



This manual details the operation of:

FIREwave Installation and Configuration Manual

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# 1 Introduction

The HOCHIKI wire to wireless intelligent Central Node (RSM-WTM) allows for the extension of an existing, or newly installed, analogue fire detection system with wireless devices with minimum interruption to the end user. There are two discrete Central Node wireless interfaces that can be installed:

## 1.1 Translator Module

This interface is added to an analogue fire detection loop. The digital Information passed from this interface to the Fire Control Panel (FCP) provides all the information normally available with analogue devices – fault monitoring, analogue values, Cause and Effect control, disablements, etc.

## 1.2 Conventional Interface Module

This interface allows a “conventional zone” of wireless devices, both trigger and alarm devices, to be added to:

An analogue detection system using a protocol that is non-compatible with the Translator Module. This is achieved by using a Zone Monitor Unit and Sounder Control Card of the same protocol as the analogue detection loop.

A Conventional FCP using a free fire detection zone and radial Sounder circuit or breaking in to an existing zone.

Geographic coverage can be increased by the use of additional wireless Expander Modules (RSM-EXP). The Expander Module is powered from a locally installed 24Vdc Power Supply Unit (PSU). Field devices can be directly associated with the Central Node and Expander Module. However, the maximum number of devices in a “Central Node cluster” cannot exceed 32 devices (see page 51 for a graphic example of a cluster).

## 1.3 Notes

The Translator Module and Conventional Interface Module are referred to as “the Central Node” throughout this manual except where differences occur – the device is then referred to by its complete name.

The Expander Module is referred to as “the Expander” throughout this manual.

Power is applied to the Translator Module when the Translator Module is wired directly to an existing fire detection loop with associated wireless field devices connected on a secure wireless network.

Power is supplied from an external source for the Conventional Interface Module. This can be from a stand-alone 24Vdc monitored PSU or a 24Vdc from its associated FCP.

This section details the requirements for installing the equipment on to a site including all necessary precautions to ensure that a system functions with high integrity and the operating parameters of the devices and how / where they can be amended.

The purpose of this manual is to provide the user with all recommended procedure descriptions and full technical details for the successful installation and commissioning of the Central Node on to a compatible FCP. Procedures described in this manual include appropriate warnings and cautions to guide the user towards adopting safe and methodical work practices during the installation and commissioning phases.

## 1.4 CE Marking



This equipment is CE Marked to show that it conforms to the requirements of the following European Community Directives:  
Electromagnetic Compatibility Directive 89/336/EEC (and the amending Directives 92/31/EEC, 93/68/EEC)  
Low Voltage Directive 73/23/EEC (and the amending Directive 93/68/EEC)

## 1.5 System Design and Planning

It is assumed that the system, of which the Central Node is a part, has been designed by a competent fire alarm system designer in accordance with the requirements of AS1670.1 and any other local codes of practice that are applicable.

## 1.6 Personnel

Installation and commissioning of this product must be carried out only by suitably qualified personnel. Engineers must have attended a *HOCHIKI* or third party certified training course for the Central Node and associated devices.

## 1.7 General

The Central Nodes are designed to be used with the *HOCHIKI FIREWAVE* range of wireless Detectors, Manual Call Points, Input Modules, Output Modules, Audio and Audio-Visual devices. They can additionally be used with compatible analogue devices

## 1.8 Field device supply and Support

The Central Node supports the full range of *HOCHIKI FIREWAVE* field devices and accessories. For details on support of these products see page 2.

## 2 Installation Guide

This Installation Guide is intended to provide an installation engineer with simple guidelines on how to install the Central Node safely. For each stage in the installation and commissioning procedures, a brief description is given of its purpose, complete with drawings, flow diagrams and / or other graphics to make the instructions easy to follow.

### 2.1 Related Documents

The guide does not describe any of the FCP installation, operating or configuration stages. For more information refer to the FCP series of manuals.

### 2.2 Warnings and Cautions



Where appropriate, this guide and the remainder of the manual includes advisory warnings and cautions to remind you to consider safety at all times, especially when following the procedures described in this manual.

You are alerted to any areas where a risk of damage to static-sensitive devices if the recommended procedures described in this manual are not followed. An example of anti-static caution is provided to the left of this paragraph.

### 2.3 Pre-installation Check List

Before installing the Central Node, you must first ensure that the following criteria have been met. Failure to do this may not only result in damage to the equipment, but may also cause problems when commissioning the equipment or adversely affect its performance. For information on pre-installation requirements for wireless field devices please refer to specific equipment installation instructions.

### 2.4 Dos and Don'ts

Before selecting a location for the Central Node and wireless devices, **DO** make sure that:

The operating ambient temperature is in the recommended range which is **-30°C to 55°C** and

The relative humidity is between **5% and 95% (@40°C)**.

The Central Node has been manufactured with an ingress protection rating of IP65. This allows for the unit to be mounted externally should the application require it.

Note: Glands used to terminate cables, when the Central Node is used in an external environment, need to have the appropriate levels of ingress protection for the application.

**DO NOT** locate the Central Node where there are high levels of vibration or shock.

**DO NOT** site the Central Node where there would be restricted access to the internal equipment and cabling/wiring connections.

## 3 Installation

The Central Node is relatively simple to install providing the recommended procedures described in this manual are followed.

Follow all installation instructions described in this manual. These instructions must be fully understood and the manufacturer's recommendations followed to avoid damage to the FCP and associated equipment.

### 3.1 Check the Central Node / Field Device for Damage

Before attempting to install the Central Node and field devices, you should do the following: After removing the Central Node / field device from its packaging, and before you proceed with installing it in its chosen location, check for any damage that may have occurred whilst in transit.

**Note:** In the unlikely event that the Central Node / field device has been damaged, then you **MUST NOT** fit it but return it to the distributor. The procedure for returning faulty items is detailed below.

If you are satisfied that none of the supplied items have been damaged you can now proceed with the installation procedure. This manual addresses the recommended installation methods of the Central Node.

To prevent unnecessary damage to the electronic components, it is recommended that the electronics are removed from the housing prior to fixing of the back-box. Refer to page 13 (**BACK BOX FIXING**) for details.

### 3.2 What to do if the CENTRAL NODE / field device is Damaged or Suspect

If you have problems regarding the quality of the Central Node / field devices, follow the procedure below:

DO NOT continue with the installation but contact the distributor for advice on what to do next. Similarly, if the product is found to be faulty during installation contact Hochiki Australia immediately.

To aid us, you are requested to

(a) quote the unique batch reference number which can be found on packaging, main chassis or inside the back box.

(b) note all the details relevant to your complaint, date of receipt, packaging condition, etc. and forward this to Hochiki Australia.

Where the product needs to be returned to Hochiki Australia, you are requested to use the original packaging, or suitable anti-static equivalent, wherever possible.

### 3.3 Radio Signal Performance and Stability

To achieve acceptable and reliable radio communication with the field wireless devices, positioning of the Central Node is important. Please observe the following procedure:

Using the Radio Survey and Test Kit (RSM-STK-01) (available from Hochiki Australia) undertake a comprehensive radio survey to establish the location that provides the best coverage of the devices to be installed.

NOTE: Please see literature supplied with test equipment for correct operation.

To comply with the requirements of AS4428.9 or AS7240.25 the results of any survey should be recorded and kept with the commissioning documentation.

If possible avoid fixing or mounting the unit close to the following:

Equipment that utilises large electrical currents

Large metal objects or structures

Fluorescent lighting fittings

Metal ceiling structures

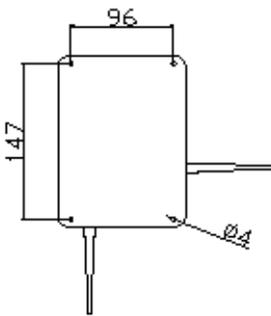
IT Cabling

NOTE: If installing multiple Central Nodes or Expanders on to a system, there should be a separation of at least 2 metres between devices.

The Central Node / Expander should be installed such that the antennae are pointing down and to the right. The LCD screen should be easily readable if installed in this aspect.

The Central Node / Expander should ideally be located no less than 2 – 2.5 metres from floor level.

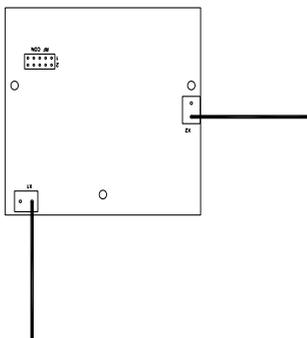
### 3.4 Back Box Fixing



Wall alignment - to prevent distortion, the Central Node / Expander back box MUST be installed on the wall as flat as possible.

Failure to comply with this requirement will result in the misalignment of the internal and external screw fixings. This will affect the IP rating of the module allowing the ingress of contamination and/or moisture.

### 3.5 Mounting Procedure



When a suitable location has been found for installing the Central Node / Expander, proceed as follows:

Remove the front PCB assembly from the enclosure – this is held in place by two spring fasteners. Remove the two antennae followed by the rear PCB assembly – secured by three screws.

Using a suitable-sized drill bit (4mm) drill the required number of holes.

Prepare apertures (20mm knockouts) required for cable access.

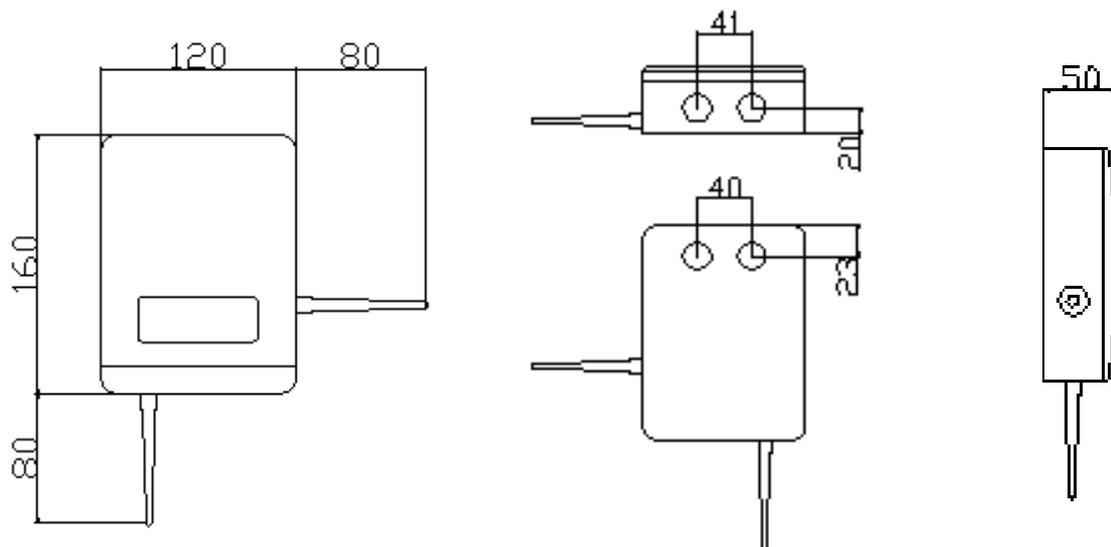
Screw the back box to the wall using all fixing holes and appropriate-sized roundhead screws. (DO NOT use countersunk screws).

Note: All dimensions are in millimetres. Fixing hole diameters are 4mm.

Remount the rear PCB assembly, fixing with the three screws. On completion, refit the two wire antennae in to the terminations on the rear PCB assembly.

Ensure the ribbon cable, between the front and rear PCBs, is securely attached. Remount the front PCB on completion

### 3.6 Central Node and Expander Module External Dimensions



(All dimensions are in millimetres)

### 3.7 Cable Instructions

All wiring should comply with current IEE wiring regulations (BS7671) or the applicable local wiring regulations. Note also the requirements of AS1670.1 for cabling and interconnection of a fire detection and alarm system.

Use the following rules when installing cables:

Cables should be brought into the enclosure through the 20mm knockouts provided on the top or top/back face of the back box.

Ensure that all openings in the back box are closed before connecting power to the FCP.

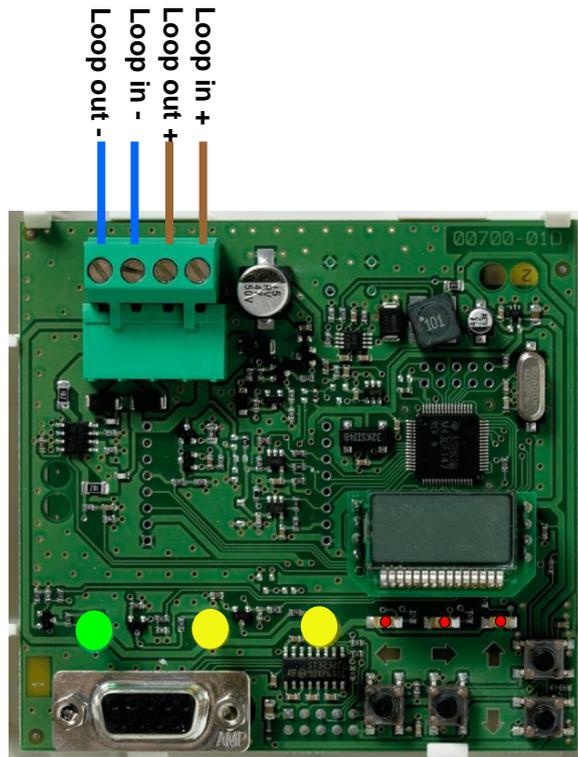
(NOTE: If more knockouts than required have been removed, the holes should be blocked with blanking glands (ensuring the blanking covers maintain the Ingress Protection rating). This is to prevent access to hazardous voltages.

Electrical cable tails should be of sufficient length to connect to the appropriate termination points at the commissioning stage

Cables should be screened and terminated in appropriate glands to meet local wiring codes and to preserve the integrity of the screen connection. The cable screen is to be clamped inside the cable gland, which must be fitted with a continuity link between the incoming and outgoing cables.

### 3.8 Detection Loop Cabling Terminations

The diagram below indicates the detection loop cable connections for the Translator Module.



## 4 Wireless Device Table

PART NUMBER	GRAPHIC	BASIC DESCRIPTION
RSM-WTM-AS		Intelligent hybrid wire to wireless Translator Module – complete with 2 in number ¼ Wave 916MHz Aerials. IP65 rating when appropriate glands fitted.
RSM-CIM-AS		Intelligent wire to wireless Conventional Interface Module – complete with 2 in number ¼ Wave 916MHz Aerials. IP65 rating when appropriate glands fitted.
RSM-EXP-AS		Intelligent wireless Expander Module. Complete with 2 in number ¼ Wave 916MHz Aerials. IP65 with appropriate glands (Requires 24Vdc PSU). For use with a Central Node.
ROD-E-AS		Intelligent wireless optical Smoke Detector c/w mounting base and power cells. For use with all wireless Central Nodes and Expanders.
RHD-E-AS		Intelligent wireless Heat Detector c/w mounting base and power cells. For use with all wireless Central Nodes and Expanders.
RMD-E-AS		Intelligent wireless Multi-criteria Detector c/w mounting base and power cells. For use with all wireless Central Nodes and Expanders.
RSM-CP-AS		Intelligent wireless Manual Call Point c/w surface mounting box and power cells. For use with all wireless Central Nodes and Expanders.

PART NUMBER	GRAPHIC	BASIC DESCRIPTION
RSM-IP-AS		Intelligent wireless single channel input module c/w power cells. For use with all wireless Central Nodes and Expanders.
RSM-OP-AS		Intelligent wireless single channel Output Module. For use with the hybrid wire to wireless Translator Module and Expanders. Requires 24Vdc PSU
RSM-POM-AS		Intelligent wireless single channel Output Module providing Normally Open or Closed contacts. Additionally provides a stand-alone 12/ 24V dc output (up to 20mA). For use with the hybrid wire to wireless Translator Module and Expanders.
RSM-WS-AS (RED)		Intelligent wireless wall mounted Sounder (Red) 100dB(A) complete with power cells. For use with all wireless Central Nodes and Expanders.
RSM-WS-AS (WHITE)		Intelligent wireless wall mounted Sounder (White) complete with power cells. For use with all wireless Central Nodes and Expanders.
RSM-WS/W-AS (RED)		Intelligent wireless IP65 wall mounted Sounder (Red) complete with power cells. For use with all wireless Central Nodes and Expanders.
RSM-WS/W-AS (WHITE)		Intelligent wireless IP65 wall mounted Sounder (white) complete with power cells. For use with all wireless Central Nodes and Expanders.
RSM-WSB-AS (RED)		Intelligent wireless wall mounted Sounder Beacon (red) complete with power cells. For use with all wireless Central Nodes and Expanders.

PART NUMBER	GRAPHIC	BASIC DESCRIPTION
RSM-WSB-AS (WHITE)		Intelligent wireless wall mounted Sounder Beacon (white) complete with power cells. For use with all wireless Central Nodes and Expanders.
RSM-WSB/ W-AS (RED)		Intelligent wireless IP65 wall mounted Sounder Beacon (red) complete with power cells. For use with all wireless Central Nodes and Expanders.
RSM-WSB/ W-AS (WHITE)		Intelligent wireless IP65 wall mounted Sounder Beacon (white) complete with power cells. For use with all wireless Central Nodes and Expanders.
RSM-STK-AS		Hybrid wireless Survey and Test Kit
PRIMARY BATTERY (WIRELESS)		Spare primary power cell compatible with all hybrid wireless devices. (sold in packs of 10). Also used as secondary power cell in Audio-Visual devices.
SECONDARY BATTERY (WIRELESS)		Spare secondary power cell compatible with all hybrid wireless devices. (sold in packs of 10) (not compatible with audio-visual devices)

## 4.1 Batteries

The majority of wireless devices are powered from onboard power cells – the primary cell (CR123A) is a 1.2Ah cell and the secondary cell (CR2032) is a 240mAh cell.

(Note: The secondary cell in RSM-WS\*-01, RSM-VS, RSM-WS/W (\*), RSM-WSB (\*), RSM-WSB/W (\*) and RSM-CLB (\*) devices, is a CR123 and not a CR2032)

The field device can be transported with the secondary cell fitted (only where the secondary cell is a CR2032 type) – this will not drain the cell as the device only becomes active when the primary cell is fitted. If power is removed from a wireless Central Node / Expander for a significant period of time, the power cells should be removed from any associated field device - with no return handshake from the wireless Central Node / Expander, the field device will suspect a problem and will instigate a higher rate of handshakes until communication is restored. If this does not happen, it will increase its power in an attempt to re-establish a link with the wireless Central Node / Expander. This will reduce the life expectancy of the power cells resulting in earlier replacement.

## 4.2 Device DIL Switch

Each wireless device is fitted with a two position DIL switch. The normal operating position is for the switch to be in the **1** position. The **ON** position is used when programming the device. The DIL switch **ON** position can also be used by an Installation / Commissioning engineer when installing a device to check its radio integrity – this is only possible after the device has been programmed on to the wireless Central Node / Expander. Leaving the switch in the **ON** position will cause the FCP to generate a fault suggesting the device cannot be communicated with. Returning the switch to the **1** position will clear this fault. (Clearing the fault on the FCP may require additional actions to be carried out by the Installation/Commissioning engineer).

## 4.3 Generic Device Indication and Settings

**Detector Address:** This indicates the digital address given to the device – NOT the loop address. This cannot be altered.

***The following parameters can only be changed using the Firewave Configurator software:***

**Supervisory Signal Period:** The default time for all devices, except Audio-Visual devices and the wireless Output Modules, is 1 minute. (The default time for Audio-Visual devices and wireless Output Modules is 7 seconds).

**Supervision Period:** This is a health check period between the wireless Central Node, Expanders and associated field child devices. The default for all child devices is 3 minutes. This can be changed to 1.5 minutes, 9 minutes or 15 minutes. If changing this parameter, care should be taken that local standards and codes of practice are adhered to. (Variations from local standards and codes of practice will need to be detailed on Project Commissioning paperwork).

***NOTE: If field devices are programmed on to the wireless Translator Module using the local programming buttons, the devices will be programmed on with default parameters.***

## 5 Individual Child Device Guidance

### 5.1 Detectors

**Sensitivity (Optical and Multi-criteria Detectors):** The default sensitivity for the smoke channel is “NORMAL”. This can be altered to “LOW” or “HIGH” depending on the installation.

### 5.2 LED Indication:

- a. **Fire:** If this indication is unchecked, the device LED will not indicate (glow RED) if there is a fire activation signal received at the Detector. This is default checked.
- b. **Battery Discharge:** If this indication is unchecked, the device LED will not indicate (glow RED) if there is a battery discharge signal received at the Detector.

**Smoke Channel (Multi-criteria Detector):** This process can be isolated in this device if the Detector is required to work with the Thermal Channel only

**Thermal Channel (Thermal and Multi-criteria Detector):** This process can be isolated in either of these devices. The device will function with the Smoke channel only.

There are three modes of operation for this parameter:

- a. **Fixed** – A standard “Fixed Temperature” Detector operating in the 58°C - 64°C zone.
- b. **High Temperature** – A standard “Rate of Rise” Detector with a fixed ceiling of 78°C.
- c. **A1R** – A Rate of Rise Detector with a fixed ceiling of 55°C.

This mode of operation should be used if the expected Rate of Rise of the Detector will be too slow for the device to operate correctly. It is a combination of the first two modes of operation.

**Note:** When learning a Multi-Criteria Detector on to the associated FCP with either channel isolated, the device will still learn on as a wireless Multi-Criteria Detector.

## 5.3 I/O Module Indications

The Input & Output Modules have processes that can only be altered using the Firewave Configurator software:

Supervisory circuits (Input Module):

- a. Do not supervise tamper sensor: **If this box is checked and the front cover of the Input Module is removed activating the tamper switch, this indication will not be passed to the wireless Central Node. This process is default unchecked.**

## 5.4 LED Indication:

- a. Fire: **If this indication is unchecked, the device LED will not indicate (glow RED) if there is a fire activation signal received at the Input Module. This process is default checked.**
- b. Battery Discharge: **If this indication is unchecked, the device LED will not indicate (glow RED) if there is a battery discharge signal received at the Input Module. This process is default checked.**

Supervisory circuits (Externally Powered Output Module):

- a. Do not use front tamper: **The Output Module has a front tamper spring fitted. If the front cover is removed, the Output Module will pass a tamper fault to the wireless Central Node and onward to the associated FCP. If this indication is checked, this will not happen. This process is default unchecked.**
- b. Do not supervise supply voltage: **If there is a problem with the device power supply, the device will forward a signal to the wireless Central Node and on to the associated FCP. The Output Module LED will flash RED with an interval of 0.1 seconds ON/2 seconds OFF. If this indication is checked, this will not happen. This process is default unchecked.**  
**The LED will illuminate ONLY if the “Low Power Supply” box is checked. This indication is default checked.**
- c. The Output relay can be set at either “Normally closed” or “Normally Open” depending on the operation required.

Supervisory circuits (Battery Powered Output Module):

- a. External fault input: *This process is disabled in this application.*
- b. LED Indication: **If either the primary or secondary battery reaches a discharge state, the device LED will illuminate either GREEN (secondary cell) or RED (primary cell). Flash interval is 0.5 seconds ON / 0.5 seconds OFF. This process is default checked.**
- c. The Output relay can be selected in one of four options as:
  - a. “Normally closed”
  - b. “Normally Open”
  - c. “Pulsed (3sec)”
  - d. “Switching”.
- d. Voltage output 12 / 24V: **A selectable 12V / 24V output available to the installer to power a stand-alone ancillary device. If the “Activate output” box is unchecked, this option is not available. This option can be either a constant output or switching output (selectable). This option is default**

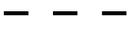
**unchecked.**

**NOTE: A wireless Remote Indicator currently learns on as a Battery Output Module. If using a Remote Indicator the Voltage Output option must be checked else the Remote Indicator will not operate in the event of a fire activation.**

## 6 Wall Sounder

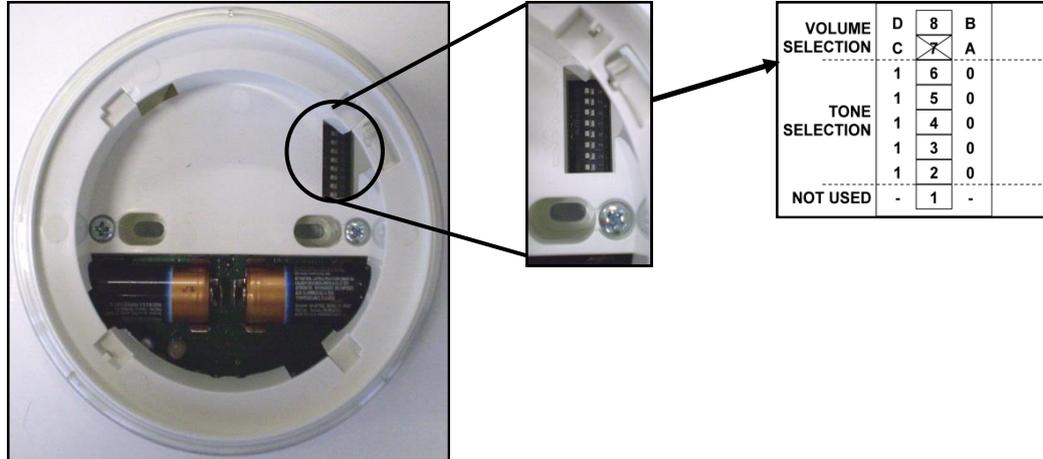
The wireless Wall Sounder has an audio output of 100dBs (+0dBs / - 6dBs). By removing the radio PCB protective cover, using a small bladed screwdriver (preferably insulated) the sound output potentiometer can be adjusted.

The Wall Sounder has three tone options:

Pattern	SND Switch Position		Frequency (Hertz)	Rate	Description	KAC Tone	Main Application
	1	2					
Alternating	ON	OFF	990 & 650	2Hz (250ms-250ms)		Tone 6	BS Fire tone
Continuous	OFF	ON	990	Steady		Tone 8	BS Fire tone
Intermittent	ON OFF F	ON OFF F	990	1Hz (500ms On/500ms Off)		Tone 18	General Purpose

## 7 Sounder Base

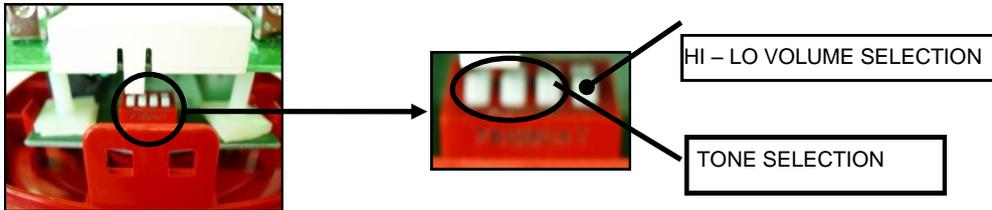
The wireless Sounder Base has an audio output of 90.1 – 92.4 dB(A). This can be adjusted by using the relevant DIL switch. The device has 32 tone options that are selected via DIL switches (see drawing below) (Common tone options are shown in the table below).



No.	Tone	Description	Switch 23456
1	LF Sweep	800-1000Hz @0.5s	11111
2	Alternative Warble	800/960Hz @ 2Hz	11110
3	Warble tone	800/1000Hz @ 0.5s	11101
6	LF Back-up Alarm	800Hz 150ms on/off	11010
8	LF Continuous Tone BS5839	800 Hz cont	11000
10	Intermittent Tone	970Hz 625ms on/off	10110
11	Continuous Tone	970Hz cont	10101
17	Interrupted Tone	800Hz 0.5s on / off	01111
18	ISO 8201 LF BS5839 Pt 1 1988	970Hz 500ms on / 500ms off	01110
19	Interrupted Tone Medium	1000Hz @0.25s on / off	01101
21	Continuous Tone	1000Hz continuous	01011
31	FP 1063.1 – Telecom	Alternating tone 800/970Hz @2Hz	00001

## 8 Wall Sounder Beacon

The Wireless Wall Sounder Beacon has a selectable audio output of 89-90dB or 99-100 dB (there is a 1dB variation depending on tone pattern selected). The preferred output is selected via the 4 position DIP switch situated under the top PCB:



The Sounder Beacon has various tone options that can be set according to the Tone Selection switch positions: (see diagram above and table below)

Pattern	SND Switch Position			Frequency (Hertz)	Rate	Description	KAC Tone	Main Application
	1	2	3					
Alternating	O N	OF F	O N	990 & 650	2Hz (250ms-250ms)		Tone 6	BS Fire tone
Continuous	O N	ON	O N	990	Steady		Tone 8	BS Fire tone
Intermittent	OF F	OF F	O N	990	1Hz (500ms On/500ms Off)		Tone 18	General Purpose
Whoop	O N	ON	OF F	300 - 1200	Sweep, 0.5s silent, repeat		Tone 7	Dutch Fire Tone
Whoop	OF F	ON	O N	300 - 1200	Sweep, 0.5s silent, repeat		Tone 7	Dutch Fire Tone
Odd 2 Tone	O N	OF F	OF F	1200 - 500	Sweep (DIN)		Tone 8	DIN Tone
Odd 2 Tone	OF F	OF F	OF F	1200 - 500	Sweep (DIN)		Tone 8	DIN Tone
Odd 2 Tone	OF F	ON	OF F	1200 - 500	Sweep (DIN)		Tone 8	DIN Tone

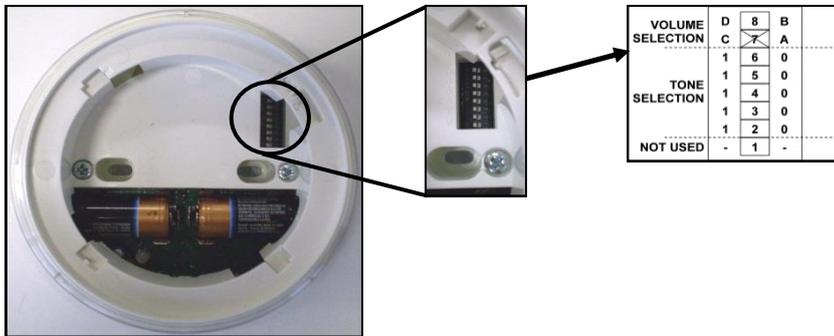
Tone selection switches are numbered 1-3 from the left. The 4<sup>th</sup> DIL switch is the switch for setting the audio output level – switch in the OFF position gives 90dB output, switch in the ON position gives 100dB output.

(OFF position for all switches is when the high side of the switch is closest to the numbers).

The light output of the Beacon is >1Cd with a flash rate of 1Hz. The flash rate cannot be adjusted.

## 9 Sounder Beacon Base

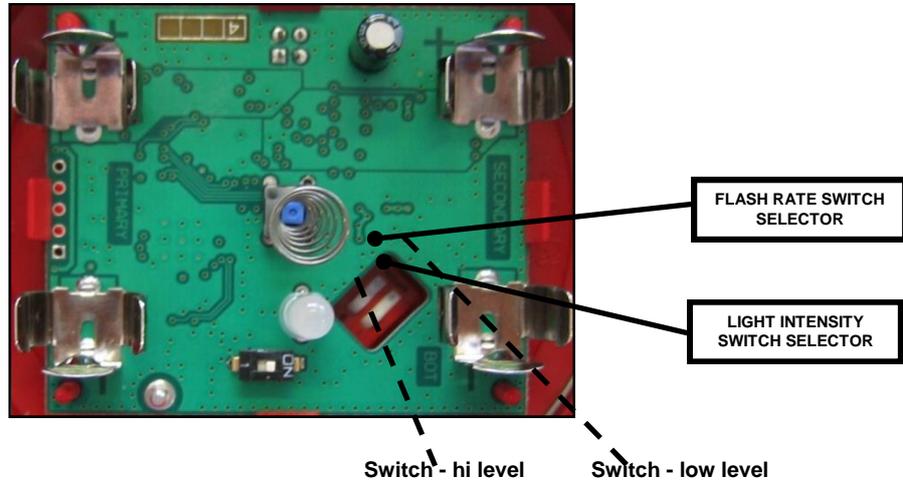
The wireless Sounder Beacon Base has an audio output of 90.1 – 92.4 db(A). This can be adjusted by using the relevant DIL switch (see drawing below). The device has 32 tone options that are selected via DIL switches (see drawing below) (Common tone options are shown in the table below).



No.	Tone	Description	Switch 23456
1	LF Sweep	800-1000Hz @0.5s	11111
2	Alternative Warble	800/960Hz @ 2Hz	11110
3	Warble tone	800/1000Hz @ 0.5s	11101
6	LF Back-up Alarm	800Hz 150ms on/off	11010
8	LF Continuous Tone BS5839	800 Hz cont	11000
10	Intermittent Tone	970Hz 625ms on/off	10110
11	Continuous Tone	970Hz cont	10101
17	Interrupted Tone	800Hz 0.5s on / off	01111
18	ISO 8201 LF BS5839 Pt 1 1988	970Hz 500ms on / 500ms off	01110
19	Interrupted Tone Medium	1000Hz @0.25s on / off	01101
21	Continuous Tone	1000Hz continuous	01011
31	FP 1063.1 – Telecom	Alternating tone 800/970Hz @2Hz	00001

# 10 Beacon

The wireless Beacon provides the installer with the option of a shallow wireless Beacon with a selectable light output of >0.5Cd or >1Cd with a flash rate of 0.5Hz or 1Hz (user selectable).



Selected switch level	Flash rate switch indicator	Light intensity switch selector
Hi Level	0.5 Hz	>1Cd (6mA)
Lo Level	1 Hz	>0.5Cd (3mA)

When selecting the device flash rate and light intensity rate, projected battery life must be taken in to account – setting the flash rate to high and setting the device with a high intensity will change the battery lifetime.

Due to the inherent nature of the communication process between the wireless Central Node and the field devices, it is NOT possible to pulse wireless Audio-Visual devices through the “Cause and Effects” at the FCP. (e.g. If an installation has been programmed at the FCP such that Audio-Visual devices in the non-danger area are to be pulsed, wireless Audio-Visual devices cannot be used).

When installing Audio-Visual devices, the Installation Engineer should note that the distance from its associated wireless Central Node or Expander may be less than if the device is a Detector or Manual Call Point. The differential is not significant but care should be taken at the design / survey phase to ensure that this is taken in to account.



## 11 Voice Sounder / Annunciator

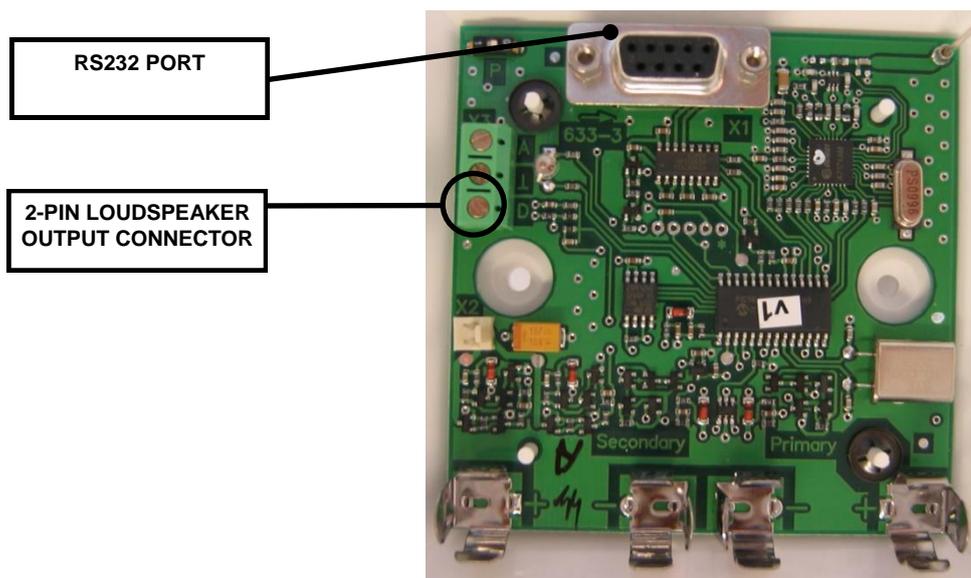
The Voice Sounder provides the installer with a device that can be programmed with 1 message of up to 32 seconds duration.

*NOTE: FCPs that support this device do not allow the selection of different voice messages. This is a future improvement of the system.*

The voice message must be in \*.wav format with a frequency of 16 KHz and a Pulse Code Modulation of 8 bits.

Using the Firewave Configurator Configuration Tool, the following parameters can be altered:

- Power output – this can be amended in 3dB steps to a maximum attenuation of 9dBs
- Two-tone pre-amble – this can be disabled if required (ensure compliance with local standards if altering this parameter)
- 



Refer to Section 7 on the procedure to follow to load messages in to the Voice Annunciator.

**Note:** The associated wireless Central Node can only support a maximum of 16 output devices (Audio devices, Audio-Visual devices, Voice Annunciators, Battery Output Modules and externally powered Output Modules) of the 32 devices that can be programmed in the wireless Central Node cluster.

## 12 Beam Detector

The wireless Beam Detector is a reflective Beam that provides the installer with the option of providing high level Beam protection. The Beam Detector has been designed to cover distances to approximately 100 metres.

When learning a Beam Detector on to a compatible FCP, the device learns on as a Smoke Detector.

The primary method of powering the wireless Beam Detector is to use CR123 batteries.

However, there is an option to power the Beam Detector from an external power source.

To align the Beam Detector to its associated Reflector Plate, a Class 2 red laser is utilised with vertical and horizontal adjustment wheels to correctly place the detection beam (the laser is only powered on during the installation phase).

Device parameters can be altered using the Firewave Configurator software (see [page 77](#) for further details)

# 13 Installation & Programming Guidelines

## 13.1 Introduction

The choice of wireless Central Node is dependent on the associated FCP:

- **Hochiki Protocol** Module Use a Hochiki Translator
- **Conventional FCP** Module. Use a Conventional Interface

The wireless Central Node provides a simple way of expanding a pre-existing, or new hard-wired system, using the wireless Central Node, Expanders (if required) and its associated range of wireless devices.

To program the Translator Module:

- Set detection loop Start Address
- Set System Code
- Set Radio Channel
- Initialise Translator Module
- Program the field devices on to the Translator Module
- Auto-learn the FCP with the wireless field devices
- Program the FCP Cause and Effects (if necessary)

Programming of the Translator Module is relatively straightforward. It can be carried out locally at the Translator Module or using the Firewave Configurator software.

The Translator Module is loop-powered. Child device loading is limited to 32 wireless devices – a mix of initiating and alarm devices.

To program the Conventional Interface Module

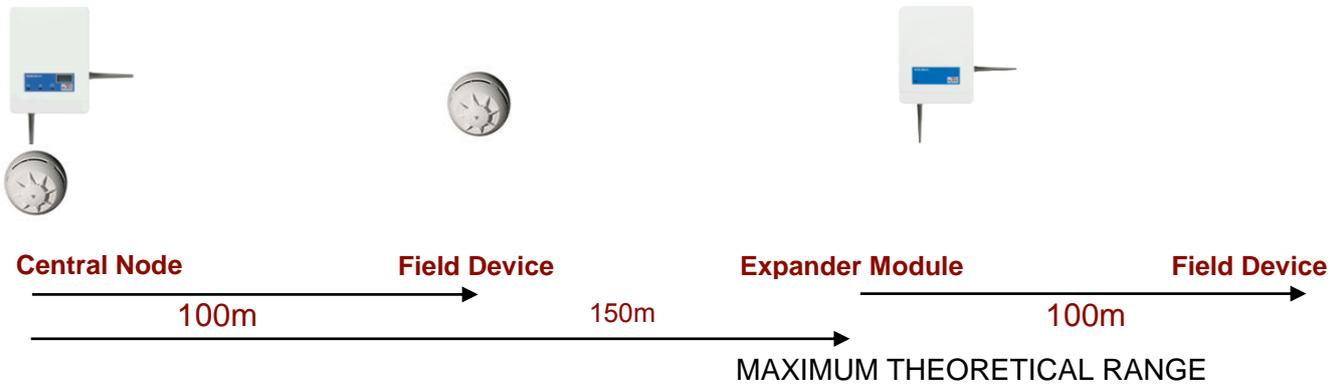
- If connecting to an analogue FCP using a different protocol:
  - Power on the Conventional Interface Module(CIM) from its external 24V dc supply
  - Connect and terminate correctly the Zone Monitor Unit (or equivalent) at the Conventional Interface Module
  - Connect and terminate correctly the Sounder Control Card (or equivalent) at the Conventional Interface Module
  - Set system code on the CIM using the Firewave Configurator software
  - Set radio channel on the CIM using the Firewave Configurator software
  - Program the CIM using the Firewave Configurator software
  - Program field devices on to the CIM
  - Auto-learn the analogue FCP
  - Program the analogue FCP Cause and Effects (if required)
- If connecting to a Conventional FCP:
  - Power on the Conventional Interface Module from its external 24V dc supply
  - Connect and terminate the required detection Zone at the CIM
  - Connect and terminate correctly the radial Sounder circuit at the CIM
  - Set system code of the Conventional Interface Module using the Firewave Configurator software
  - Set radio channel of the Conventional Interface Module using the Firewave

- Configurator software
- Add field devices to the Conventional Interface Module using the Firewave Configurator software
- Program CIM
- Program field devices
- Program CIM



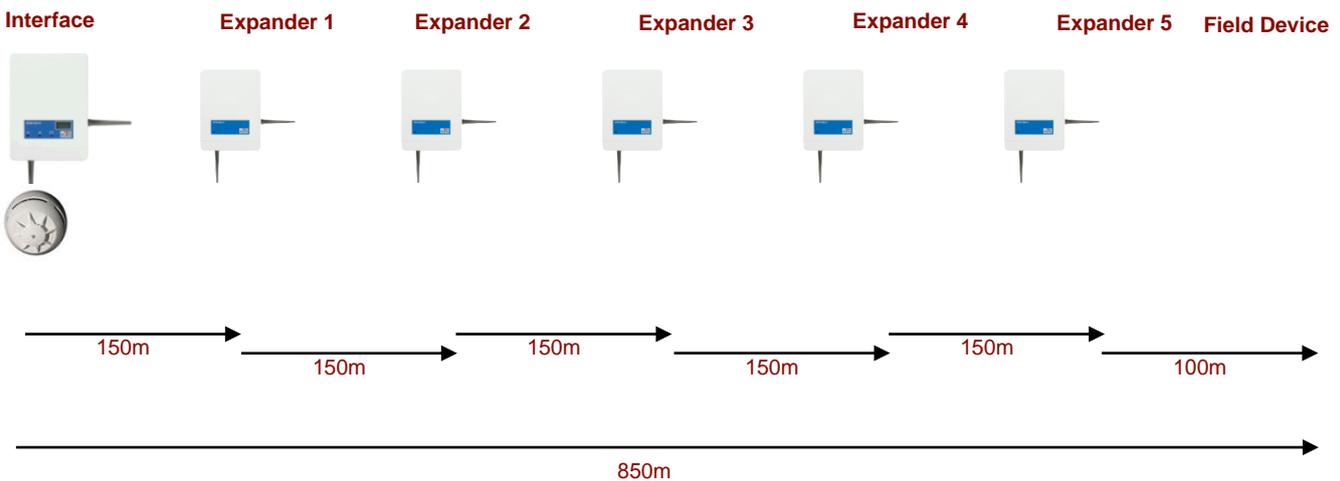
## 13.2 Range between Central Node / Expander Module & Field Device

The maximum distance between the wireless Central Node, Expander(s) and field devices is mainly affected by the fabric / structure of the building – a timber frame construction will give coverage over greater distances than if the wireless Central Node or Expander is used in a building constructed of a heavy ferrite core or one using reinforced concrete. The maximum distance in open air is:



If a wireless system were to be configured with the maximum number of layers (6) of wireless Central Node and Expander(s), the maximum distance that could be achieved between the wireless Central Node and the Expander is:

*Note: this distance is in open air*



## 13.3 Features

- Simple and full integration into hard-wired systems.
- The application of wired and wireless devices allows a fast adaptation to the changes on site.
- A maximum of 6 Translator Modules can be connected to a single fire detection loop.
- A maximum of two Conventional Interface Modules can be used per detection zone
- **For each wireless Central Node cluster up to 32 analogue addressable devices (initiating and alarm devices) can be connected. It should be noted that each wireless Central Node can only support a maximum of 16 output devices (Audio-Visual devices, Audio devices and Output Modules) within the 32 devices in the cluster.**  
*NOTE: The Conventional Interface Module does not currently support Powered Output Modules or Battery Output Modules*
- Multi-channel frequency operation.
- Main battery life: - 3 to 5 years typical (field devices).
- Backup battery life: - 2 months typical (field devices).
- Low battery alarm (field devices).
- Immediate transmission signals from field devices: Alarm, Fault and Tamper.
- Transmission of status and analogue values.

## 13.4 Specification

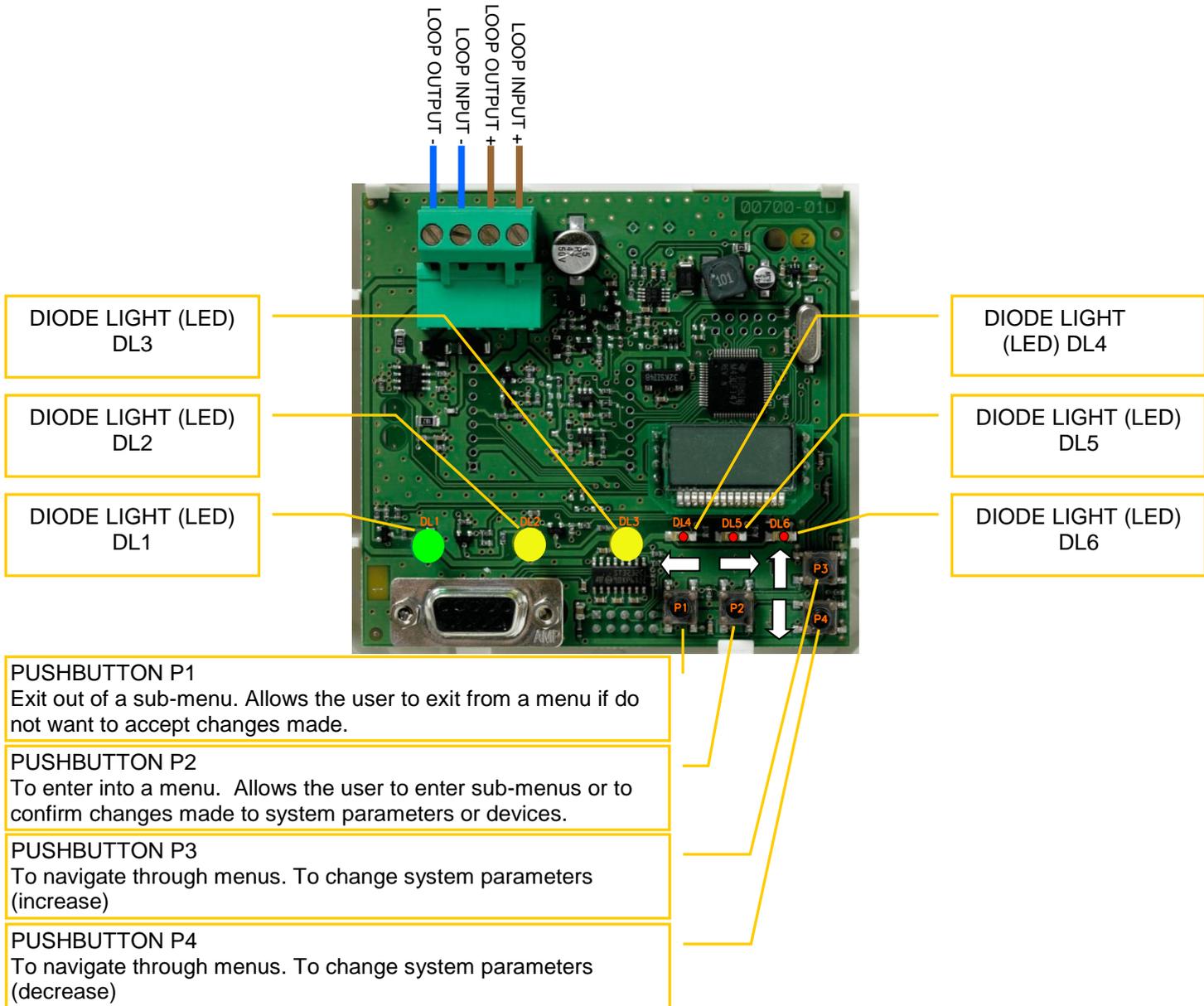
- |                                 |  |
|---------------------------------|--|
| • Colour:                       | White  |
| • Dimensions:                   | 120 x 160 x 51 (without antennae)  |
| • Operating Frequency:          | 916 MHz  |
| • Radiation power:              | 5dBm (3mW)   |
| • Modulation Type:              | Frequency Shift Keying (FSK)   |
| • Number of frequency channels: | 7  |
| • Power supply voltage:         | 15 – 40Vdc (Translator Module)<br>10 - 27Vdc (Conventional Interface Module)       |
| • Current consumption:          | 20mA (Translator Module)<br>30mA (@24Vdc in alarm) (Conventional Interface Module) |
| • Operating temperature:        | -30°C to +50°C   |

## 13.5 Installation

It is recommended that the wireless Central Node, and subsequent Expander(s), if fitted, be mounted at a height from the ground of approximately 2 – 2.5 metres in an orientation such that the vertical antenna is pointing towards the ground; the horizontal antenna is pointing to the right. Installation in any other aspect may affect system integrity and performance.

# 14 Wiring Connectivity

The figure below shows the location of the push-buttons on the Translator Module used during the programming process. It also indicates the location of the Translator Module LEDs - the use of these LEDs is explained throughout this manual. Detection loop connectivity is also shown:



## 14.1 Translator Module Menu

- **BLANK (8888)**: This is the normal operating level. In this condition the Translator Module is connected to the loop and working and is fault free – or it has had power removed from it.

NOTE: When the Translator Module LCD screen is active, the FCP will go in to fault showing “DISCONNECTED FAULTS” for all the devices attached to that particular Translator Module. When the LCD screen is blank, the faults will disappear and full operational integrity is restored.

- **LOOP ( LOOP )**: This menu contains the parameters required to correctly interface the Translator Module and associated child device on to the fire detection loop.
- **LOOP START ADDRESS ( SA )**: Enter this sub-menu to change the starting FCP address for the Translator Module and associated radio field devices.
- **CLEAR PROGRAMMING GAPS ( C I R E )**: If devices have been deleted from the program and gaps have been created in the addressing sequence, this command removes those gaps. Care must be taken when using this command as FCP detection loop addressing for some devices will change.
- **RF PROGRAMMING ( RF )**: This menu contains all the parameters related to the Translator Module.
- **TRANSLATOR ( EHP )**: This sub-menu changes the RF parameters necessary for the correct functioning of the Translator Module.
- **SYSTEM CODE ( SYS )**: The System Code is a number in the range 0-255. Change the System Code value using the P3/P4 pushbuttons and confirm by pressing the P2 pushbutton. To store the changes, it is necessary to initialise the Translator Module.
- **RF CHANNEL ( Ch )**: The RF channel is a number in the 1-7 range. Translator Modules with different RF channels will not interfere with each other. Change the RF Channel value using the P3 / P4 pushbuttons and confirm the change by pressing the P2 pushbutton. To store the changes, it is necessary to initialise the Translator Module.
- **INITIALIZE ( In It )**: Use this sub-menu to store the updated System Code and / or RF channel into the Translator Module memory. After confirming with the P2 pushbutton the new values will be used.

**NOTE 1:** After the Initialise process, all wireless devices previously linked to the Translator Module will need to be re-programmed!!! (This process should only be used during initial installation).

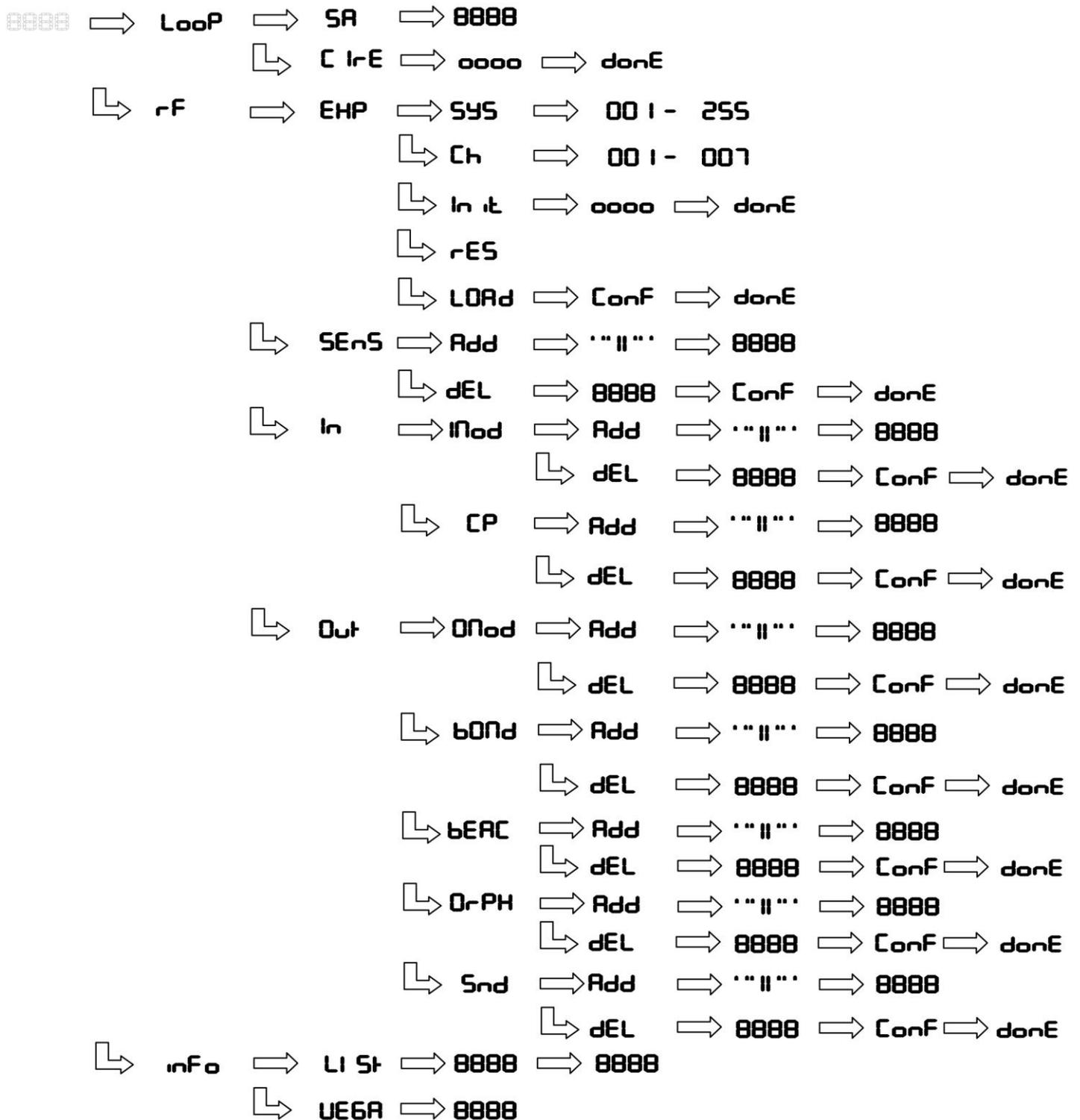
**NOTE 2:** If using multiple Translator Modules in a single installation, care should be taken that each Translator Module employs a different System Code and site diversity is employed to ensure the zone of inter-visibility between Translator Modules for each radio channel is kept to a minimum.

**NOTE 3: The internal system encryption is set up during this process and is relayed to all associated devices. If an initialisation is carried out, this encryption will be changed and the Translator Module will not communicate with the associated devices.**

- **RESET ( rES ):** Use this sub-menu to perform a soft reset of the Translator Module. After confirming with the P2 pushbutton all the wireless devices linked to the Translator Module will be reset from an existing fire and fault condition. This action is used to assist engineers on site with diagnosing soft faults or hard faults – soft faults will clear after a RESET command; hard faults will re-appear making the fault-finding process quicker.
- **LOAD CONFIGURATION ( LOAd ):** Use this sub-menu to load the system configuration from the RF PCB in to the Translator Module Processor PCB. After confirming the request with the P2 pushbutton, the Translator loads the configuration and performs a reset procedure. This is used when programming a Translator Module using the Firewave Configurator Tool.
- **DETECTOR ADDRESS ( SEnS ):** Enter this sub-menu in order to add or delete wireless sensor devices:
  - **POINT DETECTORS ( dEt ):** Enter this sub-menu in order to add or delete wireless Detectors
  - **BEAM DETECTORS ( bEAAn ):** Enter this sub-menu in order to add or delete wireless Beam Detectors
- **INPUT DEVICES ( In ):** Enter this menu to add or delete Input devices other than Detectors:
  - **INPUT MODULES ( iMod ):** Enter this sub-menu in order to add or delete a Radio Input Module.
  - **CALL POINTS ( CP ):** Enter this sub-menu in order to add or delete a Radio Call Point.
- **OUTPUT DEVICES ( Out ):** Enter this menu in order to add or delete output devices:
  - **EXTERNALLY POWERED OUTPUT MODULE ( OMod ):** Enter this sub-menu in order to add or delete an externally powered wireless Output Module.
  - **SOUNDERS ( Snd ):** Enter this sub-menu in order to add or delete a wireless Sounder, Sounder Base, Sounder Beacon or Sounder Beacon Base.
  - **BATTERY POWERED OUTPUT MODULE ( bOnd ):** Enter this menu in order to add or delete a battery powered wireless Output Module.
  - **VOICE SOUNDER ( OrPH ):** Enter this menu to add or delete a wireless Voice Sounder.
  - **BEACON ( bEAC ):** Enter this menu in order to add or delete a wireless Beacon.

- **INFO (INFO):** This is the sub-menu that contains the information about the RF devices.
- **ADD DEVICE (ADD):** Select one of these menus in order to add a new radio device to the Translator Module. After confirming with pushbutton P2, the LCD will display the “link” indication and LED DL4 will turn on. Follow the instructions as indicated in the “Device Programming” paragraph.
- **DEL DEVICE (DEL):** Select one of these menus in order to delete a radio device from the Translator Module. Press pushbutton P2 to enter the menu. Scroll through the devices listed using pushbuttons P3/p4 until the FCP loop address required is displayed. Press pushbutton P2 to delete the device. CONF will be displayed. Press P2 to confirm deletion (the LCD will display NONE if no devices are available for deletion).
- **LIST (LIST):** Use this sub-menu in order to retrieve the information about devices linked to the Translator Module. The information available to the user is the Translator Module and wireless field device address along with the device type.
- **PROTOCOL (PRO):** This option indicates the protocol the Translator Module is configured with. Pressing P2 when one of the legends is visible on the LCD screen will display three digits indicating the Translator Module firmware.

## 14.2 Translator Module Menu Structure



If the **FFFF** indication appears when programming field devices, check the Start Address (**SA**) is set to a value no higher than the last protocol supported loop address.



## 14.3 Translator Module Push Button Operation

Local programming of the Translator Module is carried out using the four pushbuttons (P1-P4) mounted on the main Translator Module PCB (the one with the LCD screen). The selected / proposed action will be shown on the LCD screen. The Translator Module menu flow chart is shown on page 38. The push button functions are detailed on pages 35 - 37.

There are limitations to locally programming the Translator Module using the pushbuttons. The Commissioning Engineer is not able to change the operational parameters of the field devices and must use the default values.

### SETUP PROCEDURE

Procedure for programming the associated wireless devices on to an analogue detection loop is as follows:

- Connect the Translator Module to the FCP via the detection loop cabling (see loop connectivity on page 34).
- Program the Translator Module RF parameters.
- Program the field devices on to the Translator Module.
- Program the FCP.

## 14.4 Translator Module Preliminary Programming

- Power on the Translator Module by connecting it to the detection loop. The LCD display will illuminate initially then go blank. If there is a problem with the initialisation, a **FA IL** indication will be displayed. Should this happen, power down the Translator Module, wait approximately 20 seconds and then re-apply power. If this does not clear the problem, the Translator Module should be exchanged.
- Using P3/P4 pushbuttons scroll to the **RF** menu; select by pressing P2. Select the Translator menu ( **SYS** ) by pressing P2. Scroll to the **ET-FC** option pressing P2 to enter. A three digit number will appear that can be altered by pressing the P3/P4 pushbuttons – this is a decimal representation of the system code – the system code can be a number between 0 - 255. When a code has been selected, press P2 to confirm. A small house symbol (  ) will appear next to **SYS**. This indicates that the system will need to be initialised for the new system code to be stored in the Translator Module's non-volatile memory.

(**NOTE:** Translator Modules with different channels will not interfere with each other. Careful selection of system codes and initial operating channels should be taken when installing a multi Translator Module system. It is advisable to select a different radio channel and a different system code for each Translator Module).

- Using P3/P4 pushbuttons scroll down until the Channel option ( **Ch** ) appears. Press P2 to enter this option. A number will appear in the range 1 - 7. Using the P3/P4 pushbuttons select the radio channel required for the Translator Module. Press P2 to confirm. A small house symbol (  ) will appear next to **Ch**. This indicates that the system will need to be initialised for the new system radio channel to be stored in the Translator Module's non-volatile memory.

The System Code and Radio Channel must not be the same for all Translator Modules on a fire detection loop or within a complete installation – the number of system codes available is sufficient for an installer to comply with this requirement. In the majority of systems, the Radio Channel chosen will have little effect. However, in a small number of systems, during the commissioning procedure it may become evident that one of the channels has a large amount of interference, or traffic from another system or source, and this can then be avoided by selection of a different channel. If the system is left operating on the noisy channel, it will still operate but the battery life of the field devices may be reduced due to the system dealing with

the excess noise.

**NOTE:** A software utility is available on the Firewave Configurator that will assist the engineer with assessing the background RF environment. For more information on this utility refer to Section 7 of this manual. Before using the Translator Module, the engineer will need to program the operational radio channel in to the Translator Module and all devices associated with the Translator Module cluster.

- Save the changes made to the Translator Module selecting the Initialisation ( **In It** ) option. During the initialisation process, the symbol **oooo** will be seen on the Translator Module LCD display. This indicates the Translator Module is processing and storing the System Code and Radio Channel selected. If the initialisation succeeds **done** will be displayed, else **FR IL** will be displayed.
- Program the Translator Module Start Address. The Start Address is the detection loop address assigned to the Translator Module in the FCP. All radio field devices will be contiguously addressed when programmed on to the Translator Module.
- Proceed with wireless field device programming (see **WIRELESS FIELD DEVICE PROGRAMMING** page 41)
- On completion of all device programming, press P3/P4 buttons and scroll to the **LI St** menu, press P2 and scroll through the listed devices using P3/P4 pushbuttons. This indicates that all devices have been learnt on to the Translator Module successfully and are ready to be programmed on to the FCP.  
(Note: If using the Firewave Configurator to program the system, the **LI St** menu will only display the Translator Module address until the **LOAD** command is carried out).
- On completion, exit from all Translator Module menus pressing P1 push-button until the LCD display is blank.

**WIRELESS DEVICE START ADDRESS**

Using P3/P4 keys scroll up/down until **Loop** is displayed. Press P2 key to confirm. Use P3/P4 push-buttons and scroll to **SA** (Start Address). Press P2 to select this option. Using P3/P4 push-buttons, set the start address for the Translator Module. Confirm the value pressing P2. On completion press P1

push-button to exit (The devices will be addressed contiguously from the address set in this action). The Start Address will be assigned to the Translator Module. All field devices will be assigned to contiguous addresses.

e.g. 1 Translator Module + 2 Manual Call Points on Fire Detection Loop 1 with Translator Module start address = 110.

	Translator Address	Address Seen at Control
Panel		
Translator Module address	110	110
Manual Call Point 1 address	111	111
Manual Call Point 2 address	112	112



## 15 Wireless field Device Programming

**(NOTE:-** Prior to commencing any device programming, ensure the Primary (CR123A) and Secondary (CR2032) power cells are available. The secondary cell is fitted to the device with the positive (+) side uppermost. This must be fitted prior to any programming, and must be fitted with the switch in the **1** position. The primary and secondary power cells in Audio-Visual devices and the Battery Powered Output Module are CR123A types).

On the wireless device being programmed set the jumper into the **ON** position before proceeding any further.

To add a device, use the P3/P4 keys and scroll up/down until **rF** is displayed. Confirm using the P2 key. Use P3/P4 key to select the appropriate menu:

( **SEN5** for Detectors, **In** for input devices, **Out** for output devices) (If adding an Input device or an Output device, select the correct device first before proceeding).

Use P3/P4 key to select **Add**. Confirm using the P2 key.

The display will show the "link" ( " " || " " ) indication and LED DL4 will turn on. Insert the primary power cell and wait until the RF device LED indicator has blinked **RED** 4 times (to indicate the device has powered on and is entering in to programming mode).

Switch the RF device jumper from **ON** to the **1** position. The RF device LED will flash **GREEN** (showing that initial programming is completed), which is followed by the LED blinking **RED** for a short period of time. The device will then flash **GREEN** two more times before extinguishing. The Translator Module LCD screen will display the address assigned to the device and DL4 LED will turn off. Programming for that device is now complete.

(Note: if the device is not placed or put back in to its base / back-box within 20 seconds of completion of device programming, a fault indication will appear on the Translator Module LCD screen (the analogue loop address for that device and a spanner symbol indicating a "*Tamper*" fault)).

Press P1 push-button to return to the device menu. Repeat the above for all devices that are to be added on to that particular Translator Module.

On completion of programming all field devices on to the Translator Module, the Translator Module and field devices can now be programmed on to the associated FCP as if they were normal analogue devices. The devices can be learnt on to the FCP using the "**Autolearn**" process.

## 16 Translator Module LED Indications

The following table shows the possible fault display on the LCD screen of the Translator Module according to the events generated by wireless field devices and Expanders (if fitted):

DL1: blinks when the Translator Module is being polled by the FCP.

DL2: indicates a system fault condition. This is to be investigated using the Firewave Configurator software.

DL3: illuminates constantly to indicate that a wireless device has reached a low power level threshold, e.g. the primary power cell should be replaced – the LCD will display the analogue loop address of the affected device.

DL4: illuminates when the Translator Module is searching for a radio device.

DL5: illuminates and the device type is displayed on the Translator Module when interrogated locally

DL6: not used

### TRANSLATOR LCD DISPLAY INDICATIONS

	Primary battery level for device with analogue loop address 138 is low
	Secondary battery level for device with analogue loop address 138 is low
	Wait indication. The Translator Module is performing a time consuming action
	When carrying out changes to the system, a confirmation of action is requested
	The last action performed has been completed successfully
	A wireless device has gone in to a fire condition
	The Translator Module is radio linking to a field / child device
<hr/>	
	Indicates a fault with a device and is accompanied by the device analogue address – this icon normally appears if the associated field device is in a tamper condition
<hr/>	
	Indicates a problem with a child Expander associated with the Translator Module (The n will be a number between 1 and 7)
	Indicates there is an error in communication between the front processor PCB and the rear radio PCB. The ribbon cable connecting the two PCBs should be checked for correct insertion.
	Indicates a fatal error with the Translator Module or the last action has generated an error
	This indicates there are no more loop addresses available
	This indicates that the radio PCB and the analogue PCB are not synchronised and a "LOAD" command must be carried out

# 17 Translator Module Programming

## 17.1 Programming Procedure

The following step-by-step procedure should be used to program the Translator Module:

- Initial Translator Module configuration
- Translator Module Cluster configuration
- RF Device programming
- Translator Module configuration load
- FCP configuration

### PUSH BUTTON AND LED LOCATIONS

For the location and use of the Translator Module's indication LEDs and control push buttons refer to the illustration on [page 34](#).

### MENU STRUCTURE AND GUIDES

For a comprehensive overview of the system menus and structure refer to the descriptions and illustrations on [pages 35 - 38](#).

### INITIAL TRANSLATOR MODULE CONFIGURATION

This section covers the set up of the main Translator Module properties.

**Note:** When the buttons on the front of the Translator Module are being used to configure the system, communication with the FCP will be lost and therefore a **“LOOP DISCONNECTED FAULT”** indication will be displayed on the FCP. This fault will clear on completion of programming.

### TRANSLATOR MODULE POWER UP

To configure the Translator Module it is necessary to be connected to a live fire detection loop. Connect the fire detection loop cabling as per [page 34](#) and apply power to the loop. The Translator Module LCD screen will illuminate initially then go blank.

If the Translator Module does not initialise correctly, a **FA IL** indication will be displayed. Should this happen, power down the Translator Module, wait 20 seconds and re-apply power. If this does not clear the problem, the Translator Module should be exchanged.

**NOTE:** *If there is a requirement to program the system prior to attending site and a FCP is not available, it is possible to power on the Translator Module from a stand-alone 24V dc Power Supply Unit. Programming of all devices can then be carried out using the local programming buttons or using the Firewave Configurator software. On completion of all programming, the Translator Module can be powered down and the device power cells should be removed – all programming will be retained in the non-volatile memory of the Translator Module and child devices.*

## 17.2 Loop Device Configuration

The wireless devices on the system will each take an analogue detection loop address on the FCP - one for each field device and one for each Translator Module. (Expanders do **NOT** take a detection loop address – they are transparent to the FCP).

## 17.3 Field Device Power Cells

Prior to commencing any device programming, ensure the field device primary power cell (CR123A) and secondary power cells (CR2032) are available. The secondary power cell is fitted to the device with the positive (+) side upper most. This **must** be fitted prior to any programming. Power cells for field devices should not be fitted until immediately prior to programming. Fitting cells prior to this may foreshorten cell longevity.

## 17.4 Field Device Configuration

The Translator Module and wireless devices can now be learnt onto the system in the same way as normal analogue wired devices from the front of the FCP or configured using the FCP configuration tool. (Refer to the FCP manual for further details).

All wireless field devices should be configured to an appropriate device type, in the same way an analogue device is configured.

# 18 Wireless Expander Module Installation Guidelines.

## 18.1 Introduction

The Expander is used to extend the geographic range of a Central Node in order to program wireless field devices that would otherwise have received too weak a radio signal to work efficiently.

A maximum of 7 Expanders can be connected to one Central Node. It should be noted that only a maximum of 32 devices can still be programmed on to the Central Node – adding Expanders does not increase the number of field devices that can be associated with a Central Node.

Each Expander receives a digital address from the Central Node in order to be identified. Examples of this addressing can be seen on [pages 50 / 51](#).

An Expander requires an external power source (EN54 battery backed PSU) of 24Vdc. It should be noted that the Expander will function correctly with an input voltage of 10 – 27Vdc.

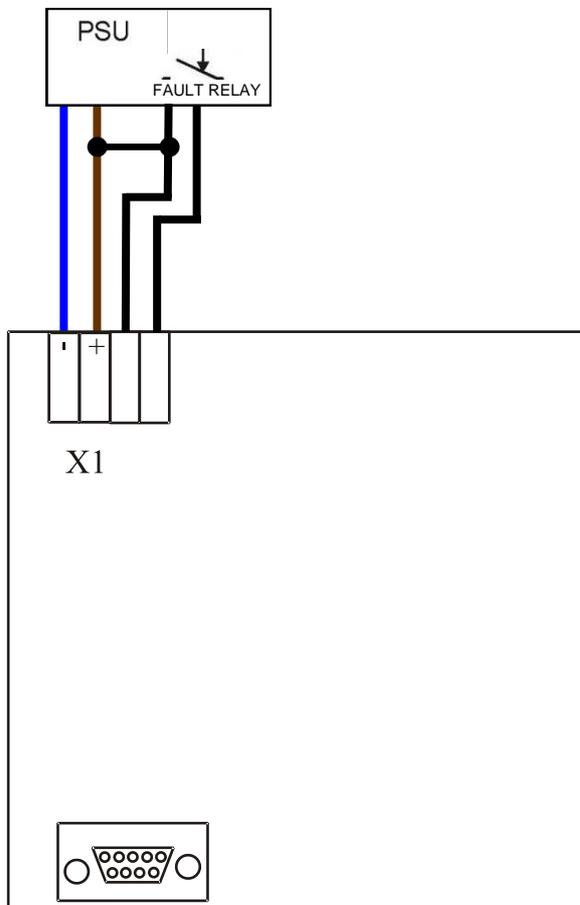
## 18.2 Specification

- Multi-channel frequency operation.
- Immediate transmission signals from field devices: Alarm, Fault and Tamper.
- Transmission of status and analogue values.
- Colour: White
- Dimensions: 116 x 107 x 65 (without an antenna)
- Operating Frequency: 868 - 870 MHz
- Radiation power: 0.01 - 3mW
- Modulation Type: Frequency Shift Keying (FSK)
- Number of frequency channels: 7
- Power supply voltage: 10 - 27Vdc
- Current consumption ≤15mA (@ 24Vdc)
- Operating temperature: -30°C to +55°C

## 18.3 Cabling Termination - Monitored Power Supply Unit (PSU)

The diagram indicates the connections required to connect a monitored PSU to an Expander.

Maximum current (I) consumption of the Expander is  $\leq 15\text{mA}$  (@24V dc)



To connect the EM to a monitored 24V D.C. PSU:

Connect the +24V PSU output to the + and – connections of the Expander

Connect the MM and BM connector of the Expander to the PSU controlled relay as indicated (In this scenario, it is assumed that the PSU fault relay opens when reporting a fault)

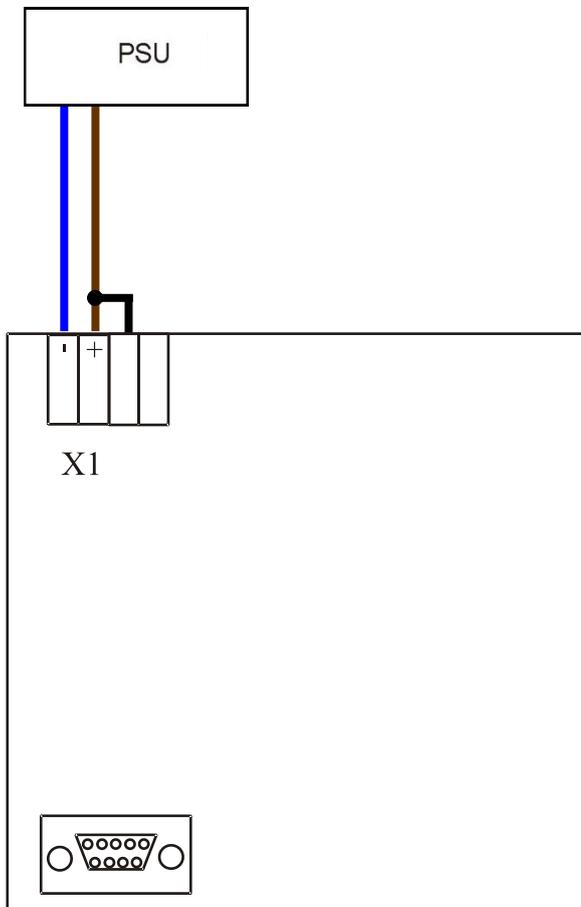
Fit a small jumper link between the “+” terminal and the “MM” terminal.

The “MM” and “BM” Expander inputs monitor the primary and the backup power supply voltage levels.

## 18.4 Cabling Termination - Non-Monitored Power Supply Unit (PSU)

The diagram below indicates the connections required to connect a non-monitored PSU to an EM.

Maximum current consumption of the Expander is  $\leq 15\text{mA}$  (@24V dc).



**NOTE: If using a non-monitored PSU (as above), care must be taken that the system conforms to local standards and codes of practice.**

### PROGRAMMING

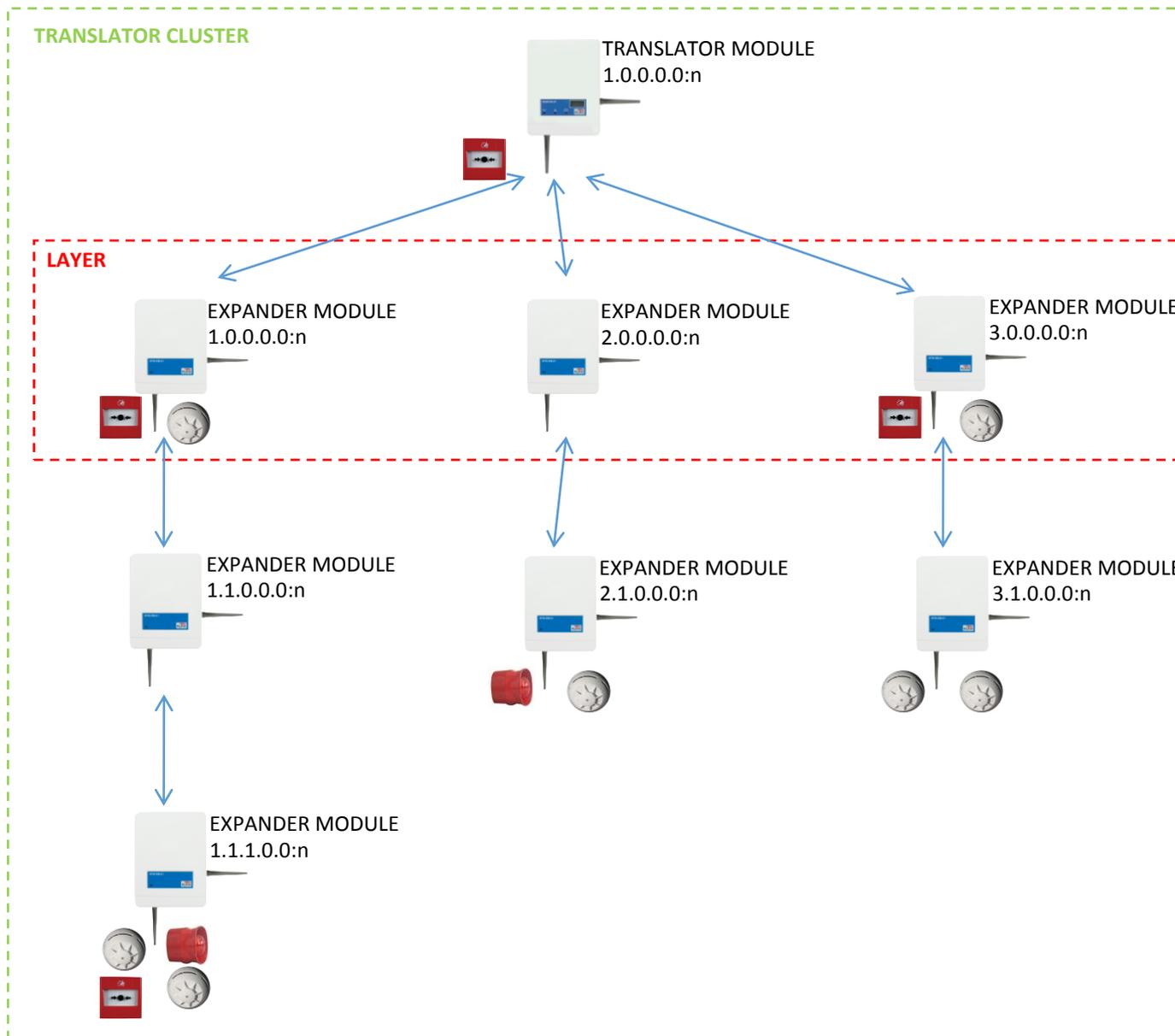
The Expander can ONLY be programmed using the Firewave Configurator software supplied with the Central Node.

The Expander and associated devices should be programmed in accordance with Section 6.

To use the Firewave Configurator, connect a laptop computer to the RS232 connector on the Expander front PCB - a standard RS232 cable is to be used.

## 18.5 Expander Module Configuration & Topology

Expanders are used in association with a Central Node:- one Central Node can communicate to a maximum of seven Expanders:



This configuration employs the maximum number of Expanders (7). Each Expander can have field devices associated with it.

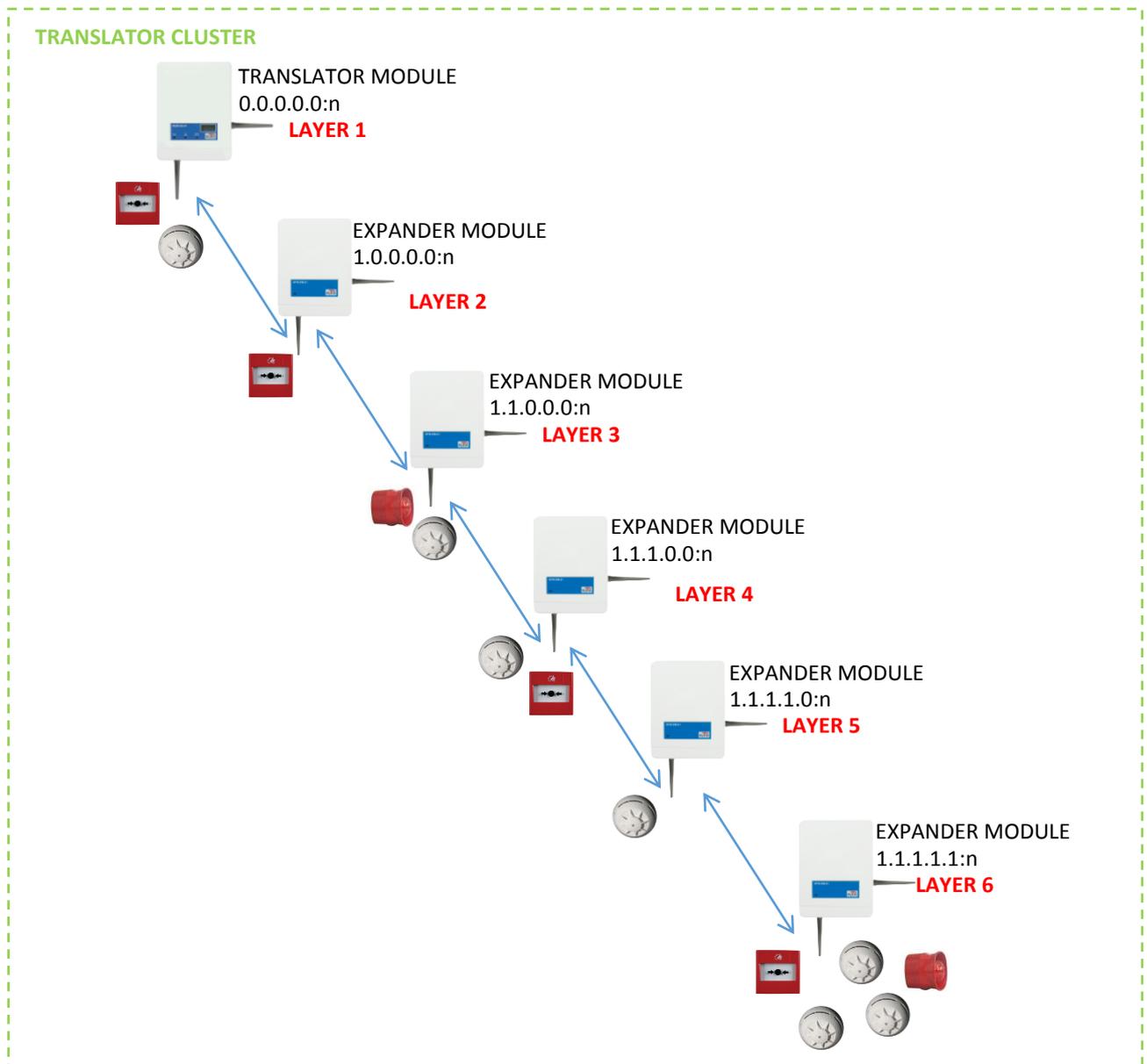
There can be no more than 3 Expanders on one layer due to the digital addressing employed by the Central Node to recognise each Expander.

A Central Node cluster (as shown above) can have a maximum of 32 field devices associated with it.

The “...n:” is the digital sub-address given to a wireless field device and forms part of the unique identifier for that device.



An alternative configuration is shown below:



This configuration employs a **MAXIMUM** of six layers of wireless Interfaces (the top layer is **always** a Central Node (as shown above). This is due to the digital addressing employed between the Central Node and the Expanders.

The "...n:" is the digital sub-address given to a wireless field device and forms part of the unique identifier for that device.

# 19 Wireless Conventional Interface Module Installation Guidelines

## 19.1 Introduction

The Conventional Interface Module (CIM) is used to provide:

- A conventional zone of wireless alarm and detection devices when connected to a Conventional FCP (wireless Battery Powered Output Modules and externally powered Output Modules cannot be used with the CIM)
- A conventional zone of wireless alarm and detection devices when connected to a non-supported protocol FCP via a Sounder Control Card (alarm devices) and a Zone Monitor Unit (detection devices), or equivalent.

Standard child Expanders can be used with this device up to a maximum of 7. Configuration of the CIM can only be achieved using the Firewave Configurator.

It should be noted that a maximum of 32 devices can be programmed on to the CIM – adding Expanders does not increase the number of field devices that can be associated with this device.

Each Expander receives a digital address from the CIM in order to be identified. Examples of this addressing can be seen on [pages 50 - 51](#).

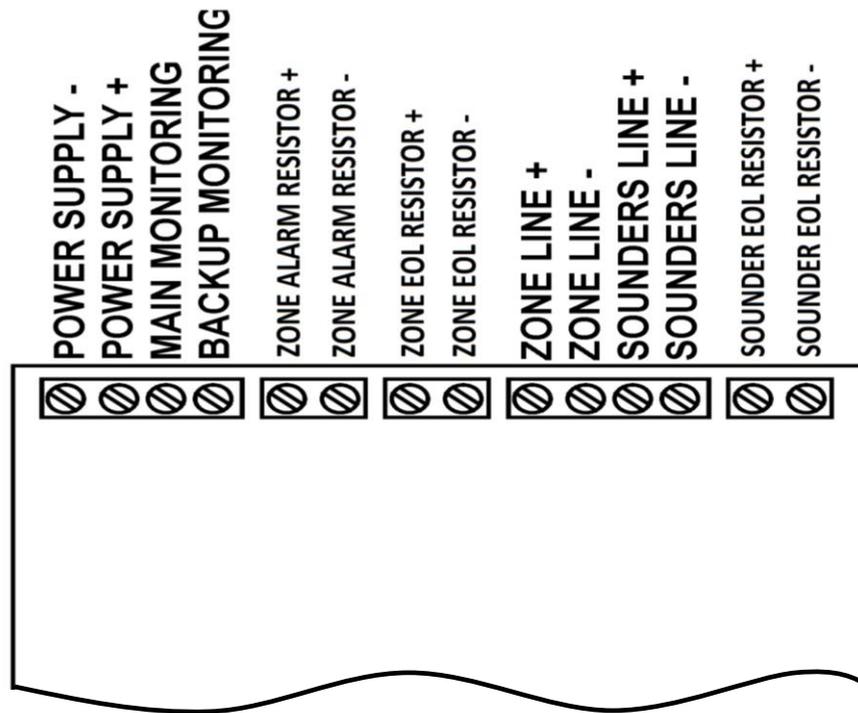
A CIM requires an external power source (EN54 battery backed PSU) of 24Vdc.

## 19.2 Specification

- Multi-channel frequency operation.
- Immediate transmission signals from field devices: Alarm, Fault and Tamper.
- Colour: White
- Dimensions: 116 x 107 x 65 (without an antenna)
- Operating Frequency: 868 - 870 MHz
- Radiation power: 0.01 - 3mW
- Modulation Type: Frequency Shift Keying (FSK)
- Number of frequency channels: 7
- Power supply voltage: 10 - 27Vdc
- Current consumption: ≤30mA (@ 24Vdc)
- Operating temperature: -30°C to +55°C

### 19.3 Conventional Interface Module Front PCB Terminations

The schematic below indicates the terminations at the CIM:



#### Termination Details

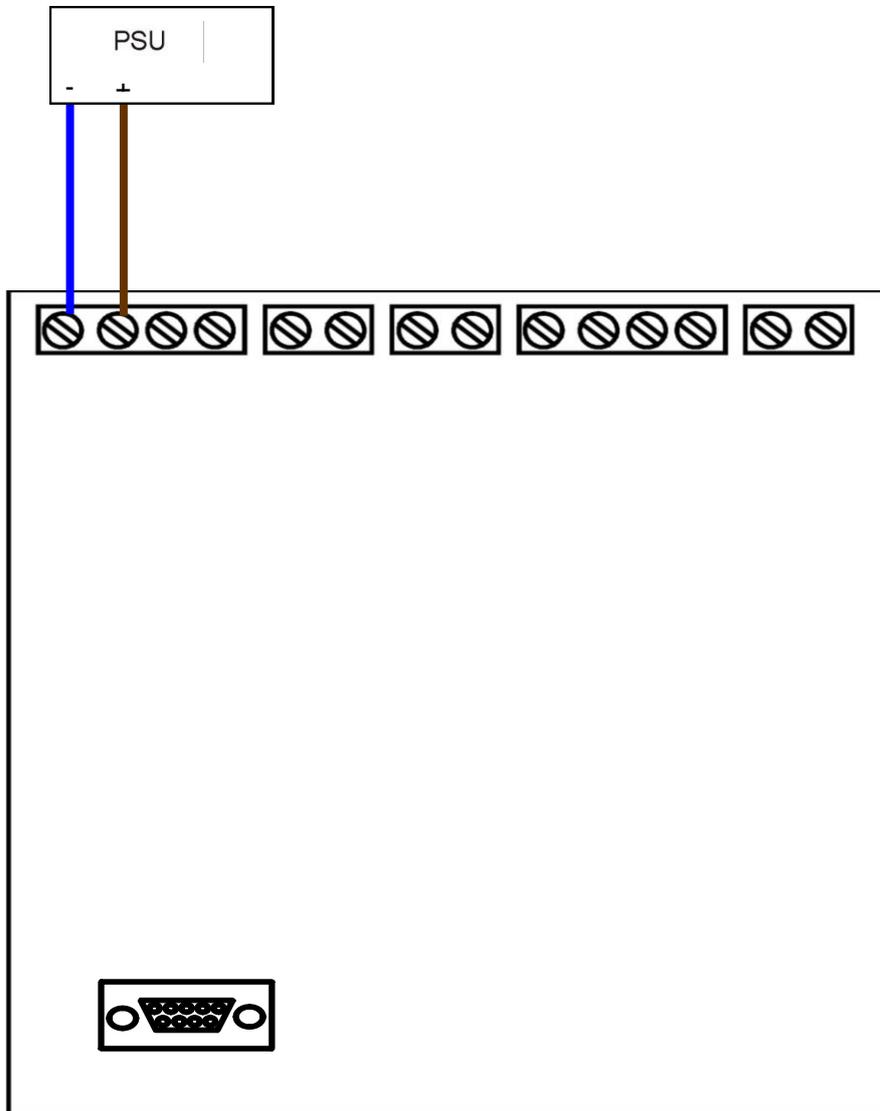
Power Supply +	}	Connect external +24V dc power supply
Power Supply -	}	
Main Monitoring	}	Monitoring circuit for external power supply – not used if using +24V from the associated FCP
Backup Monitoring	}	
Zone Alarm Resistor +	}	As defined by the FCP
Zone Alarm Resistor -	}	
Zone EOL Resistor +	}	As defined by the Conventional FCP or the Zone Monitor Unit
Zone EOL Resistor -	}	
Zone Line +	}	Connections from the required zone of a Conventional Fire Control Panel or the associated Zone Monitor Unit
Zone Line -	}	
Sounders Line +	}	Connections to a radial Sounder circuit from a Conventional FCP or from a Sounder Control Card
Sounders Line -	}	
Sounder EOL Resistor +	}	As defined by the Conventional FCP or the associated Sounder Control Card
Sounder EOL Resistor -	}	



## 19.5 Cabling Termination - Non-Monitored Power Supply Unit

The diagram below indicates the connections required to connect a non-monitored Power Supply Unit to a CIM.

Maximum current consumption of the Conventional Interface Module is  $\leq 30\text{mA}$  (@24V dc).



**NOTE:** If using a non-monitored PSU (as above), care must be taken that the system conforms to local standards and codes of practice.

### PROGRAMMING

The CIM can ONLY be programmed using the software supplied.

The CIM and associated devices should be programmed in accordance with Section 5.

To use the Firewave Configurator, connect a laptop computer to the RS232 connector on the CIM front PCB - a standard RS232 cable is to be used.

# 20 The Firewave Configurator - Installation & Programming Guidelines

## 20.1 Introduction

This section explains the facilities available to an engineer when using the Firewave Configurator :

- The Firewave Configurator has been designed to allow an Installation / Commissioning Engineer to program wireless radio detection/initiation and alarm devices prior to programming a FCP.
- If a wireless system has Expanders associated with it, these can ONLY be programmed using the Firewave Configurator.
- If the parameters of field devices need to be amended away from the default settings, this can ONLY be carried out using the Firewave Configurator.
- There are additional applications built in to the Firewave Configurator that allows a Fire Alarm Engineer to:
  - Analyse the background RF environment
  - Change out a faulty Central Node / Expander(s) without having to reprogram the associated field devices – ***as long as the program contained within the modules can still be read.***
  - Program Voice Annunciators with bespoke Voice Messages
- The Firewave Configurator allows a Fire Alarm Engineer to interrogate an existing system to diagnose reported faults.
- The Central Node contains an “Events Log” that can be downloaded using the Firewave Configurator. This can then be forwarded (if requested) to further analyse the fault and provide the engineer with a corrective solution.
- The “RF History” of a device can be downloaded using the Firewave Configurator for off-site analysis (if required)

## 20.2 Loading Software

### Computer requirements:

Compatible Operating Systems:	Windows XP/2000
Disk space:	50MB
Minimum Processor speed:	Pentium 233MHz
Minimum RAM:	64MB

The Firewave Configurator software is provided on a CD.

Insert the CD in to the laptop drive. The following window will appear:



Press 

This will start the Installation Wizard for the Firewave Configurator software. With the Wizard started the following window will appear:

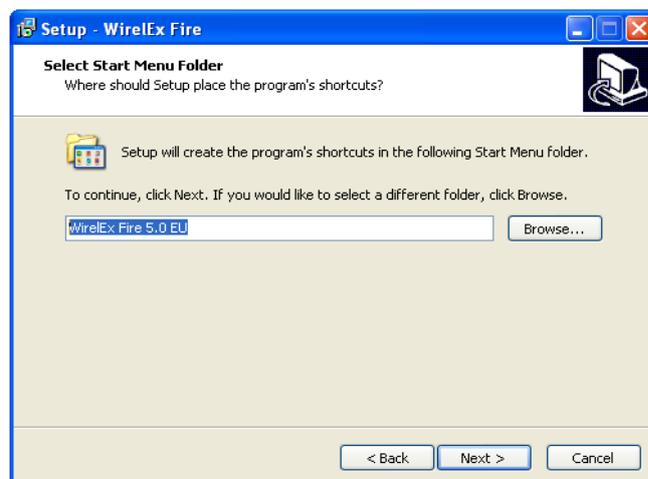


This will install the software in to a default folder on the computer. If there are other versions of Firewave Configurator software active on the destination computer, new installations of software will overwrite current software. It is preferable to place each version in to a different folder:

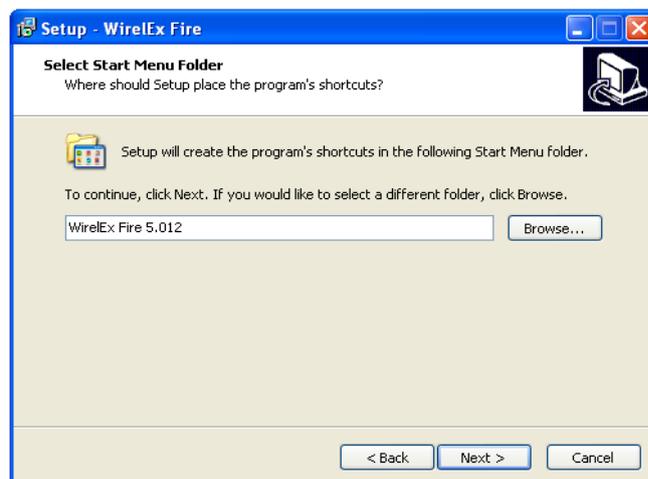


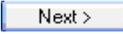
It can also be modified by selecting . Once the destination folder is correct, press .

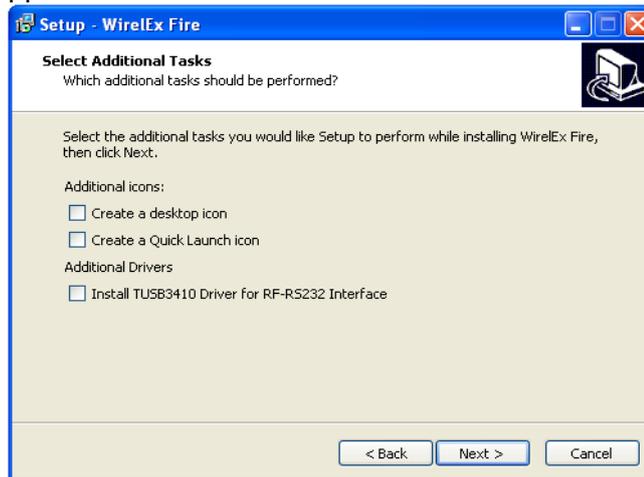
The following window will appear:



This will add a line to the Start-up Menu so that the application can be selected from the computer main menu. As before, it is preferable to re-name the Start Menu folder in order to avoid conflicts with previously installed Firewave Configurator software.

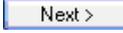


This can be altered if required. Once the folder name is correct, press  . The following Window will appear:



Checking the box for “**Create a desktop icon**”, a shortcut icon will appear on the Desktop window allowing the application to be accessed direct from the Desktop.

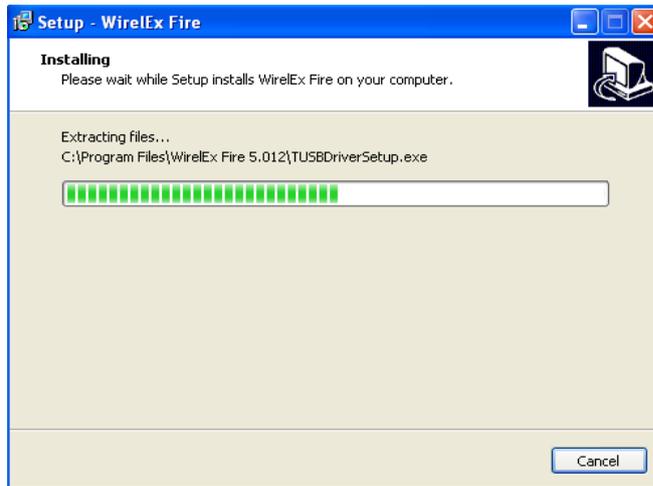
Checking the “**Create a Quick Launch icon**” will place a small icon on to the taskbar area reserved for favourite/often used applications.

Checking the “**Install TUSB3410 Driver for RF-RS232 Interface**” an additional driver (relating to a future, currently unavailable, upgrade) will be installed. Once personal choices have been made, press .

The following example shows all icons checked along with windows that will be displayed should this option be chosen:-



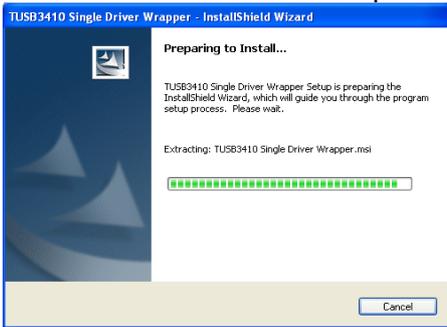
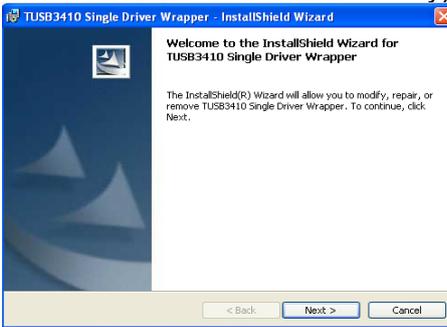
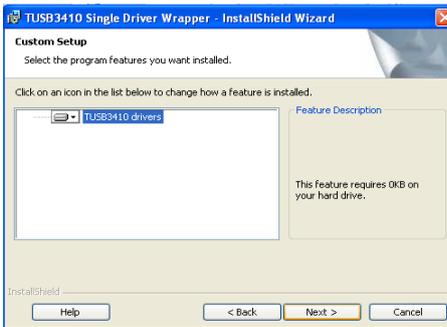
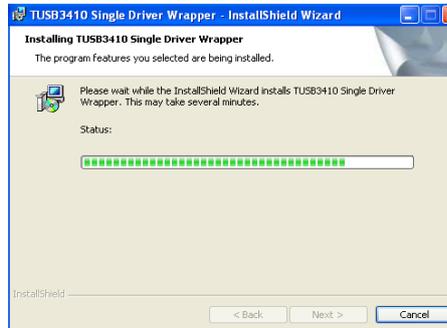
This window provides a précis of the information just entered by the user. Selecting  will start the installation process and display the following:-



Note: The information above the scrolling bar will change depending on the driver being installed at the time. If the option for installing the TUSB3410 driver was not selected, proceed to [page 65](#)

If installing the TUSB3410 Driver, the following windows will appear prior to the Firewave Configurator software installation completing:

(Press **Next >** when directed to complete the installation of the TUSB3410 Driver correctly)

- a. 
- b. 
- c. 
- d. 
- e. 
- f. 
- g. 



On completion of the TUSB3410 Driver being installed, the Firewave Configurator software will complete its installation and the following window will appear:



Click the  box.

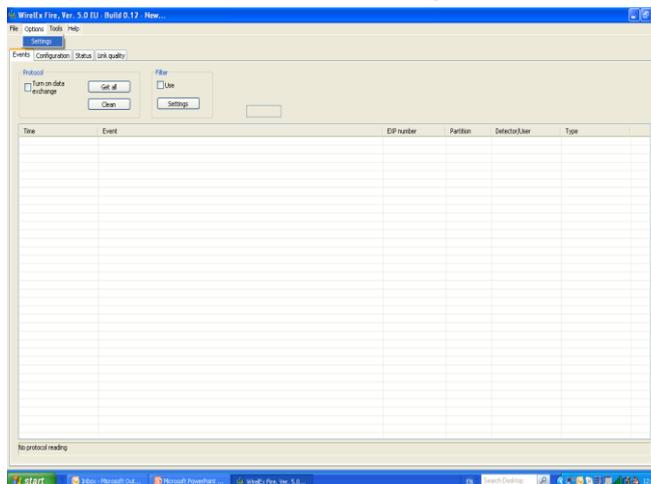
Remove the CD from the CD drive and store in a safe place. The CD is not required to run this application once installed on to a computer.

### 20.3 Start System Configuration

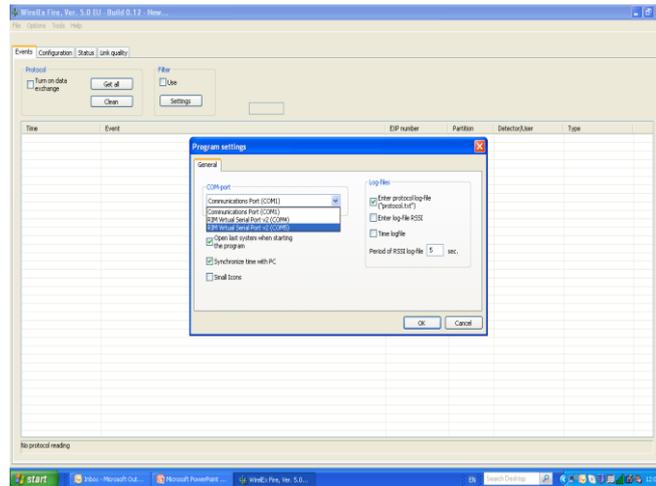
1. Connect the computer to the Central Node via a standard 9 pin RS232 Serial Cable
2. Open the Firewave Configurator software by double clicking the cursor over the Firewave Configurator icon  located on the computer desktop.

The default connection within the software is to connect through COM Port 1. If this needs to be changed:

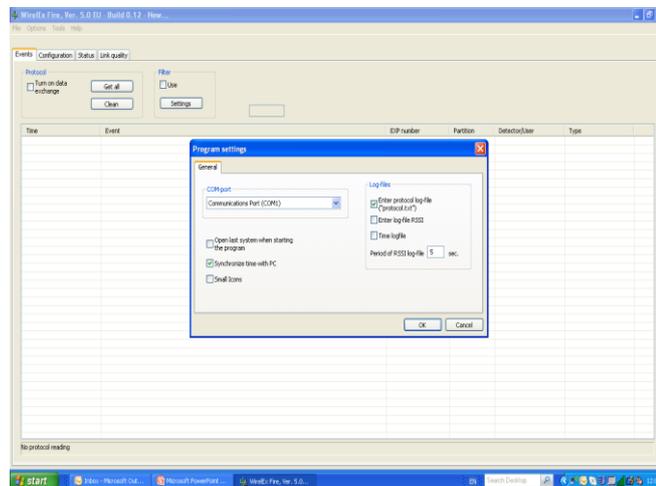
- a. From the tool bar at the top of the window, select **“Options”** then **“Settings”**



b. Select the correct COM port for the RS232 connection - there is an algorithm within the software that will only display the COM ports available on the connected computer (see example below)



**Whilst this window is open, the user should uncheck the “Open last system when starting the program” option. This will ensure that each time the application opens, the software will open with a “blank canvas”.**

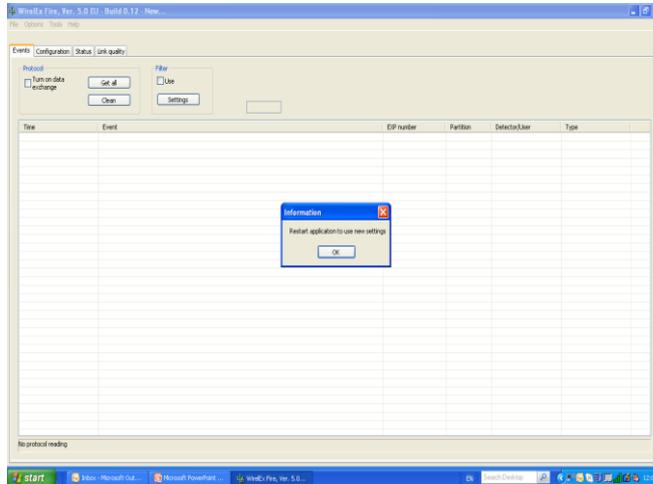


On the right hand side of the “Program settings” window in the LOG FILE area, the following boxes should be checked:

“Enter protocol log-file (“protocol.txt”) – this will allow the Event Log to be saved as a \*.txt file.

“Enter log-file RSSI” this will allow the RSSI Log File to be saved as necessary.

“Small icons” selection: Selecting this option will cause the icons seen in the “Configuration” tab to be smaller. (The installer will be prompted to restart the application if this option is selected):



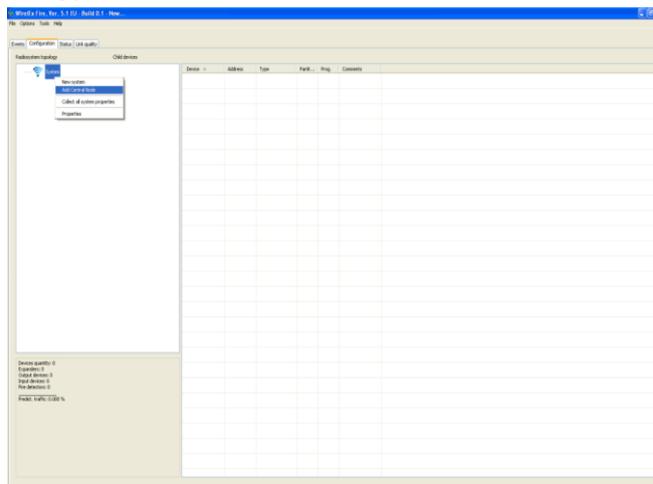
Press

A wireless fire detection system can now be programmed.

Prior to proceeding with the software, the Central Node needs to be configured with a unique System Code, Radio Channel and Start Address.

This information will be transferred to the Firewave Configurator when requested by the installer.

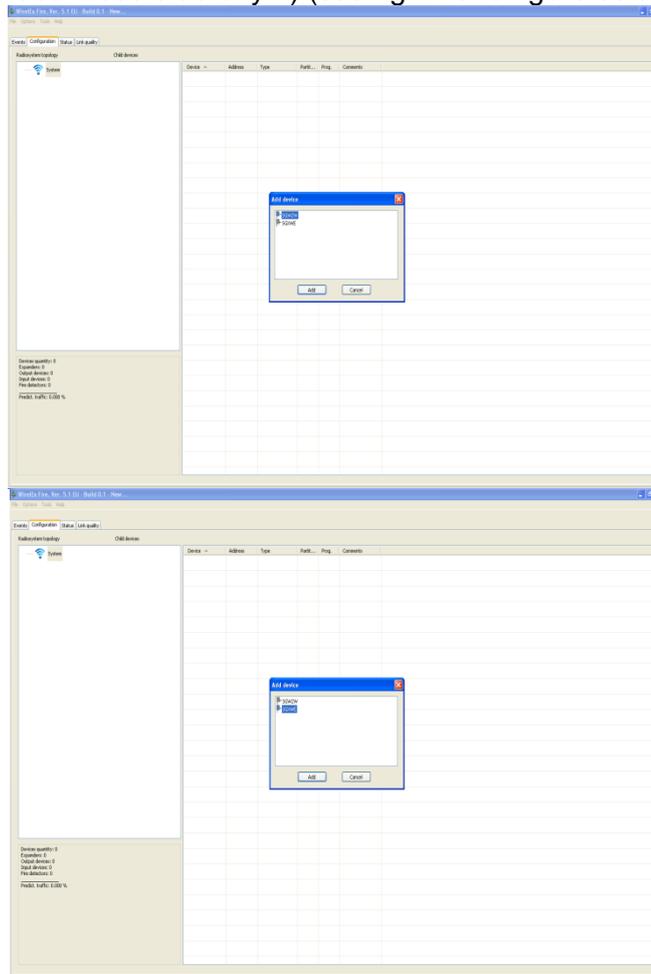
At the Main Menu page, select the “Configuration” tab. Right click on the word “System” in the “Radiosystem topology” box. A drop down window will appear:



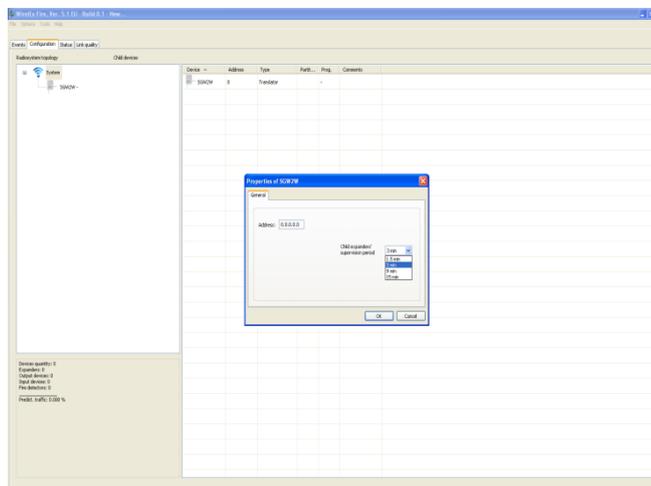
Highlight and select “Add Central Node”. This will open another window with two options.

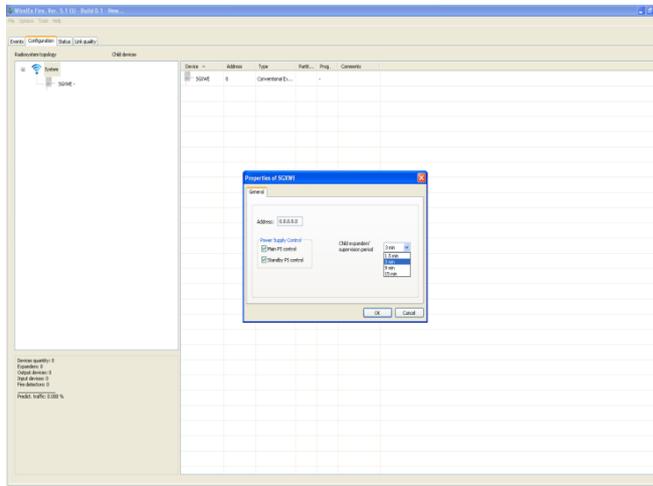


If the system being built / programmed is on to a supported protocol FCP, select **“RSM-WTM”**(the Translator Module acronym)(see left hand figure below). If the system being built is on to a non-supported protocol analogue FCP or on to a Conventional FCP, select **“RSM-CIM”** (the Conventional Interface Module acronym) (see right hand figure below):



Press  for the Central Node required and one of the following windows will appear:  
**RSM-WTM** **RSM-CIM**



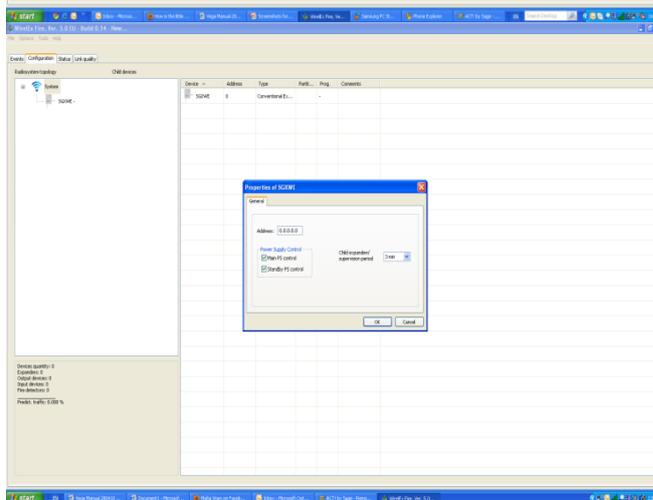
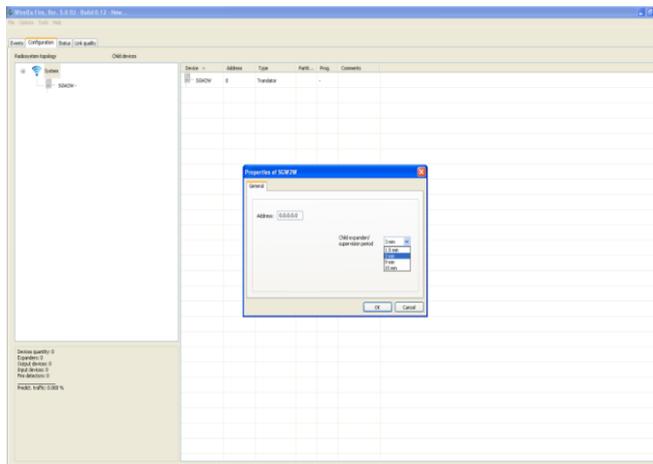


**Note:** The “*Expander Address*” cannot be changed. This is a digital address assigned by the system for future identification within the microcell environment.

The only parameter that may be changed is the “*Child Expanders’ Supervision Period*”.

RSM-WTM

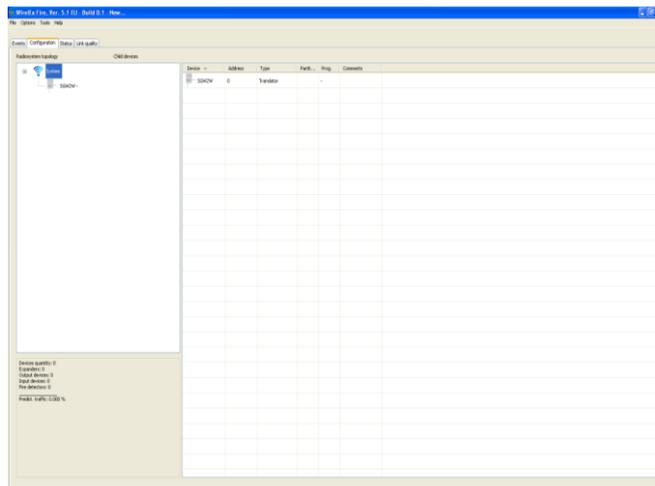
RSM-CIM



If selecting a Conventional Interface Module, care should be taken to ensure that the supporting power supply is monitored. If using an external power supply, the two boxes marked **“Main PS control”** and **“Standby PS control”** should be checked. If the power for the Conventional Interface Module is supplied from its supporting FCP, these boxes are to be unchecked. Once all parameters are as required, press  to confirm the Central Node settings.

Note: Programming devices on to either Central Node is identical. For the purposes of this manual, the example system built uses a Translator Module (RSM-WTM). Where there are variations with the Conventional Interface Module (RSM-CIM), these will be highlighted in the relevant sections

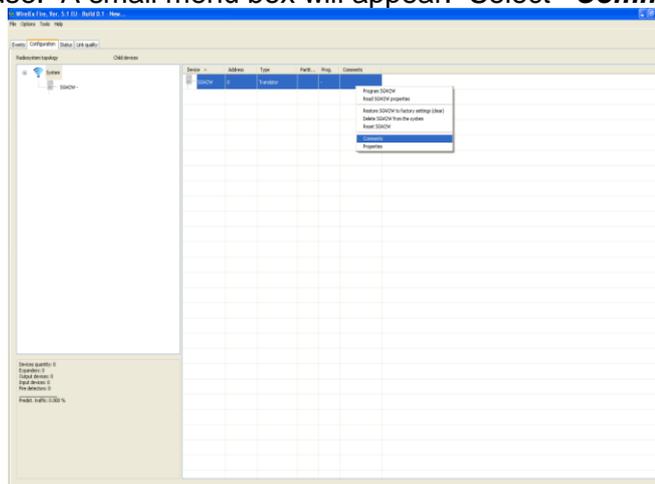
A new Translator Module has now been added to the System configuration and the related icon appears in the Radiosystem topology tree - the associated chart has been updated to reflect the addition of the Translator Module. Under the word **“System”** an icon graphic of the Translator Module will appear.



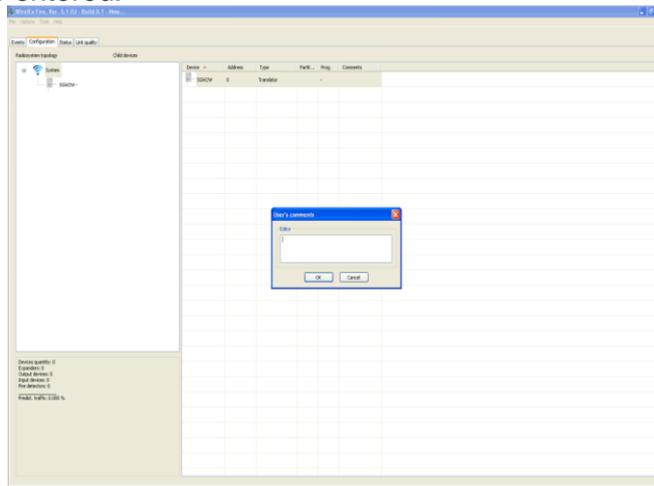
(If building a system employing multiple Central Nodes, it is recommended that each Module be assigned a different operational channel and different system code. There are seven operational channels available).

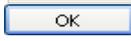
Each Central Node system requires a new Firewave Configurator file – two Central Nodes cannot be added to one file.

To add comments (device location, FCP detection loop address, etc), highlight the Central Node and right click the mouse. A small menu box will appear. Select **“Comments”**



A **“User’s Comments”** box will now appear (shown below). A maximum of 31 alphanumeric characters can now be entered.



On completion press  to return to the main window.

(Tip: An alternative quicker method is to double click the mouse in the associated field device Comments box – this will present the user with the above window)

(Tip: Put the full/abbreviated location in here and if possible the FCP detection loop address, e.g. Grd Flr Office L1 D22. This is useful when transferring the information to the FCP Configuration Tool or if entering the information direct at the FCP)

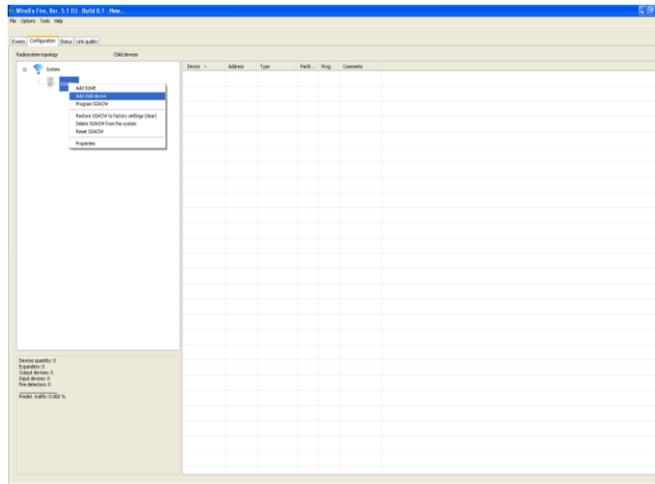
**NOTE: The comments that are entered above are only stored in the software configuration on the computer – they are not transferred to the Translator Module when a “Program RSM-WTM” is performed. The Comments information is not transferred to the associated FCP.**

## 20.4 Adding Field (Child) Devices to the Central Node

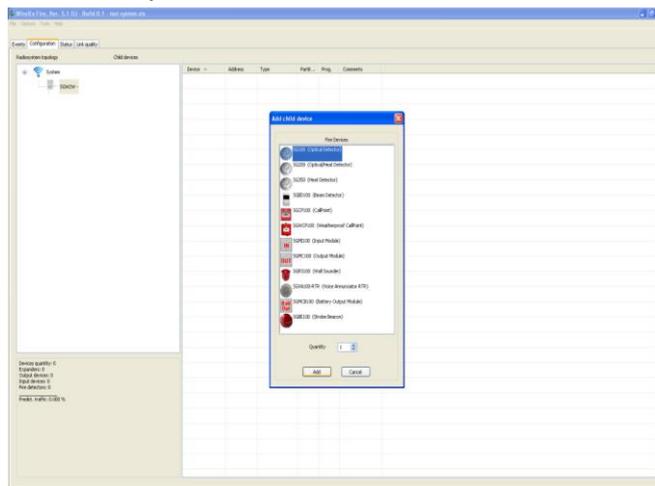
This section details adding a child device of each type to the Central Node. As each device is added to the Central Node, the device parameters that can be amended are detailed and explained.

## 20.5 Adding an Optical Smoke Detector

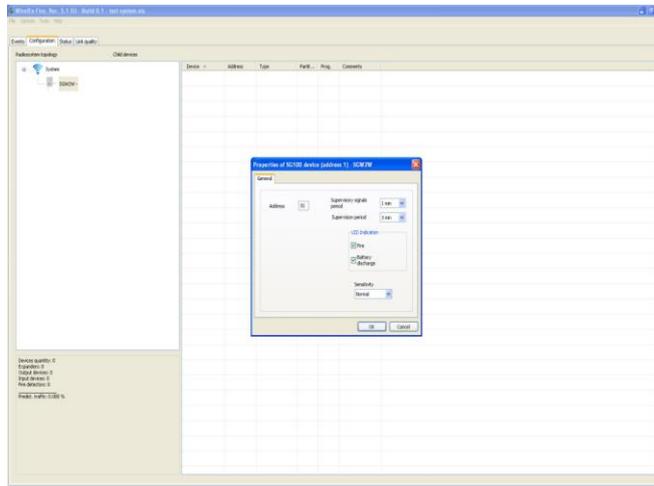
To add an Optical Smoke Detector to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**



A window with the list of selectable child devices now appears. Select the device and quantity required; press **Add** on completion.



A window will appear allowing the engineer to amend the device operating parameters. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected, in that instance, will have the same operational parameters.



The sensitivity of the smoke channel can be amended from its default of *“Normal”* to *“High”* or *“Low”*.

Un-checking the *“LED Indication”* boxes – *“Fire”* and *“Battery discharge”* – will stop the device LED indicating if there is a fire activation or when the batteries reach a discharge state. The default for these indications is to remain checked and it is recommended that these two indications are left in the default state.

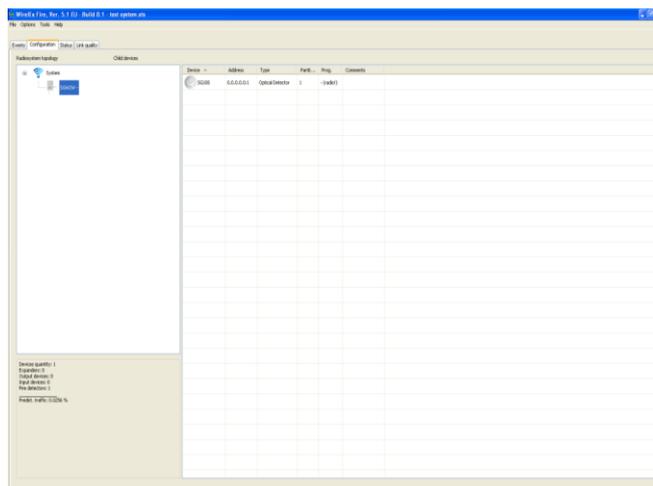
The *“Supervisory Signal period”* should be left at the default value of 1 minute.

The *“Supervision period”* would normally be left unchanged. This can be changed from the default *“3 mins”* by changing the level in the *“Supervision period”* window.

On completion of parameter/process changing press .

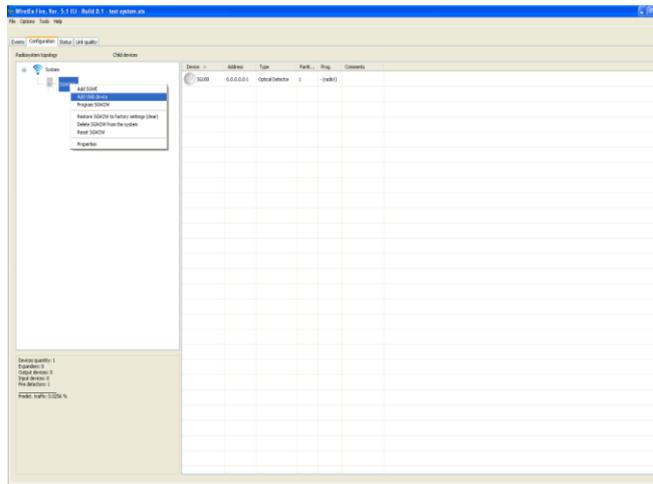
The window will close and the user will be directed back to the *“Configuration”* tab for adding further devices (if required). The *“Configuration”* window will now be updated to reflect the addition of an Optical Smoke Detector. The device will show the following information in the columns:

- Device:** Shows device type icon and abbreviated ID
- Address:** Indicates digital address NOT the analogue loop address
- Type:** Indicates the device type
- Partition:** This will always be 1 – all fire devices learn in to Partition 1
- Prog:** This will initially show *“-(radio!)”* indicating that the device should be programmed
- Comments:** Allows the user to insert up to 31 alphanumeric

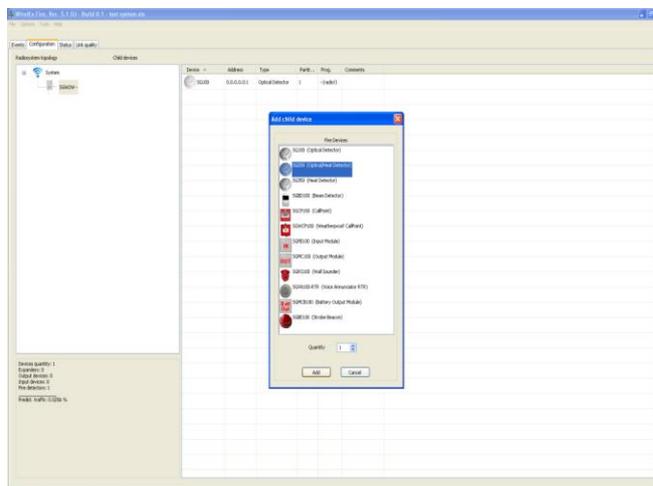


## 20.6 Adding a Multicriteria Detector

To add a Multi-Criteria Detector to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**

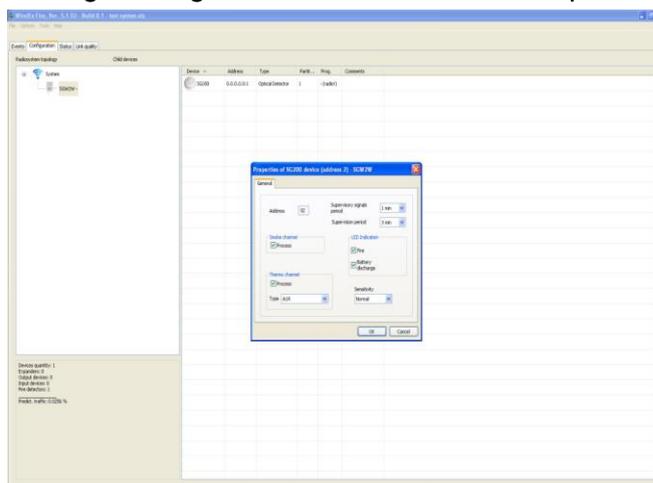


A window with the list of selectable child devices now appears.



Select the device and quantity required; press **Add** on completion. If the device quantity is > 1, only the first device address will appear in the parameter window below but all devices of the type selected will have the same operational parameters.

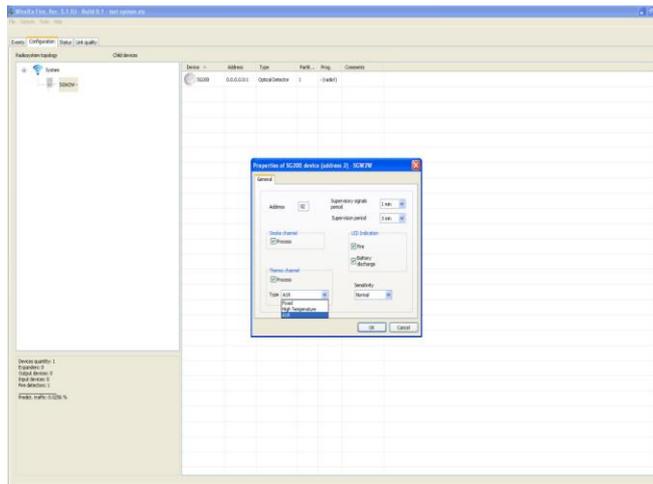
A window will appear allowing the engineer to amend the device operating parameters.



**The default mode of operation for the Multi-Criteria Detector is “A1R”.**



This can be changed to **“Fixed”** or **“High Temperature”** by changing the **“Thermo channel Type”**. The sensitivity of the smoke channel can be amended from its default of **“Normal”** to **“High”** or **“Low”**.



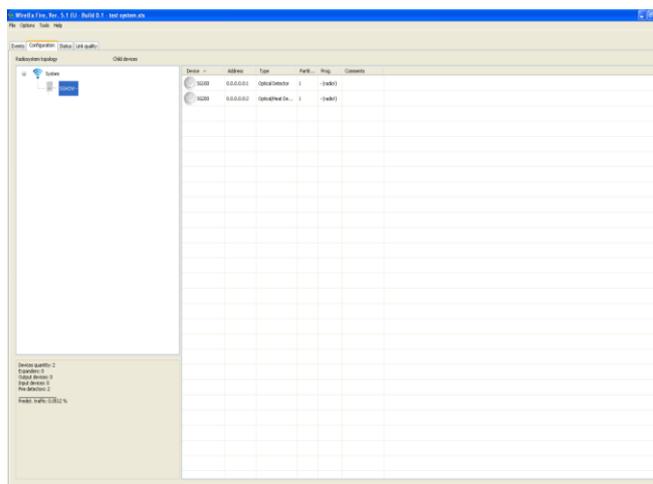
Un-checking the **“LED Indication”** boxes – **“Fire”** and **“Battery discharge”** – will disable the device LED from flashing if there is a fire activation or when the batteries reach a discharge state. The default for these indications is to remain checked and it is recommended that these two indications are left in the default state.

The **“Supervisory Signal period”** should be left at the default value of 1 minute.

The **“Supervision period”** would normally be left unchanged. This can be changed from the default **“3 mins”** by changing the level in the **“Supervision period”** window.

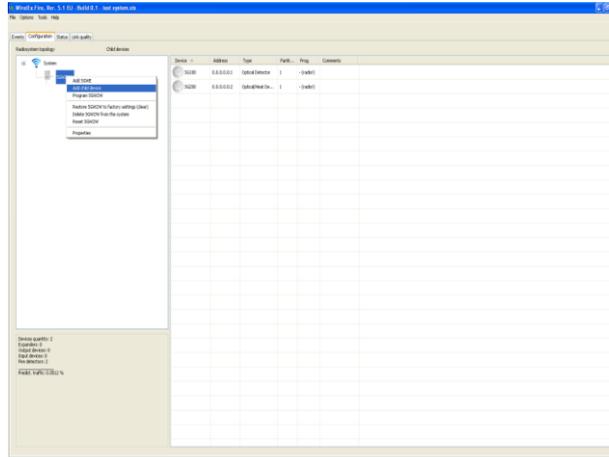
On completion of parameter/process changing press .

The window will close and the user will be directed back to the **“Configuration”** tab for adding further devices (if required). The **“Configuration”** window will now be updated to reflect the addition of a Multi-Criteria Detector.

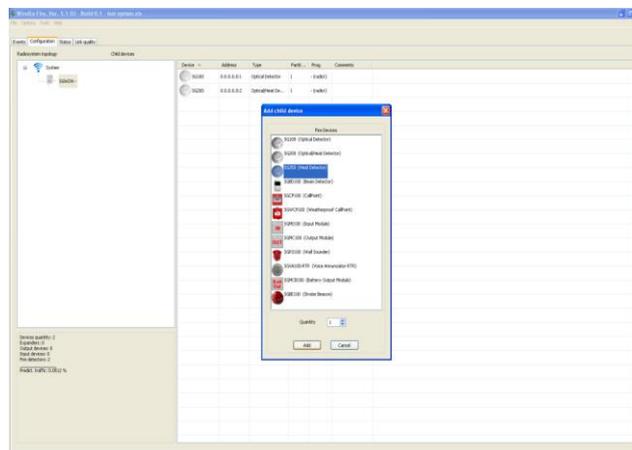


## 20.7 Adding a Thermal Detector

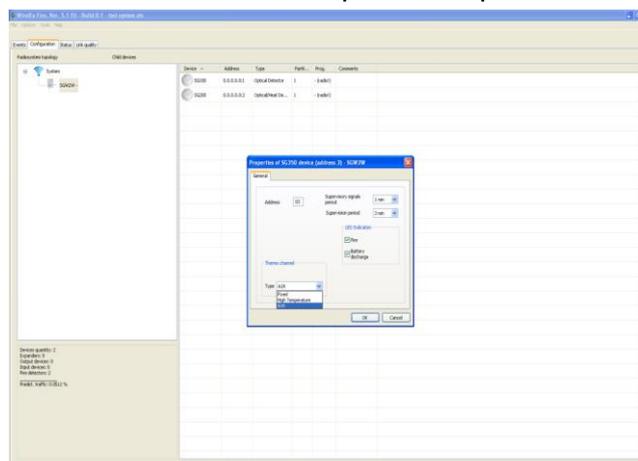
To add a Thermal Detector to the Central Node, right click the mouse over the Central Node icon selecting: **“Add child device”**



A window with the list of selectable child devices now appears. Select Thermal Detector and quantity required; press **Add** on completion.



A window will appear allowing the engineer to amend the device operating parameters. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters.

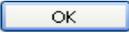


The default mode of operation for the Thermal Detector is “A1R”. This can be changed to “Fixed” or “High Temperature” by changing the “Thermo channel Type”.

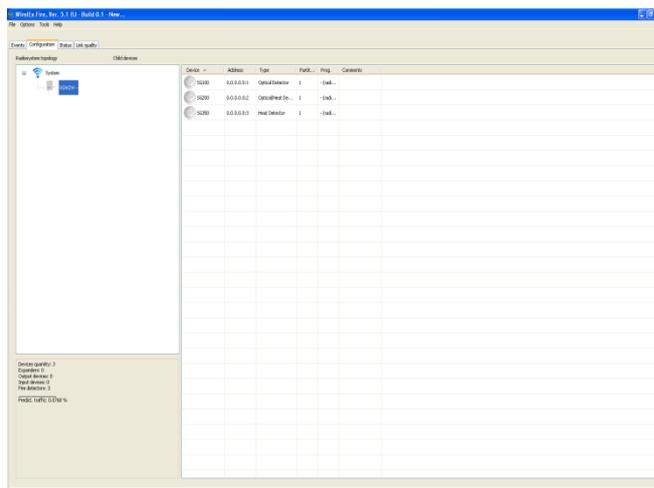
Un-checking the “LED Indication” boxes – “Fire” and “Battery discharge” – will disable the device LED if there is a fire activation or when the batteries reach a discharge state. The default for these indications is to remain checked and it is recommended that these two indications are left in the default state.

The “Supervisory Signal period” should be left at the default value of 1 minute.

The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.

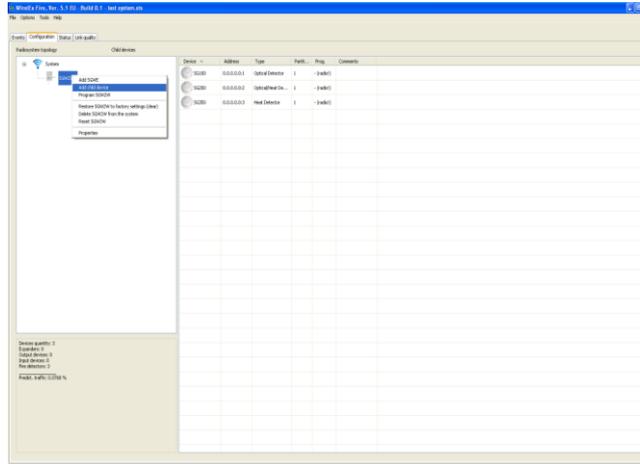
On completion of parameter / process changing press .

The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required). The “Configuration” window will now be updated to reflect the addition of a Thermal Detector.

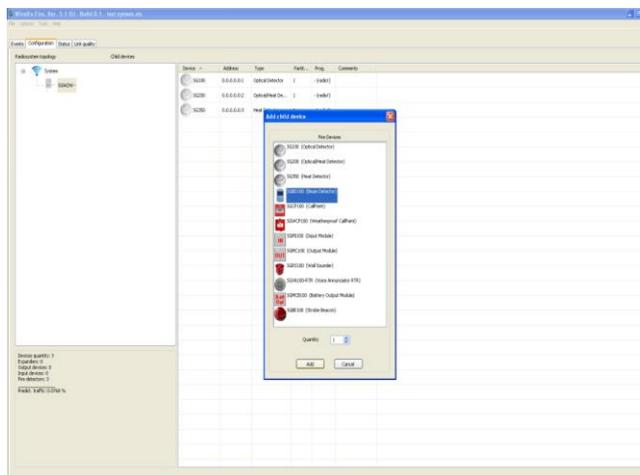


## 20.8 Adding a Beam Detector

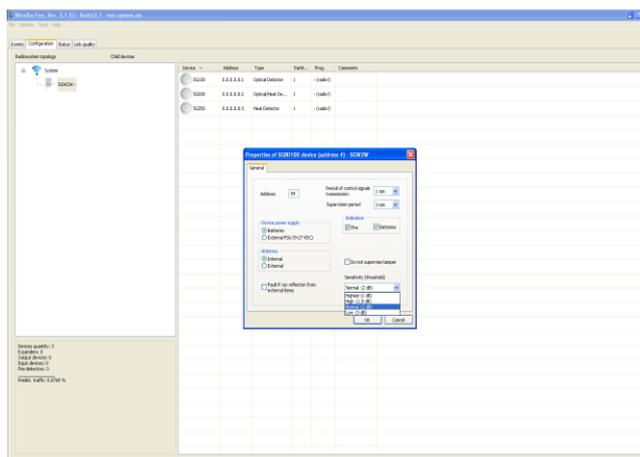
To add a Beam Detector to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**



A window with the list of selectable child devices now appears.



Select Beam Detector and quantity required; press **Add** on completion. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters. A window will appear with the device parameters



**Un-checking the “LED Indication” boxes – “Fire” and “Battery discharge” – will disable the device LED if there is a fire activation or when the batteries reach a discharge state. The default for these indications is to remain checked and it is recommended that these two indications are left in the default state.**

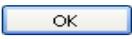
**The “Supervisory Signal period” should be left at the default value of 1 minute.**

**The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.**

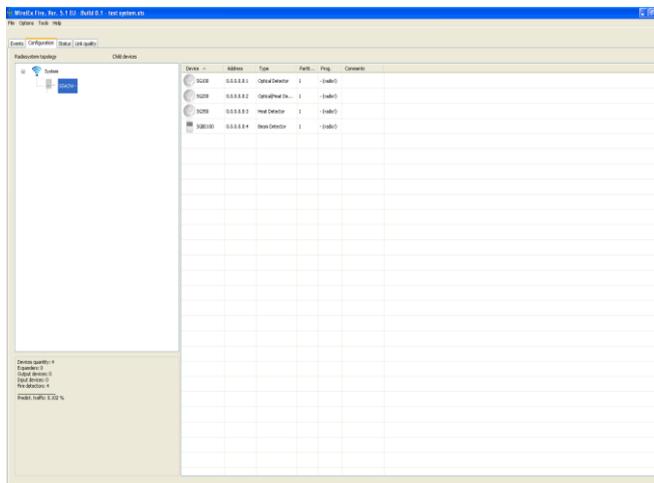
Device Power Supply: Select from internal batteries (4 x CR123A) or from an external 9 – 27Vdc. If using an external PSU care should be taken to ensure the PSU is monitored correctly in accordance with EN54 requirements.

Fault if ray reflection from external items: If this is checked, the Beam Detector will indicate a fault if the beam is deflected from its reflector sheet by an alien object, e.g. a decorative mobile, light fitting, etc.

Sensitivity (threshold): The sensitivity of the Beam can be altered from its default setting to be more or less sensitive depending on the requirements of the installation.

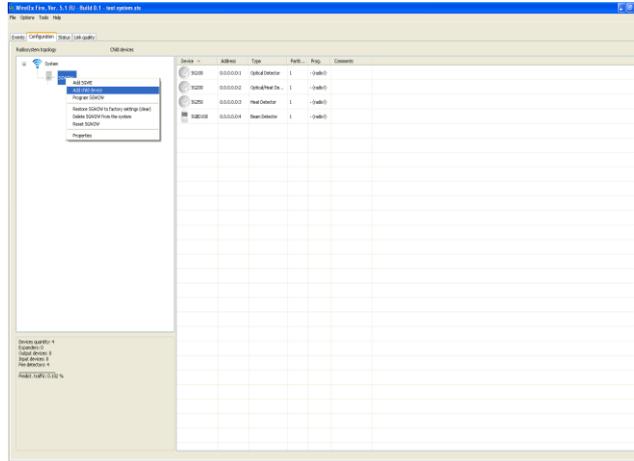
On completion of changing the Beam Detector operational parameters, press .

The parameter window will close and the “Configuration” tab will be updated to include a Beam Detector:

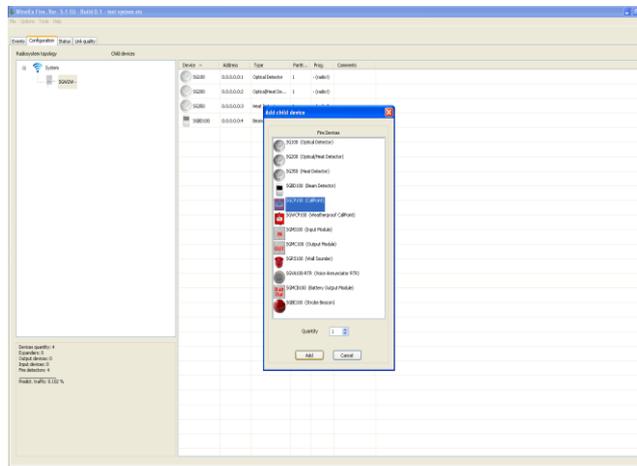


## 20.9 Adding a Manual Call Point

To add a Manual Call Point to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**

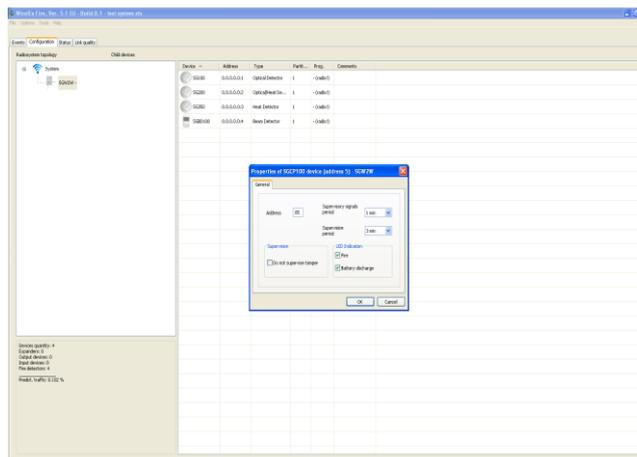


A window with the list of selectable child devices now appears.



Select Manual Call Point and quantity required; press **Add** on completion. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters.

A window will appear allowing the engineer to amend the device operating parameters.



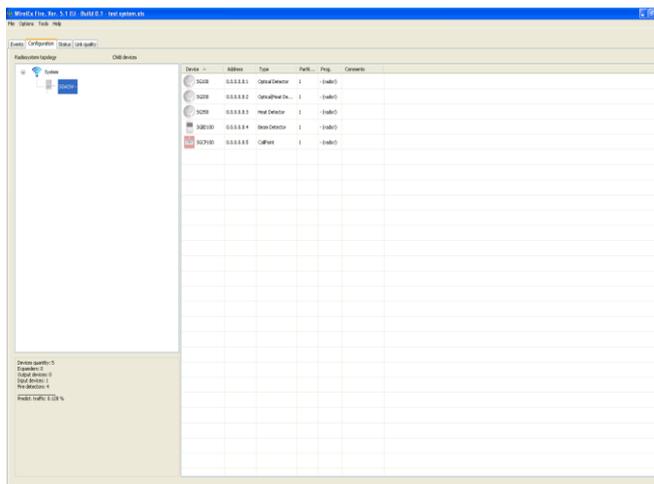
Un-checking the “LED Indication” boxes – “Fire” and “Battery discharge” – will stop the device LED indicating if there is a fire activation or when the batteries reach a discharge state. The default for these indications is to remain checked and it is recommended that these two indications are left in the default state.

The “Supervisory Signal period” should be left at the default value of 1 minute.

The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.

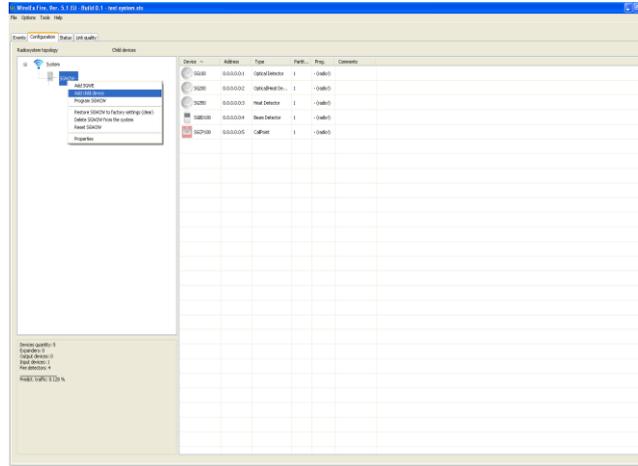
On completion of parameter/process changing press .

The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required). The “Configuration” will be updated to include a wireless Manual Call Point

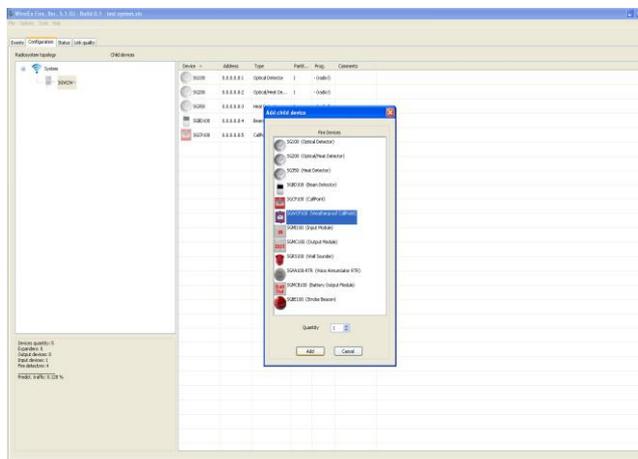


## 20.10 Adding a Waterproof (IP RATED) Manual Call Point

To add a Waterproof Manual Call Point to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**

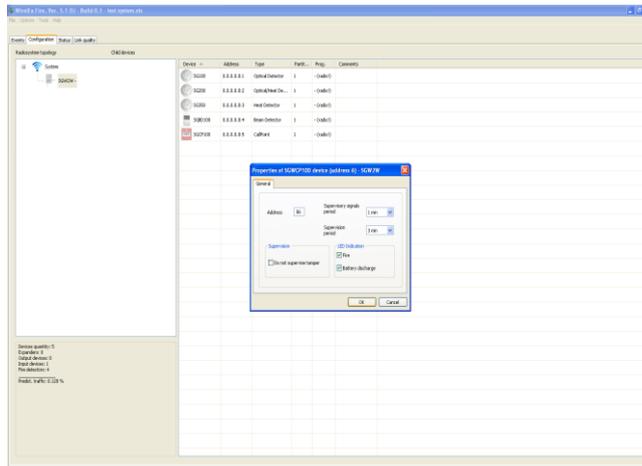


A window with the list of selectable child devices now appears.



Select **“Weatherproof Manual Call Point”** and quantity required; press **Add** on completion. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters.

A window will appear allowing the engineer to amend the device operating parameters:



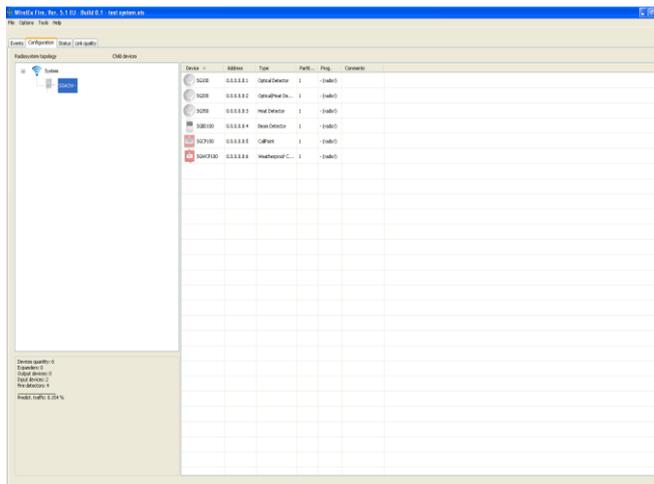
Un-checking the “LED Indication” boxes – “Fire” and “Battery discharge” – will stop the device LED indicating if there is a fire activation or when the batteries reach a discharge state. The default for these indications is to remain checked and it is recommended that these two indications are left in the default state.

The “Supervisory Signal period” should be left at the default value of 1 minute.

The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.

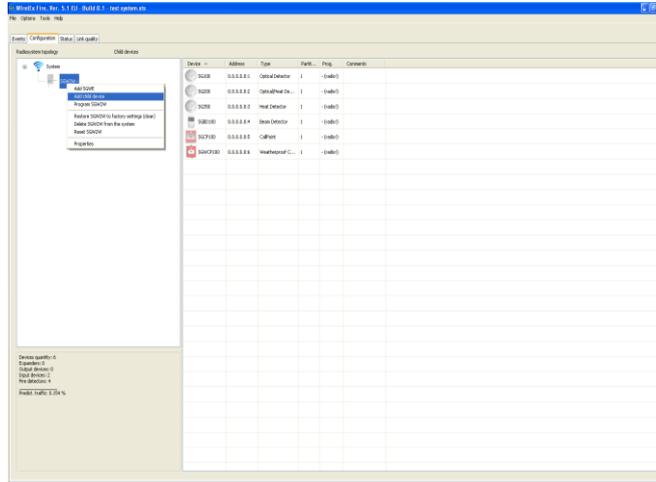
On completion of parameter / process changing press .

The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required). The “Configuration” will be updated to include a Waterproof Manual Call Point

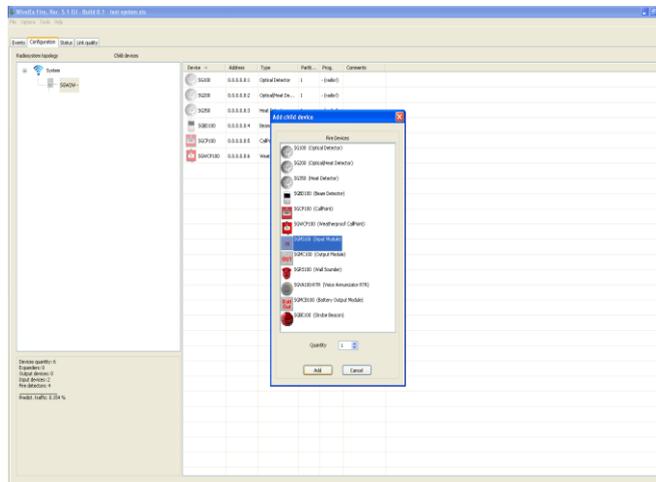


## 20.11 Adding a Wireless Input Module

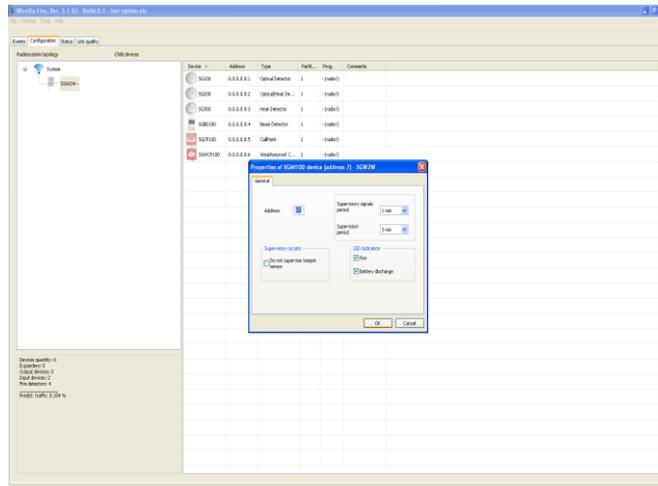
To add a Wireless Input Module to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**



A window with the list of selectable child devices now appears:



Select **“Input Module”** and quantity required; press **Add** on completion. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters. A window will appear allowing the engineer to amend the device operating parameters.



The wireless Input Module has a tamper spring mounted on the device PCB. If the device cover is removed, a fault will be reported at the Central Node and ultimately back at the FCP. If there is a requirement to NOT monitor a tamper fault, the check box next to “Do not supervise tamper sensor” should be checked. The default for this process is for the check box to be un-checked

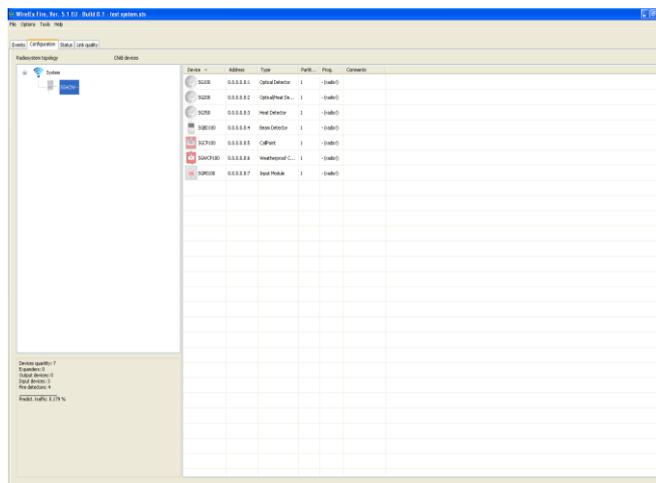
Un-checking the “LED Indication” boxes – “Fire” and “Battery discharge” – will stop the device LED indicating if there is a fire activation or when the batteries reach a discharge state. The default for these indications is to remain checked and it is recommended that these two indications are left in the default state.

The “Supervisory Signal period” should be left at the default value of 1 minute.

The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.

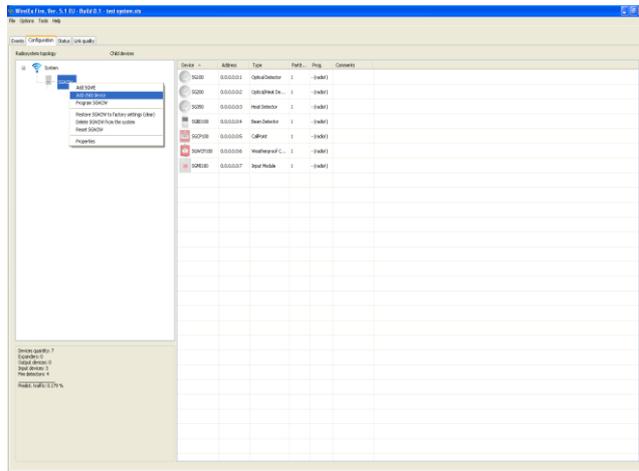
On completion of parameter/process changing press .

The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required).

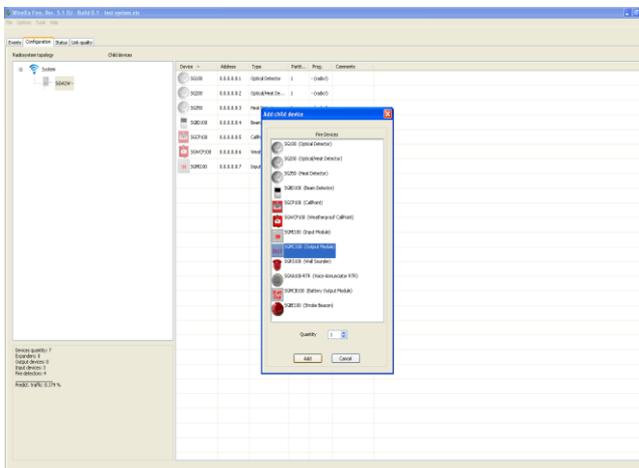


## 20.12 Adding a Mains Powered Output Module

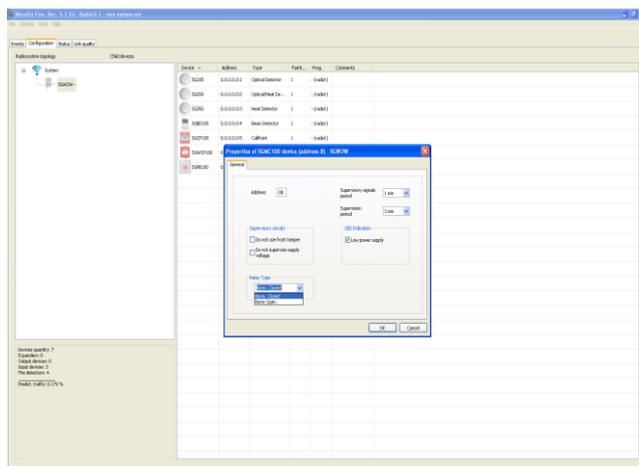
To add a Wireless Mains Powered Output Module to the Translator Module, right click the mouse over the Translator Module icon selecting **“Add child device”**



A window with the list of selectable child devices now appears. Select **“SGMC (Output Module)”** and quantity required; press **Add** on completion.



If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters. A window will appear allowing the engineer to amend the device operating parameters.



The wireless Mains Powered Output Module has a tamper spring mounted on the device PCB. If the device cover is removed, a fault will be reported back at the Translator Module and ultimately back at the FCP. If there is a requirement to NOT monitor a tamper fault, the check box next to “Do not use front tamper” should be checked. The default for this process is for the check box to be un-checked.

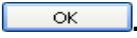
Similarly, if the power supply voltage is NOT monitored, the box next to “Do not supervise supply voltage” should be checked. The default for this process is for the check box to be un-checked.

Un-checking the “LED Indication” box – “Low Power Supply” – will stop the device LED indicating if there is a problem with its associated power supply. The default for this indication is to remain checked and it is recommended that this indication be left in the default state.

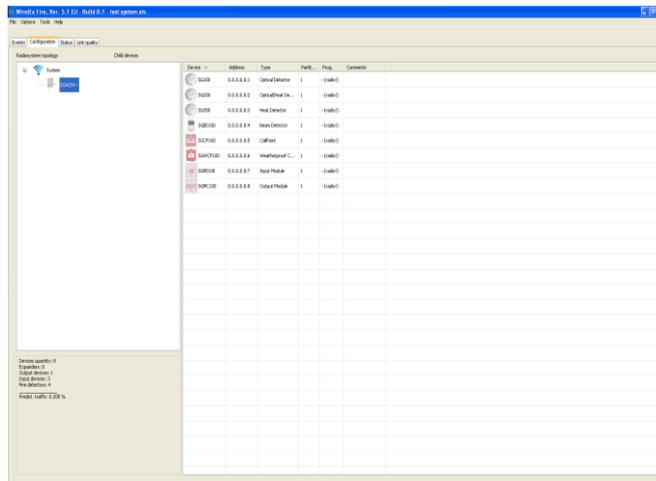
The “Supervisory Signal period” should be left at the default value of 1 minute.

The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.

The “Relay type” can be changed from “Normally Closed” to “Normally Open” depending on the requirement of the installation. The default for this process is “Normally Closed”.

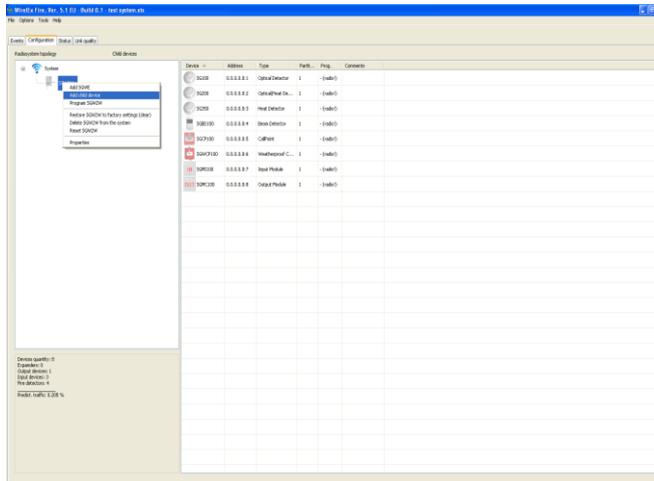
On completion of parameter/process changing press .

The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required).

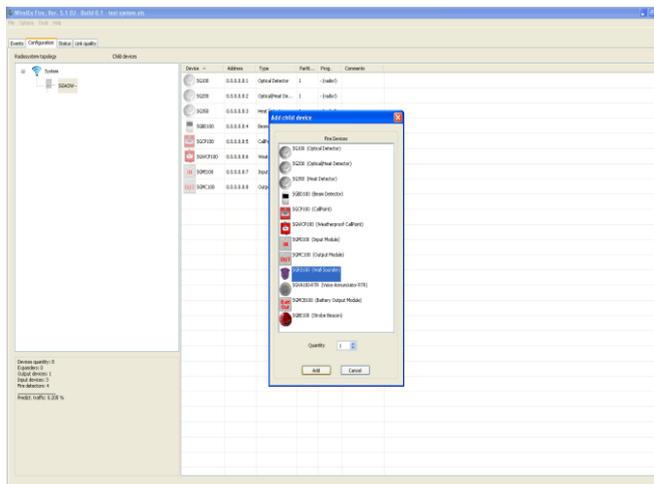


## 20.13 Adding a Wall Sounder/Sounder Beacon/Base Sounder/Base Sounder Beacon

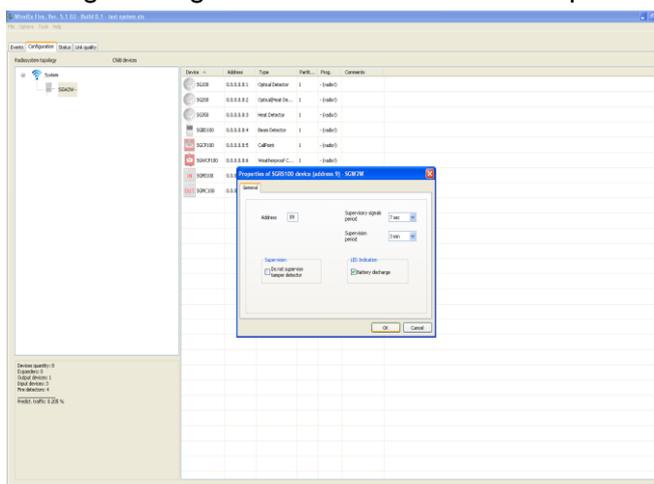
To add a Wireless Sounder / Sounder Beacon / Base Sounder / Base Sounder Beacon to the Central Node, right click the mouse over the Central Node icon selecting: **“Add child device”**



A window with the list of selectable child devices now appears. Select **“Sirena-R (Sounder)”** and quantity required; press **Add** on completion.



A window will appear allowing the engineer to amend the device operating parameters:



**Un-checking the “LED Indication” box – “Battery discharge” – will stop the device LED indicating if the batteries reach a discharge state. The default for this indication is to remain checked and it is recommended that this indication be left in the default state.**

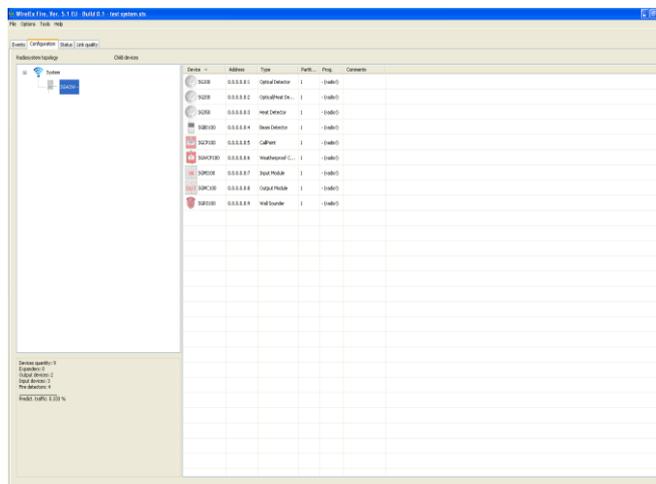
**The wireless Sounder / Sounder Beacon has a tamper spring mounted on the device. If the device is removed from its base, an indication is sent to the associated Central Node and ultimately to the FCP. If there is a requirement to NOT monitor this process, the check box “Do not supervise tamper detector”, should be checked. The default for this process is for the check box to be un-checked.**

**The “Supervisory Signal period” should be left at the default value of 7 seconds. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters.**

**The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.**

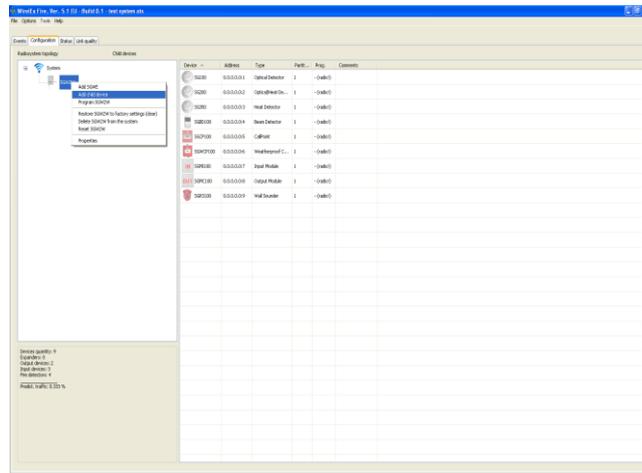
**On completion of parameter/process changing press . The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required).**

The above procedure should be followed if adding a wireless Base Sounder / Base Sounder Beacon or Wall Sounder Beacon.

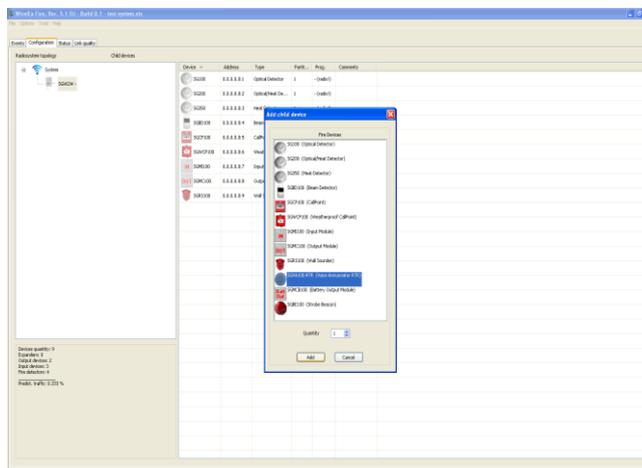


## 20.14 Adding a Voice Sounder/Annunciator

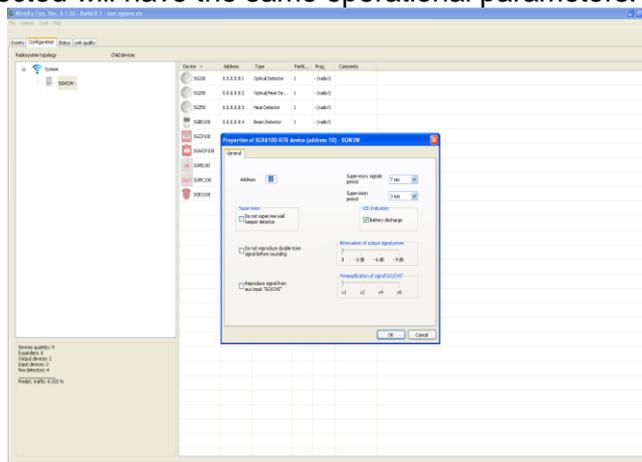
To add a Wireless Voice Sounder to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**



A window with the list of selectable child devices now appears. Select **“(Voice Annunciator RTR)”** and quantity required; press **Add** on completion.



A window will appear allowing the engineer to amend the device operating parameters. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters.



**Un-checking the “LED Indication” box – “Battery discharge” – will stop the device LED indicating if the batteries reach a discharge state. The default for this indication is to remain checked and it is recommended that this indication be left in the default state. The “Supervisory Signal period” should be left at the default value of 7 seconds.**

**The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.**

**The wireless Voice Sounder has a tamper spring mounted on the base of the device that will activate if the device is moved from its installed position. If the device is moved, an indication is sent to the associated Central Node and ultimately to the FCP. If there is a requirement to NOT monitor this process, the check box “Do not supervise wall tamper detector” should be checked. The default state for this process is that the box is unchecked. It is recommended that this process be left in the default state.**

**When the Voice Sounder is activated, prior to transmitting the voice message, a two-tone signal is emitted. This can be disabled so that only the voice message is produced. This disablement is carried out by checking the box marked “Do not reproduce double-tone signal before sounding”. The default state for this process is that the box is unchecked.**

**The nominal output signal power of the Voice Sounder is 0.75W. This signal level can be attenuated by a factor -3dB, -6dB or -9dB. This is changed by moving the slider on the box marked “Attenuation of output signal power”**

**It is possible to connect an auxiliary (external) input to the Voice Sounder using the termination block located on the Voice Sounder PCB.**

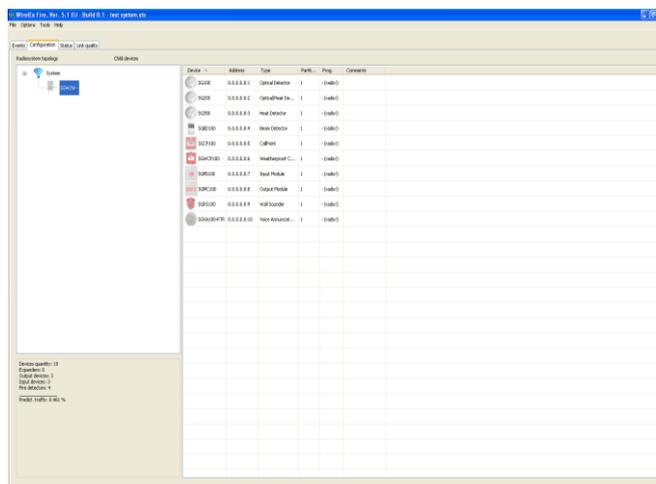
Termination Block for connecting an External Input on to the Voice Sounder



The external input can be used to activate real-time voice messages. To enable this process, the check box marked “**Reproduce signal from aux. input “GO/CHS”**” must be checked. The default state for this process is that the box is unchecked.

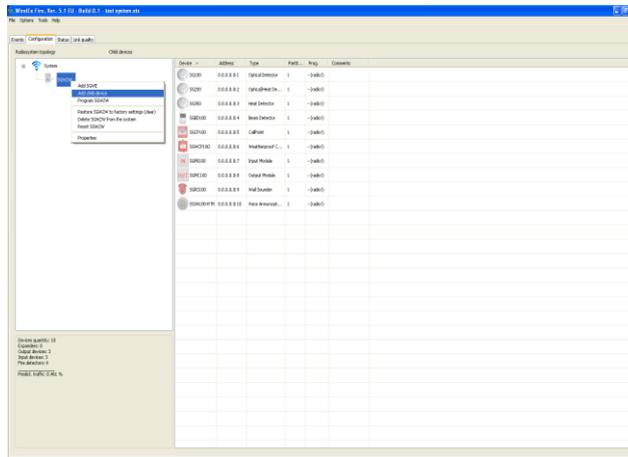
The auxiliary input audio level can be changed by moving the slider on the box marked “**Pre-amplification of signal “GO/CHS”**”. On completion of parameter/process changing press .

The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required).

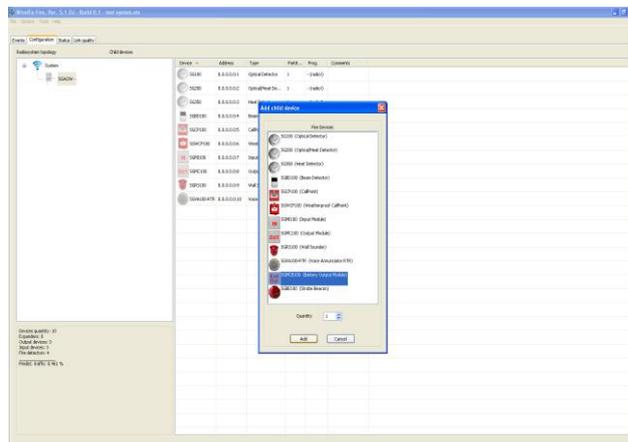


## 20.15 Adding a Battery Powered Output Module/Remote Indicator

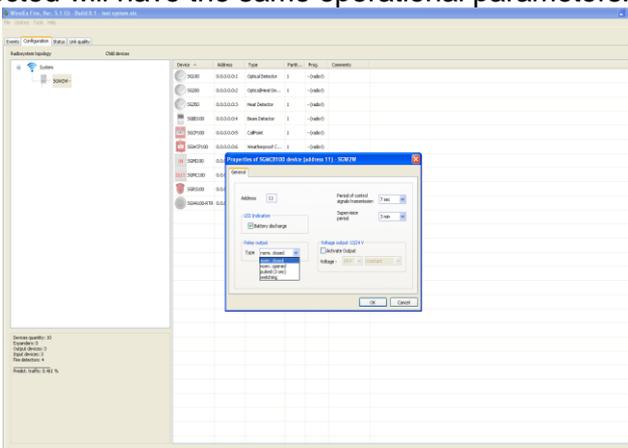
To add a Battery Powered Output Module or Remote Indicator ( both devices learn on with the same product code) to the Translator Module, right click the mouse over the Translator Module icon selecting **“Add child device”**



A window with the list of selectable child devices now appears. Select **“SGMCB100 (Battery Output Module)”** and quantity required; press **Add** on completion.



A window will appear allowing the engineer to amend the device operating parameters. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters.



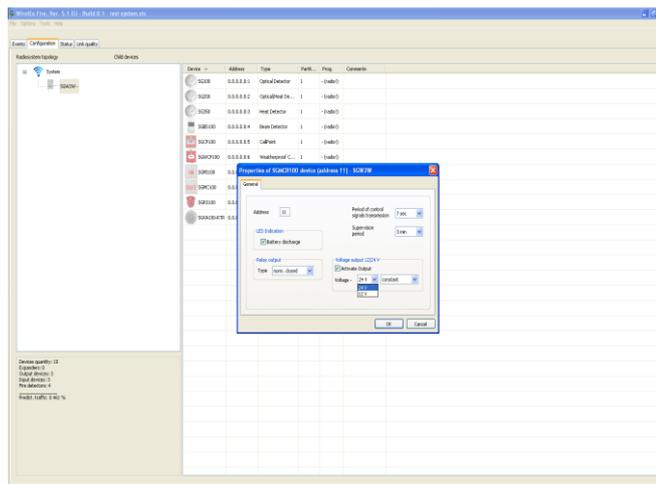
**Un-checking the “LED Indication” box – “Battery discharge” - will stop the device LED indicating if the batteries reach a discharge state. The default for this indication is to remain checked and it is recommended that this indication be left in the default state. The “Period of control signals transmission” should be left at the default value of 7 seconds. The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.**

The **“External fault input”** is, by default checked. This will monitor a fault from an external source. In this application this process is not used and should be left disabled.

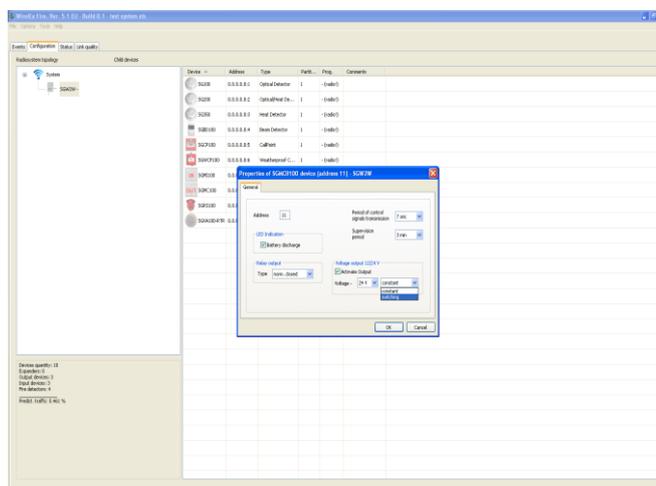
The relay output of the Module can be changed to one of four variants depending on the site application. This is altered by changing the parameter in the **“Relay output”** window.

There is a stand-alone voltage output providing the installer with an option of 12V or 24V. The required output can be chosen by selecting 12V or 24V at the window.

Note: If adding a wireless Remote Indicator Module, the voltage output must be made active and the 24V output must be selected



The output can be selected as a constant or switching output by changing the mode in the drop down window:

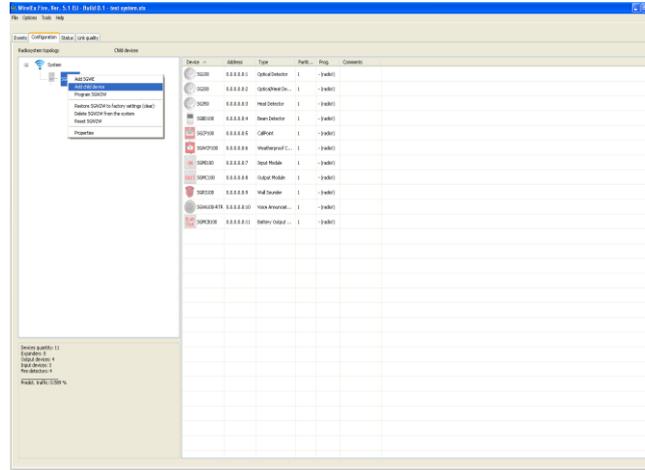


On completion of parameter / process changing press .

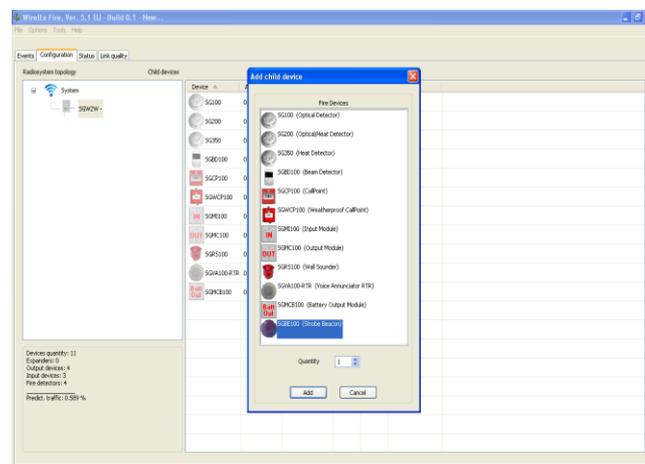


## 20.16 Adding a Beacon

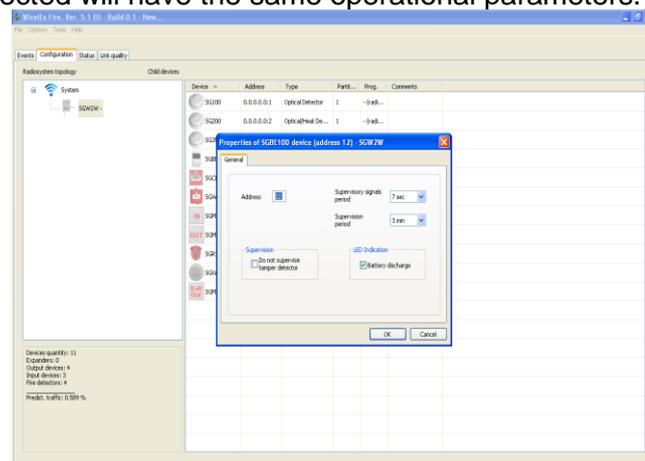
To add a Wireless Beacon to the Central Node, right click the mouse over the Central Node icon selecting **“Add child device”**



A window with the list of selectable child devices now appears. Select **“Beacon”** and quantity required. Press **Add** on completion.



A window will appear allowing the engineer to amend the device operating parameters. If the device quantity is > 1, only the first device address will appear in the parameter window but all devices of the type selected will have the same operational parameters.



The wireless Beacon has a tamper spring mounted on the device that will activate if the device is removed from its base. If the tamper is activated, an indication is sent to the associated Central Node and ultimately to the FCP. If there is a requirement to NOT monitor this process, the check box “Do not supervise tamper detector” should be checked. The default state for this process is that the box is unchecked. It is recommended that this process be left in the default state.

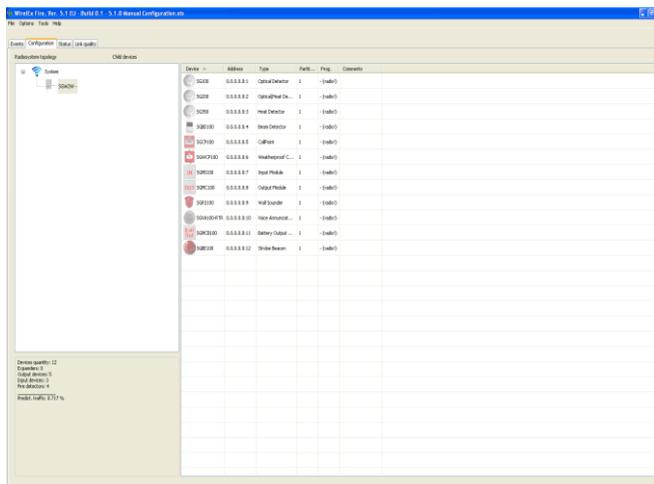
The “Supervisory Signal period” should be left at the default value of 7 seconds.

The “Supervision period” would normally be left unchanged. This can be changed from the default “3 mins” by changing the level in the “Supervision period” window.

Un-checking the “LED Indication” box – “Battery discharge” – will stop the device LED indicating if the batteries reach a discharge state. The default for this indication is to remain checked and it is recommended that this indication be left in the default state.

On completion of parameter / process changing press .

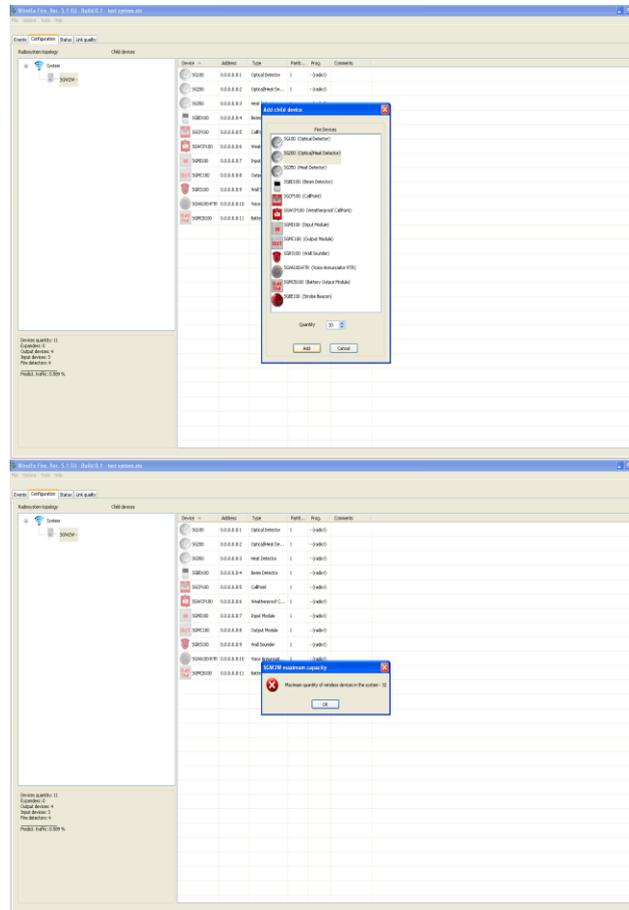
The window will close and the user will be directed back to the “Configuration” tab for adding further devices (if required)



The above configuration displays one type of each child device available in the Firewave wireless product range.

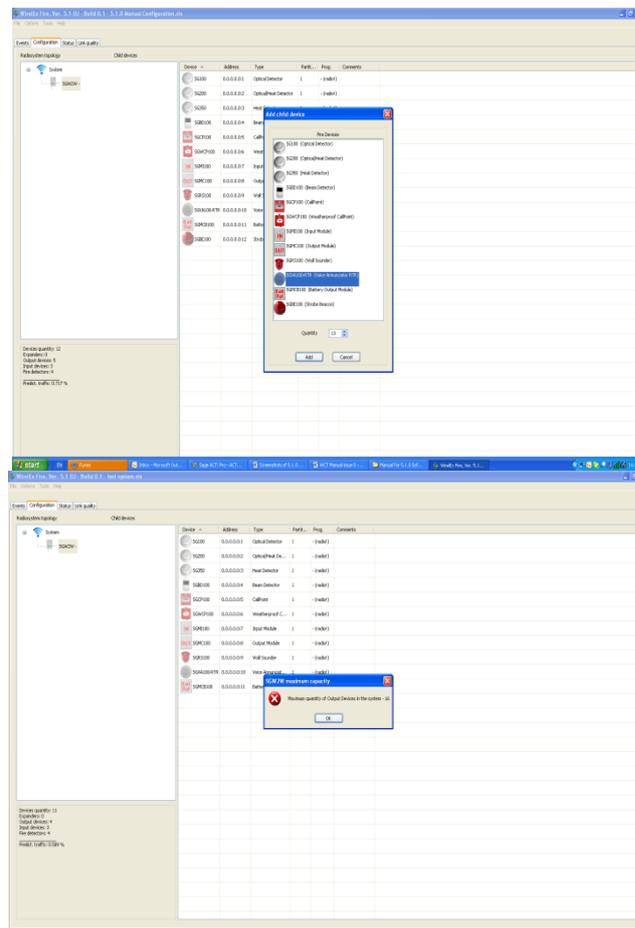
The maximum number of devices that can be added to a system is 32 with a maximum of 16 output devices contained within the 32 devices. If an attempt is made to add more than this number, the software will prevent this happening by displaying one of two warning messages:

1. If >32 Devices are added: The example below indicates that a further 30 devices are required to be added to the Central Node:



The software will allow the number 30 to be entered (above left). When  is selected, a warning message (above right) will appear to warn the installer that this number of devices is not possible –

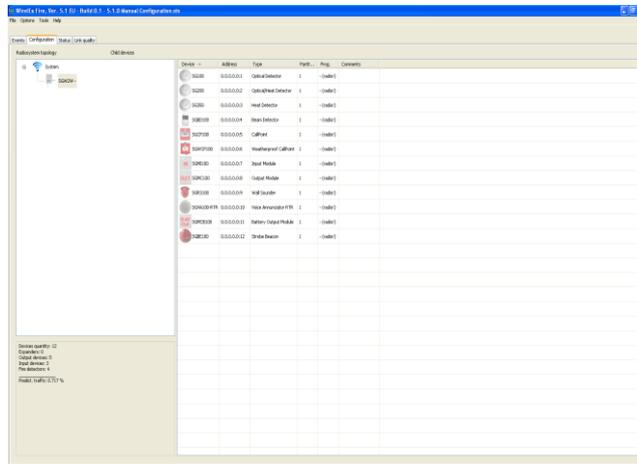
2. If > 16 output devices are to be added. The example below is attempting to add a further 13 Voice Sounders:



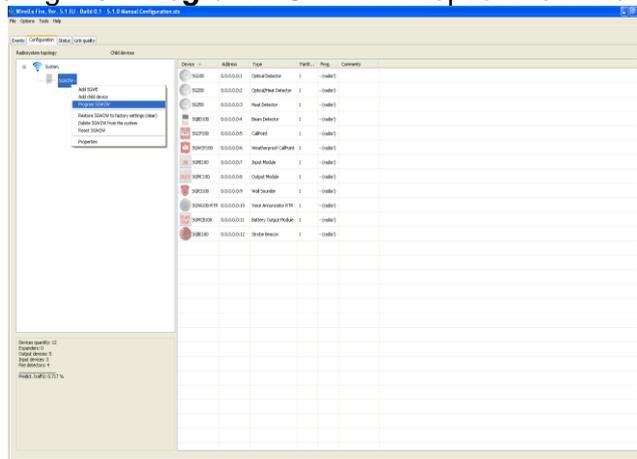
The software will allow 13 to be entered (above left). When  is pressed, a warning message will appear (above right) to warn the installer that this is an invalid action.

# 21 Programming the Central Node and Associated Devices

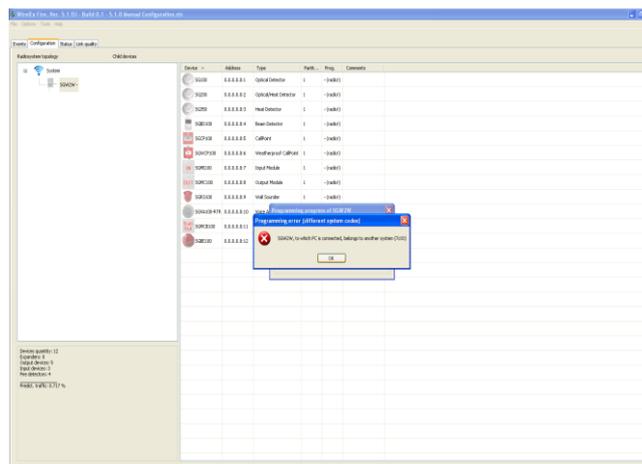
When the system architecture is complete and all child devices have been added the following will be seen at the **“Configuration”** tab:



The Central Node and its associated devices will need to be programmed. Right click over the Central Node icon selecting the **“Program RSM-WTM”** option from the drop down menu:

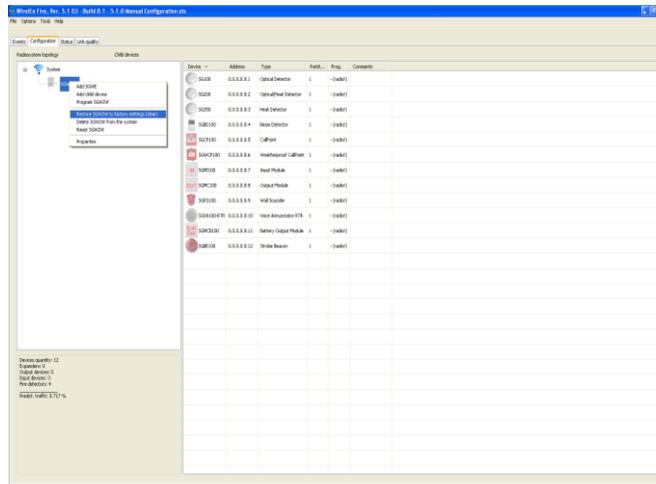


The following window may appear:-

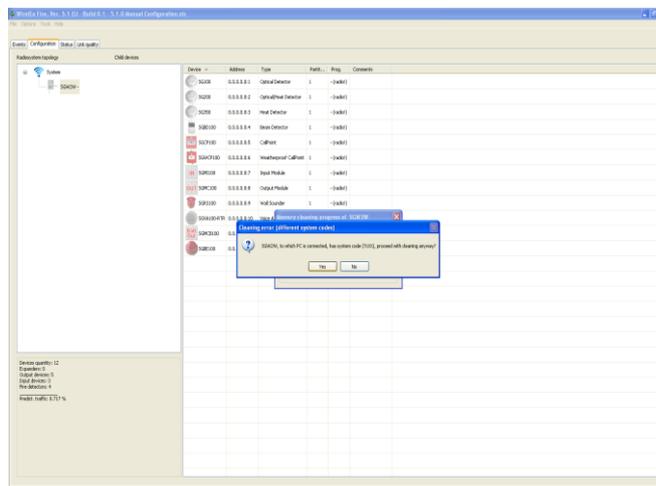


This is quite normal - when the software application is initially opened a new system is virtually built through the software; the software allocates a random system code to this Central Node. The code that is generated by the software will be different to the code generated by the Central Node when it is powered on. This results in a conflict when the PC is finally connected to the Central Node. The solution is as follows:

Right-click the Central Node icon in the *“Radiosystem topology”* area selecting *“Restore RSM-WTM to factory settings(clear)”* option



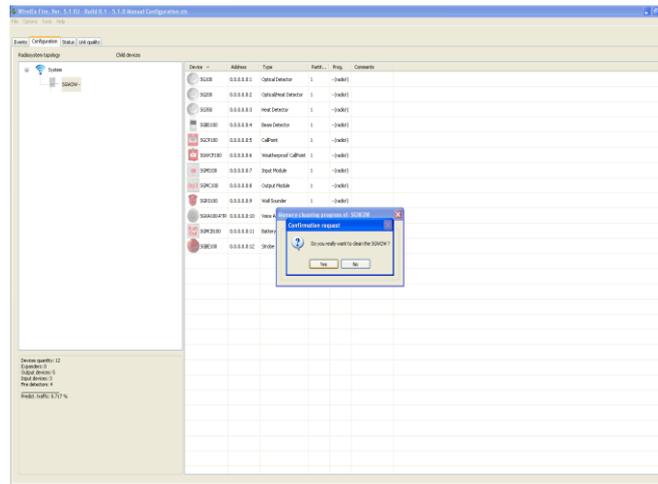
A further sub-window will appear:



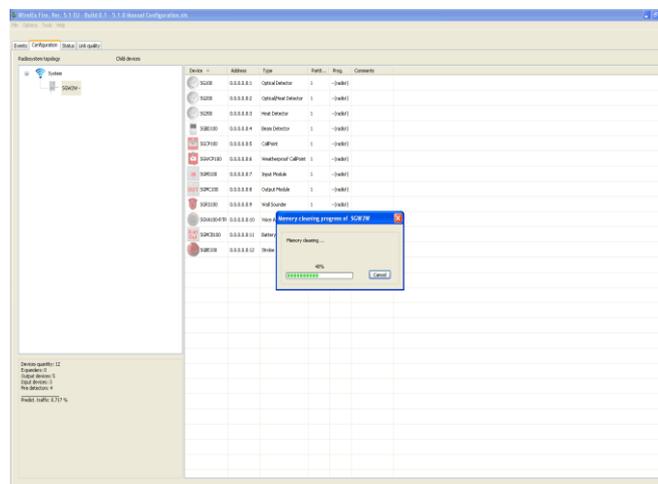
Select



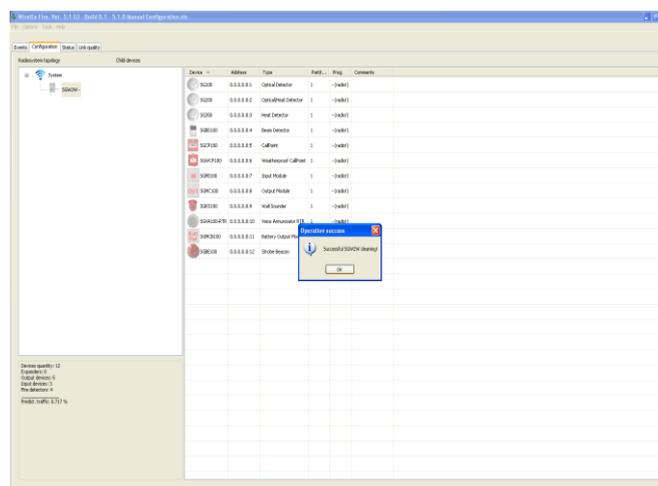
To ensure that the engineer **REALLY** wants to clear the Central Node, a further confirmation sub-window will appear:



Select  and the following sub-window will appear indicating that a cleaning routine is taking place and the Central Node is being reset to factory settings:



On completion of the cleaning process, a further sub-window will appear. This confirms to the engineer that the Central Node is now ready for programming. Press



(The cleaning process ensures that the Central Node and associated Expanders will be ready to

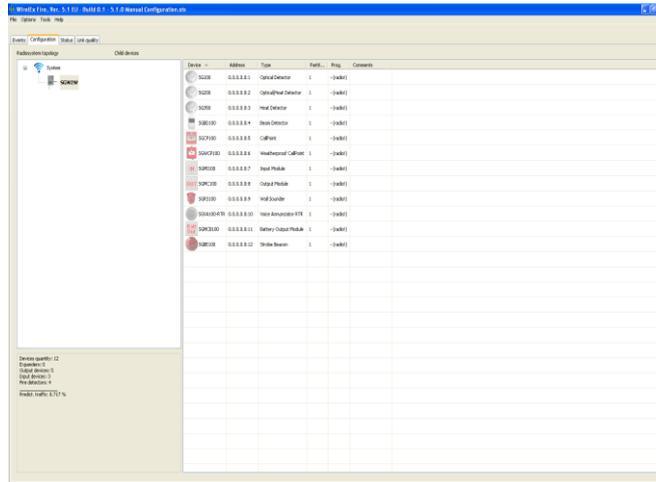


accept the new program that has just been created)





On completion of programming, the Central Node will become **BOLD** in appearance. This indicates that the software application and the radio PCB are synchronised. In the “**Prog.**” column a “+” sign will appear to further indicate that programming is complete:



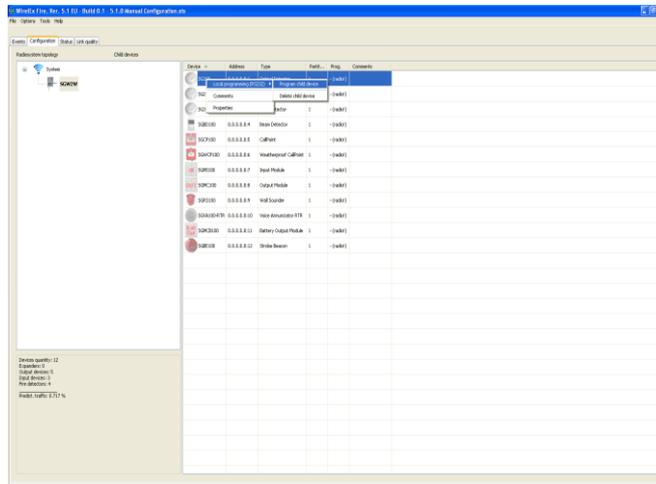
(For info - this indicates that although the Central Node has been programmed, the child devices still need to be programmed). The Central Node needs to be programmed first prior to programming Expanders that have been configured on to the system.

## 22 Programming Childe Devices

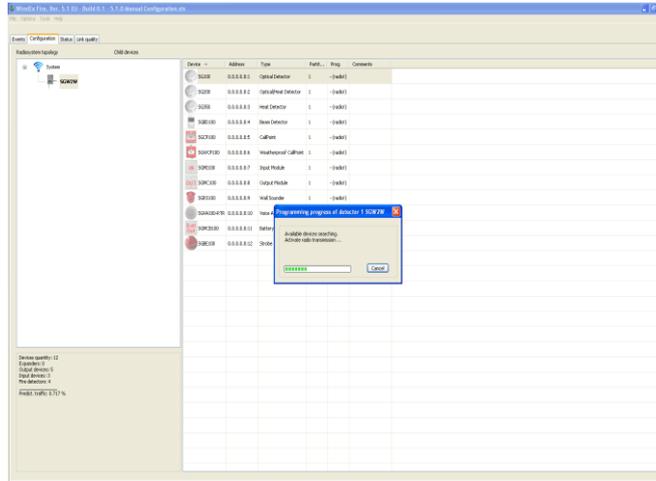
Child devices can only be programmed via its associated radio interface - Central Node or Expander.

With the computer connected to the relevant Central Node, right click the mouse over the first associated child device. Select:

**“Local Programming (RS232) > Program child device”**.



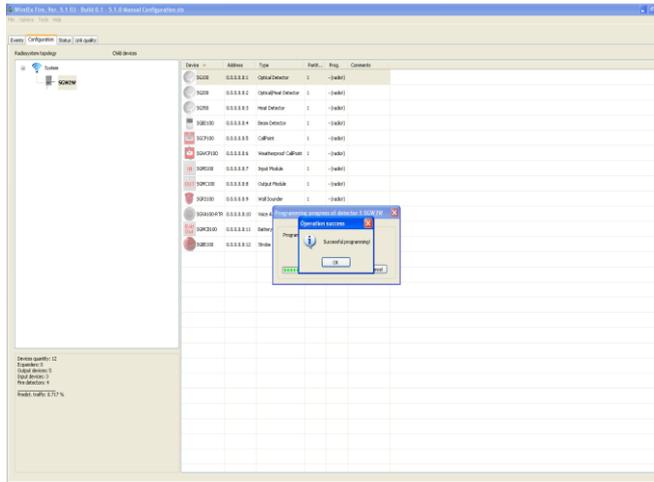
Once selected a sub-window will appear indicating that the Central Node has started the connection process and is searching for the device to be programmed:



Ensure the Secondary Battery (CR2032) is fitted first, while the switch is in the **1** position. Move the programming switch on the back of the device to the **ON** position. Insert the Primary Battery (CR123A) into the device. When the primary battery is installed, the child device LED will flash **RED** four times indicating the device is in programming mode. When the four **RED** flashes have been seen, move the programming switch back to the **1** position. The device LED will now flash **GREEN** twice to indicate initial programming is complete. The device may continue flashing **RED** followed by two **GREEN** flashes prior to extinguishing. This is normal and should not be a cause for concern.

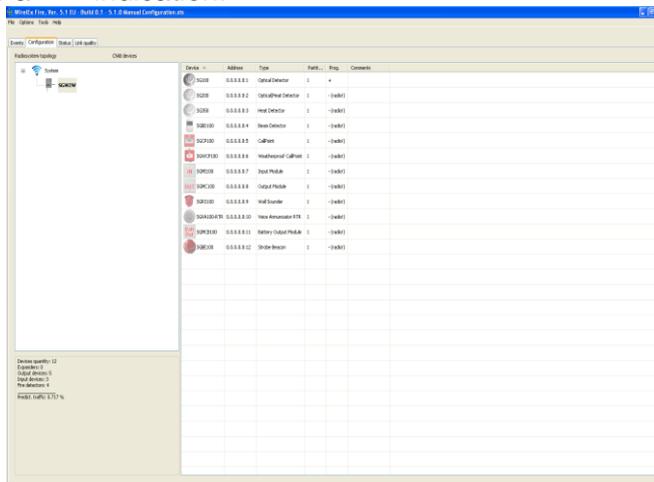


On the Firewave Configurator Configuration Tool, a sub-window will appear indicating programming is complete:



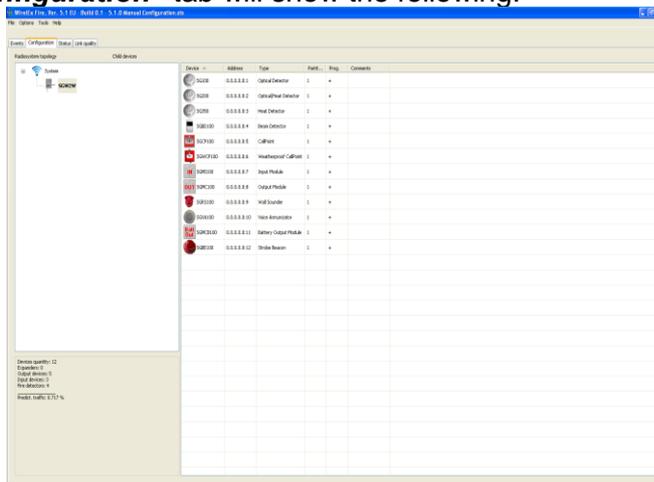
Press

The child device icon will now become bold and the content of the “Prog.” Column will change from showing “-(radio)!” to a “+” indication:



This indicates that the device is now learnt on to the RF Printed Circuit Board (PCB) of the Central Node (this is the rear PCB (secured to the Central Node back-box by three screws) fitted within the Central Node housing) and can now be controlled through the Firewave Configurator software.

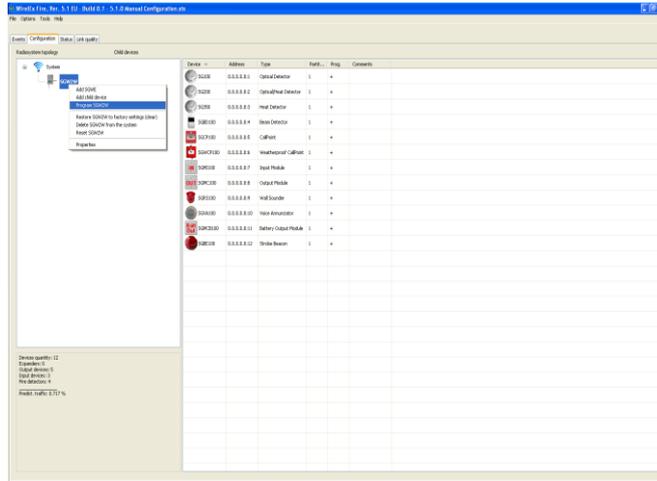
Repeat for the remainder of the child devices on the Central Node. When all devices have been programmed, the “**Configuration**” tab will show the following:



Carry out one final programming of the Central Node by right clicking on the Central Node icon



selecting **“Program RSM-WTM”**:



The next step is to carry out a LOAD command at the Translator Module.

## 22.1 The Load Process

When programming the system using the Firewave Configurator Configuration Tool, all steps/actions carried out to this point are between the Translator Module and the field devices via the rear PCB (the RF PCB). By performing a LOAD command at the Translator Module, this information is transferred to the front PCB, where further processing takes place allowing the wireless field devices, including the Translator Module to be recognised by the associated FCP. The front PCB acts as the interface between the FCP and the wireless field devices. After carrying out all the above steps, the next actions are carried out at the Translator Module.

The Translator Module LCD screen should be displaying **LOAD** and the centre yellow LED will be flashing to indicate that a LOAD command needs to be carried out.

At the Translator Module, using the P3/P4 buttons, scroll up/down until **rF** is displayed in the LCD window.

Select using the P2 button.

Use P3/P4 to scroll up/down until **EHP** is displayed.

Select using the P2 button.

Using the P3/P4 buttons, scroll through until **LOAD** is displayed.

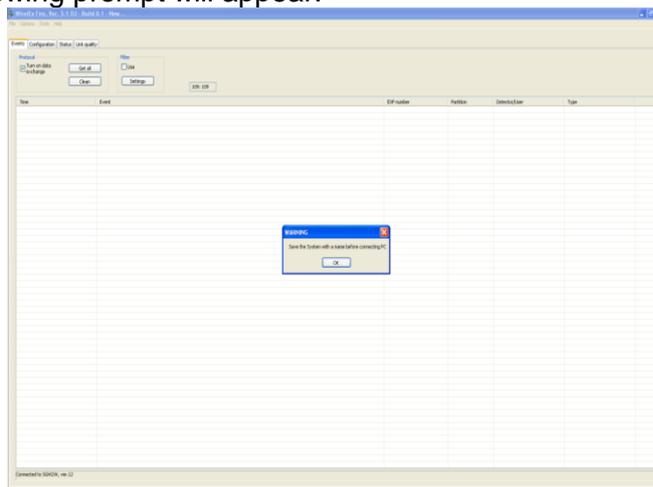
Press the P2 button. **CONF** will be displayed. Confirm using the P2 button.

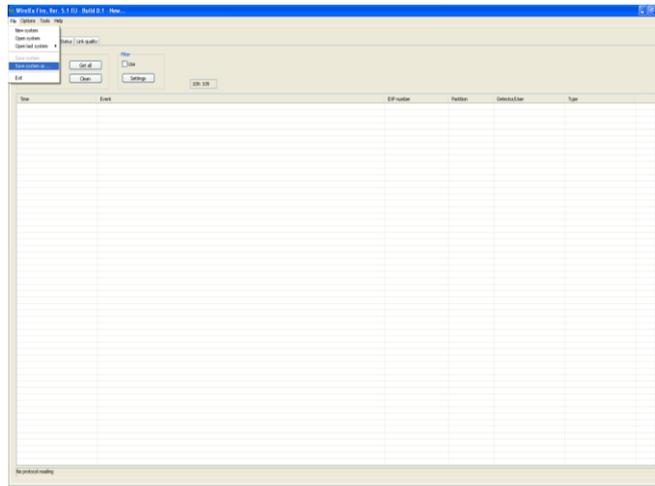
If correct, **done** will be displayed.

Press the P1 button until the LCD display is blank.

**NOTE: Only after the system has been loaded in to the Translator Module CPU (located on the front PCB) will the system function correctly with the FCP.**

Prior to accessing further information on the installed system – Events, Status, Link Quality, etc – the system file must now be saved. If the system is not saved and an attempt is made to access the system information by checking the **“Turn on data exchange”** option in the **“Events”** tab, the following prompt will appear:





Press  (above left) and save the file on the computer (above right). Once the file has been saved full access to the diagnostic information is now available.



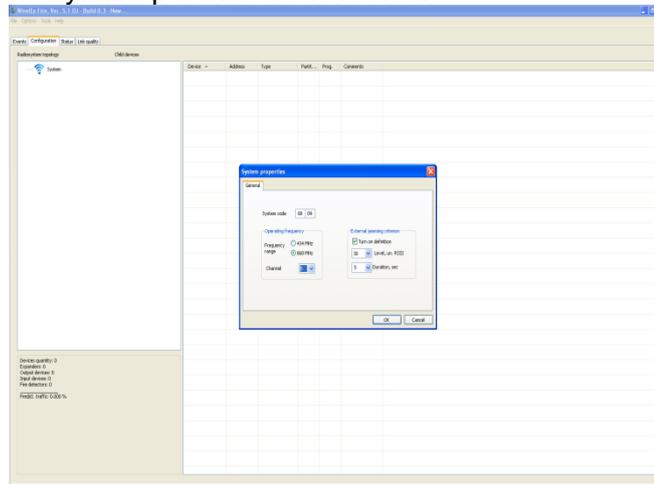
## 22.2 System Properties Window

The Central Node properties can be interrogated after downloading, or from the outset, by accessing the **“Properties”** window. This window will also give access to the system **“RSM-WTM Table”** where the wireless digital address for each device is listed ready for conversion to an address recognised by the FCP. As well as viewing the system code and radio channel, other parameters can be viewed.

To gain access to the window is achieved in one of two ways:

- **OPENING THE SOFTWARE AND BUILDING A SYSTEM INITIALLY**

With the software open select **“FILE”**. From the drop-down window select **“NEW SYSTEM”**. A window will open with the system parameters revealed:



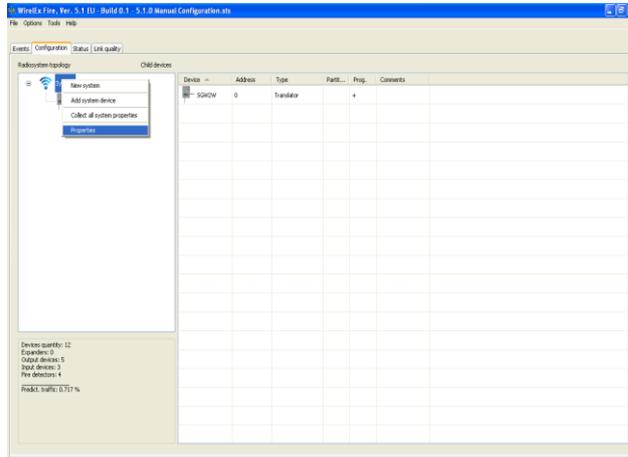
The above window shows the system code and the operational radio channel allocated by the software. The first two most significant bits (left-most bits) of the system code can be changed and the operational radio channel can be changed if required. It should be noted that the operating frequency band can also be altered from 868MHz to 434MHz. Care should be taken to ensure that the correct frequency band is allocated to ensure compliance with local or national regulations.

The **“External Jamming Criterion”** allows the installer to define the system parameters for checking if there are external influences active that could affect the integrity of the system:

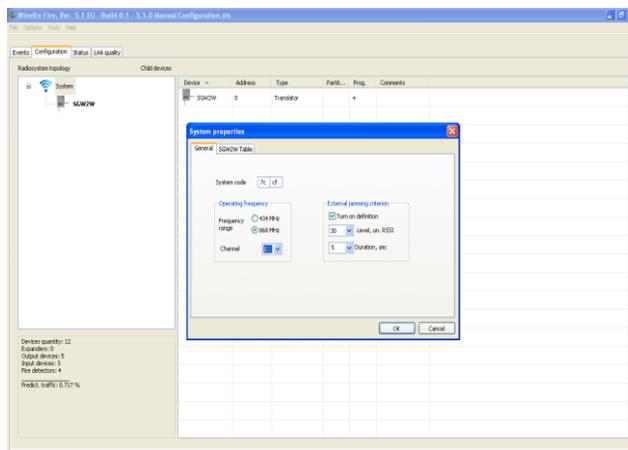
- The **“Turn on definition”** should be checked. This will allow the system to check external RF radiating equipment is not generating signals that can block the wireless communication.
- The level in the **“Level un. RSSI”** should be left at the default value of 30. Care must be taken to ensure that this level is not set to high or low compromising the ability of the system to perform and report correctly – if too low, the system will report a spurious RF signal as jamming even if it is not; set too high, communication between the Central Node and the device may be lost before the jamming report is activated.
- The figure in the **“Duration, sec.”** should be left at the default value of 5 seconds. If the suspect “jamming signal” is present for longer than the time detailed, the jamming criteria is satisfied and a fault is generated at the Central Node Event Log.

## 22.3 The RSM-WTM Table

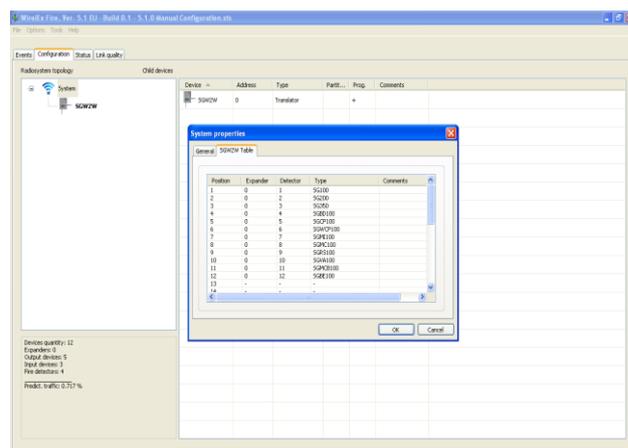
The RSM-WTM table is the process used to interface the digital aspect of the system with the analogue aspect of the system, i.e. how the analogue detection loop identifies the child devices and generates the associated analogue detection loop device addresses. This table can be found by highlighting the **“Configuration”** tab, right click on the word **“System”** in the **“Radiosystem topology”** area; select **“Properties”**:



The following window will be displayed:



Highlight the **“RSM-WTM Table”** tab. (or **RSM-CIM Table** if using a Conventional Interface Module). This will display the RSM-WTM table. The engineer will now be able to see all the devices loaded on to the Central Node and associated Expanders (if fitted)(It is not possible to maximize the window to display all 32 devices):



The columns shown overleaf are:

**Position:** This is the order the devices are learnt on to the associated FCP. Using the vertical scroll bar on the right hand side, it can be seen that this column shows a maximum of 32 devices – the maximum number that can be associated with a Central Node micro-cell/cluster.

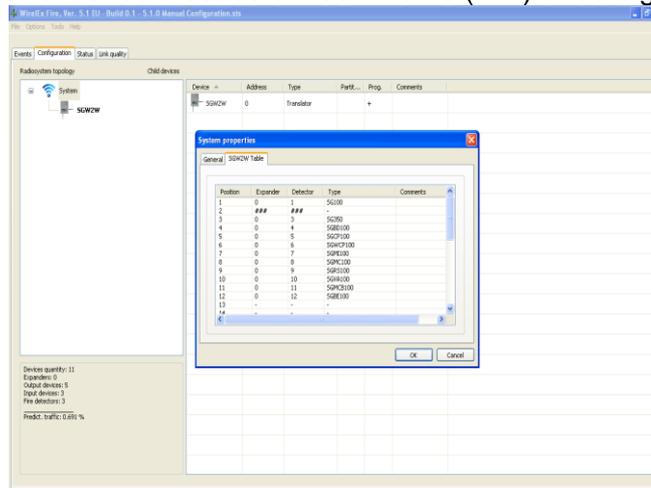
**Expander:** This column indicates if a device is on the Central Node (Expander 0) or an Expander (Expander 1 – 7).

**Detector:** This column indicates the digital address that has been given to a device. If there are Expanders associated with the Central Node, the same number will appear to indicate the location of that device on the associated Expander. The previous column should be read in conjunction with this column to determine the complete digital address for a child device.

**Type:** This column indicates the type of device that should be found at this address.

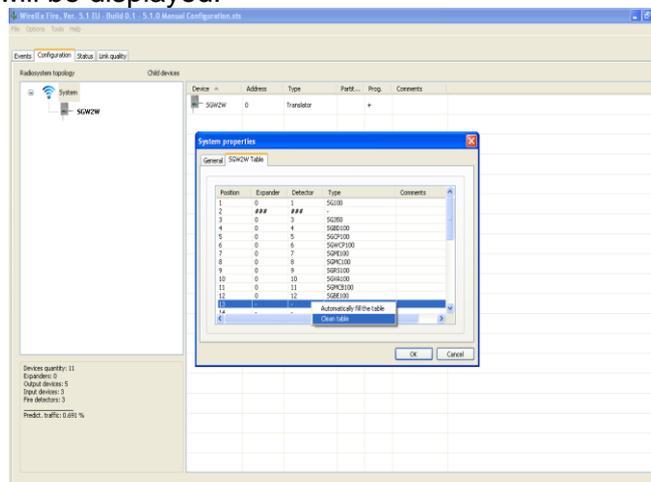
**Comments:** This column and cell will only have information in if the “**Comments**” cell in the “**Configuration**” tab has been used for the child devices.

If the system configuration has been altered, e.g. devices removed, there may be gaps in the table. These will appear either as a series of hash marks (###) or as a gap:



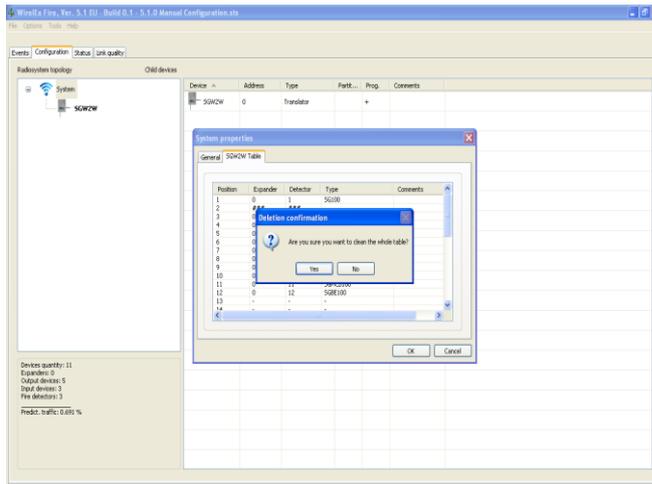
This can lead to incorrect identification of devices at the FCP. To overcome this, on completion of the *LOAD* process, the following action may need to be followed. Anywhere in the table, right click with the mouse.

The following window will be displayed:

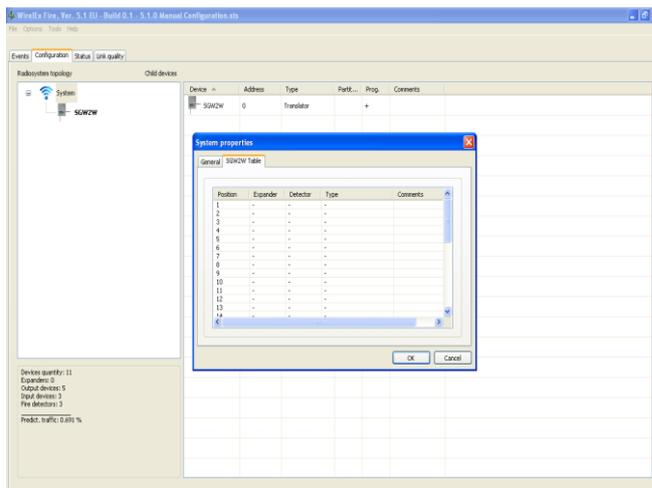


Highlight the “**Clean table**” option.

This will cause a warning window to be displayed:

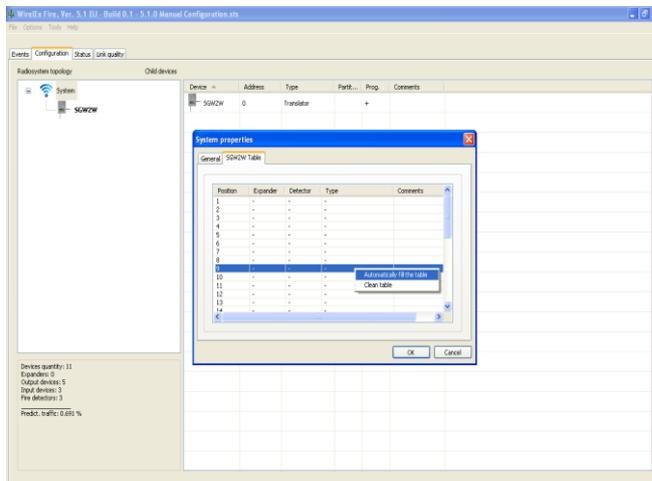


Select . This will cause the table to blank:

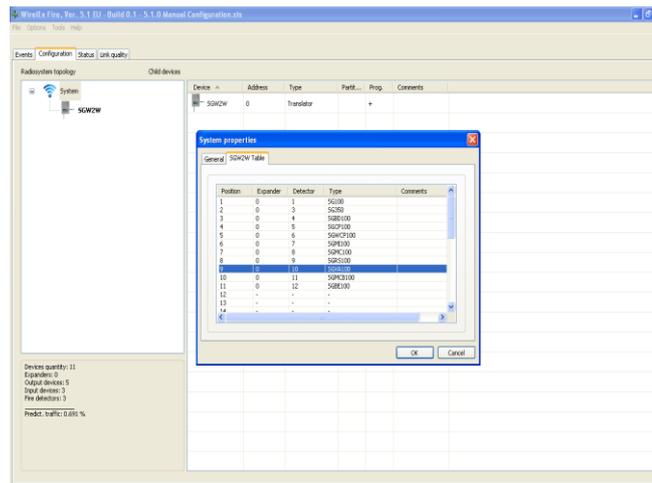


The devices are still present on the system; it is only the W2W table that has gone blank.

Right click in the blank table and highlight **“Automatically fill the table”**:



The devices will now re-appear in a logical order starting with the devices on the Central Node followed by devices on Expander 1, Expander 2, etc:



**NOTE:** It is recommended that this process is only carried out during the initial commissioning of the system. If this process is carried out on an existing system, the associated FCP may display incorrect device text, incorrect device types and the System Cause and Effects may not function correctly.

## 22.4 W2W Table Address Versus Fire Control Panel Loop Address

Care should be taken when determining the analogue loop address of the Translator Module and its associated devices from the RSM-WTM Table. If read incorrectly, when carrying out diagnostic or corrective maintenance on a wireless device, remedial work may be carried out on the wrong device.

Prior to interrogating the RSM-WTM Table to determine the analogue loop detection address of the wireless devices, the RSM-WTM Table should be set up correctly such that devices on the Translator Module are detailed first followed by devices on Expander Module 1, Expander Module 2, Expander Module 3, etc. If a Translator Module or Expander Module is being used as a radio bridge and has no direct devices associated with it, there will be no sign of that interface in the RSM-WTM Table – the first interface with devices should be listed first.

If devices have been added to the Translator Module followed by Expander Module 2 then Expander Module 1 followed by more devices on the Translator Module, the “Clean and Fill” procedure detailed previously should be carried out first.



The Hochiki Protocol allows for a maximum of 127 devices to be connected to an analogue detection loop. When interrogating the W2W Table, the analogue loop address of the Translator Module needs to be identified. This can only be done from the Translator Module itself. In the following example, it is assumed that the Translator Module analogue loop address is 25.

From the W2W Table we can see that the system consists of the following devices:

Position	Expander	Detector	Type	Comments
1	0	1	SG100	
2	0	2	SG200	
3	0	3	SG350	
4	0	4	SGCP100	
5	0	5	SGRS100	
6	1	1	SG350	
7	-	-	-	
8	-	-	-	
9	-	-	-	
10	-	-	-	
11	-	-	-	
12	-	-	-	
13	-	-	-	
14	-	-	-	

It can be seen that the first five devices are directly associated with the Translator Module and the final device is associated with Expander Module 1.

Knowing that the Translator Module has an address of 25 would indicate that the devices indicated in the table above have the following analogue loop address:

Position	Expander	Detector	Type	Comments
1	0	1	SG100	Address 26
2	0	2	SG200	Address 27
3	0	3	SG350	Address 28
4	0	4	SGCP100	Address 29
5	0	5	SGRS100	Address 30
6	1	1	SG350	Address 31
7	-	-	-	
8	-	-	-	
9	-	-	-	
10	-	-	-	
11	-	-	-	
12	-	-	-	
13	-	-	-	
14	-	-	-	

Assuming that the devices are listed contiguously, a quick way to determine the analogue loop address of a device is:

$$\text{Translator Module Loop Address} + \text{Position Number} = \text{Analogue Loop Address}$$



## 23 Additional Diagnostic Information

The two remaining tabs – **“Status”** and **“Link Quality”** – provide additional information for the engineer:

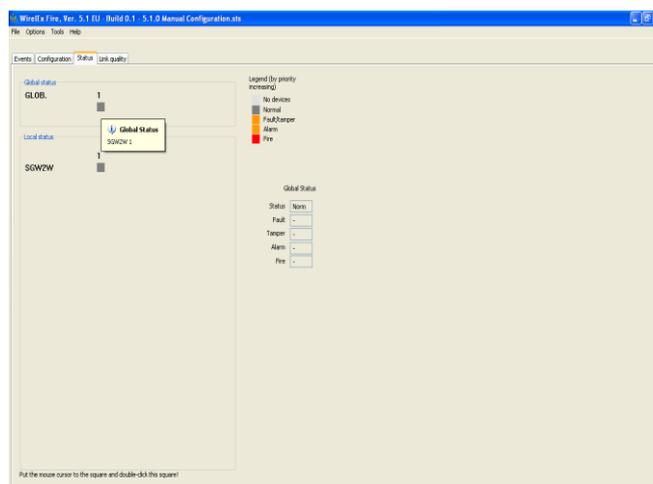
- a. Graphic display of RF quality of each child device.
- b. Graphic display of RF quality history.
- c. Fault and fire indication in a partition.
- d. Fire and status indication of each device.
- e. Power output attenuation control.
- f. Communication control between the Central Node and associated Expanders.

### 23.1 Use of Status Tab

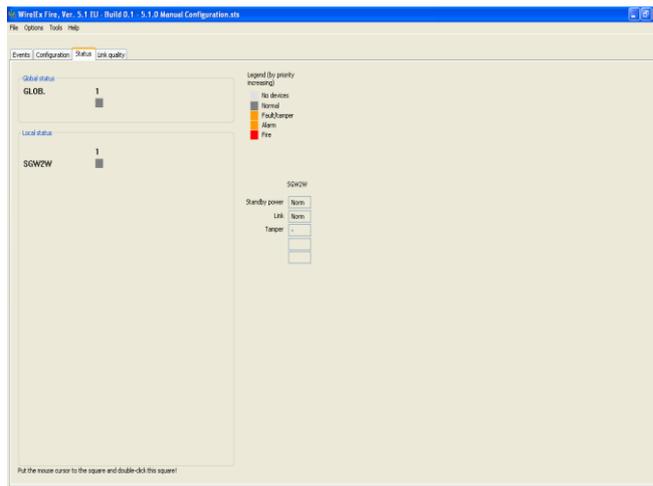
Select the **“Status”** tab. The following window will be displayed:



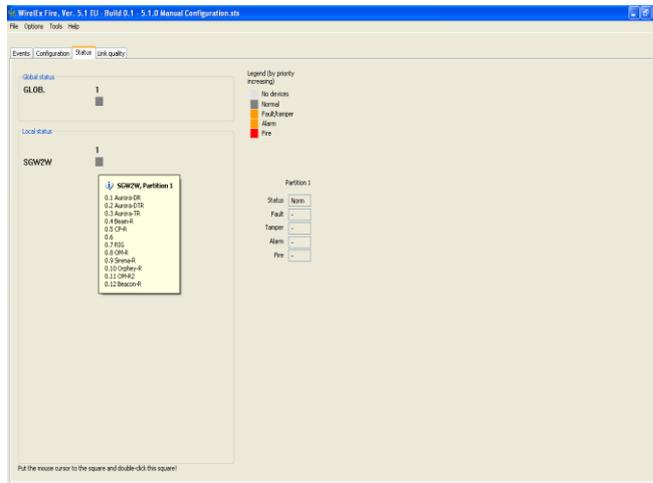
The legend on the right hand side displays various alarm/fault/status indications. In the **“Global status”** area, the system indicates all global partitions active on the system. In this application, the only partition displayed will be Partition 1 – fire devices will only be seen in this partition. If the devices are fault free and are not in a fire state, the box beneath number 1 will appear dark grey indicating all devices are in a standard quiescent state. When holding the computer mouse icon over the same box, the interfaces (Central Node / Expander(s)) associated with this system will be displayed. The indications in the lower right hand box will normally be blank – apart from **“Status”** where **“Norm”** is displayed - indicating the system is fault free:



Holding the mouse over the **RSM-WTM** in the **“Local Status”** box will bring up the Translator Module status:

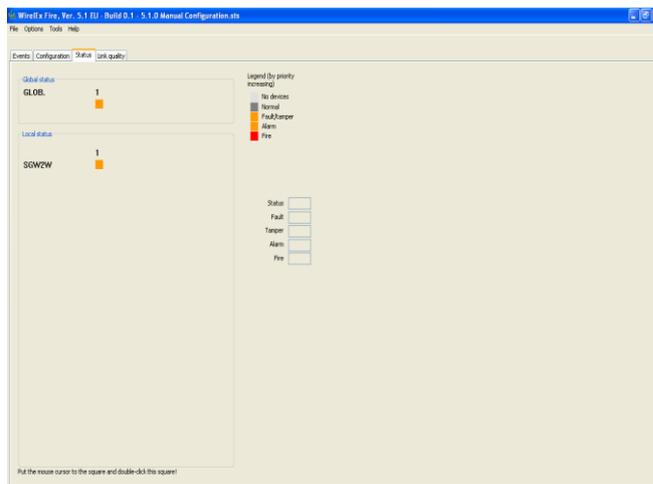


Hovering the mouse icon over the square in this box will display all devices associated with the particular interface:

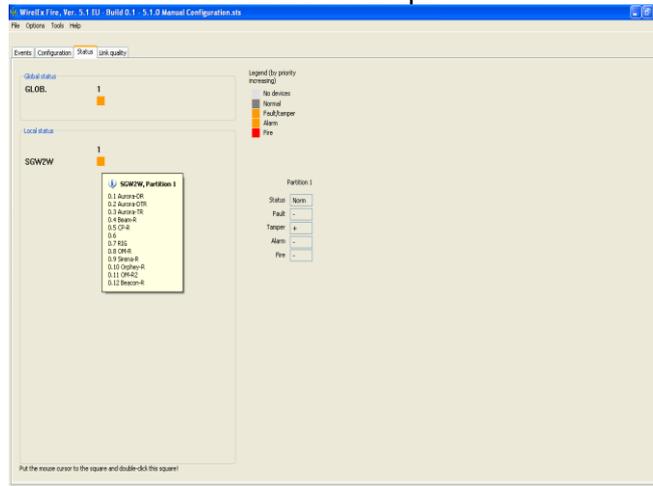


The lower right legend will also change and will indicate if there are any devices in fire or fault and if there are issues with the power to the interface.

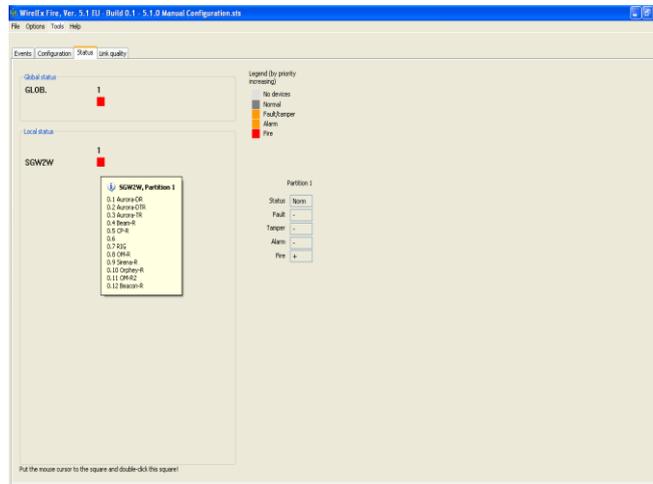
If a device is in **FAULT**, the square under the number 1 in both the **“Global status”** and **“Local status”** areas will turn orange (■):



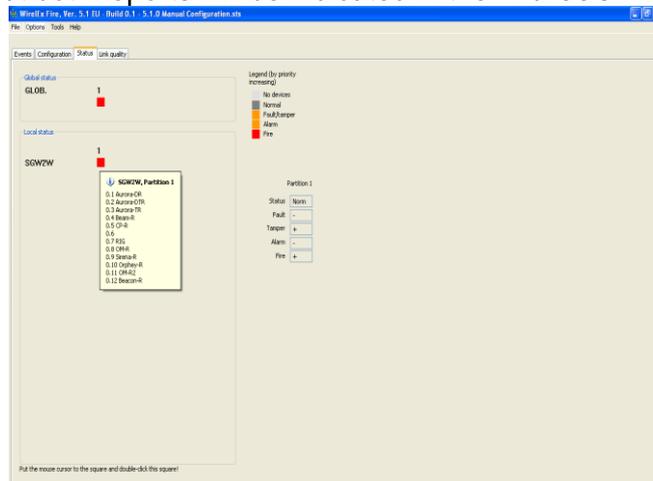
Hovering the mouse over the orange box in the **“Local status”** area, will cause the indications in the **“Partition 1”** table to alter and will indicate the problem – but not the device:



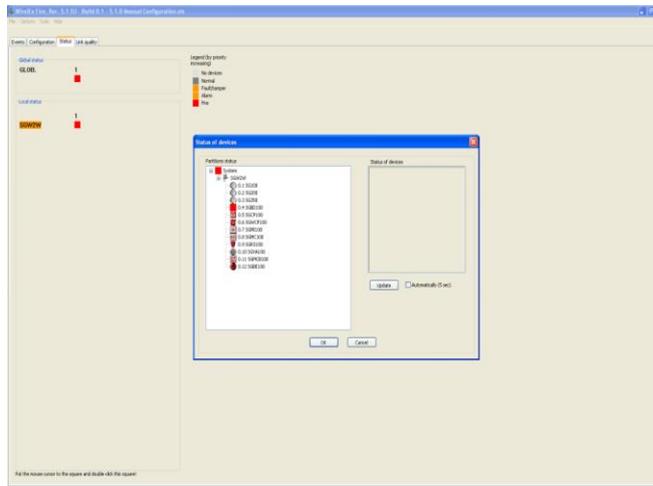
If a device is in a FIRE state, the same box will turn red in colour (■):



If there are devices in FAULT and FIRE, the highest priority message (FIRE) will be indicated by the colour of the box but both reports will be indicated in the **“Partition 1”** table:



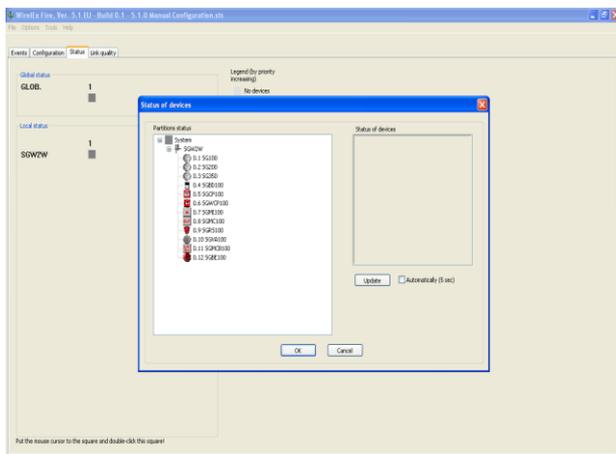
Double tapping the box under the number 1 in the **“Local status”** area will open a further page that will provide more detail about device status. If local partition 1 is indicating any other colour than light grey (■) (indicating no devices are attached to that interface) or dark grey (■) (indicating that the interface is in a normal quiescent state), double-clicking over the coloured square will open another window:



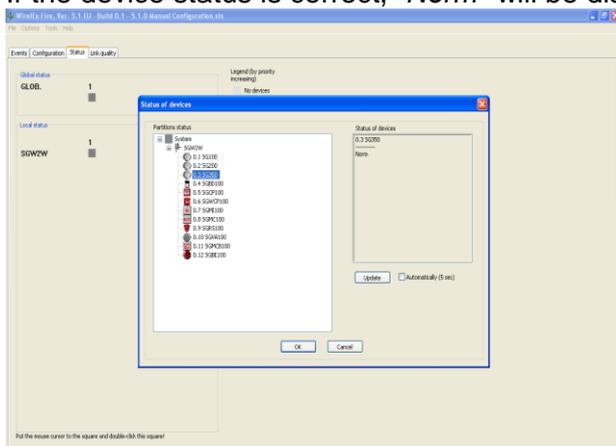
By left clicking over a device, its status will appear in the right hand box titled **“Status of devices:”**

**POSSIBLE DEVICE TYPES**

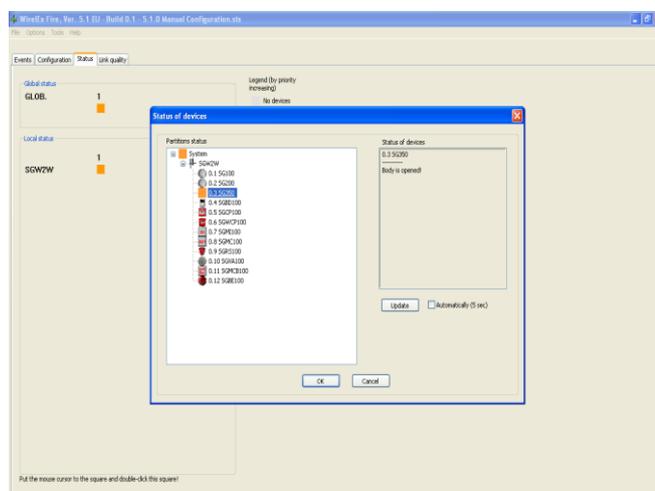
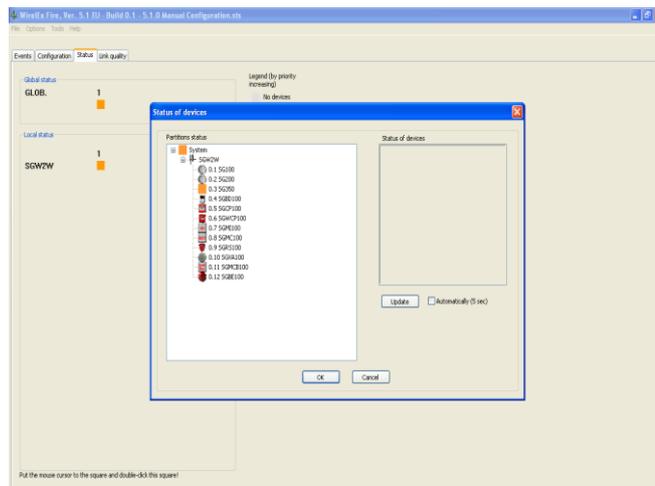
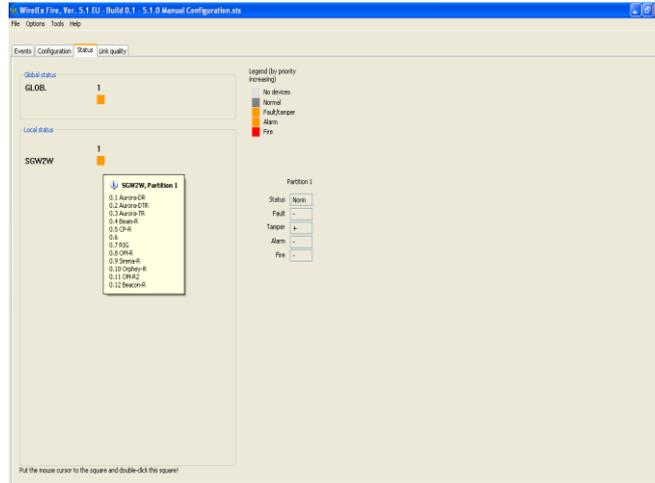
- ROD-E:- - Smoke Detector
- RHD-E:- - Heat Detector
- RMD-E:- - Multicriteria Detector
- RSM-BD: Beam Detector**
- RSM-CP: Manual Call Point
- RSM-CP/W: Weatherproof Call Point
- RSM-WS(RED): Audio-Visual device
- RSM-OP: Ext. Powered Output Module
- RSM-IP:- Input Module
- RSMVS:- Voice Sounder
- RSM-POM:- Battery Output Module
- RSM-CLB (RED): Beacon



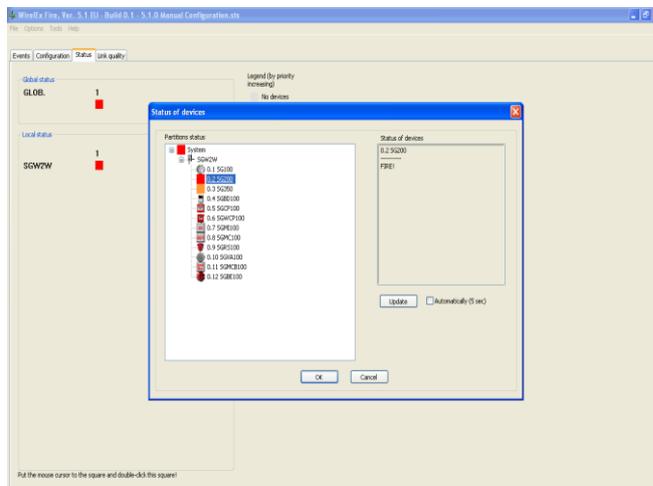
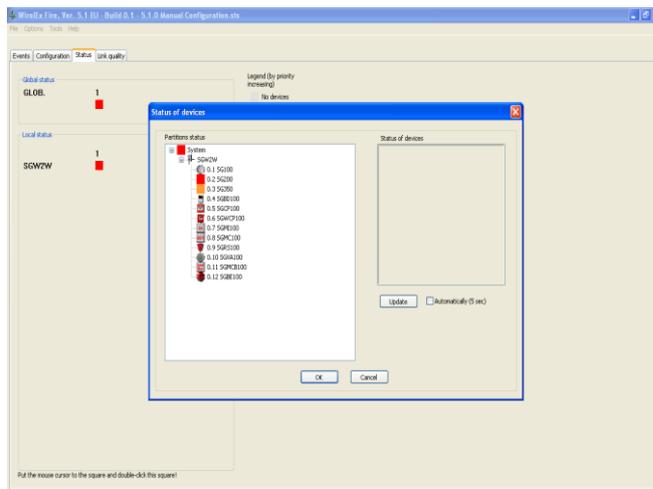
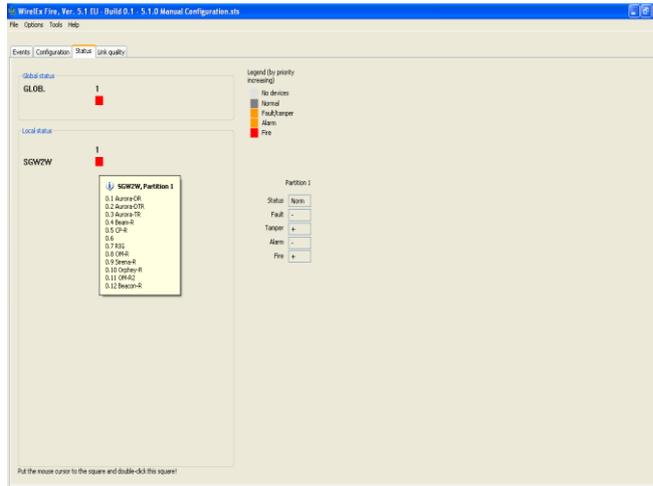
If the device status is correct, **“Norm”** will be displayed.



If the device is in fault, the associated icon will have an **ORANGE** box over it. An **ORANGE** box will also appear adjacent to Global Partition 1 and local partition 1. By left clicking the device, a fault indication will appear in the **“Status of devices”** box:



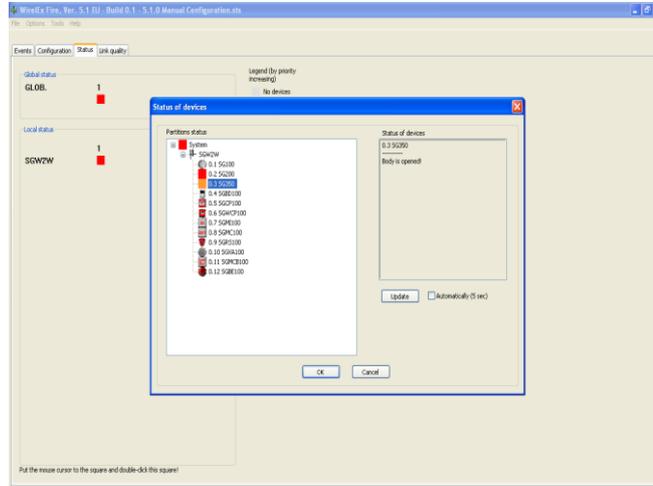
If there is a “FIRE” activation the associated boxes will have a **RED** square over/adjacent them. By following the same process as above, an engineer will be able to verify the child device has activated:



By pressing , the engineer will be returned to the **Status** page.



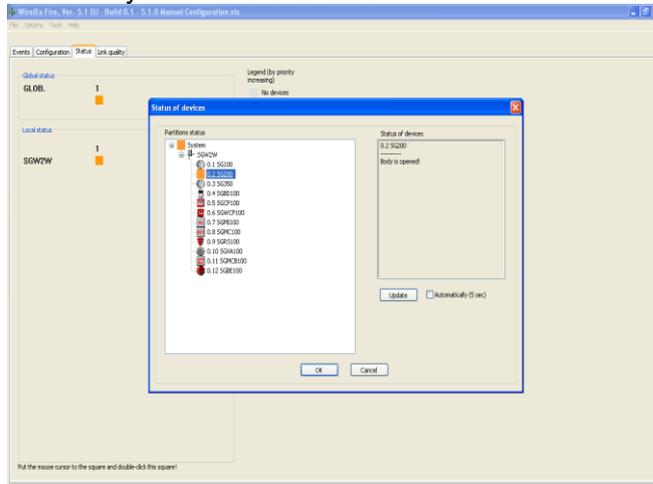
If there are a number of faults or fires on the same Central Node or Expander, the highest priority report will be indicated at the **“Global status”** and **“Local status”** areas of the **“Status”** tab – this will be shown by the normally grey box being **RED** in colour. A double left click on this box will open the **“Status of devices”** window. This will show the status of all devices directly associated with this Central Node or Expander. A single left click on the reporting device will cause the status area of the window to update and show the actual fault or alarm associated with that device:



# 24 Examples of Displayed Faults

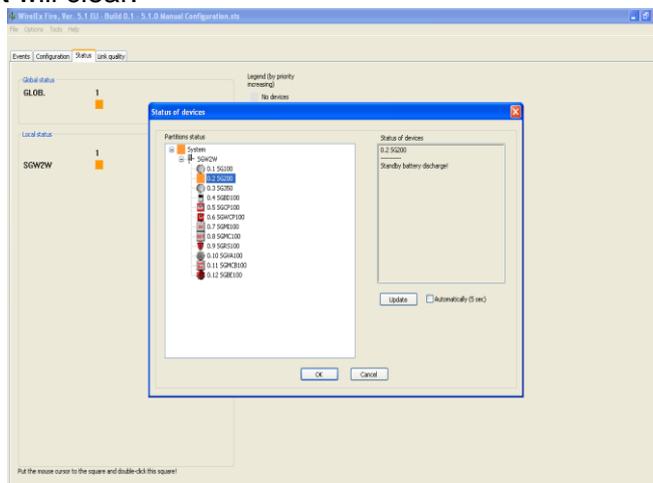
## 24.1 Tamper Fault (BODY IS OPENED!)

The comment shown in the box titled **“Status of devices”** indicates that the child device has been removed from its base / back-box and is now in a tamper condition. Check the device to ensure it is seated correctly and when this has been confirmed, carry out a RESET command and this fault will clear. Alternatively waiting for the next handshake between the Interface and the field device will update the system and the fault will clear automatically:



## 24.2 Secondary (STANDBY/RESERVE) Battery Discharge

The comment shown in the box titled **“Status of devices”** indicates that the Secondary or Standby power cell has fallen below the voltage threshold for that cell. The cell should be replaced at the earliest opportunity. When the cell has been changed, perform a RESET command and the fault will clear.

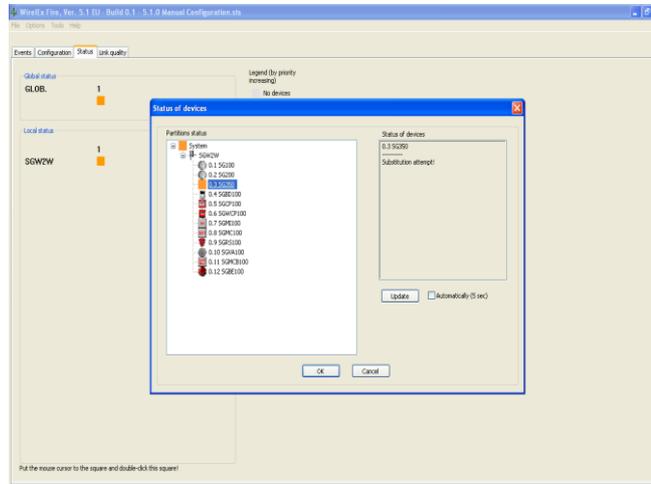


It is advisable that all power cells – Standby / Reserve and Main / Primary are changed should this fault occur.



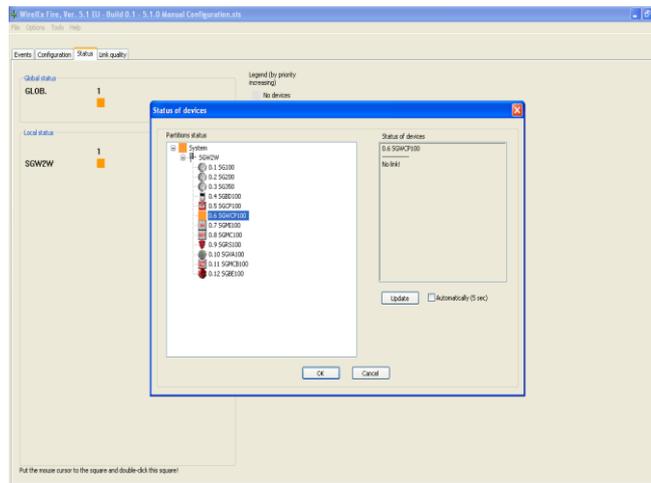
## 24.3 Substitution Attempt

The comment shown in the box titled **“Status of devices”** indicates that a device has been introduced to the system that has the same address – comparable with an analogue “Double Address Fault”.



This will happen if an apparently faulty device is removed from the system and replaced with a new device. However, if the batteries from the old device are still in place, the removed device retains in its memory the digital address originally prescribed to it by the Central Node and will try to regain communication with the Central Node. Removing the batteries from the faulty device and carrying out a **“RE-INITIATE CHILD DEVICE”** on the new device should eliminate this fault.

## 24.4 No Radio Link/No Link



This fault occurs if:

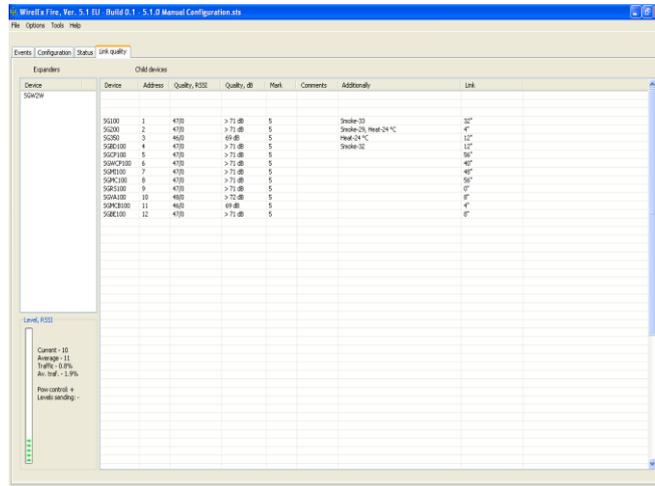
- a. A device is out of range of its associated Central Node or Expander. By moving the device back in to range and performing a RESET command, this fault will disappear.
- b. If the batteries within the device have both discharged and the previous warnings about battery discharge have been ignored. By replacing both cells in the device, and performing a RESET command, this fault will disappear

NOTE: This fault will only appear after the time interval set in the **“SUPERVISION PERIOD”** parameter when adding the device to the system.

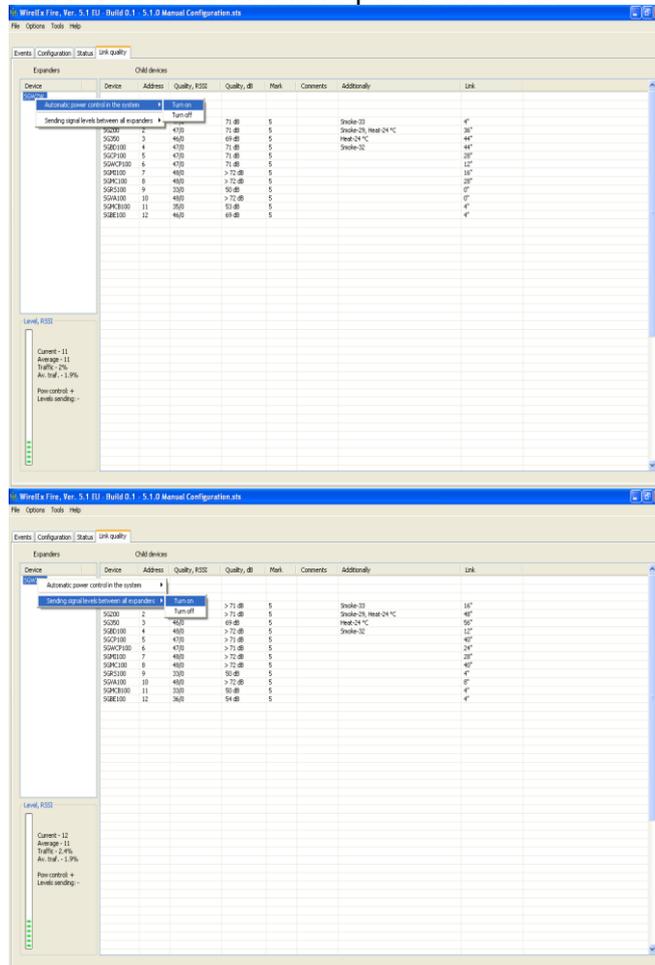


# 25 Use of RF Link Quality Tab

Select the **“Link Quality tab”** on the Firewave Configurator software. The following window will be displayed:



**Expanders:** The Central Node and associated Expanders in the cluster are displayed here. Highlighting the Expander you wish to investigate will display the associated child devices in the right-hand area. Right clicking the cursor over the highlighted Central Node / Expander will give two further options that will reveal in turn further options for each:



The **“Automatic Power Control in the System”** option allows the engineer to turn on / off the automatic power attenuation facility within the Translator cluster. This is normally left on as the



system uses complex algorithms to determine the best power level between the Central Node / Expander(s) and the associated child devices. Turning this off causes all devices to work at maximum power levels. This can result in an increased level of RF noise causing communication with some devices to be lost. This will also reduce the expected battery life

The “***Sending Signal Levels Between All Expanders***” option allows the engineer to turn on/off the communication between the Central Node and any Expander(s) fitted. If Expander(s) are employed within the microcell/cluster, this option **must** be turned on. This allows all information to pass freely between the Central Node and Expander(s) within the cluster so that all device faults, tamper faults, fire activations can be seen when interrogating/testing the system through the Firewave Configurator software.

## 25.1 Link Quality Tab – Child Device Section

In the Child device section of the page, the following information is displayed:

Device	Address	Quality	RSSI	Quality	dB	Mark	Comments	Addressably	Link
SI000	1	470	71.0B	5			Shode 03		4"
SI000	2	400	> 70.0B	5			Shode 05, Heat 24 °C		30"
SI000	3	470	71.0B	5			Heat 24 °C		40"
SI000	4	470	71.0B	5					4"
SI000	5	400	> 70.0B	5			Shode 02		35"
SI000	6	470	71.0B	5					12"
SI000	7	400	> 70.0B	5					15"
SI000	8	400	69.0B	5					4"
SI000	9	300	69.0B	5					4"
SI000	10	300	69.0B	5					4"
SI000	11	200	30.0B	5					4"
SI000	12	200	30.0B	5					4"

**Device:** The device type is displayed in the first column.

**Address:** The device address is displayed in the next column. This address is allocated to the device by the associated Central Node / Expander. This is the system digital address and **NOT** the allocated detection loop address.

**Quality, RSSI:** **Received Signal Strength Indication (RSSI)** is a measurement of the power present in a received radio signal. The signal level from each RF modem is displayed here – the value to the left of the oblique is from the Primary modem, the figure to the right is the value from the Secondary modem. This level is measured in Standard Units. Only one value will be indicated here – left or right. The other value will be zero.

**Quality, dB:** The signal level here is shown as a dB level.

**Mark:** This is an indication of the link quality based on a five point rating scale:

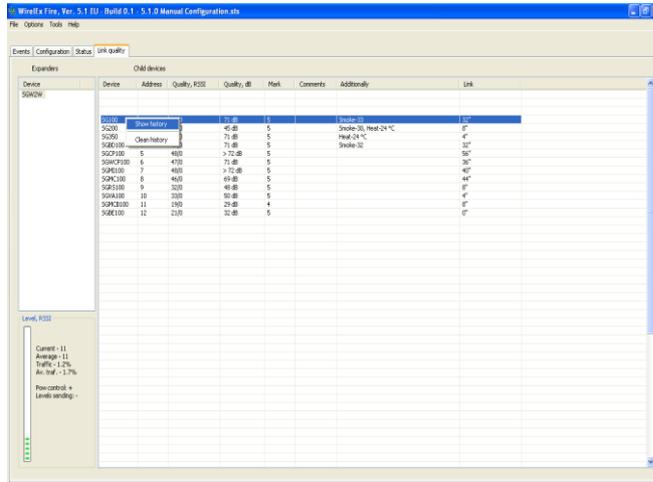
<u>QUALITY MARK</u>	<u>LINK INDICATION</u>
2	Fail – no connection or very weak. Link margin is ≤ 10dBs
3	Not good – Link margin is between 11 - 20dBs
4	Good – robust communication with a link margin between 21 - 30dBs
5	Excellent – Robust communication with a link margin ≥ 31dBs

**Comments:** This is the comment added about device location at the **“Configuration”** tab

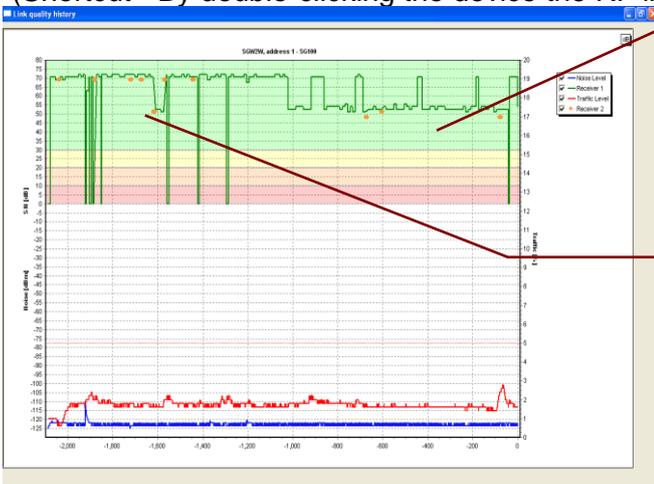
**Link:** This indicates the last time communication between the field device and its associated Central Node / Expander took place. This indication will increment in 4 second intervals. For all devices, except wireless Audio-Visual devices, this will increase to approximately 1 minute and return to zero. For the Audio-Visual devices this will increment to approximately 8 seconds before returning to zero.

## 25.2 Link Quality History Graph

By highlighting a single device, moving the cursor over it and right clicking, two options are displayed:



**Show History:** Selecting this option will display the RF link quality graph (shown below) (Shortcut - By double-clicking the device the RF link quality history graph will be displayed)



The different colours indicate the Mark Quality:

- GREEN – 5
- YELLOW – 4
- ORANGE – 3
- PINK – 2

The Orange dot indicates that the Secondary Modem signal was stronger than the Primary Modem signal for this particular reading – this does not indicate that there is a problem with the device only that during that time frame the signal seen at the Secondary Modem was stronger – this is caused by vagaries in radio propagation

The GREEN waveform indicates the RF link quality history for each device. The graph will provide the user with as many as 8192 segments. This is the equivalent of a sample every 5 seconds over a 12 hour period.

**Clean History:** This will clean all RF link quality information – resetting the graph.



The screenshot displays the Firewave software interface, showing a table of CHM devices and a 'Clearance confirmation' dialog box.

**CHM devices table (Top Screenshot):**

Device	Address	Quality, RSSI	Quality, dB	Mark	Comments	Additionally	Link
SI020	1	360	54 dB	5	Smoke 10		40"
SI020	2	3020	50 dB	5	Smoke 10, Heat 24 °C		30"
SI020	3	270	41 dB	5	Heat 24 °C		12"
SI0E100	4	410	71 dB	5	Smoke 12		47"
SI0P100	5	645	69 dB	5			47"
SI0C100	6	480	> 72 dB	5			44"
SI0E100	7	470	71 dB	5			40"
SI0C100	8	470	71 dB	5			40"
SI0E100	9	300	44 dB	5			17"
SI0A100	10	300	50 dB	5			17"
SI0K100	11	3020	30 dB	5			17"
SI0E100	12	3020	44 dB	5			17"

**CHM devices table (Bottom Screenshot):**

Device	Address	Quality, RSSI	Quality, dB	Mark	Comments	Additionally	Link
SI020	1	360	54 dB	5	Smoke 10		40"
SI020	2	3020	50 dB	5	Smoke 10, Heat 24 °C		30"
SI020	3	270	41 dB	5	Heat 24 °C		12"
SI0E100	4	410	71 dB	5	Smoke 12		47"
SI0P100	5	645	69 dB	5			47"
SI0C100	6	480	> 72 dB	5			44"
SI0E100	7	470	71 dB	5			40"
SI0C100	8	470	71 dB	5			40"
SI0E100	9	300	44 dB	5			17"
SI0A100	10	300	50 dB	5			17"
SI0K100	11	3020	30 dB	5			17"
SI0E100	12	3020	44 dB	5			17"

**Clearance confirmation dialog box:**

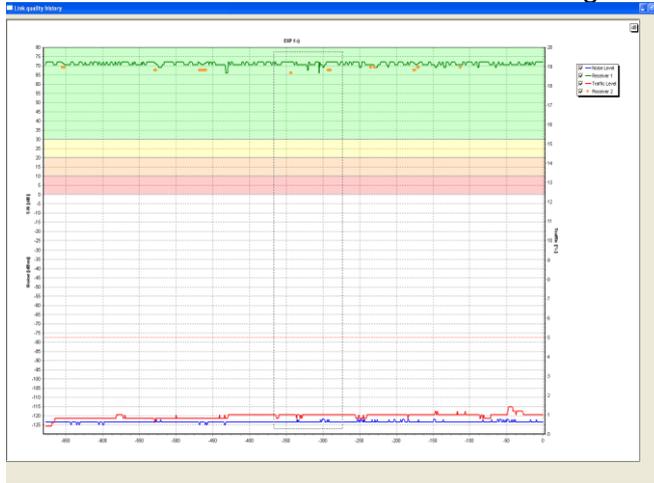
Are you sure you want to clean history file?

Yes No

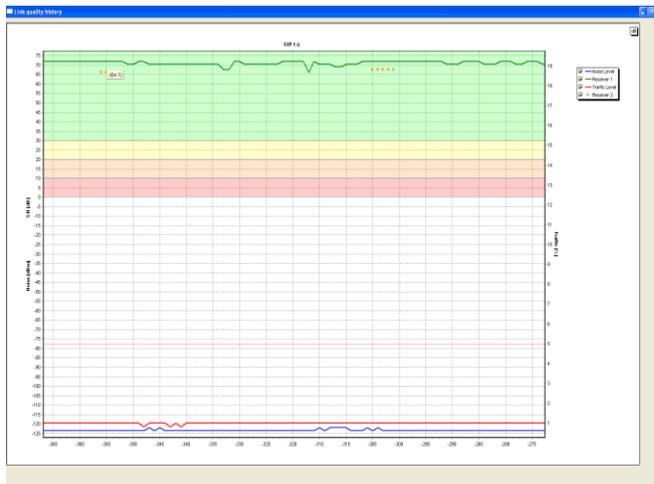


### 25.3 Zoom in on RF History Graph

The user can zoom in on specific areas within the graph for better analysis of the RF Quality history. This is achieved by holding down the left mouse button, creating a box by moving from top left to bottom right around the interested area and then releasing the left mouse button.



The graph will now zoom in on that area providing the user with an enhanced view. This can be repeated until the area is clear enough for the user to analyse the information. Once the desired level of analysis has been reached, holding the cursor over the area will produce a box giving an indication of the segment number under investigation along with a dB level.



### 25.4 Return to Normal Graph View

To return to the normal screen level, the user must make a further box moving the cursor from bottom right to top left whilst holding down the left control on the mouse – this will return the graph to its normal appearance.



## 26 System Configuration Code Hexadecimal-Decimal Conversion Table

The System Configuration Code is a code assigned to the Central Node when it is powered on. It forms part of the encryption process employed by the Central Node - the system code seen at the Translator Module LCD display is a decimal interpretation of a hexadecimal code, ranging from 01 to ff. The table shows all hexadecimal codes and the decimal equivalents.

Decimal	Hexadecimal								
1	1	52	34	103	67	154	9A	205	CD
2	2	53	35	104	68	155	9B	206	CE
3	3	54	36	105	69	156	9C	207	CF
4	4	55	37	106	6A	157	9D	208	D0
5	5	56	38	107	6B	158	9E	209	D1
6	6	57	39	108	6C	159	9F	210	D2
7	7	58	3A	109	6D	160	A0	211	D3
8	8	59	3B	110	6E	161	A1	212	D4
9	9	60	3C	111	6F	162	A2	213	D5
10	0A	61	3D	112	70	163	A3	214	D6
11	0B	62	3E	113	71	164	A4	215	D7
12	0C	63	3F	114	72	165	A5	216	D8
13	0D	64	40	115	73	166	A6	217	D9
14	0E	65	41	116	74	167	A7	218	DA
15	0F	66	42	117	75	168	A8	219	DB
16	10	67	43	118	76	169	A9	220	DC
17	11	68	44	119	77	170	AA	221	DD
18	12	69	45	120	78	171	AB	222	DE
19	13	70	46	121	79	172	AC	223	DF
20	14	71	47	122	7A	173	AD	224	E0
21	15	72	48	123	7B	174	AE	225	E1
22	16	73	49	124	7C	175	AF	226	E2
23	17	74	4A	125	7D	176	B0	227	E3
24	18	75	4B	126	7E	177	B1	228	E4
25	19	76	4C	127	7F	178	B2	229	E5
26	1A	77	4D	128	80	179	B3	230	E6
27	1B	78	4E	129	81	180	B4	231	E7
28	1C	79	4F	130	82	181	B5	232	E8
29	1D	80	50	131	83	182	B6	233	E9
30	1E	81	51	132	84	183	B7	234	EA
31	1F	82	52	133	85	184	B8	235	EB
32	20	83	53	134	86	185	B9	236	EC
33	21	84	54	135	87	186	BA	237	ED
34	22	85	55	136	88	187	BB	238	EE
35	23	86	56	137	89	188	BC	239	EF
36	24	87	57	138	8A	189	BD	240	F0
37	25	88	58	139	8B	190	BE	241	F1
38	26	89	59	140	8C	191	BF	242	F2
39	27	90	5A	141	8D	192	C0	243	F3
40	28	91	5B	142	8E	193	C1	244	F4
41	29	92	5C	143	8F	194	C2	245	F5
42	2A	93	5D	144	90	195	C3	246	F6
43	2B	94	5E	145	91	196	C4	247	F7
44	2C	95	5F	146	92	197	C5	248	F8
45	2D	96	60	147	93	198	C6	249	F9



46	2E	97	61	148	94	199	C7	250	FA
47	2F	98	62	149	95	200	C8	251	FB
48	30	99	63	150	96	201	C9	252	FC
49	31	100	64	151	97	202	CA	253	FD
50	32	101	65	152	98	203	CB	254	FE
51	33	102	66	153	99	204	CC	255	FF



# 27 Wireless Expander Modules

## 27.1 Introduction

To increase the area of coverage for a Translator Module, a signal booster module, known as an **EXPANDER MODULE**, is available. This device is used:

- To increase the range of coverage for wireless devices
- To overcome obstacles affecting radio signal integrity, e.g. decorative mobile
- To link buildings together negating the requirement for containment between the buildings – trenches, catenary wires, underground ducting, etc.

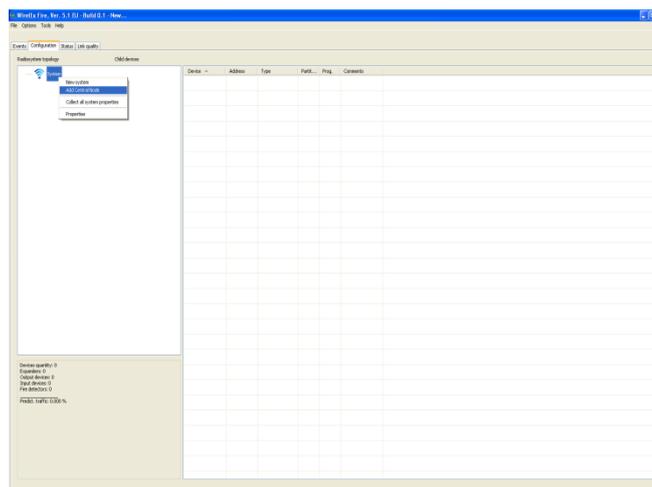
A maximum of seven Expander Modules can be associated / linked with a Central Node (see pages 50 – 51).

Care must be taken when adding Expander Modules that the correct programming sequence for the system is followed – deviations from this can result in lost devices or even lost Expander Modules from the expected system.

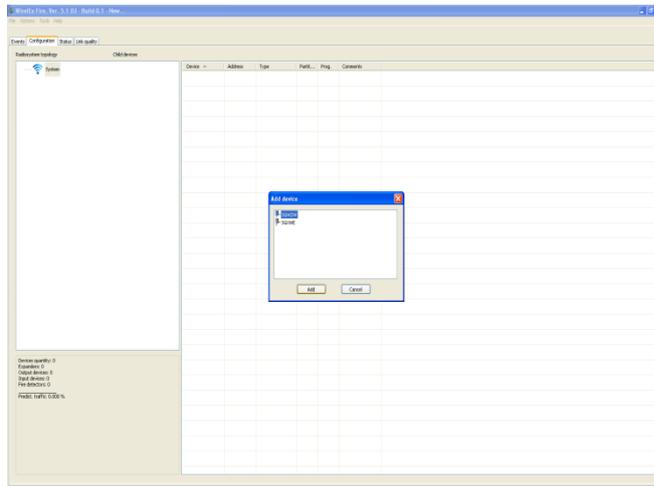
An Expander Module, and associated devices, can only be added to a Central Node using the Firewave Configurator software. It is not possible to “locally” program an Expander in the same way a Translator Module can.

## 27.2 Adding an Expander Module to an Unprogrammed Central Node

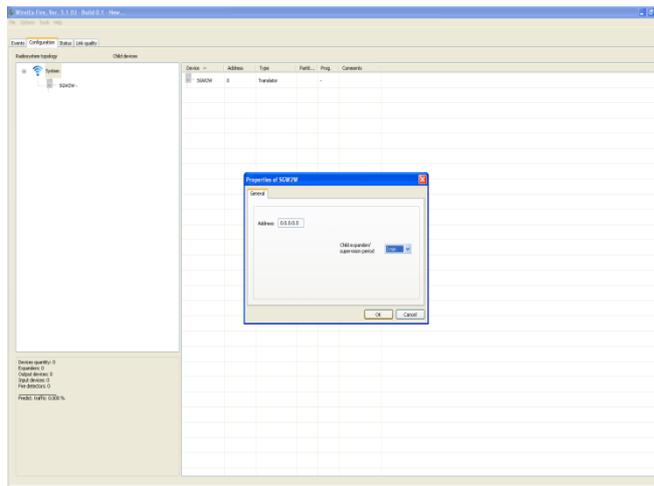
Open the Firewave Configurator software connecting the computer to the Central Node RS232 termination block using a standard 9-pin serial cable. Select the **“Configuration”** tab. Right click on **“System”** and from the drop-down window select **“Add Central Node”**:



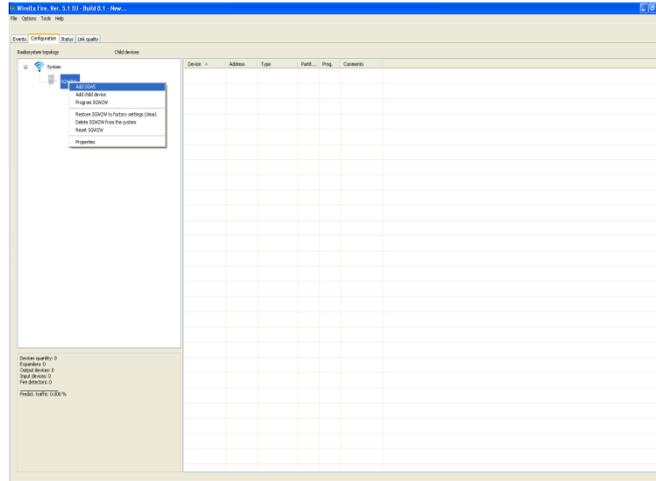
In the window that appears select the correct Central Node for the application pressing  once selected:



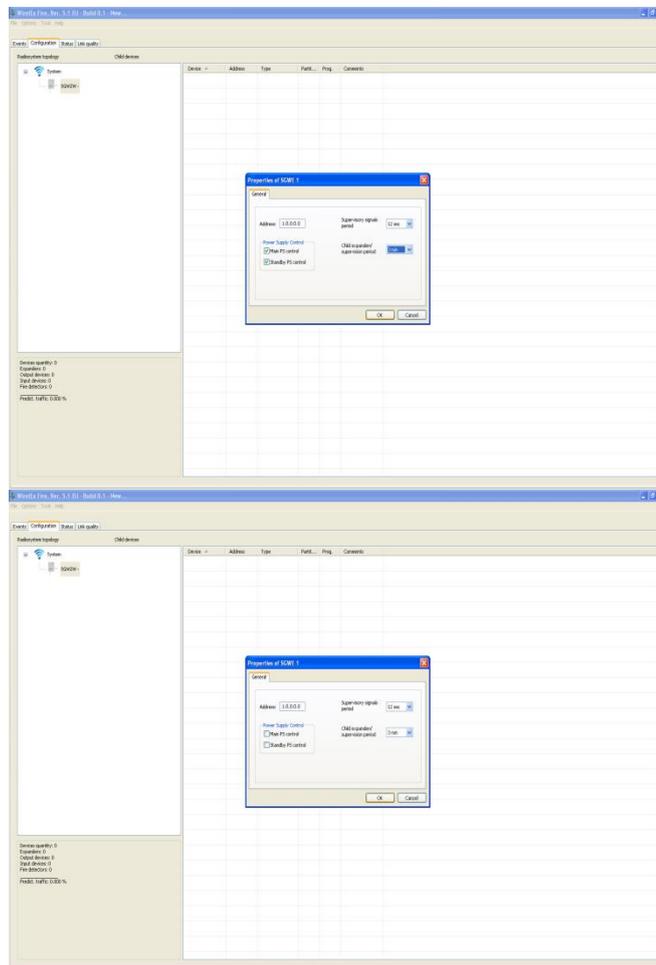
The Central Node parameter window will open. Press  to be returned to the **“Configuration”** tab:



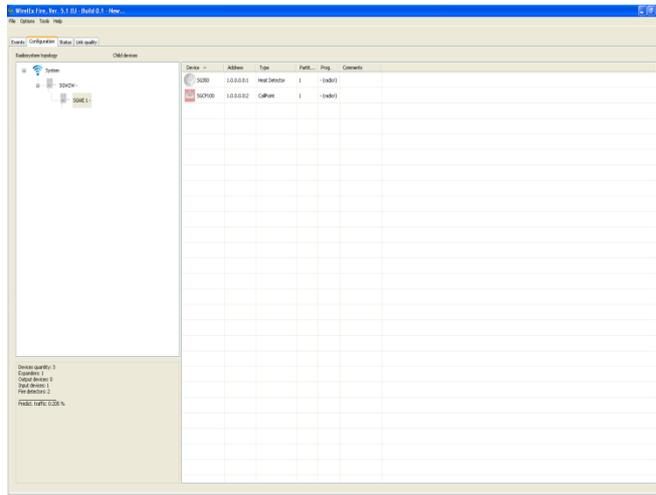
When all wireless child devices that are to be directly associated with the Central Node have been added, right click on the Central Node icon and from the drop down window that appears select **“Add SGWE”**:



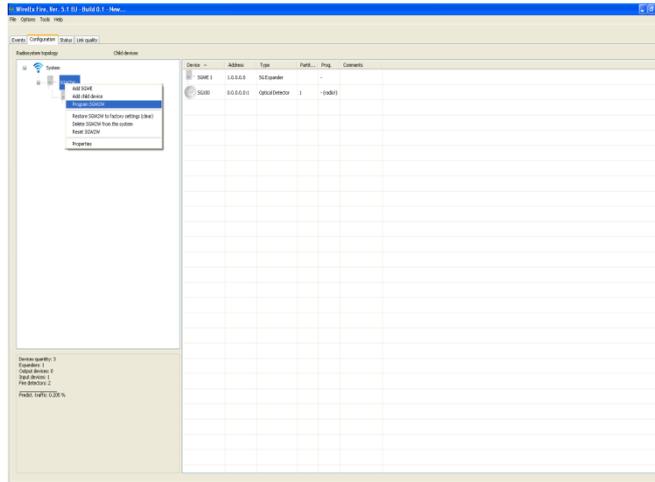
A window will appear with the parameters for the Expander. If the associated power supply is being monitored ensure the two boxes marked **“Main PS control”** and **“Standby PS control”** are checked. If the power supply is not being monitored, the two boxes should be unchecked:



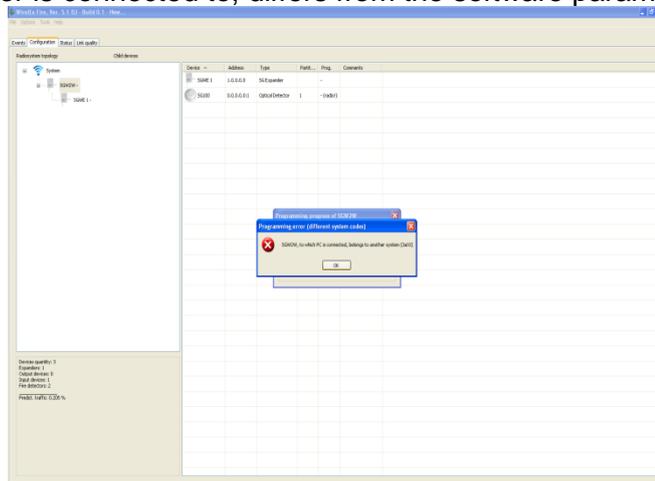
Once the parameters have been selected, press **OK** to be returned to the **“Configuration”** tab. Wireless child devices should now be added to the Expander:



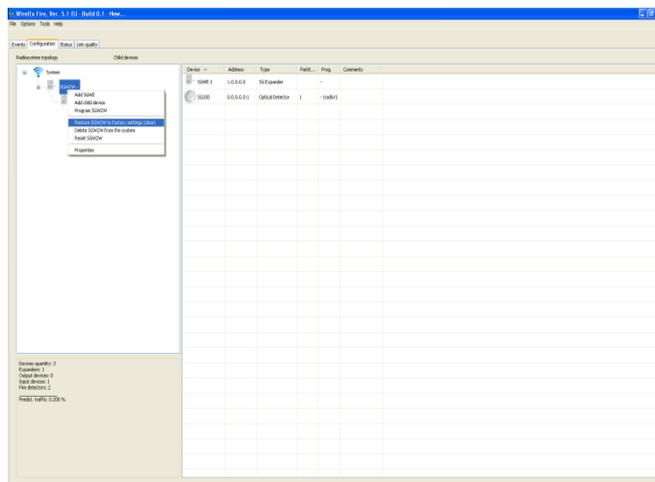
When the system architecture has been completed, the system will now need to be programmed. Programming of the system should always start with the Central Node. At the **“Configuration”** tab, right click on the Central Node and from the drop down window select **“Program RSM-WTM”**:



The following window may appear. This indicates that the parameters of the Central Node, for the device the computer is connected to, differs from the software parameters:

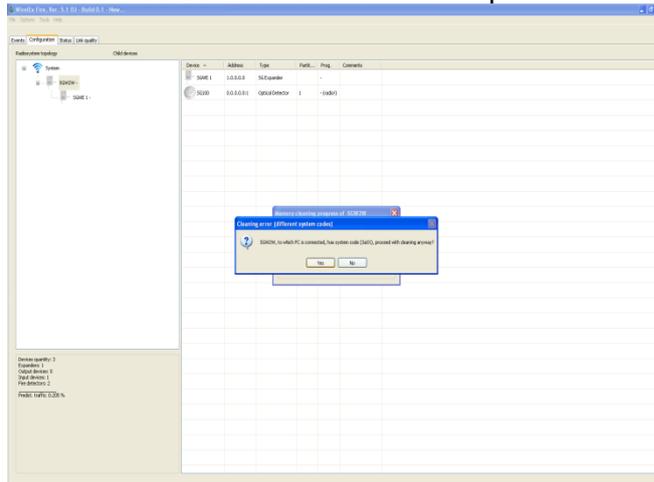


Press  and the User will be returned to the **“Configuration”** tab. Right click on the Central Node selecting **“Restore to factory settings (clear)”** from the drop down window that appears:

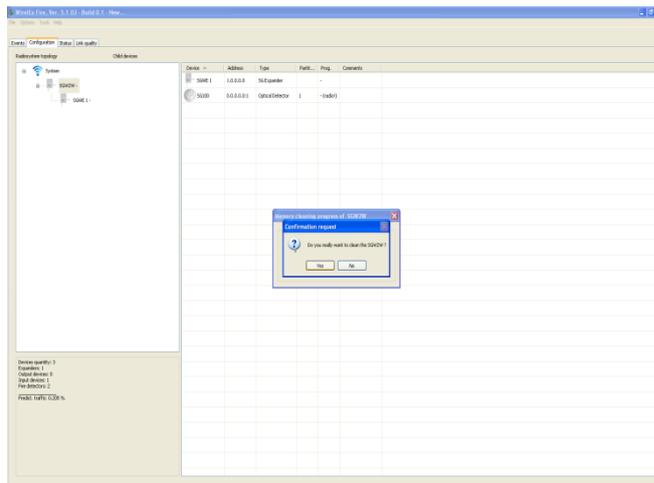


This will clear the internal memory of the Central Node but will not delete the configuration compiled earlier.

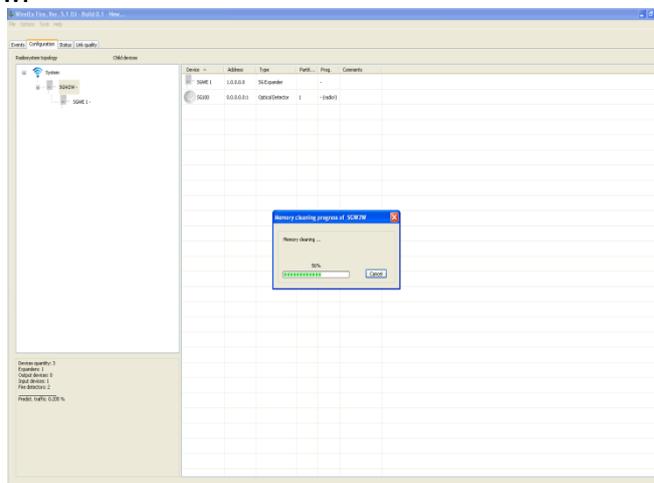
Before the cleaning process starts a window will appear warning the User that the system parameters the computer is connected to differs from the expected:

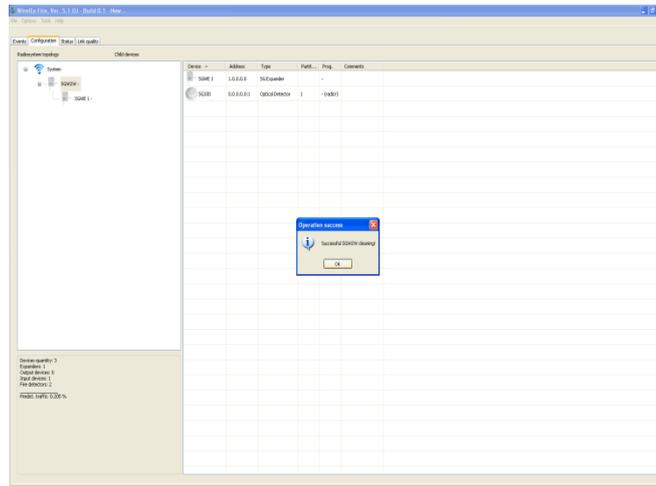


A further warning window will appear to confirm that the User wants to proceed with this process:



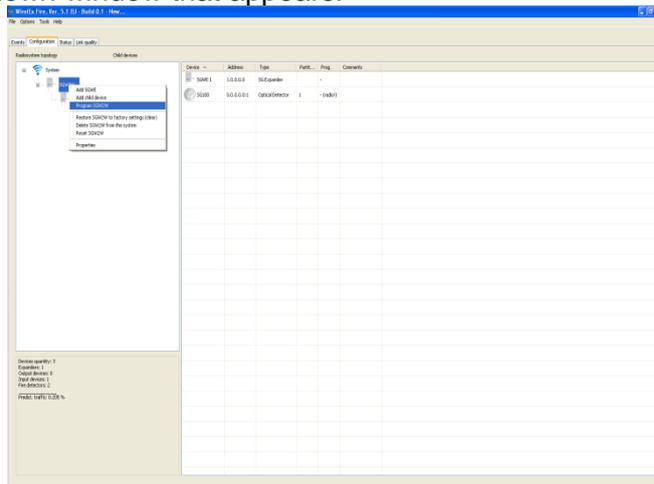
Press the **Yes** button and the process will start with a progress window displayed followed by a completion window:



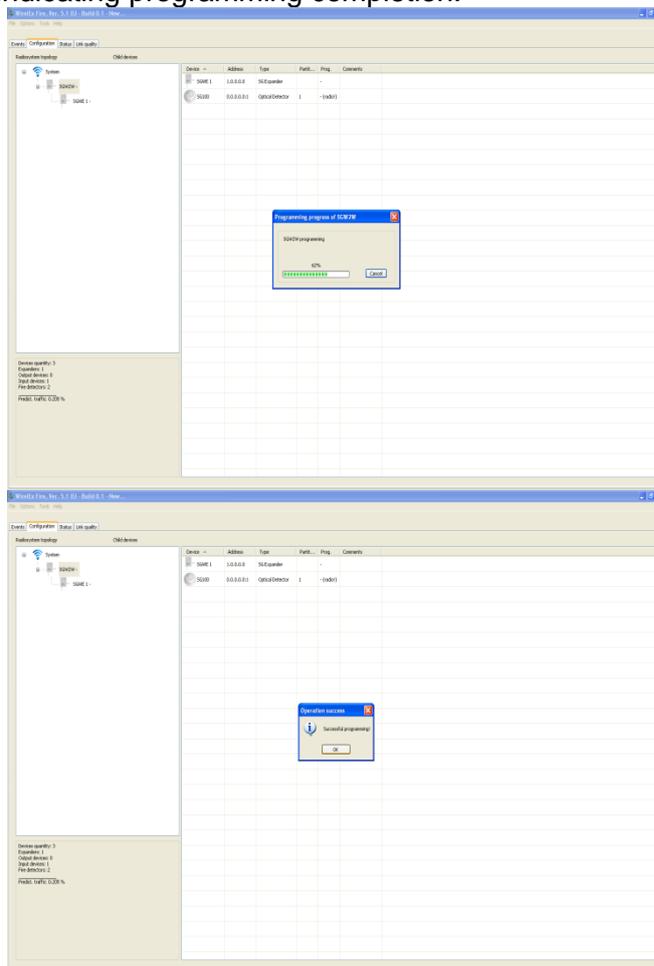


The Central Node has now been cleaned. The process for programming the Central Node should now be repeated.

At the **“Configuration”** tab right click on the selected Central Node selecting **“Program RSM-WTM”** from the drop down window that appears:

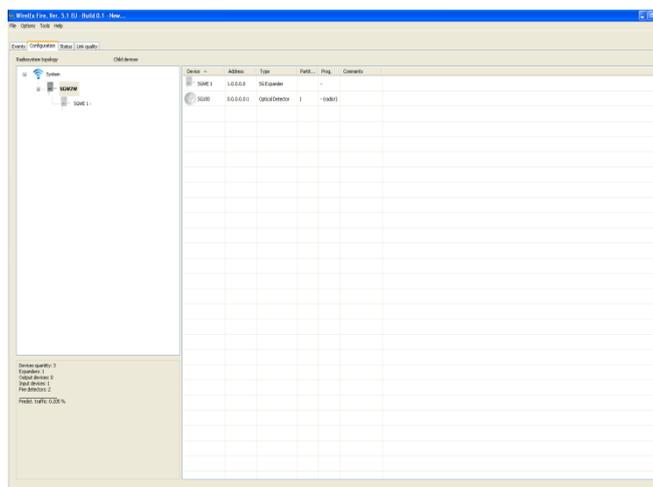


Programming will commence and a window will appear indicating programming progress followed by a window indicating programming completion:



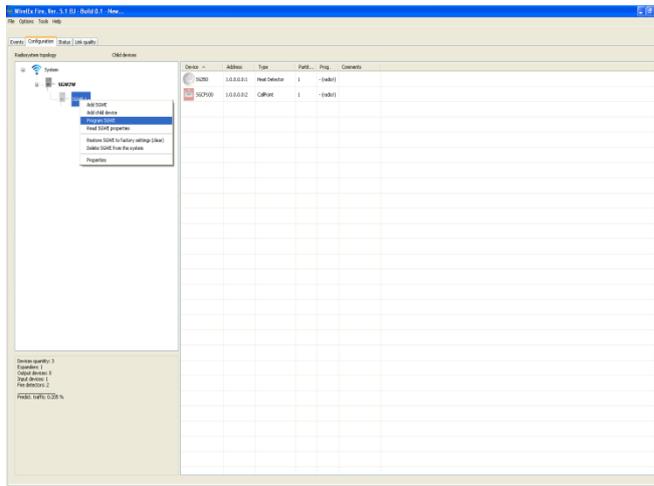
Press  and the user will be returned to the **“Configuration”** tab. The User should note the difference in the appearance of the font for the word **“RSM-WTM”** it will now be **bold**. The icon for the Central Node will also be deeper in appearance as compared to the Expander (“RSM-EXP”) that is yet to be programmed.



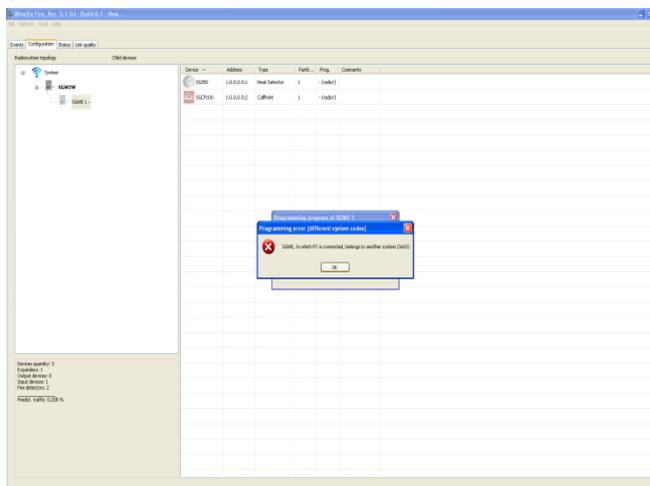


The child devices directly associated with the Central Node should now be programmed as previously detailed (see [page 102](#))

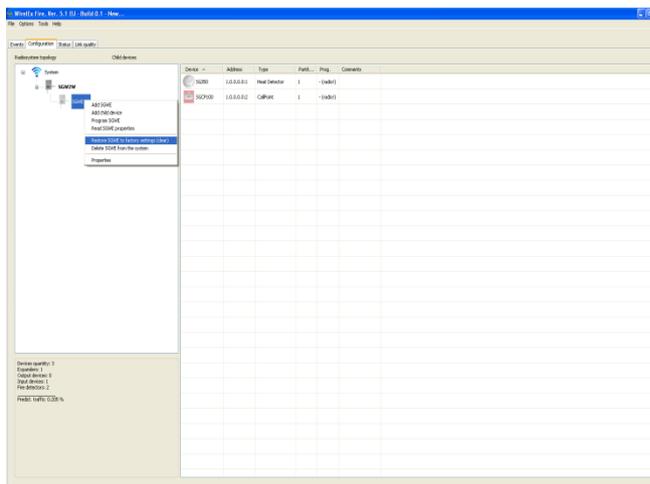
On completion of programming all the child devices directly associated with the Central Node, the Expander should now be programmed. The programming lead should be moved from the Central Node to the Expander that is to be programmed. Right click on the Expander in question (in this example RSM-EXP 1). A drop down window will appear. Select **“Program RSM-EXP”**:



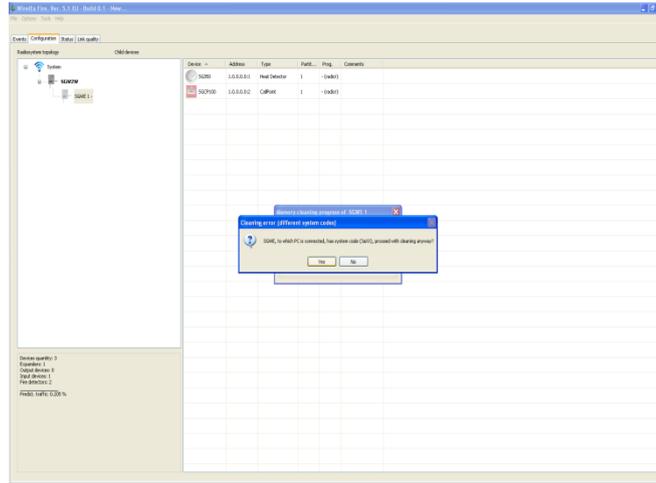
The following window may appear indicating that the Expander has different operational parameters to those expected:



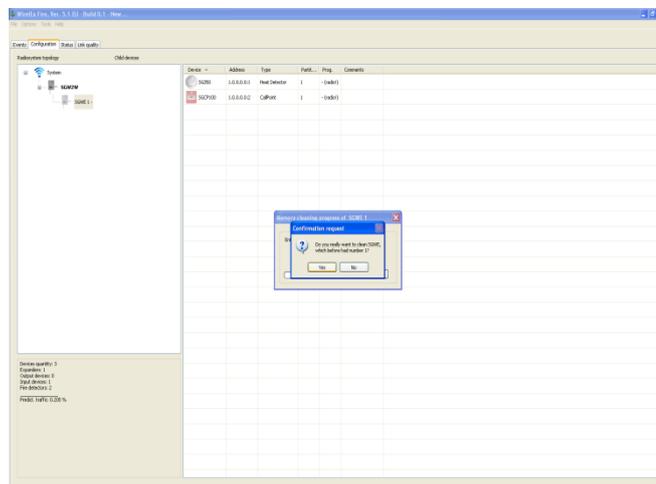
Press . The warning window will disappear. Right click on RSM-EXP again. From the drop down window that appears, highlight **“Restore RSM-EXP to factory settings (clear)”**:



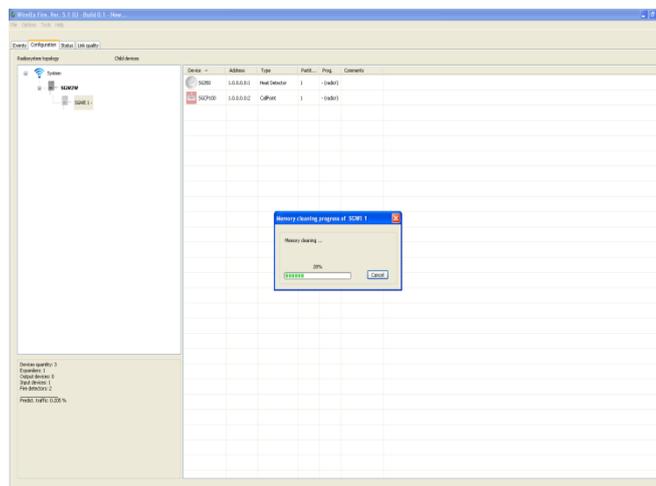
A further warning window will now appear informing the User that the system the computer is connected to has different system parameters and should the action proceed:

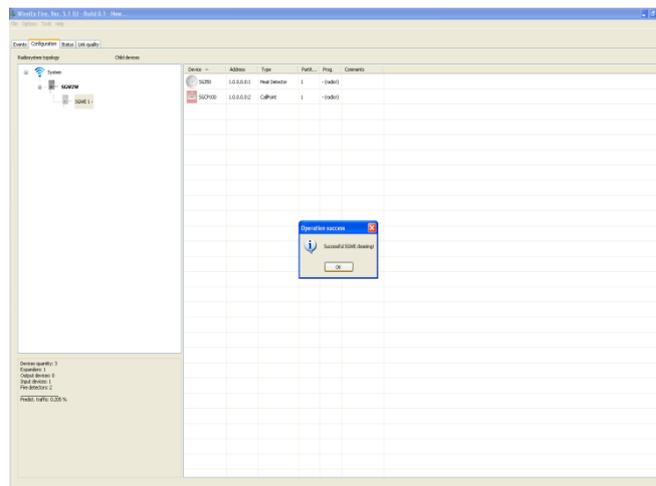


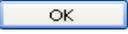
Selecting  will open another window requesting the User to confirm the action should proceed:



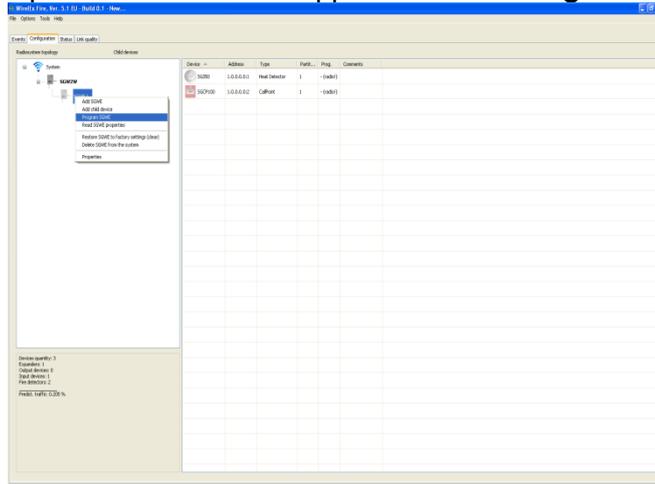
The cleaning process of the Expander will now commence. A window indicating progress will appear (below left) followed by a completion window (below right):



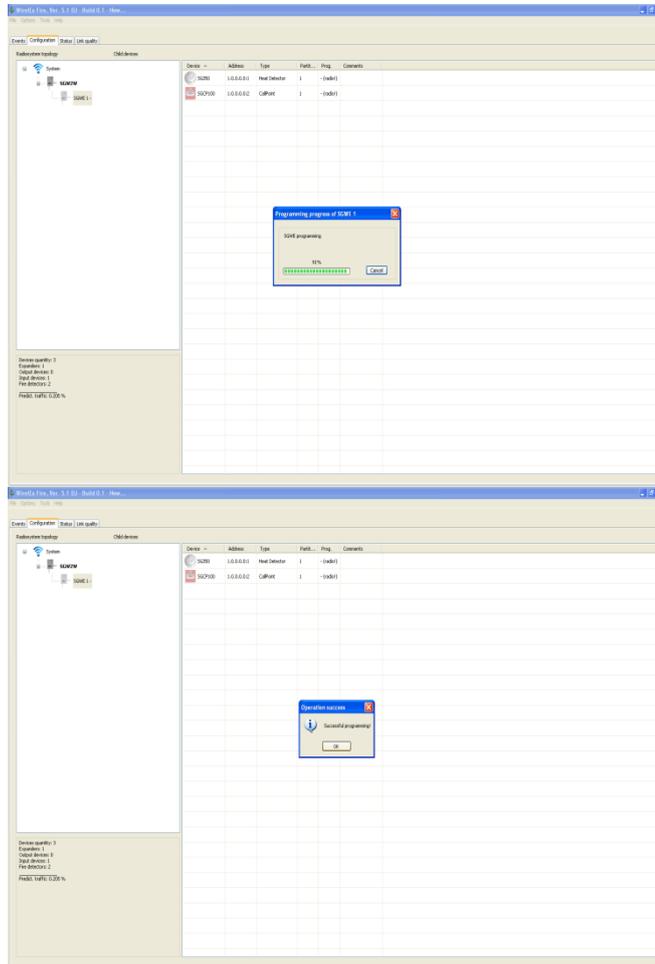


Press  to be returned to the main **“Configuration”** tab

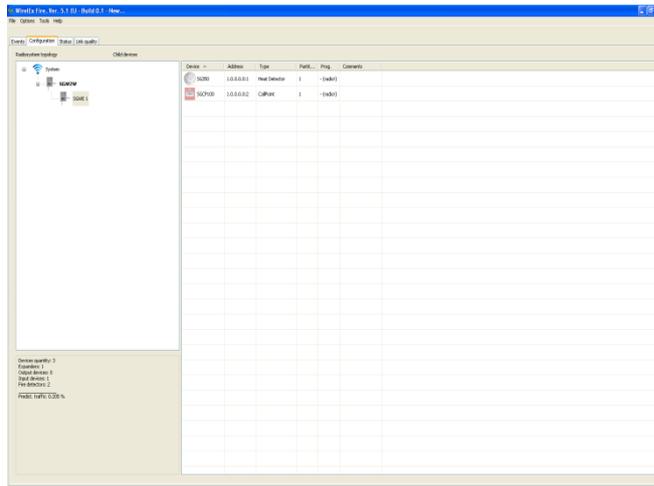
The action of programming the Expander should now be repeated. Right click on the relevant Expander. From the drop-down window that appears select **“Program RSM-EXP”**:



Programming will commence and a progress window will be displayed followed by a programming completion window:



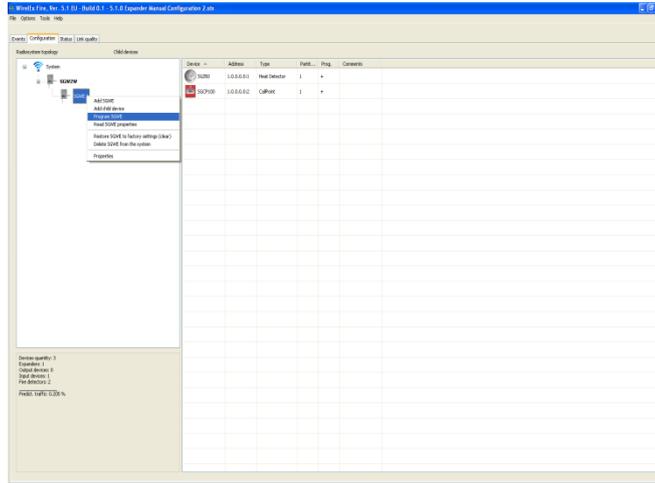
Press  to be returned to the main **“Configuration”** tab. The User will now see that the Expander icon is the same density as for the Central Node:



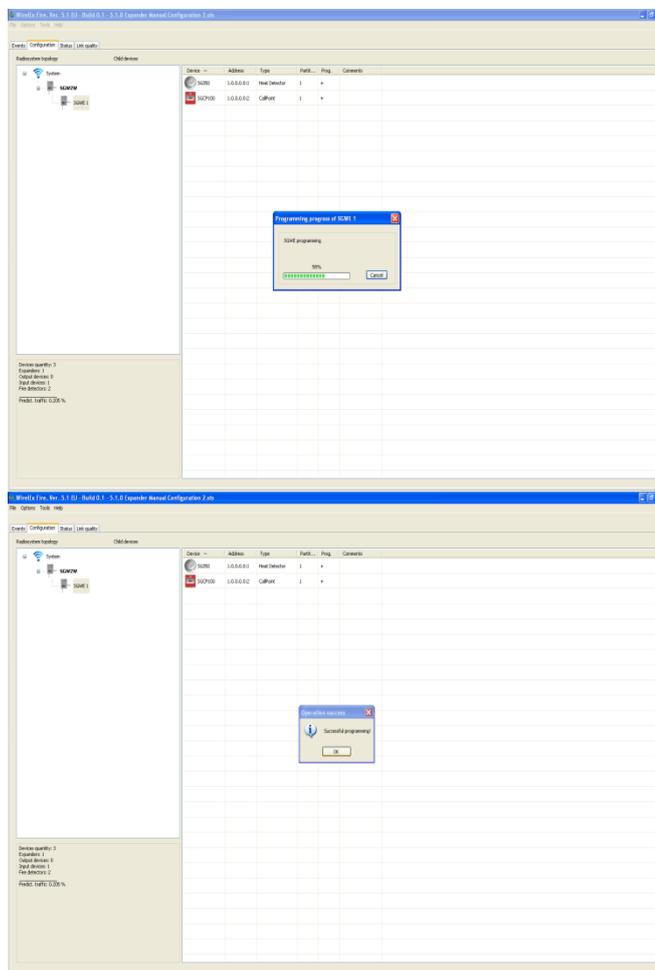
The child devices directly associated with this Expander should now be programmed

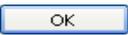
To complete programming of the Expander to ensure the system functions correctly, the following further programming process will need to be completed.

Right click on the Expander that has just been programmed. From the drop down window that appears select **“Program RSm-EXP”**:



A window will appear indicating progress of the programming followed by another window showing programming is complete:

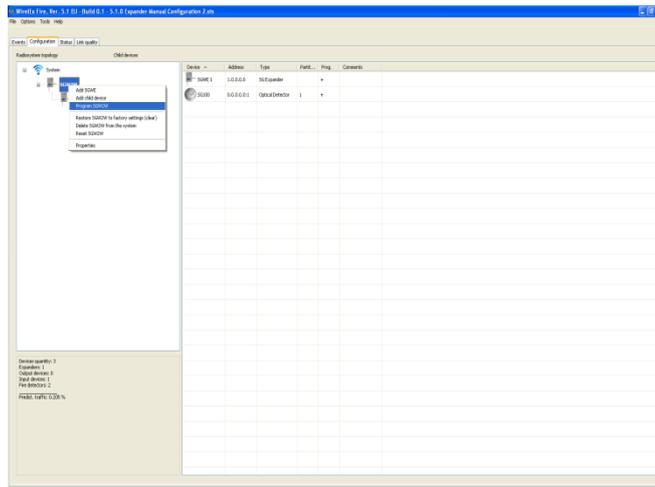


On completion press . The User will now be returned to the **“Configuration”** tab.

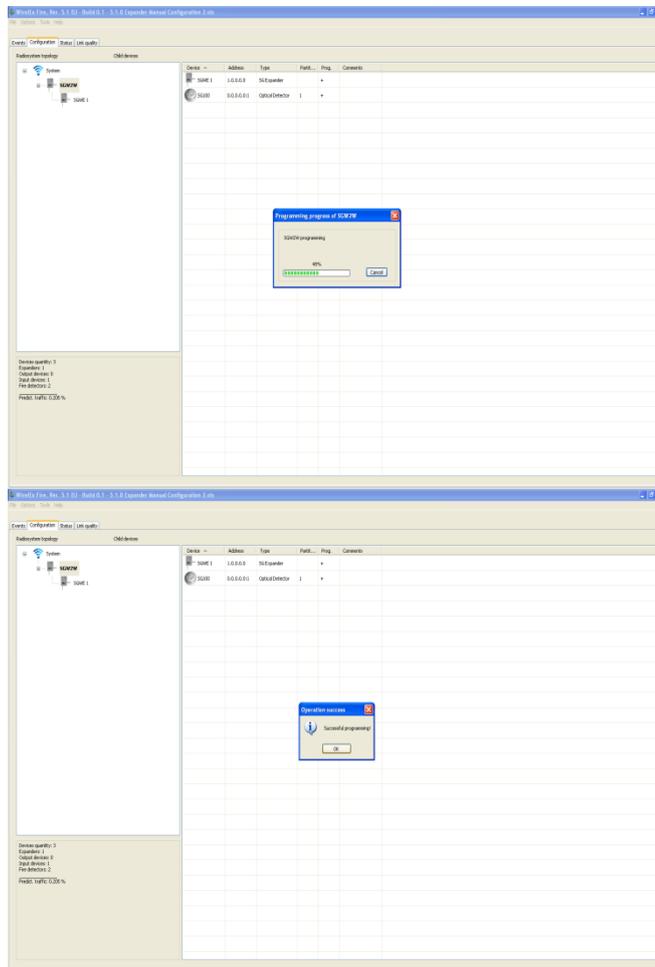
The programming lead should now be moved back to the Central Node for the final step.



The final step is to carry out a final programming of the Central Node. Right click on **“RSM-WTM”** selecting **“Program RSM-WTM”** from the drop down window:



A window will appear to show progress of programming (below left) followed by a window indicating completion (below right):



A **“LOAD”** command should now be carried out locally at the associated Central Node (see [page 105](#)).

**NOTE:** If the Central Node is a Conventional Interface Module, programming is complete when

the final Central Node programming has been carried out. A “LOAD” command does not need to be carried out on a Conventional Interface Module

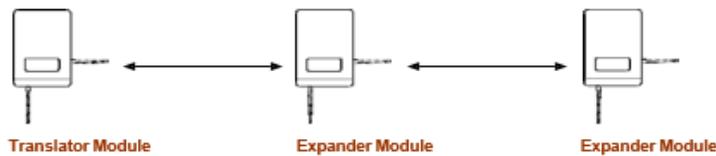
### 27.3 Adding an Expander Module to a Programmed Central Node

If a system has already been installed and there is an operational requirement to add an Expander to the system, the methodology is the same as described in [pages 129 - 138](#)

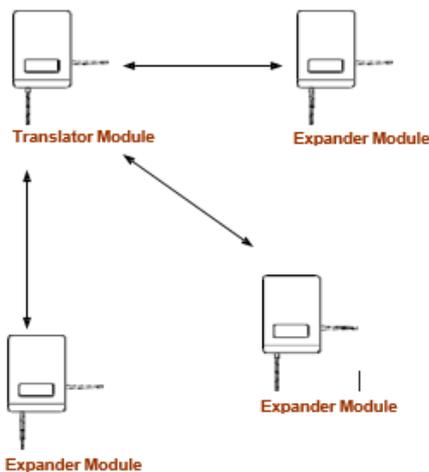
### 27.4 Adding Additional Expander Modules

If adding additional Expanders, these can be added in three ways – daisy chain from the previous Expander or on the same layer as another Expander, or a combination of the two.

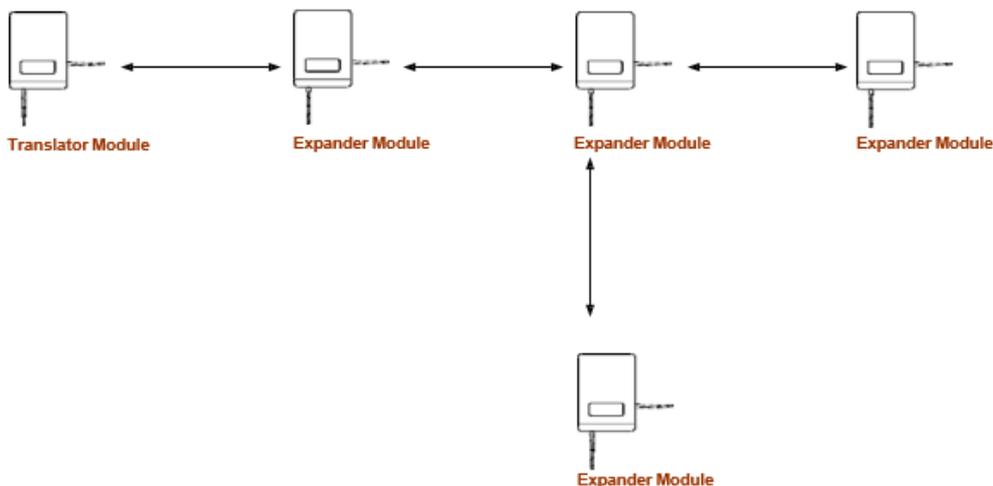
#### DAISY CHAIN



#### SAME LAYER



#### COMBINATION

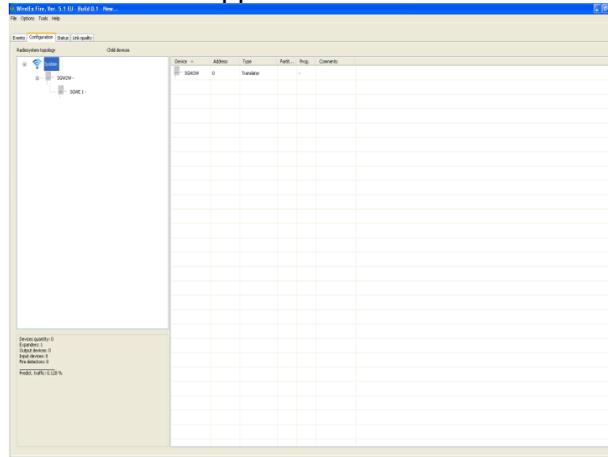


#### DAISY CHAIN

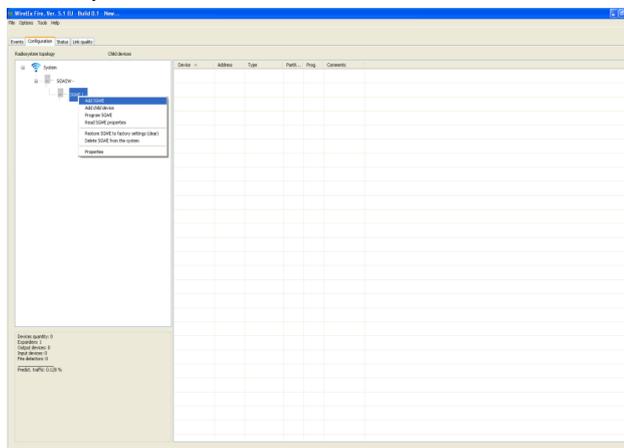


When adding Expanders in a daisy chain format, the following process should be followed. Deviation from this may result in incorrect reporting of faults and fires from trigger devices and no activation of alarm devices.

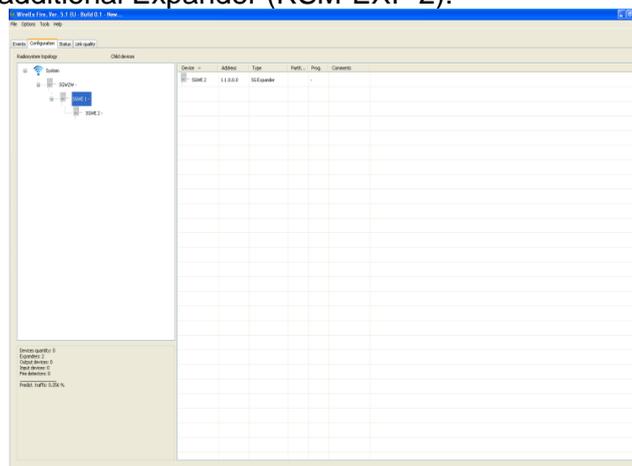
Open the Firewave Configurator software and whilst connected to the Central Node via the RS232 port, add a Central Node (plus child devices) and first Expander (plus child devices) as detailed at [pages 129 - 138](#). **DO NOT CARRY OUT ANY PROGRAMMING**. The Firewave Configurator “*Configuration*” tab should appear as follows:



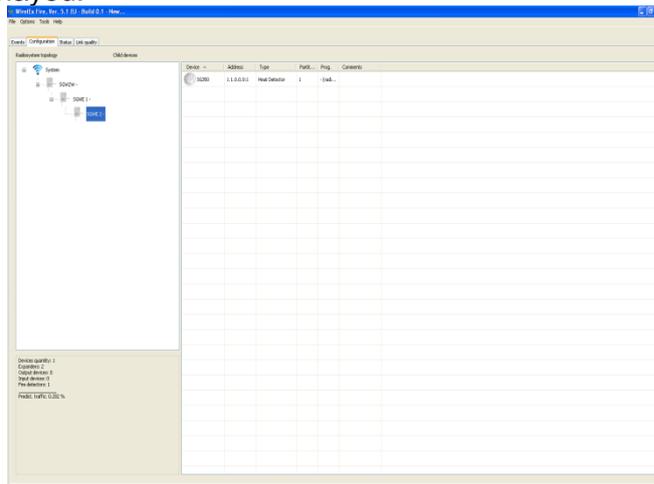
To add an additional Expander in a “daisy chain format”, right click on “**RSM-EXP 1**” selecting “**Add RSM-EXP**” from the drop down menu:



This will open up the Expander properties window (see [page 130](#)). Ensure the system parameters are correct. Press  on completion. The following window will be displayed showing the additional Expander (RSM-EXP 2):



If devices are to be added to this Expander – in this instance a Thermal Heat Detector - these should be added as previously detailed. When all devices have been added, the following window should be displayed:



The following steps should be taken to ensure that all components of the system are programmed correctly:

- Program Central Node
- Program Central Node devices

(Transfer lead to Expander 1)

- Program Expander “RSM-EXP 1”
- Program Expander “RSM-EXP 1” child devices

(Transfer lead to Expander 2)

- Program Expander “RSM-EXP 2”
- Program Expander “RSM-EXP 2” child devices

(Transfer lead to Expander 1)

- Program Expander “RSM-EXP 1”

(Transfer lead to Central Node)

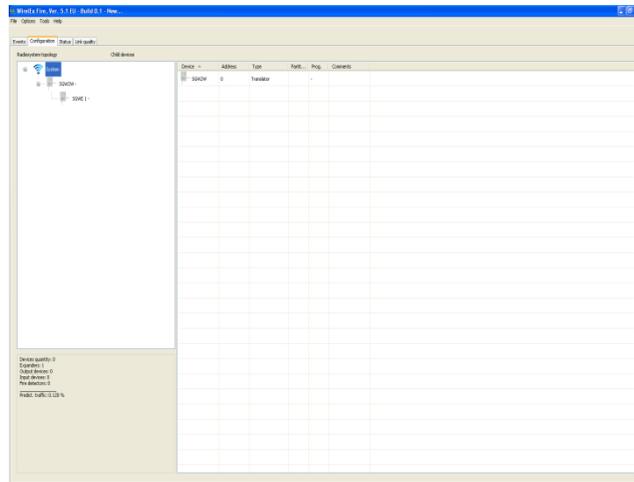
- Program Central Node

On completion of the programming sequence a **“LOAD”** command (see [page 105](#)) should be carried out at the Central Node (only if the Central Node is a Translator Module). The whole system can now be displayed and controlled with the computer connected to the Central Node as previously indicated.

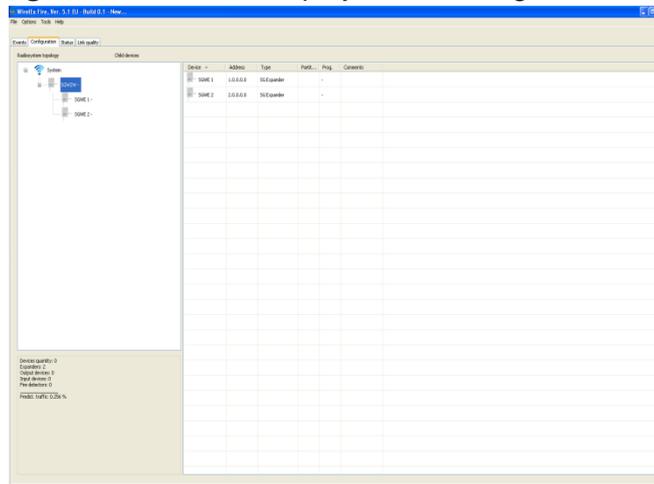
Should any further Expander Modules need to be added to extend the “daisy chain” further, the same process described above should be followed. The maximum number of Expander Modules that can be added in a “daisy chain” is 5 creating a maximum of 6 layers.

## 27.5 Same Layer

If adding a second, or third, Expander on to the same layer – in this instance to the Central Node, the following process should be followed. Open the Firewave Configurator software. With the computer connected to the Central Node, add a Central Node (plus child devices), then add the first Expander (plus child devices). The **“Configuration”** tab should display the following:



To add another Expander on to the same layer as the first Expander, right click on **“RSM-WTM”** in the **“Radiosystem topology”** area selecting **“Add RSM-EXP”** from the drop-down window. When added the **“Configuration”** tab will display the following:



From the above window, the difference in the topology of the above system and a “Daisy Chain” system can be seen. The difference in the digital address of the Expanders should also be noted. The programming sequence for this system is:

- Program Central Node
  - Program Central Node devices
- (Transfer lead to Expander 1)
- Program Expander “RSM-EXP 1”
  - Program Expander “RSM-EXP 1” child devices
- (Transfer lead to Expander 2)
- Program Expander “RSM-EXP 2”
  - Program Expander “RSM-EXP 2” child devices

(Transfer lead to Central Node)

- Program Central Node



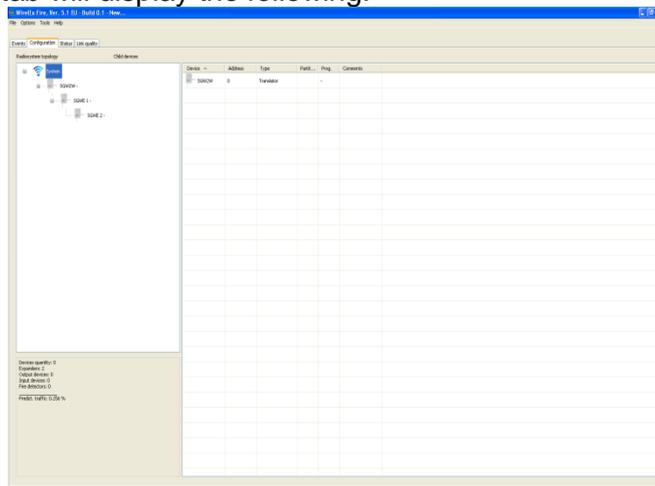
## 27.6 COMBINATION

There may be a requirement to add Expander Modules in a combination of the previous two sequences – this could be used in an installation with multiple buildings, for example.

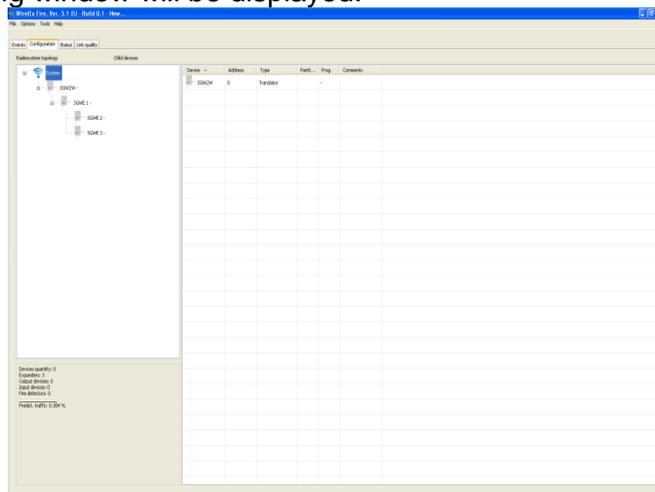
Open the Firewave Configurator software. With the computer connected to the Central Node, add a Central Node and child devices (if applicable) and two Expander Modules (plus child devices (If applicable)) in a daisy chain as previously described.

(For this system, Expander Module **“RSM-EXP 1”** has no child devices) A second Expander Module will now be added to Expander Module 1 (RSM-EXP 3)

The **“Configuration”** tab will display the following:



Right click on Expander, **“RSM-EXP 1”**, selecting **“Add RSM-EXP”** from the drop down window. Ensure all operational parameters are correct before selecting . On completion the following window will be displayed:



It can be seen from the above image that the system is a combination of the DAISY CHAIN system and the SAME LAYER system.

Programming of the system should be carried out as follows:

- Program Central Node
  - Program Central Node devices

(Transfer lead to Expander 1)

- Program Expander “RSM-EXP 1”

(Transfer lead to Expander 2)

- Program Expander “RSM-EXP 2”
- Program Expander “RSM-EXP 2” child devices

(Transfer lead to Expander 3)

- Program Expander “RSM-EXP 3”
- Program Expander “RSM-EXP 3” child devices
- Program Expander “RSM-EXP 3”

(Transfer lead to Expander 2)

- Program Expander “RSM-EXP 2”

(Transfer lead to Expander 1)

- Program Expander “RSM-EXP 1”

(Transfer lead to Central Node)

- Program Central Node

On completion, carry out a **LOAD** command (see [page 105](#)) at the Central Node (if the Central Node is a Translator Module). As before, it will now be possible to control the whole system with the computer connected to the Central Node.

The three processes detailed above should be used in isolation, or in combination, when adding numerous Expanders to a system. The process is logical and must be followed to avoid “losing” part of the system and prolonging the programming process.

## 28 Additional Software Applications

### 28.1 Introduction

To assist an installation there are two additional software applications available on the Firewave Configurator CD:

- RF ANALYZE UTILITY

This allows the engineer to assess the background RF environment for all seven operational channels. This can assist the Commissioning Engineer to correctly allocate a “clean” RF channel during initial installation for a Central Node and associated devices.

- FIRECLONE UTILITY

The “**Fireclone**” utility allows the User to take a copy of the configuration contained within a wireless interface (Central Node or Expander)

If the Central Node or Expander suffers an electrical failure or other fatal failure, this saved copy can be uploaded to the replacement without the need to re-program the associated child wireless devices.

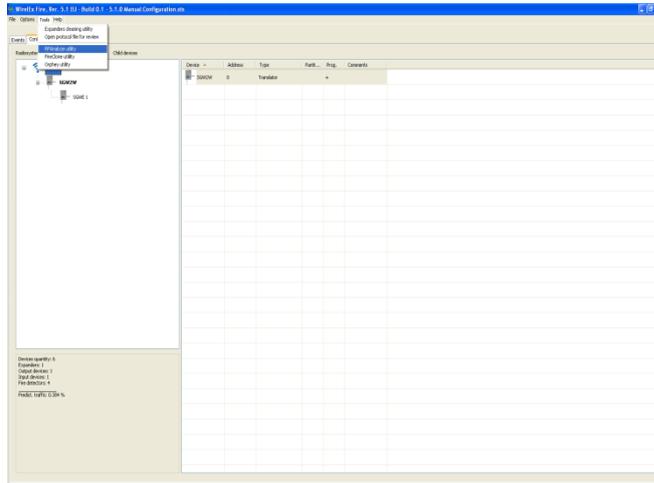
- VOICE ANNUNCIATOR (ORPHEY) UTILITY

This utility assists the installer in programming the Voice Annunciator (HFW-VSK-01) with voice messages. These messages can be pre-loaded prior to installation.

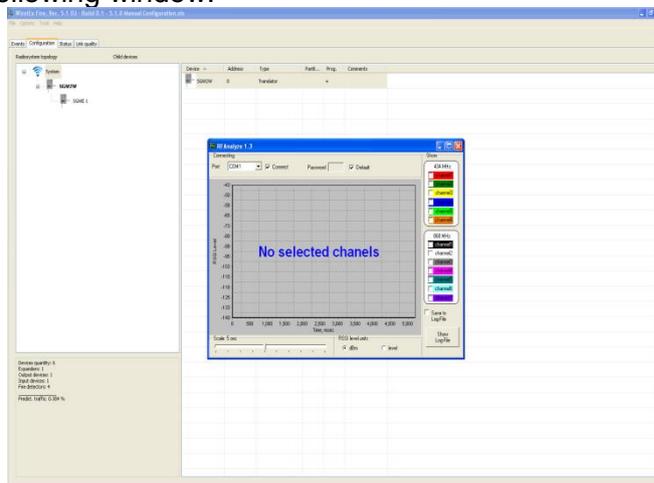
This section details how to access and use these utilities.

## 28.2 RF Analyze Utility

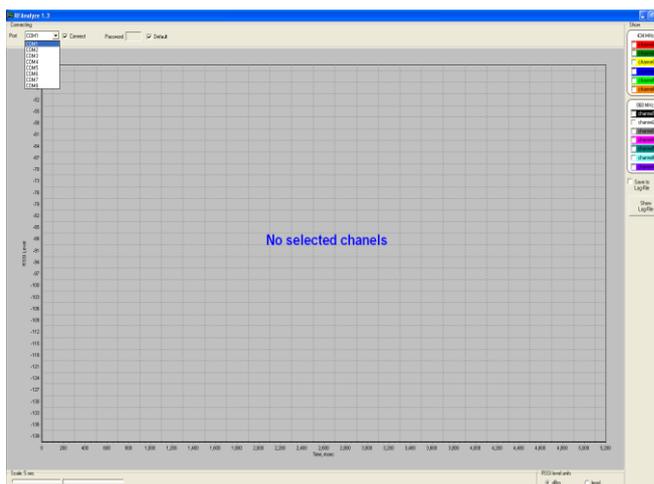
Connect a computer to the Central Node using a standard RS232 cable. To access this facility, select the “Tools” option and at the drop down window select “RF Analyze Utility”



This will bring up the following window:

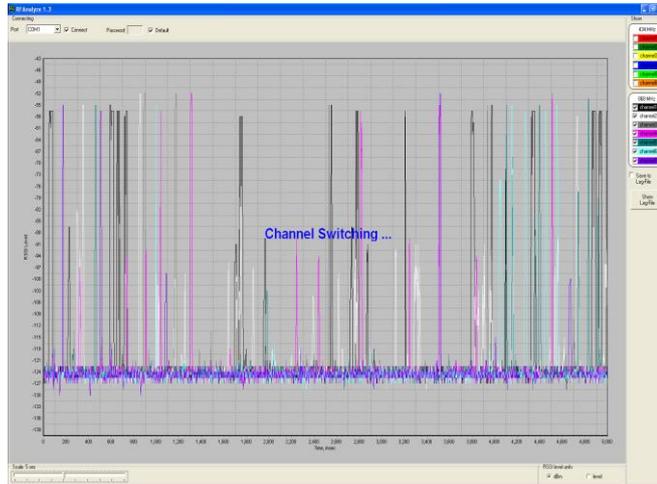


The engineer will need to ensure that the “Port” displayed is the same one that the RS232 lead is connected to (if using a PC with a serial port, the default for this is COM Port 1). If COM Port 1 is not the correct port, select the correct port from the options displayed in the drop down window – there are only a choice of 8 ports that can be selected. The “Connect” box should also be checked:

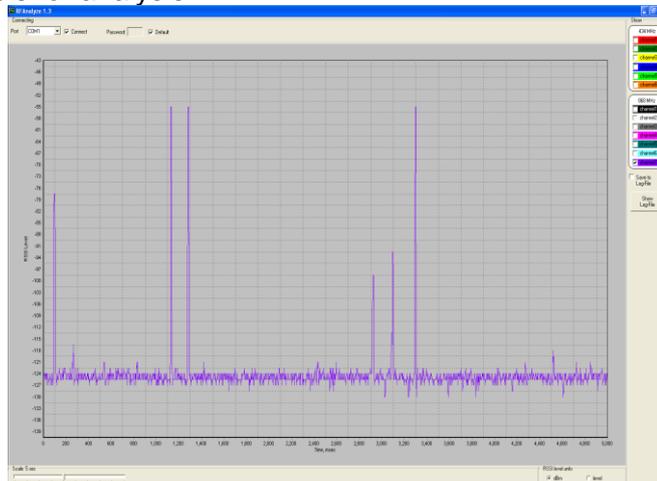


**NOTE: Ensure that no other application is open that uses the same port else information will not be transferred.**

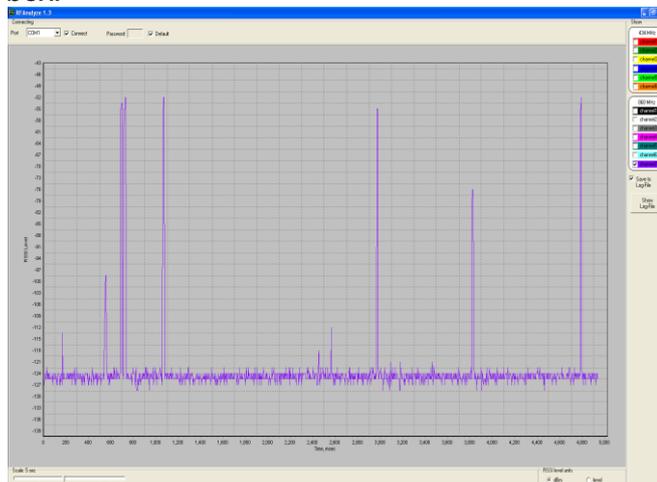
The **“868MHz”** channels should be selected for analysis. It is advisable to check all seven channels in the first instance:



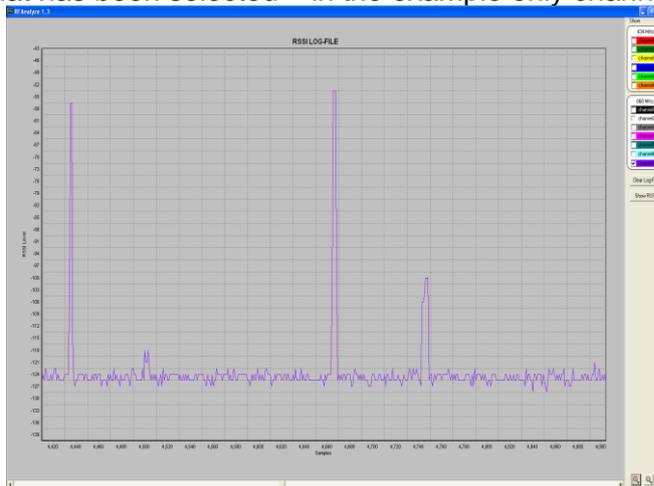
After analyzing the above radio environment, the User should start to de-select “busy” channels leaving clearer channels for analysis:



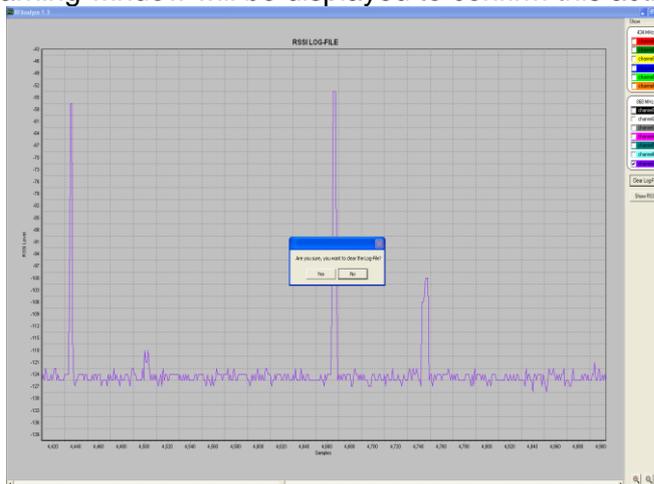
As can be seen from the above screenshot, the chosen channel (Channel 7) appears to be the least busy. This signal screen can be saved for future analysis. This is carried out by checking the **“Save to log file”** box:



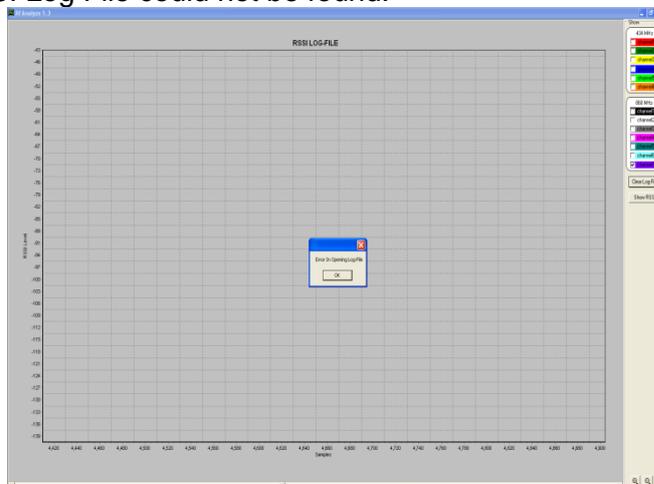
To display this log file, click on the **“Show log file”** button. The RSSI Log File will display a log file for each channel that has been selected – in the example only channel 7 has been saved:



Two alternative buttons will now be displayed – **“Clear log file”** and **“Show RSSI”**. If the first option is selected, a warning window will be displayed to confirm this action:



If **“YES”** is selected the log file will be deleted and a further comment box will be displayed indicating that the RSSI Log File could not be found:



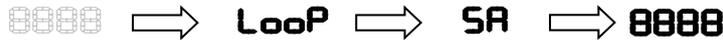
Selecting **“Show RSSI”** will take the User back to the active screen. The RSSI Log file is a dynamic file – each time **“Show log file”** is selected, the amount of readings recorded is increased



## 28.3 Fireclone Utility

This utility allows the User to take a copy of a Central Node configuration. In the event of a fatal failure of a Central Node or Expander, this copy can be uploaded to the new Central Node or Expander without the need to re-program the associated field devices.

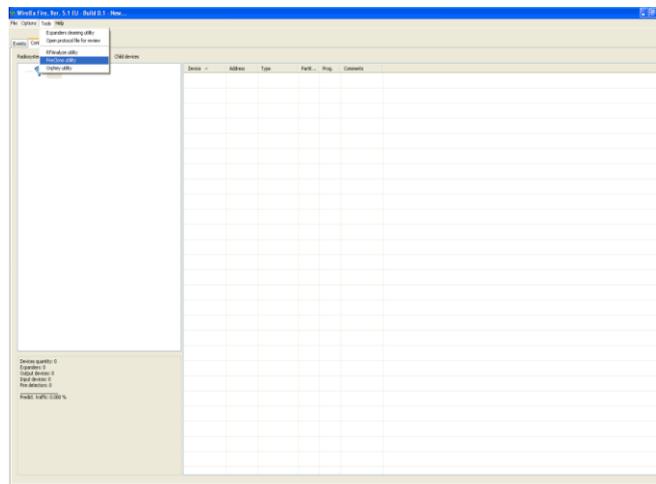
Although the Fireclone utility transfers the system configuration, the Loop Address of the Translator Module and associated devices is NOT transferred. The Start Address should be recorded and this can then be transferred to the new Translator Module.



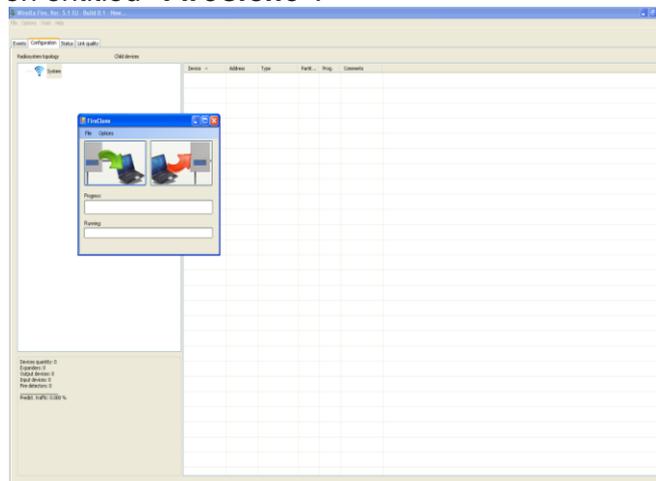
To read the Loop Start Address access the “LOOP” menu, press P2, SA will appear, press P2, the Loop Address will now appear. Record and press P1 until the LCD is blank. On completion, the Fireclone process can now proceed.

### DOWNLOAD THE CONFIGURATION FILE

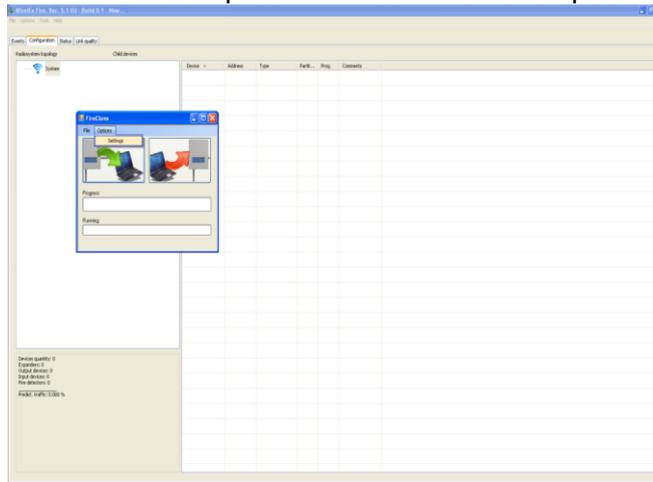
Open the Firewave Configurator software. To access this utility, select the “Tools” option and at the drop down window select “FireClone Utility”:



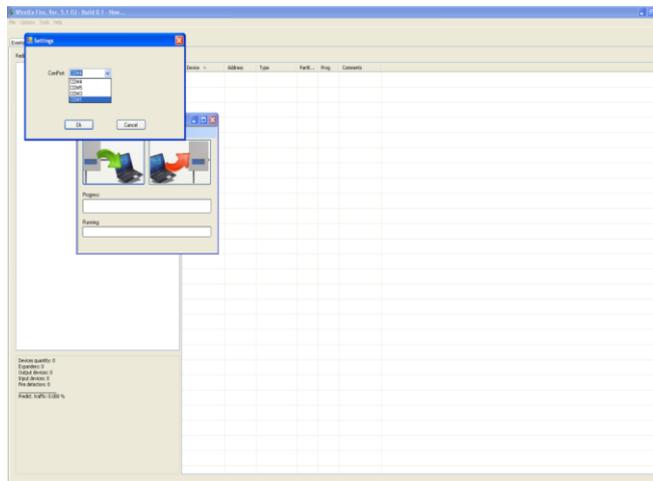
A small window will open entitled “FireClone”:



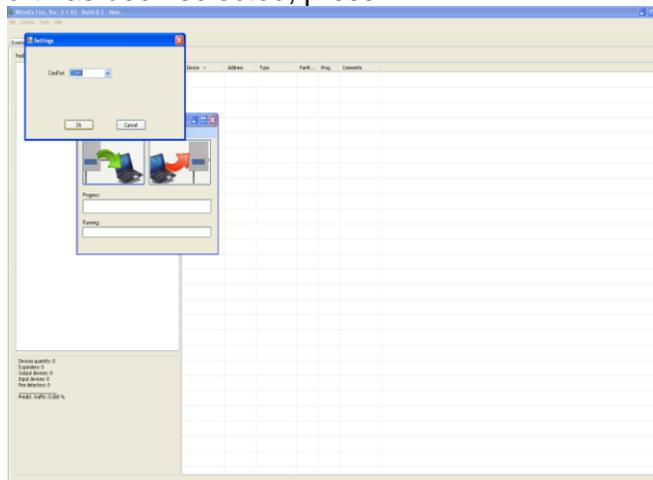
Before commencing a clone of the installed Central Node, the User needs to ensure that the computer is talking to the Central Node, ensure the correct COM Port is selected. Left clicking on the word **“Options”** will reveal a drop-down window with one option **“Settings”**:



Select **“Settings”**. This will give the User the option to select the correct COM Port for this utility:

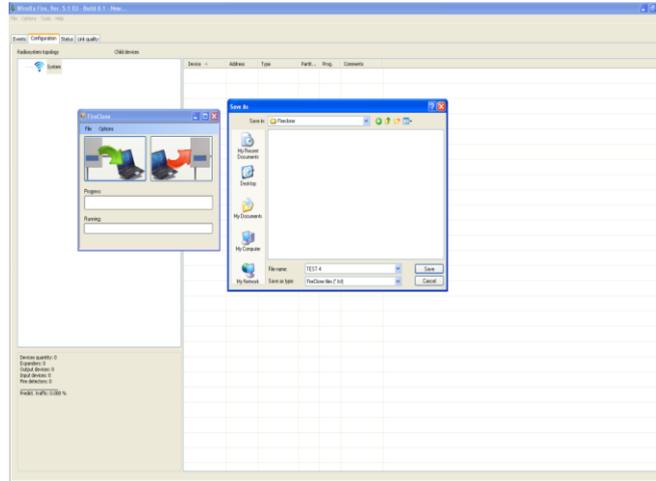


When the right COM Port has been selected, press **OK**:

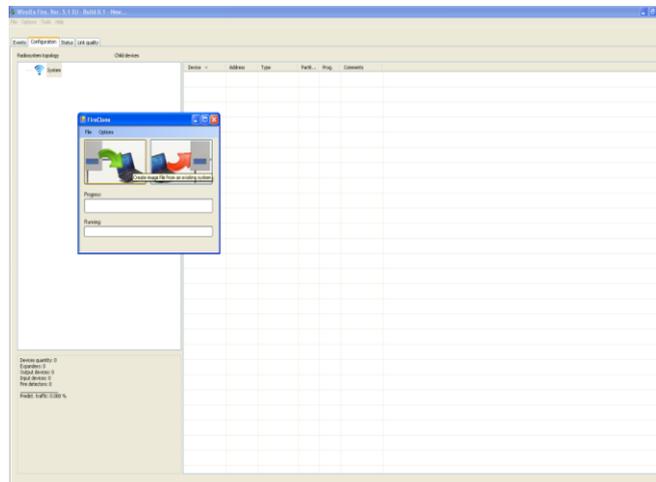


The User is now ready to clone the installed Central Node and save a copy of the system configuration file to his/her computer.

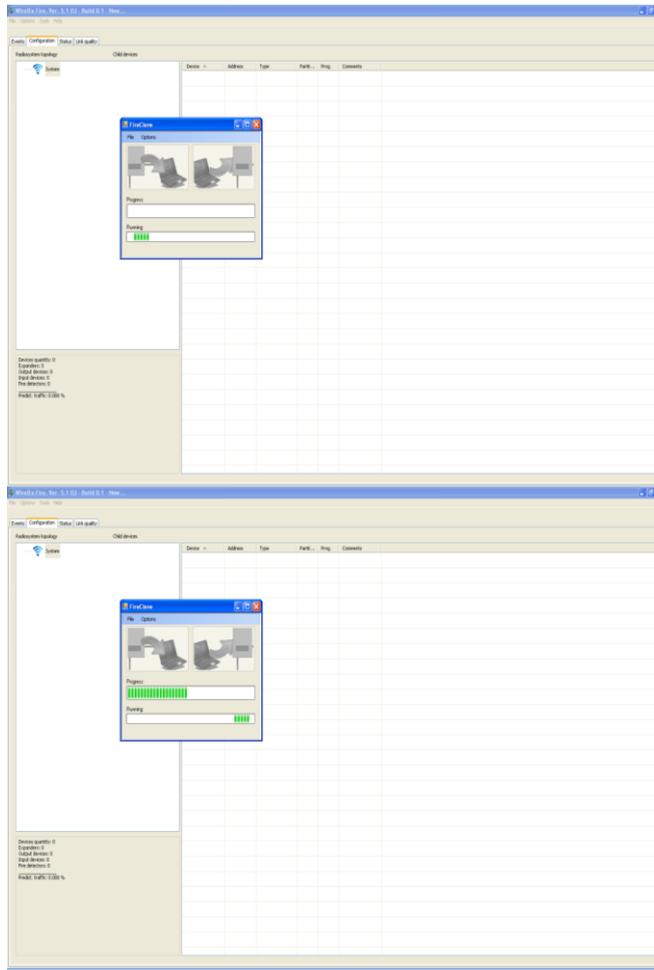
To start the process, click on the left hand smaller window that has a **GREEN** arrow pointing away from a wireless interface (Central Node or Expander) towards a computer.



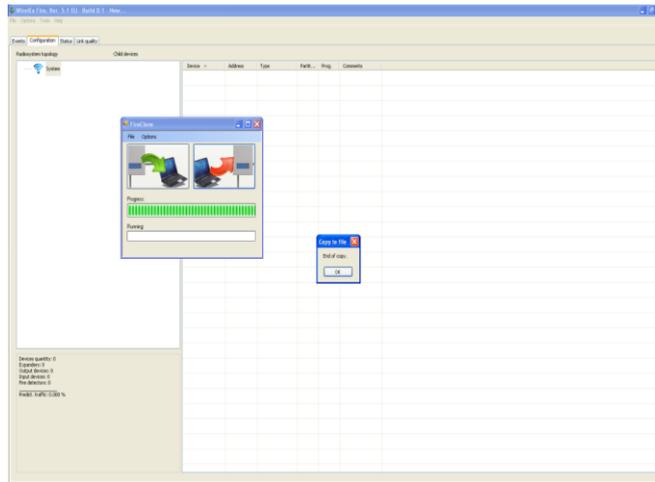
Note: Prior to clicking the sub-window, hovering the mouse over this sub-window will reveal the words  
***“Create image file from an existing system”***



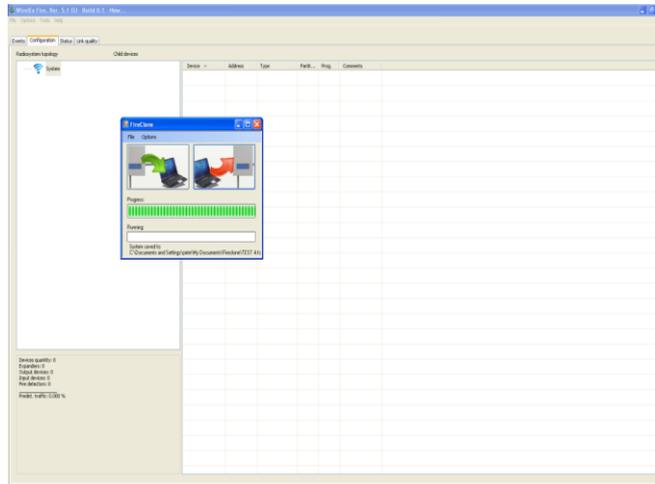
Save the file in to a folder on the computer – if there is more than one Central Node on site, and each Central Node interface configuration is being “Firecloned”, a separate file will be required for each interface. Press **Save** on completion  
 The Fireclone process will now start. Progress will be seen initially in the **“Running”** box followed by completion levels in the **“Progress”** bar:



When the copy is complete, a small window will appear indicating this:



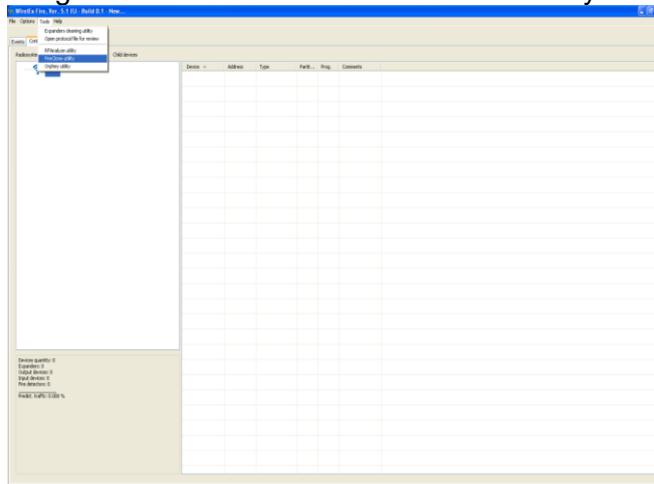
Pressing  will close this warning window and the original sub-window will now indicate where the file has been saved on the computer:



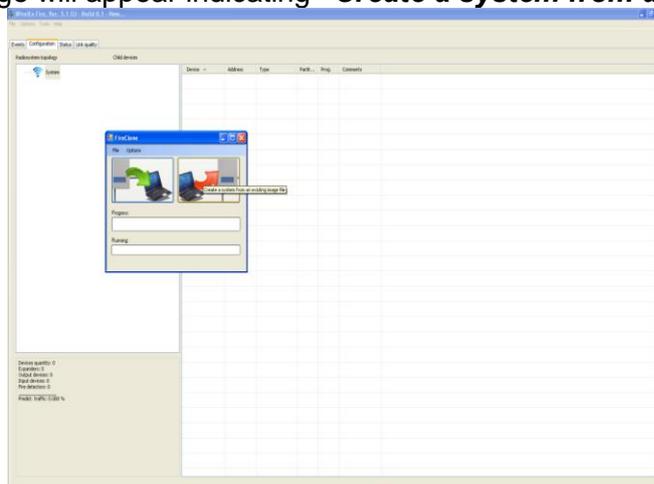
## 28.4 Uploading a copy of the Configuration File

When a file needs to be uploaded to a replacement Central Node, the following process should be followed.

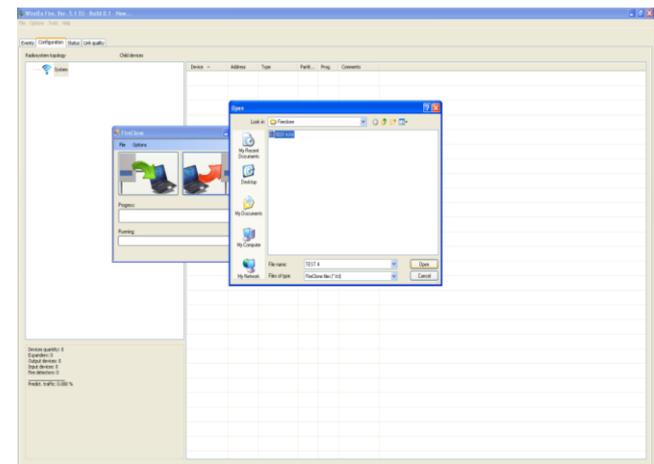
Open the Firewave Configurator Configuration Tool selecting the **“Tools”** option. A drop down window will appear allowing the user to select the **“Fireclone”** utility:



When the Fireclone utility is selected, a small sub-window will appear. Hover the mouse over the right smaller window with a **RED** arrow that indicates a transfer from a computer to a Central Node. A small message will appear indicating **“Create a system from an existing image file”**:



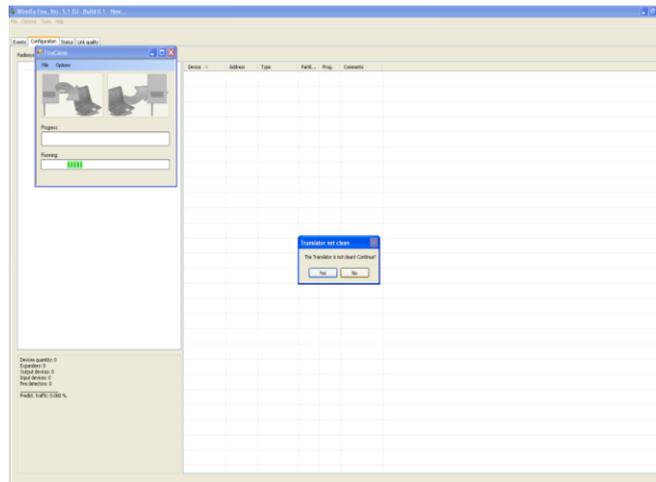
Clicking on this window will open another window allowing the user to select the required file for uploading:



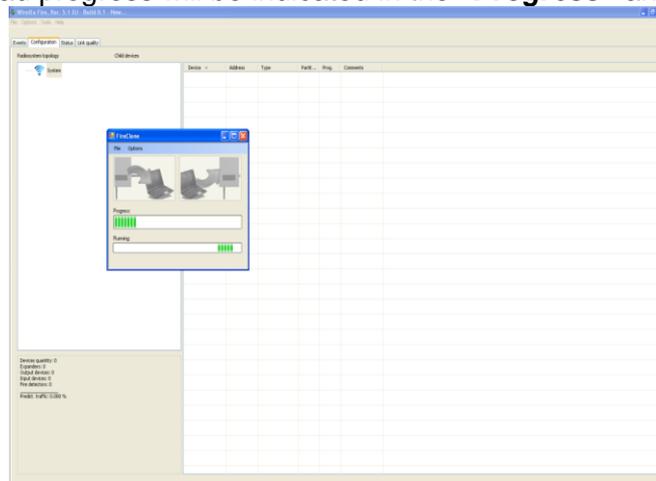
Highlight the file for downloading pressing **Open** when correct.



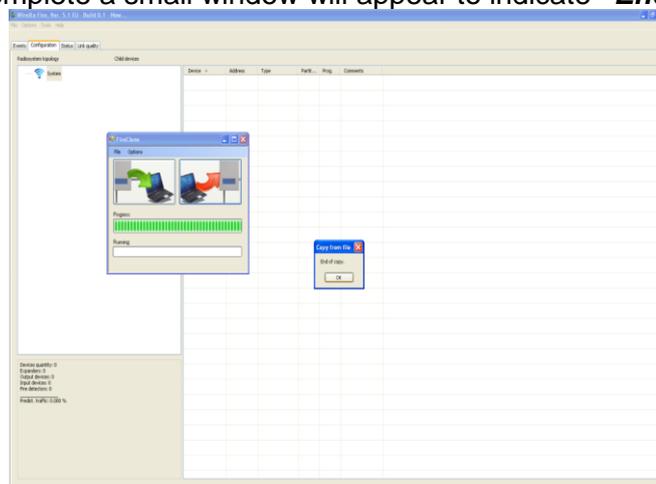
The following window may appear initially indicating that the Central Node already has some information on:



If  is selected, the process will stop. Selecting the  option will start the Fireclone upload. As part of the upload process, the Central Node will be cleaned prior to the file copy being uploaded. Upload progress will be indicated in the **“Progress”** and **“Running”** bars:



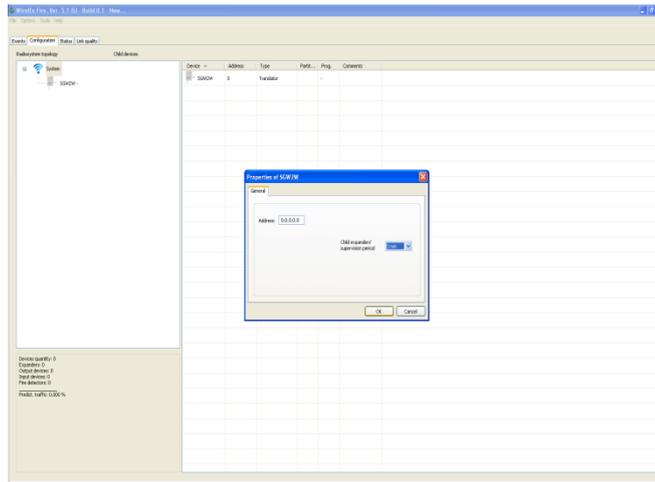
When the upload is complete a small window will appear to indicate **“End of copy”**:



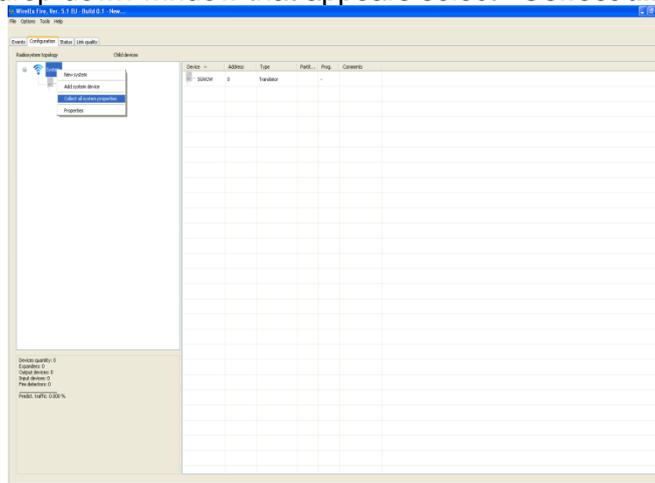
Pressing  will close this small warning window.



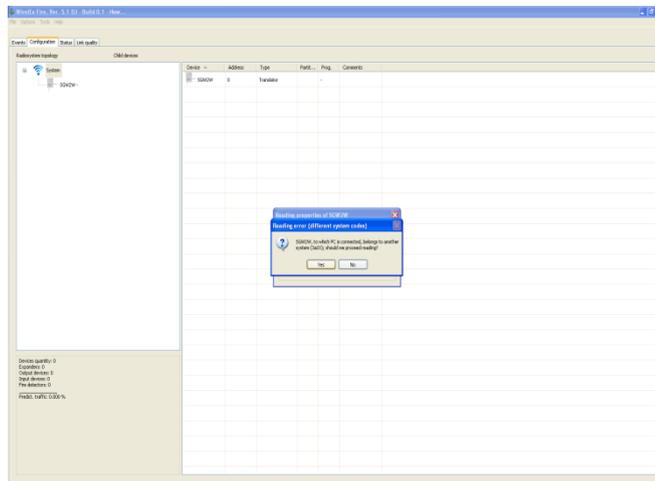
The Central Node parameter page will now open:



Pressing  will add a Translator Module under the word **“System”**. Right click on **“System”**. From the drop down window that appears select **“Collect all system properties”**:

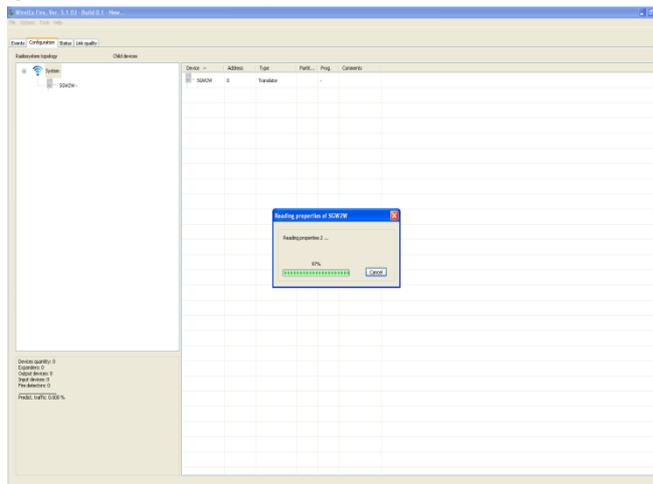


The computer will now connect to the Central Node in an attempt to download all system properties. The following window will appear:

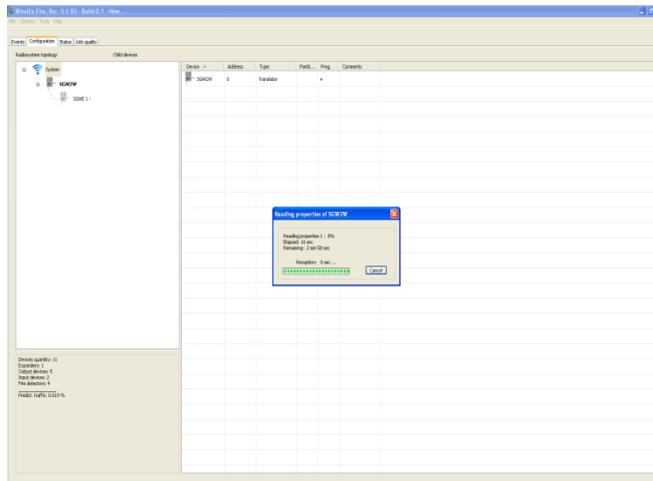


Select  and the system will start to be downloaded.

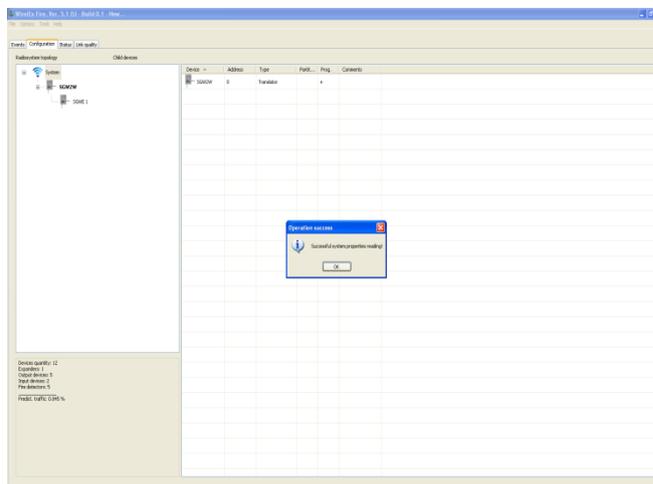
If there are Expanders on the system and they are powered on and communicating with the Central Node, the configuration of each Expander will also be downloaded.



Each Expander will take approximately 3 minutes to read - a window indicating progress will appear:

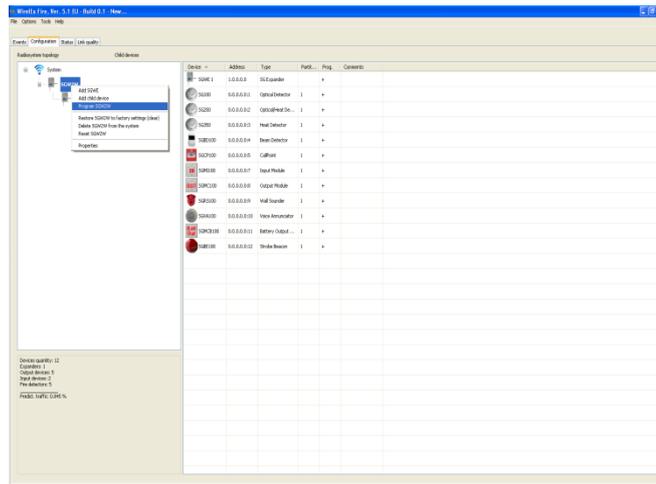


On completion of reading all Expanders attached to the Central Node, a small window will appear indicating that the system has been read correctly:

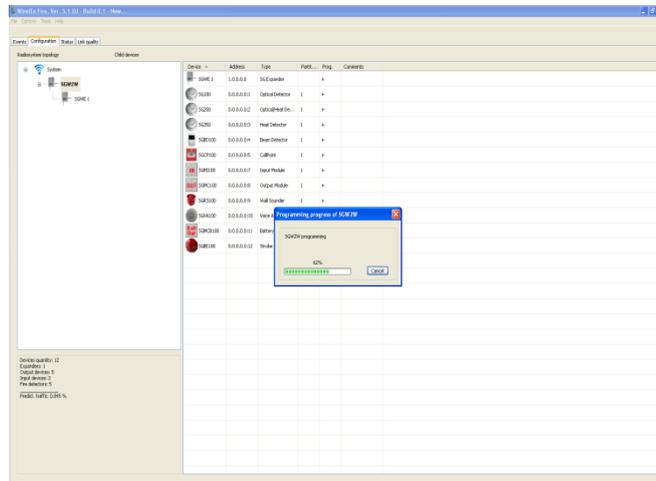


The system interfaces (Central Node and associated Expanders) will now need to be programmed.

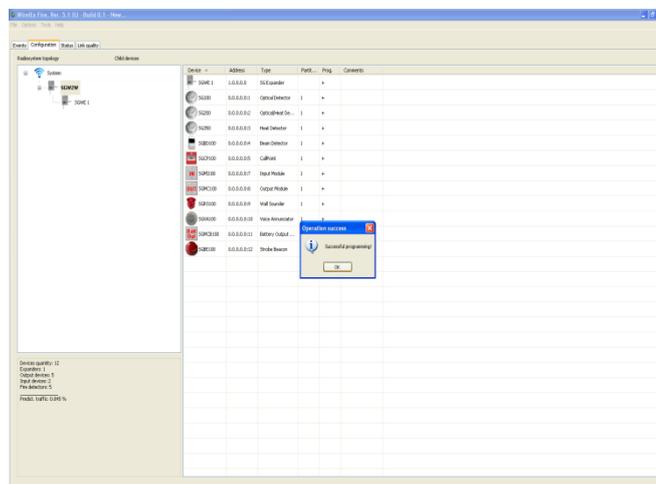
Right click on **“RSM-WTM”** selecting **“Program RSM-WTM”** from the drop down window that appears:



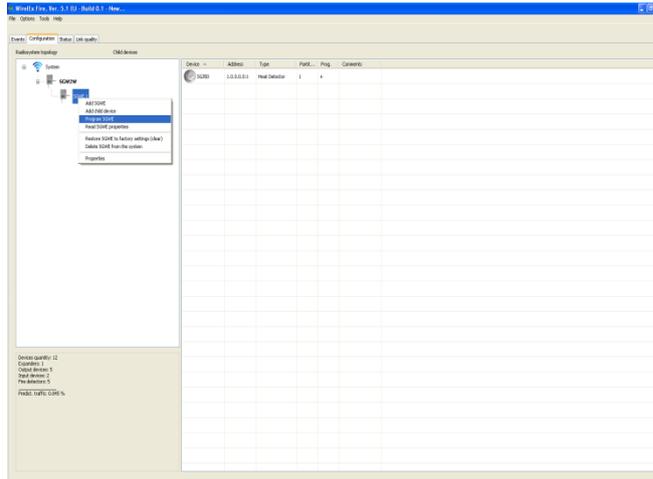
A small window will open indicating that that programming is taking place and progress of the programming:



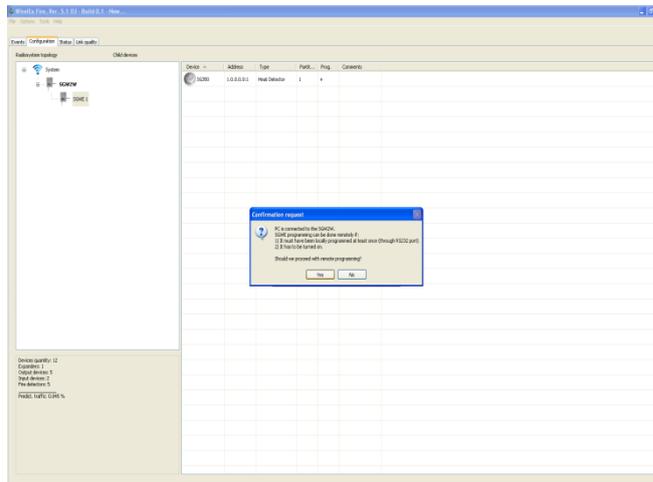
A window will appear indicating programming is complete:



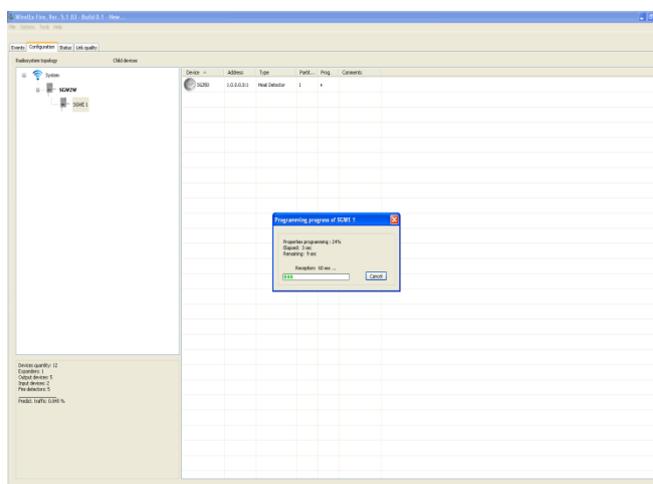
To program each Expander, right click on **“RSM-EXP 1”** selecting **“Program RSM-EXP”**:



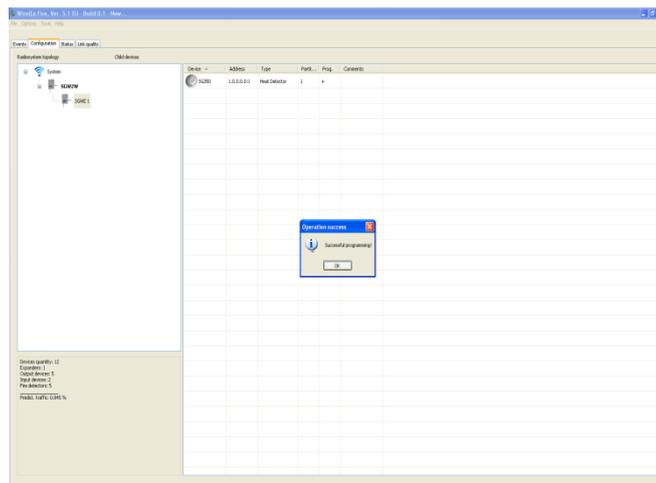
A window will appear reminding the user that the Expander must have been programmed previously and must be powered on for this operation to be carried out successfully:



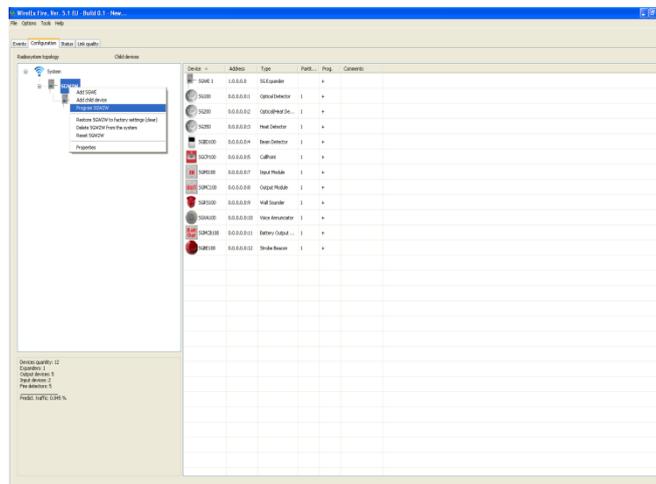
Selecting **Yes** will start the remote programming of the Expander. A small window will appear indicating progress and time remaining for the operation to complete:



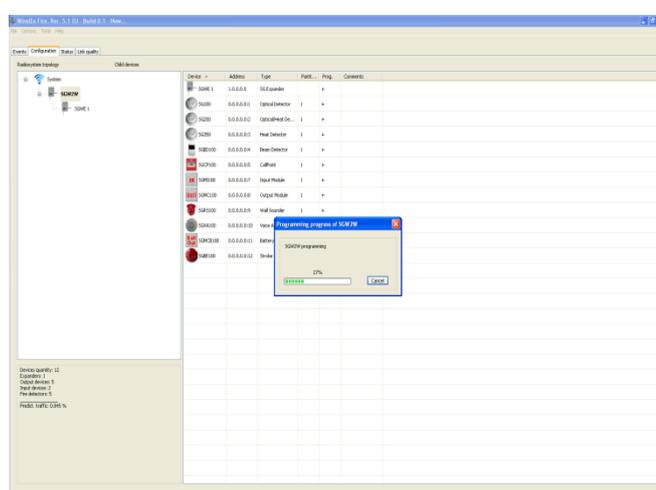
On completion a small window will appear indicating the success of the operation:



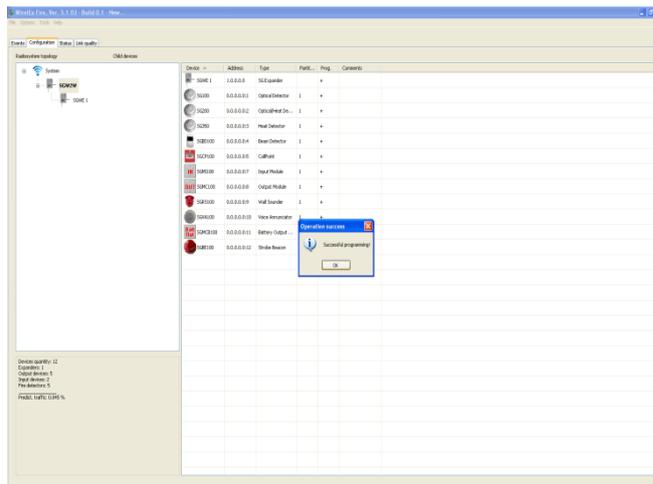
On completion of programming all Expanders, a final programming of the Central Node should take place. Right click on **“RSM-WTM”** selecting **“Program RSM-WTM”** from the drop down window that appears:



A small window will appear indicating progress of the programming:



On completion of all programming a further window will appear indicating this process is complete:



In order for the configuration file to be brought forward, a **“LOAD”** command should be carried out at the Translator Module.

At the Translator Module, use P3/P4 buttons scrolling through until **rF** is displayed. Press P2. **EHP** will be displayed. Press P2; **SYS** will be displayed. Scroll up using P3/P4 buttons until **LOAD** is displayed. Press P2. **CONF** will be displayed. Press P2. This completes the LOAD command. To confirm the LOAD command is complete, the word **done** will be displayed on the Translator Module LCD screen.

Ensure that the Loop Address recorded earlier is now transferred to the new Translator Module. This can be checked by carrying out the following process:

8888 ⇨ **Loop** ⇨ **SA** ⇨ 8888

Use the up/down buttons (P3/P4) to scroll through to the required Loop Address. When the correct address has been reached, press P2 to confirm the change.

This completes the Fireclone process.

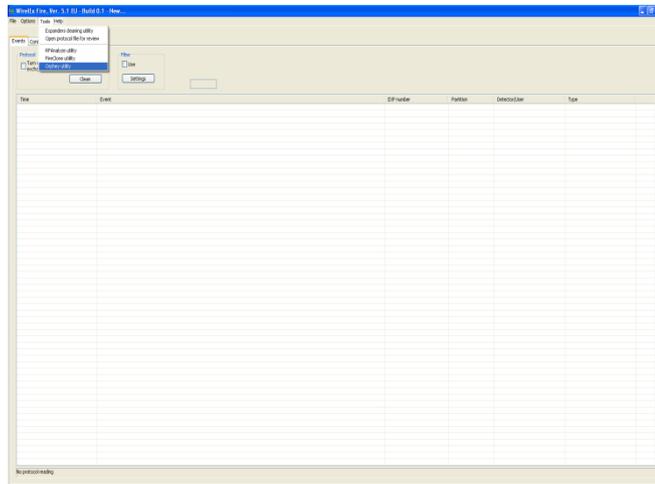
NOTE: To ensure the system is fully backed-up, a Fireclone should be carried out at the Central Node and each Expander associated with the Central Node

## 28.5 Voice Annunciator (Orphey) Utility

To program voice messages in to the wireless Voice Sounder, there is a utility available on the Firewave Configurator software.

*NOTE: Before commencing the programming process, power on the Voice Sounder by inserting the supplied batteries in the correct orientation.*

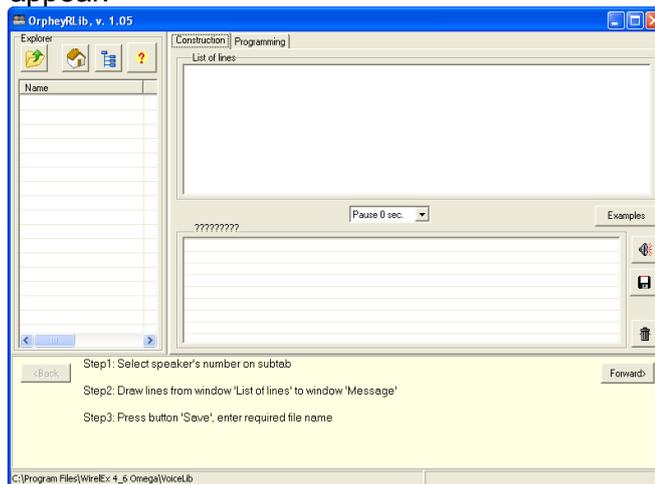
To open the utility, left click on “**Tools**” and select “**Orphey utility**” (see below)



This will open the utility and allow an installer to program Hyfire Voice Annunciator devices with bespoke messages – each device will need to be programmed.

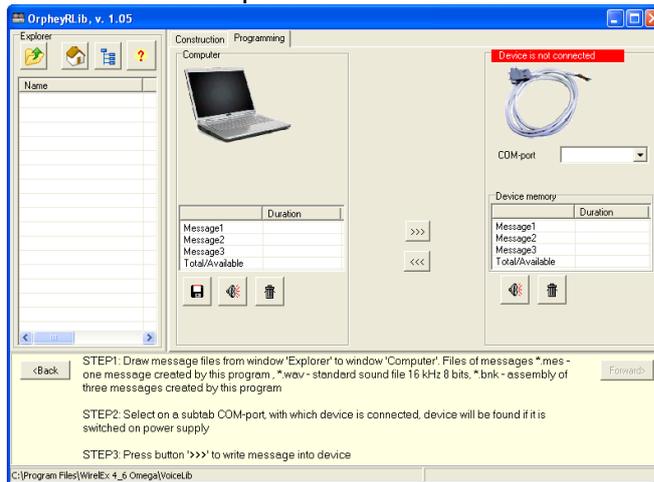
**(Note: the voice message must be in a \*.wav format, 16 KHz, 8 bit format)**

The window below will appear:

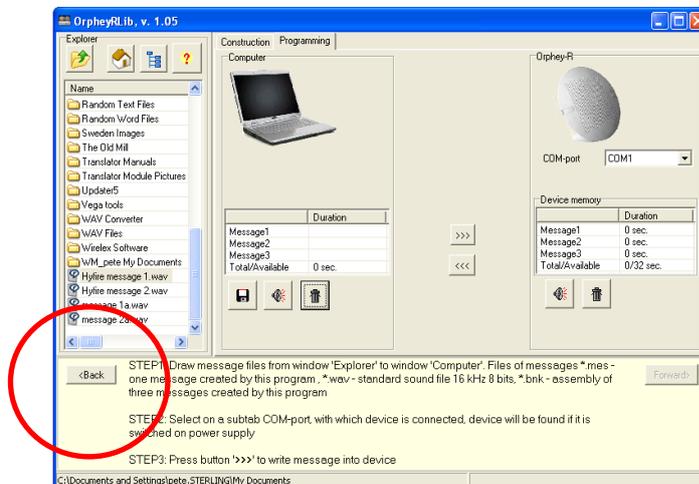
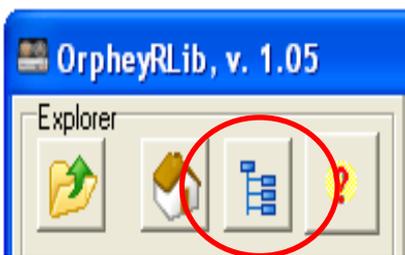


From this page, select the “**Programming**” option.

The following page will be revealed. If the Voice Sounder is not connected to the computer, a drawing of a RS232 lead will be displayed and a warning will be shown. Select the correct COM port for communication between the computer and the device.



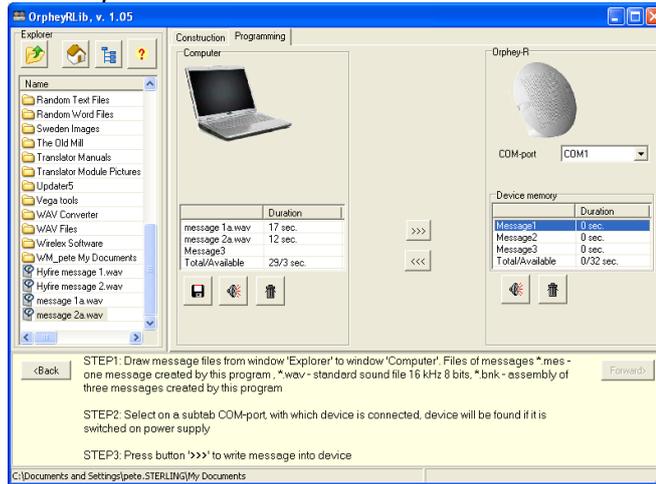
Connect the Voice Sounder to the computer using a RS232 lead and the displayed picture will change from a lead to a representation of Voice Sounder (see below). To start the programming process, the location of the sound files to be imported must be identified. Select the correct location by clicking on the icon highlighted (below left). The sound files will need to be located from the computer hard drive (example below right)



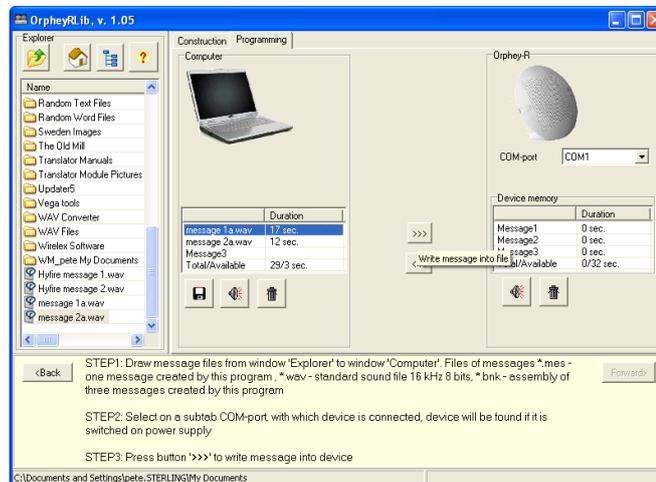
The sound files should now be detailed in the window on the left of the screen. (The image above is an example and may be appear differently on other computers)



Identify the sound file that will be loaded in to the Voice Sounder dragging it to the "Message 1" box in the "Computer" section.

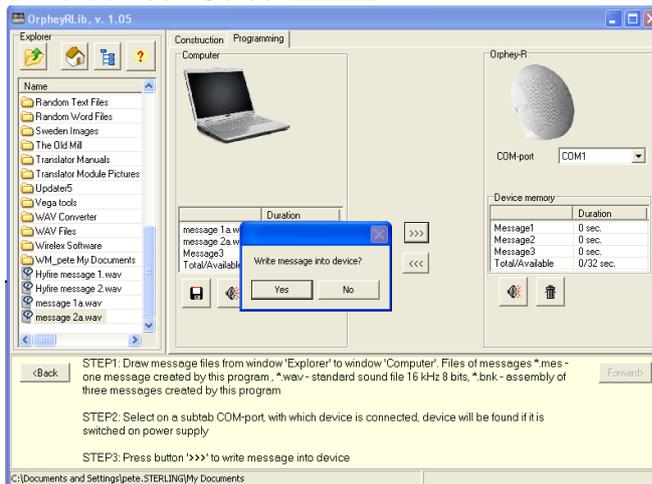


This section will be updated with the message title and the expected duration of the message. If required, the audio message can now be played back by clicking on the small sounder icon (bottom middle icon). The maximum time duration of audio messages that can be transferred is 32 seconds.

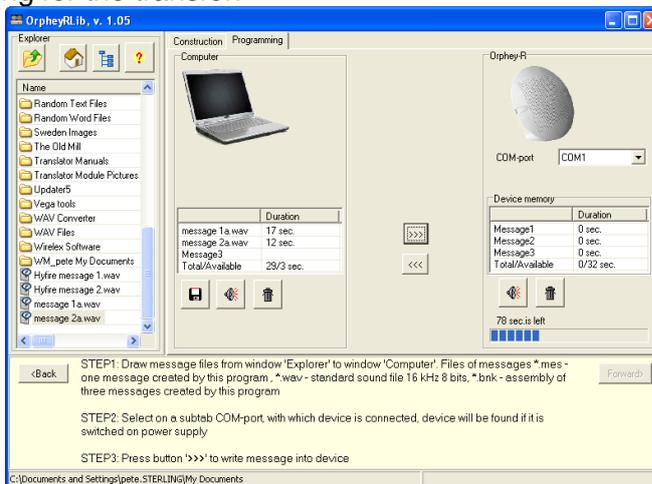


To transfer the message from the computer to the Voice Sounder, click the computer mouse over the small icon, centre screen, containing three arrows pointing to the right.

A small warning message will be displayed asking the user to confirm that the message should be written in to the device. Select .

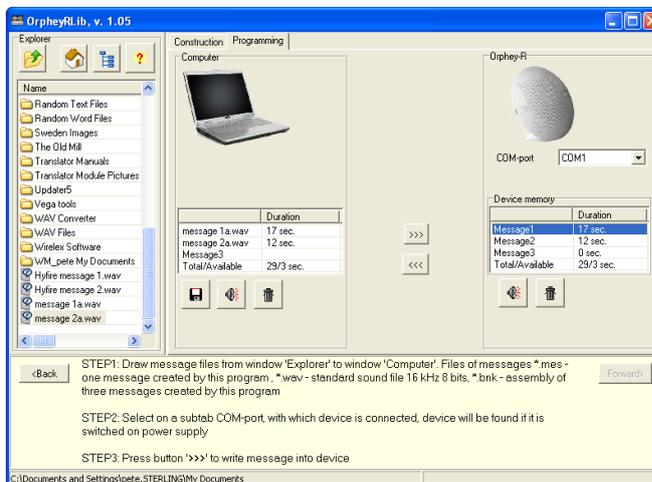


When the transfer commences, an additional process will appear in the **“Orpheus-R”** section indicating time remaining for the transfer:



At the Voice Sounder a small surface mounted LED will glow **RED** indicating that a data transfer is taking place.

On completion of the download, the **“Device Memory”** table will be updated and the sound files will be displayed.



The messages can now be tested by clicking on the Speaker icon in the **“Device memory”**. The programming process needs to be completed for each device to be used.



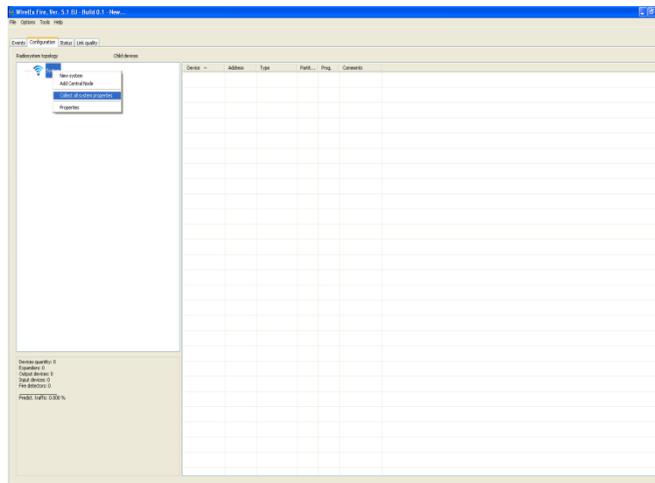
# 29 Maintenance Visits

## 29.1 Introduction

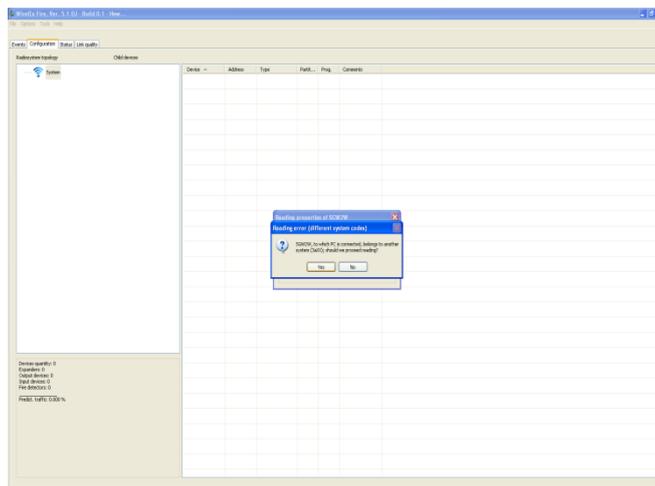
During site maintenance visits, an engineer may be tasked to take readings of an existing radio system to ensure the radio integrity of the system is still intact. If the building layout has changed, some devices may need to be added or deleted from the Central Node or an Expander may need to be added to incorporate further devices in a new extension to the building or to add devices for a temporary building (e.g. Portacabins) during sports events, corporate hospitality, etc.

## 29.2 Connecting Computer to a Live System

Open the Firewave Configurator software selecting the **“Configuration”** tab. Right click on the **“System”** icon, a small window will appear. Highlight and select the **“Collect all system properties”** option.

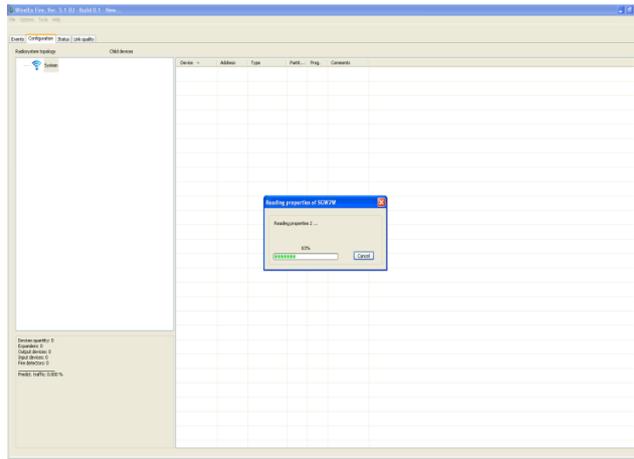


A small window will appear to remind the user that the system code of the current software program is different to the system code of the connected Central Node:



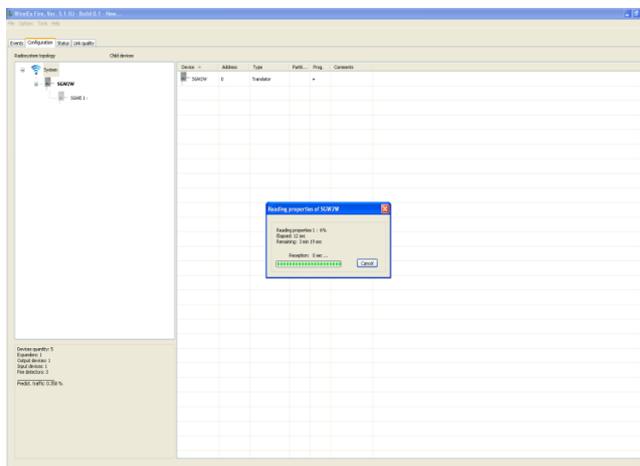
Select  .

A small window will now appear to indicate that the computer is now linked to the Central Node and is downloading the configuration from its Non Volatile Memory:

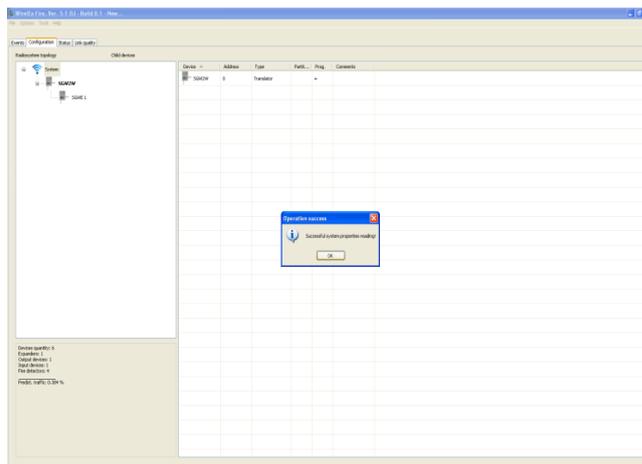


If there are Expanders on the system the computer will automatically link through the Central Node to the Expanders and read the configuration contained within them:

Note: All Expanders should be powered on and be in communication with the Central Node:



On completion of reading all wireless interfaces, a small window will appear to indicate completion.





On completion of the event download, check the **“Turn on data exchange”** box again. The computer is now dynamically linked to the Central Node. All future events will now be recorded with real time date/time stamps until the computer is disconnected.

The Firewave Configurator Configuration Tool can now be used as a diagnostic aide allowing the user to analyse signal levels between devices and Central Nodes or Expanders; investigate the status of devices; remotely control device LEDs; investigate system traffic levels, etc.

### 29.3 Replacing/Changing a Field/Child Device

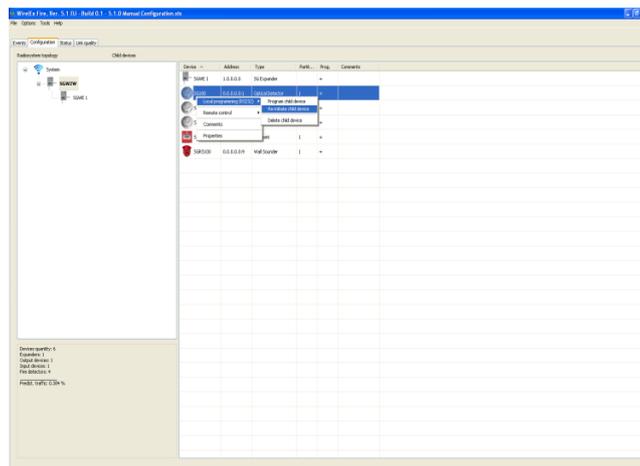
If a child device is suspected of being faulty, that device can be changed with a replacement device without deleting the original device from the system.

Having downloaded an existing system (see page 169), the initial action of the engineer is to remove the suspect device(s) from its installed position and remove the primary power cell from the device. This will turn the device off and will eliminate the possibility of a **“Child device substitution attempt”** (see page 120) fault appearing in the Central Node Event Log. With the new device at hand – secondary power cell inserted and the device programming switch in the **“ON”** position – follow the process below.

Identify the suspect device at the Central Node or Expander (in the following example, there are two suspect devices – one on the Central Node (a Smoke Detector) and one on the Expander (a Heat Detector))

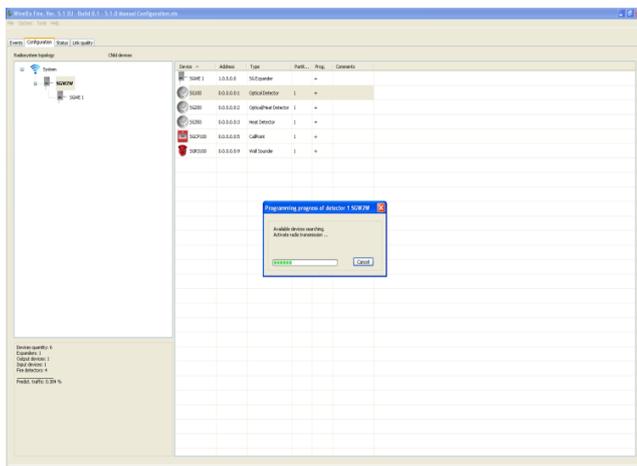
### 29.4 Central Node Field Device

Right clicking on the device, the User will be presented with a drop down window. Select **“Local programming (RS232)”**, at which point a further window will appear with three options. The centre option should be selected **“Re-initiate child device”**:



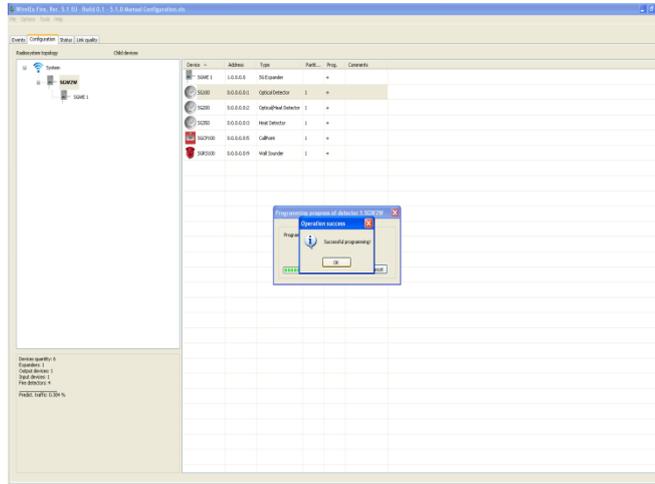
The Central Node will initiate a search pattern for the child device:





At this point, the secondary power cell should be inserted in to the new device and the programming switch moved from the **1** position to the **ON** position.

Insert the primary power cell in the new device. The Smoke Detector LED will blink **RED** 4 times (to indicate the device has powered on and entered programming mode). On completion, move the Smoke Detector programming switch from the **ON** position to the **1** position. The Smoke Detector LED will flash **GREEN** twice (showing that initial programming is completed). The following window will now be displayed on the computer:

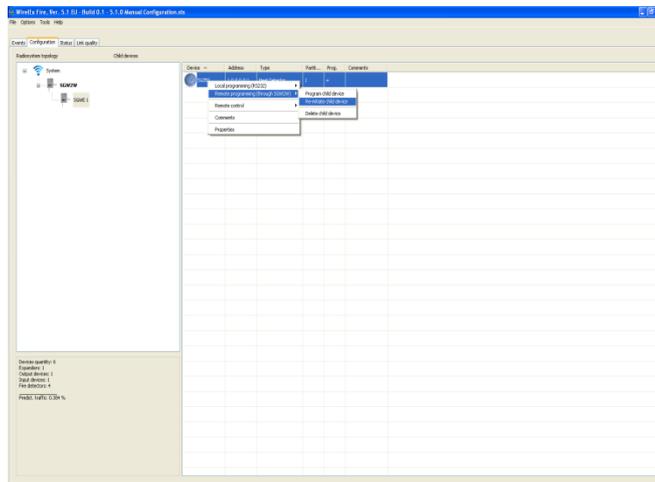


Press . The new device has now assumed the same parameters as the previous device including the same analogue loop address

No further action is required.

## 29.5 Expander Module Field Device

Right clicking on the suspect device in the Expander configuration will show a drop down window with one additional option as compared to the Central Node:



To replace a device directly associated with an Expander, the User has two options:

1. The computer is still connected to the Central Node. The User should select **“Remote programming (through RSM-WTM)”** followed by **“Reinitiate child device”** repeating the process detailed above for changing a device on a Central Node.

2. The computer is connected to the Expander directly associated with the child device. The User should select **“Local programming (RS232)”** followed by **“Reinitiate child device”** repeating the process detailed above for changing a device on a Central Node.

The device has now been changed and should be put back in to its installed position. This is all that is required of the engineer to change a device.

For Technical Support concerning this product, please contact Hochiki Product Support:

T: 01634 266565

E: [psupport@hochikieurope.com](mailto:psupport@hochikieurope.com)

