaining. If a fire alarm is seen during this period the time is changed back to the selected time duration. If no fire events are seen in 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.

Step No	Action	Screen Display
1	With the Interface in its normal state the screen will display:	**DEV02 AL00 FT00**
2	Press the Rotary Control and the screen will now display:	**Device Status**
3	Turn the Rotary Control until the screen displays:	**Interface Status**
4	Press the Rotary Control and the screen will now display:	**Fault Status**
5	Turn the Rotary Control until the screen displays:	**Fast Test**
6	Press the Rotary Control and the screen will display:	**Start Fast Test**
7	Press the Rotary Control and the screen will display:	**Test Timeout 1min**
8	Turn the Rotary Control until the screen displays the timeout duration required and press the Rotary Control. The display will show:	**Fast Test 00:59**
9	Press the Back Button to return to the normal front screen display.	**DEV02 AL00 FT00**

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

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

3.46 Audio Detect - This option allows the No Sndr Audio fault reporting to be selectable between On and Off on the interface 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 interface 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.

3.47 Batt Smooth - This option allows the Battery Low fault reporting to be selectable so verification of the low battery can be ascertained before the fault Analogue Value 7 Fault type is displayed on the loop module and the Control Panel. Available smoothing options are selectable between OFF = No smoothing and 1-5 days smoothing in one day steps. 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.

3.48 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.

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

3.5 Radio Channels

This menu allows the two frequency channels currently used by the interface to be viewed and also allows the channels used to be selected either manually or automatically. 32 channels are available for use on the system and these are as follows;

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

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3.51 Changing Radio Channels

The two 868 MHz radio channels that the loop module uses for communication between itself and the devices must be selected to allow communication to take place. These channels MUST be selected when the loop module does not have any devices logged on to it. If the loop module does have devices logged on to it, the menus for changing the radio channels will not be available. The recommended method for selecting these channels is by using the Auto Scan option. This option will scan all available channels for a selectable time period and at the end of this time automatically select the two most suitable frequencies which have the least background signal on them. The longer duration the Auto Scan is left running the more accurate the results will be. Available time durations are between 1 min and 60 mins.

To auto select the frequencies on the loop module the following actions are required.

Step No	Action	Screen Display
1	With the Module in its normal state the screen will display:	**DEV00 AL00 FT00**
2	Press the Rotary Control and the screen will now display:	**Device Status**
3	Turn the Rotary Control until the screen displays:	**Radio Channels**
4	Press the Rotary Control and the screen will now display:	**Currently Used**
5	Turn the Rotary Control until the screen displays:	**Auto Select**
6	Press the Rotary Control and the screen will now display:	**Scan Time 1min**
7	Turn the Rotary Control until the required scan time is shown and then press the Rotary Control. The screen will now display the time remaining:	**00:59secs - - - - - - - - - -**
8	When the time has elapsed or the scan aborted (by pressing the Rotary Control) the display will change to show the selected channels:	**Auto Ch xx Ch xx**
9	Press the Rotary Control and the screen will now display:	**View Results N ?**
10	It is not normally necessary to view the results so press the Rotary Control and the screen will now display:	**Auto Select**

If the results are required to be viewed turn the Rotary control until View Results Y? is shown and then press the Rotary Control. All channels can now be viewed.

11	Press the Back Button to return to the normal front screen display.	**DEV00 AL00 FT00**

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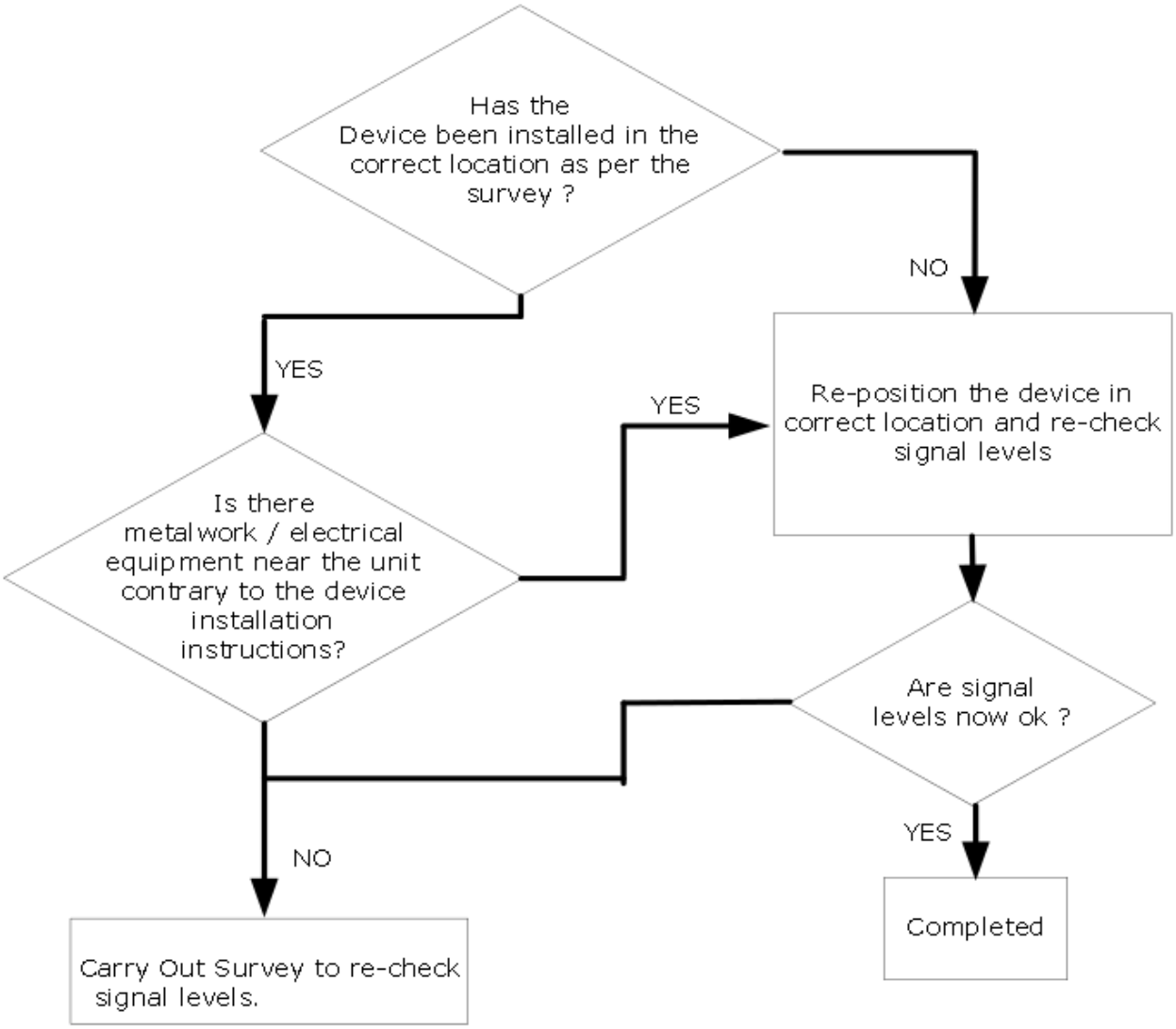
4.0 FLOWCHART ON HOW TO IMPROVE DEVICE SIGNAL LEVELS



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5.0 ANALOGUE VALUE TABLE

Analogue Value	Radio Device Type	Symptom
0	All Device Types	Battery missing from either pack 1 or 2.
1	Detector	Detector head fault.
1	Sounder	No Audio output from sounder.
2	Detector	Detector head missing.
3	Sounder	Sounder head missing.
4	All Device Types	In Tamper condition.
4	Input/Output	Input Open or Short circuit.
4	Loop Interface	Aerial Tamper (Note: Only applicable with external high gain aerials).
7	All Device Types	Batteries low from either pack 1 or 2. Replacements required within 30 days.
13	All Device Types	Radio Signal strength caution.
14	All Device Types	Radio Signal strength low.
16	Callpoint, Sounder and I/O Unit	Radio Signal strength good or medium.
20	Detector	Radio Signal strength medium.
25	Detector	Radio Signal strength good.
35	Detector	Detector head dirty.
50	Pre-Alarm	Detector in pre-alarm condition.
64	Callpoint	Callpoint in alarm condition.
85	Alarm	Detector in alarm condition.

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