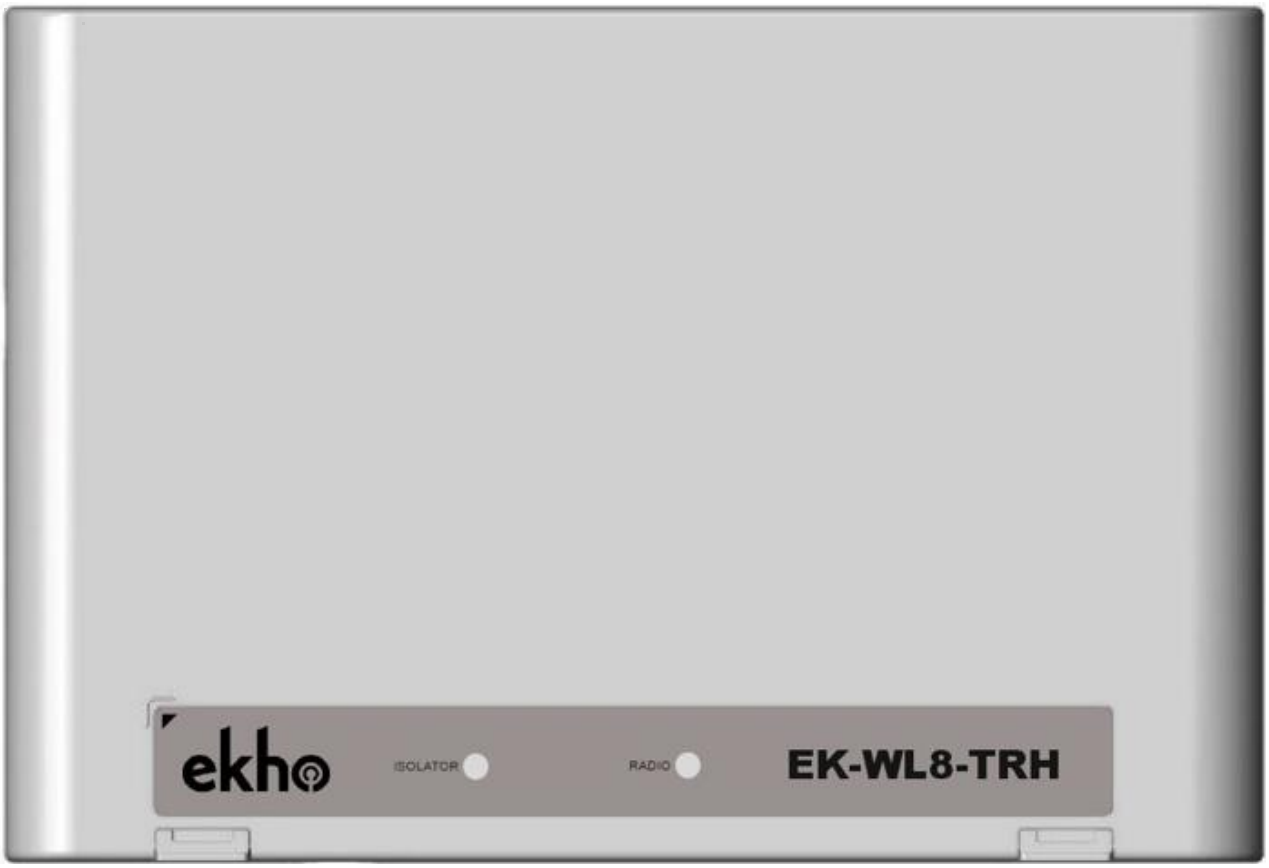

ekho
ISOLATOR
RADIO
EK-WL8-TRH

CONTENTS

GENERAL DESCRIPTION

- The “wire to wireless” translator module is a device which interfaces the hard-wired Hochiki Enhanced Systems Protocol (ESP) loop to the Ekho wireless system. This allows connection of fire detection devices based on the Ekho wireless communication protocol for monitoring and control.
- The translator is powered directly by the analogue loop and incorporates a loop short circuit isolator. It is designed to be used with control panels that implement the Hochiki ESP protocol *(Panel compatibility needs to be checked with the manufacturer)*.
- The translator is supplied with a mounting kit (an optional back box is available EK-BOX-01).
- The product complies with the requirements of the EN54-17:2005, EN54-18:2005 and EN54-25:2008 standards.

NOTE

Ekho refers to a family of addressable, wireless, analogue-intelligent devices. These devices communicate with the translator module wirelessly using the “Ekho” protocol. This allows the control panel to manage and control wireless devices as if they were a part of its loop.

TECHNICAL SPECIFICATIONS

Loop Supply Voltage (low)	from $17V_{dc}$ to $32V_{dc}$
Loop Pulse Voltage	from 7 V_{dc} to 9 V_{dc}
Quiescent Current	31mA (at $41V_{dc}$)
Loop current (when polled)	22mA±20%
Radio frequency	866 – 869.85 MHz
Radio signal modulation type	GFSK
Number of frequency channels	6
Radiated power	Not more than 25 mW
Receiver category (EN300-220-1)	1.5
Communication range with a wireless expander device	2000 m (in open space)*
Communication range with other wireless devices	1000 m (in open space)**
Maximum linked wireless expanders	126*
Maximum linked wireless child devices	126*
Temperature range	from -10°C to +55°C
Tolerated humidity range (no condensation)	to 95 % RH at 40 °C
Dimensions	210mm × 145mm × 40mm
Number of antennas	2
Weight	300g

Dependent on system/control panel capacity

NOTE Check the latest version of the product specification document STFV.425551.070-E-PS for further data, obtainable from the manufacturer.

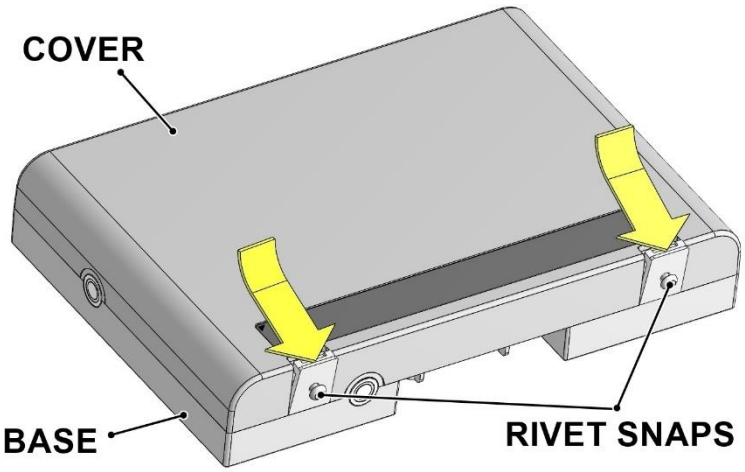
FEATURES

- Allows connection Ekho wireless devices onto the Hochiki ESP protocol
- Up to a maximum of 10 translators can be connected to a loop*
- Up to a maximum of 126* child devices linked to a single translator
- Emulates ESP counterpart devices on behalf of wireless devices
- Loop powered
- Wireless system reset via ESP commands
  - ***Dependent on system/ control panel capacity***

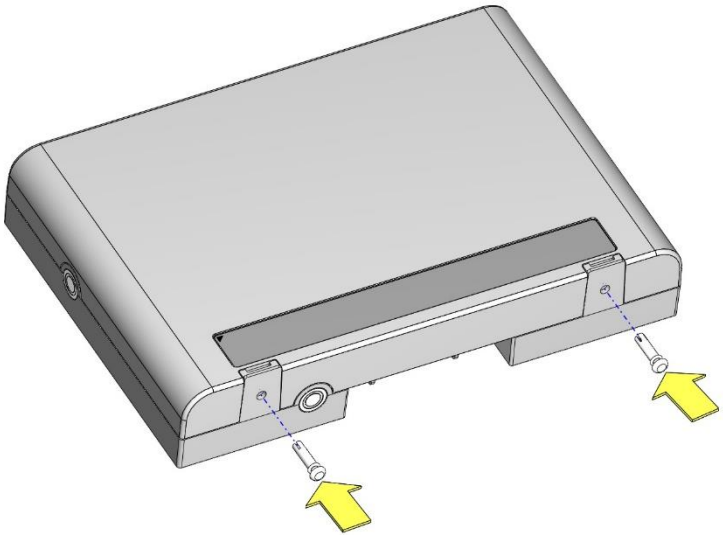
- Communicates the wireless devices low battery and tamper conditions to the control panel
- Integrated short circuit isolator
- Two internal antennas
- OLED graphical display 96x64 dots embedded

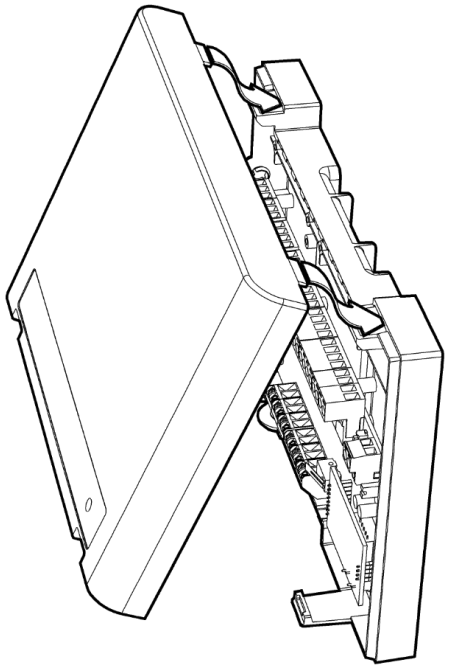
CONSTRUCTION

To open the cover, remove the two rivet snaps by gently pulling on the two cover clips.



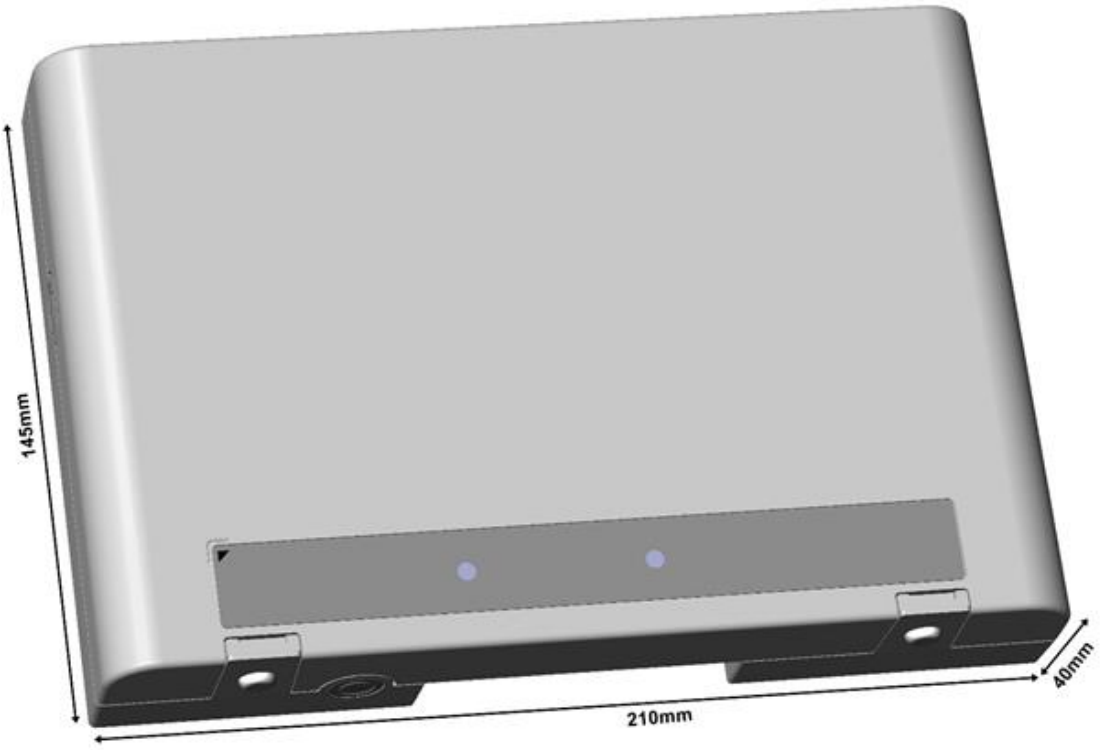
In order to close the cover, first hook the cover onto the back plate, and apply pressure until the cover clicks into place.





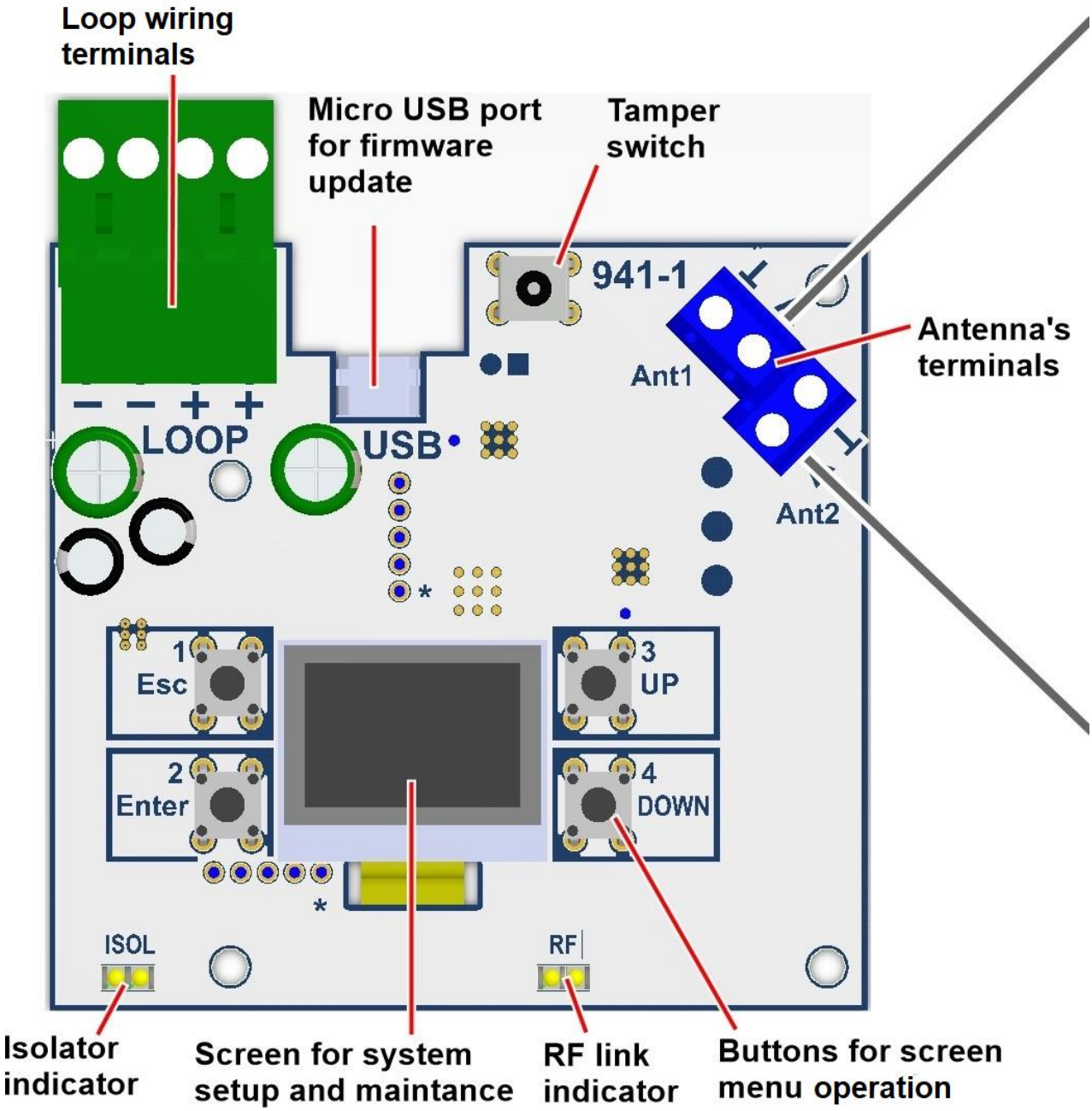
To secure the cover, you should insert the two rivet snaps into the holes.

Dimensions:



STRUCTURE

EK-WL8-TRH board



LOOP WIRING TERMINAL BLOCKS: Used for connecting the translator to the analogue loop

DISPLAY: Used for configuring the wireless system

Micro USB PORT: Used for updating the firmware with a computer via a micro-USB cable and for connecting to the “Ekho Configuration” software.

ANTENNA TERMINAL BLOCKS: Can be used to replace the built-in antennas with a third party external antenna. In order to do that, please remove the existing antennas and insert coaxial cables from the external 868 MHz antennas (connect the central conductor to socket "A").

NOTE: The use of External antenna’s is at the installers/users risk.

TAMPER: When the cover is opened, a "Fault" event is generated, this can be disabled/enabled via the Ekho Configuration software or the translator menu.

"ESCAPE/[1]" BUTTON: Used to exit from a menu or a sub-menu if the user doesn’t want to apply the changes. A second function of this button is to be used as a digit "1" for the pass code.

"ENTER/[2]" BUTTON: Used to select a menu or a sub-menu; confirming the changes made to any parameters. A second function of this button is to be used as a digit "2" for the pass code.

"UP/[3]" BUTTON: Used for navigating through menus or sub-menus; changing the parameters (as a value increase). A second function of this button is to be used as a digit "3" for the pass code.

"DOWN/[4]" BUTTON: Used for navigating through menus or sub-menus; changing the parameters (as a value decrease). A second function of this button is to be used as a digit "4" for the pass code.

ISOLATOR indicator: Green LED on: loop is normal and isolator is closed, yellow LED on: short-circuit on the loop and the isolator is open.

RF indicator: Operates only if the translator is in expander mode. The green LED indicates that the RF connection with the central node (other translators) is present, the yellow LED indicates that RF connection with central node is lost.

INSTALLATION

Avoid installing the translator close to:

- equipment that uses large amounts of electrical current
- large metal objects, structures or metal ceiling structures
- fluorescent lighting fixtures
- computers, and their peripheral and network cabling.

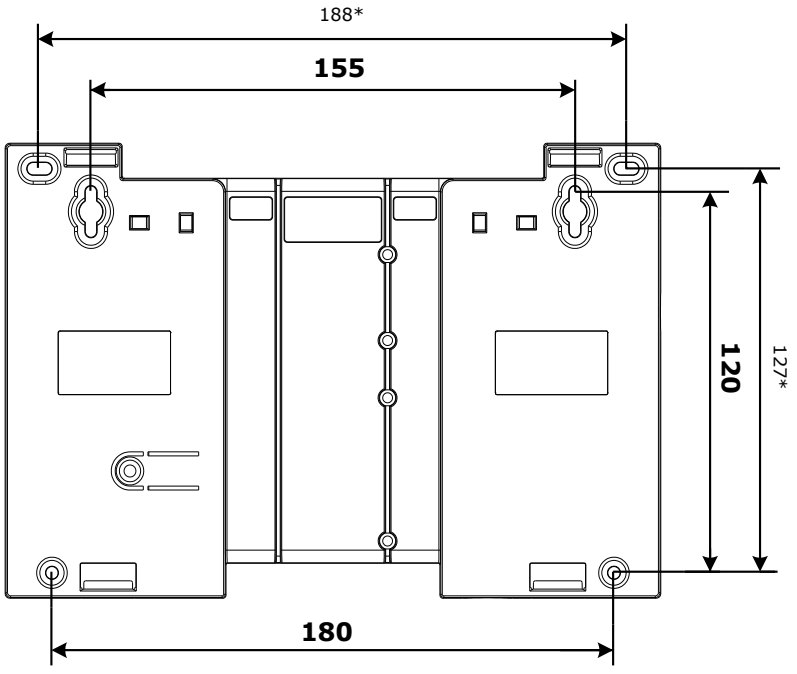
If there are other translators or wireless system expander modules, a distance of at least 2 meters should be kept between them. In general, all wireless devices (devices included) should be installed at least 2 meters apart from each other.

It is recommended to install the translator and expanders at least 2 - 2.5 meters from the floor.

Environmental conditions (temperature, humidity etc.) must be in the ranges specified at the beginning of this manual.

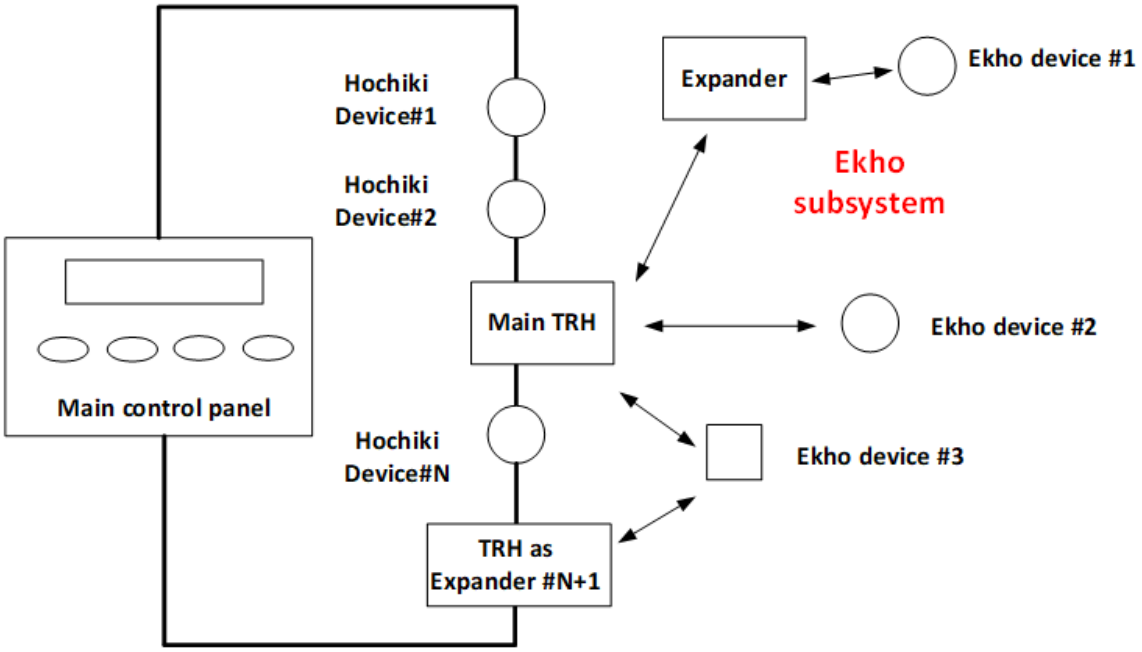
After having installed the translator, make sure that the translator's devices (sensors, call points, etc.) are receiving a good, strong signal (refer to the individual device manuals) at their installed location.

Install the translator module using screws, fixing point information is shown below:

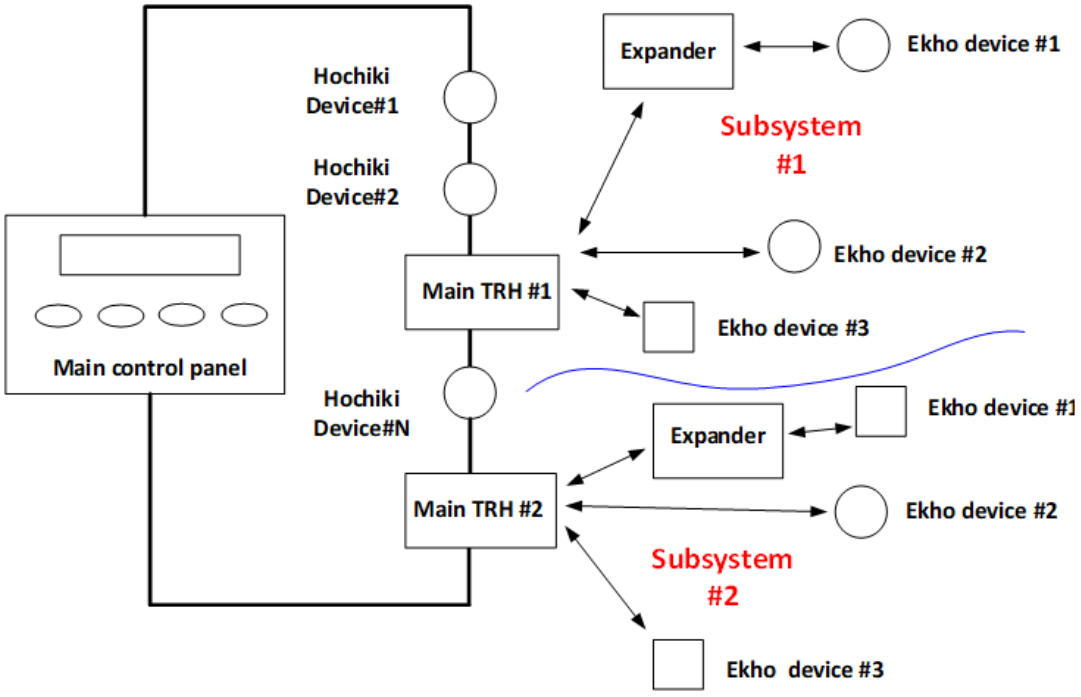


SYSTEM TOPOGRAPHY

There is one Ekho translator on a loop



There are two Ekho translators on a loop



WIRING

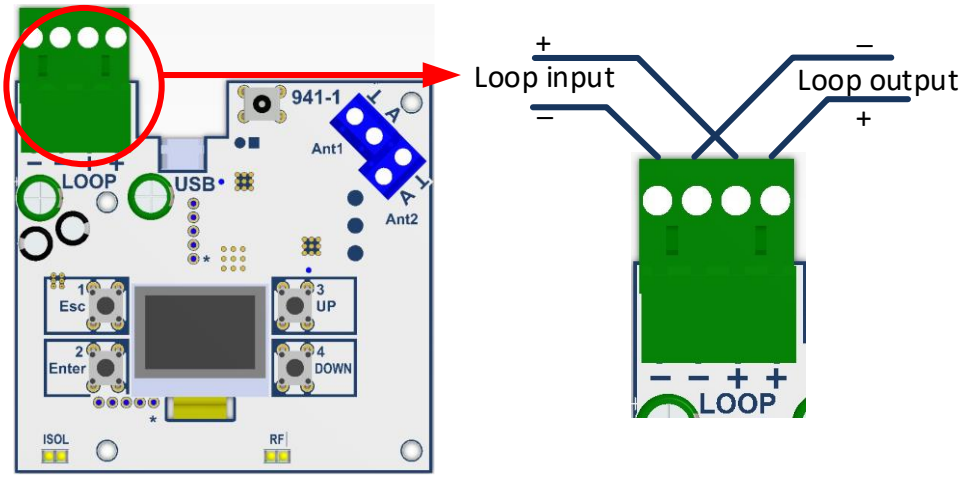
TRANSLATOR WIRING

Before wiring the device, please consider the following:

- refer to and follow national codes of wiring and cabling practice and other internationally recognized standards
- loop terminals are polarity sensitive

Connect the loop wiring to the translator's terminal blocks as per the wiring scheme in the following picture and table.

NOTE It's recommended not to install more than 10 translators on to a single loop



Picture 6

Terminal	Function	Description	Comment
1	Loop – in	Loop negative in	
2	Loop – out	Loop negative out	
3	Loop + in	Loop positive in	Short circuit protected
4	Loop + out	Loop positive out	Short circuit protected

SHORT CIRCUIT ISOLATORS

The translator incorporates an integral short circuit isolator.

FINAL STEPS OF INSTALLATION

Configure the radio system either directly with the translator's keyboard/display or with a personal computer. System configuration and programming will be described further in this manual.

PROGRAMMING

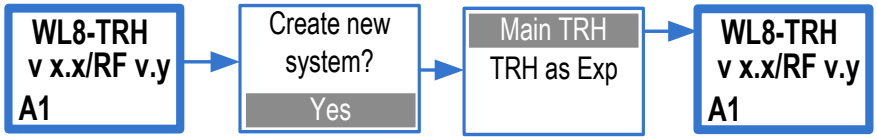
ACCESS PERMISSION

To access the "Configuration" menu a pass code needs to be entered (default password- "33333"). It is possible to change the default pass code by entering the "PSW Change" sub-menu which can be found in "Configuration"/"PSW Change". To do this you should enter the Current pass code twice and then the new pass code.

NOTE If the pass code is forgotten a factory reset (This action will erase any program configuration) of the system will need to be performed. To do this you should simultaneously press and hold button 1 and 3 and power cycle the translator. The display will show "Clear all?". Select "Yes", the system will be reset and the default pass code ("33333") can then be used.

CREATING A NEW SYSTEM

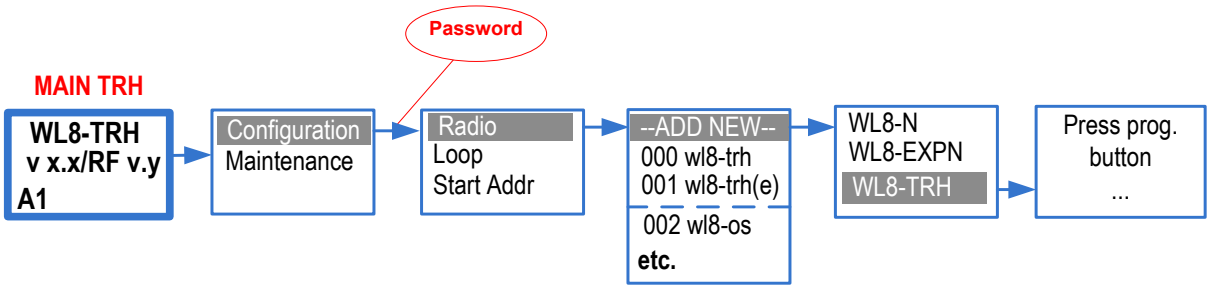
Firstly, a central node(s) (Main TRH) should be created.



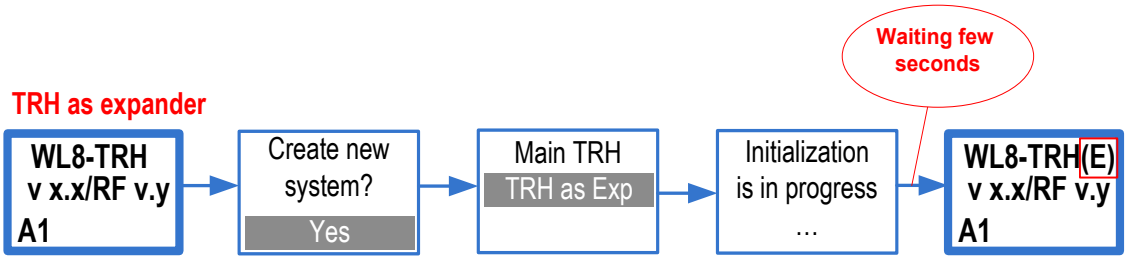
The loop address will also need to be changed.

Once completed an additional TRH as expander can be added to the system.

STEP1 – add TRH as expander to main TRH configuration



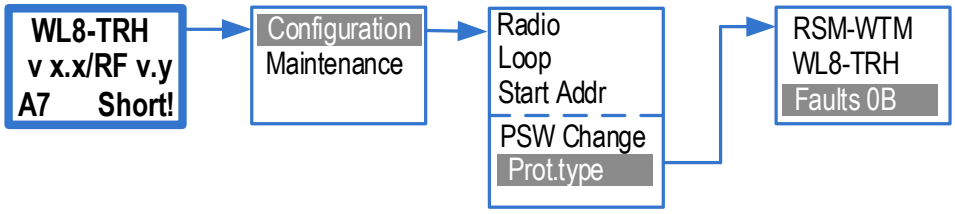
STEP2- initialize TRH as expander in the system



STEP3 – make sure the following message appears on Main TRH display

STEP4 – change the loop address for TRH and TRH as expander via the menu

CHOOSING THE PROTOCOL TYPE



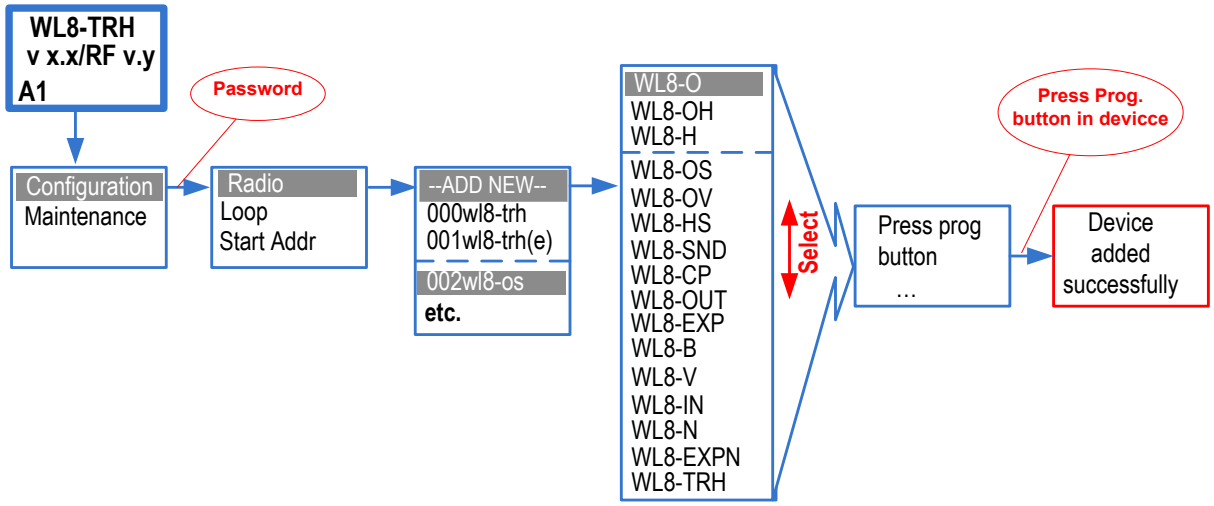
The protocol type named Faults 0B is differs from WL8-TRH in that it supports faults (battery discharge, tamper etc.) information in child devices.

The protocol type named WL8-TRH is differs from RSM-WTM in that it supports isolators information. The RSM-WTM protocol type is designed to be backward compatible with older panels.

ADD/DEL DEVICES

The following steps describe the common procedures for adding or deleting the devices from the wireless system.

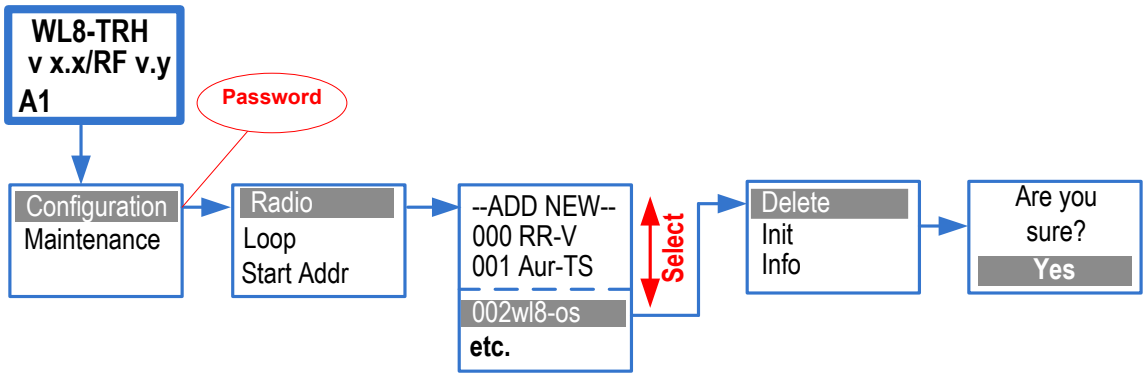
1. The ADD command procedure is performed in the following way:



After the ADD command is performed, the translator waits for a device to be linked, to link a device press the device's "program button" (see the specific installation manuals of these devices).

After a device has been linked the translator automatically assigns a subsequent address to this device. The whole sequence starts from the address assigned to the translator ("Start Addr" menu option).

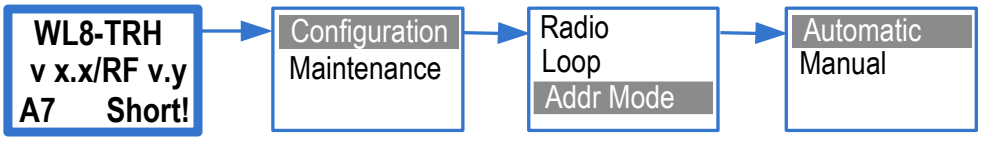
2. The following picture describes the DEL ("delete") command procedure, which can be applied to devices that are already present in the wireless configuration:



Be aware that this command deletes a device from the configuration of the translator, but not from the configuration of the main control panel.

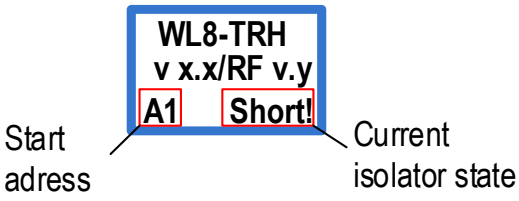
CHANGING LOOP ADDRESS OF THE DEVICES

The addressing type can be chosen as automatic or manual.

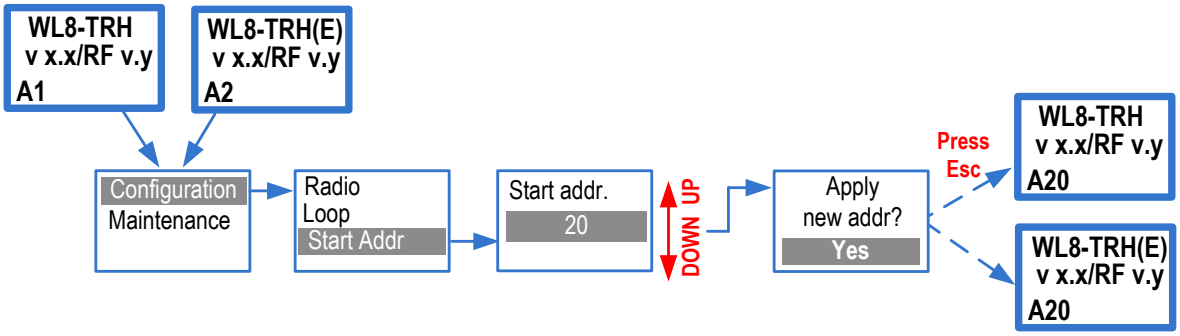


In automatic addressing mode, the starting address of the translator is set. In manual mode the loop address of each device can be changed.

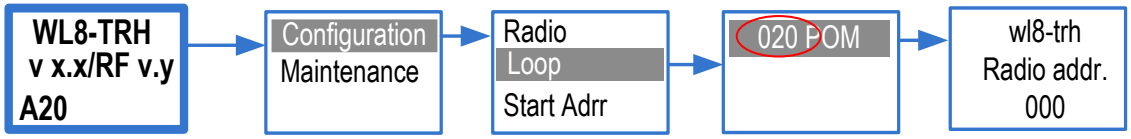
Upper display menu



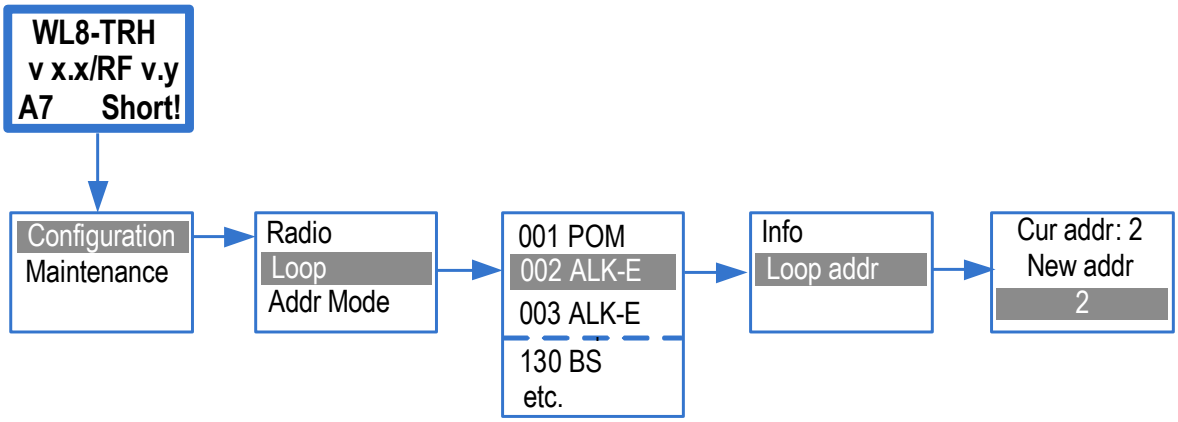
Automatic addressing mode. If the wired ESP loop has devices connected (for example, addresses 1 to 19 are occupied), you must change the start address (available from 1 to 127) to connect the following (wireless) devices:



Confirmation that the correct address has been applied can be checked

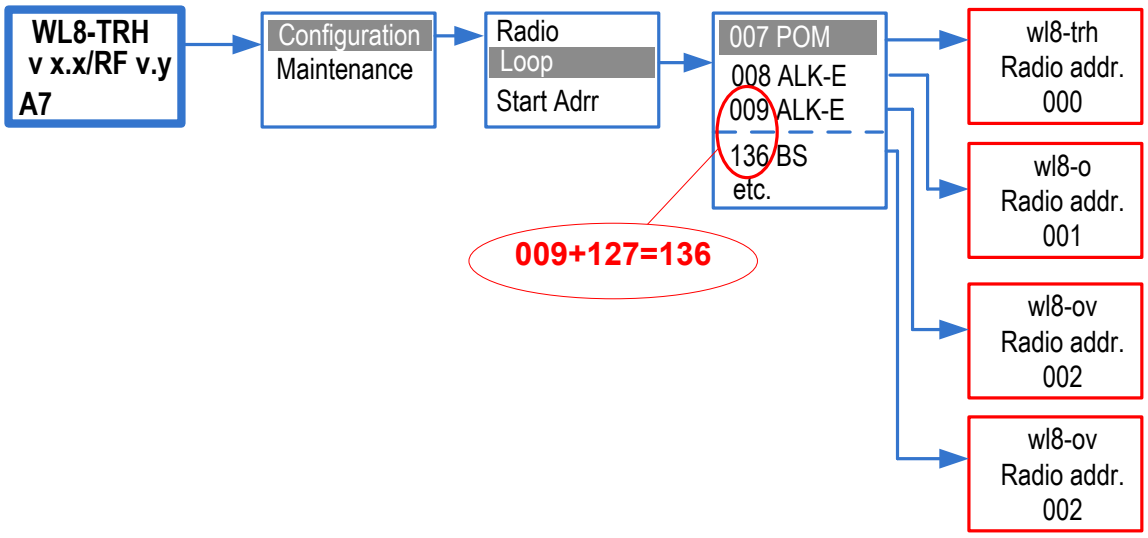


Manual addressing mode. If the wired ESP loop has devices connected (for example, addresses 1 to 20 and 50 to 60 are occupied and there are more than 30 wireless devices are used), you must change the addresses of the field devices manually (available from 1 to 127) to avoid duplicate addresses.



ADDRESSES CROSS-MAPPING

The Loop menu is used to display information regarding the entire address table that the translator provides to the Hochiki ESP loop. It is also possible to view the mapping between the Hochiki ESP loop devices and the radio addresses.

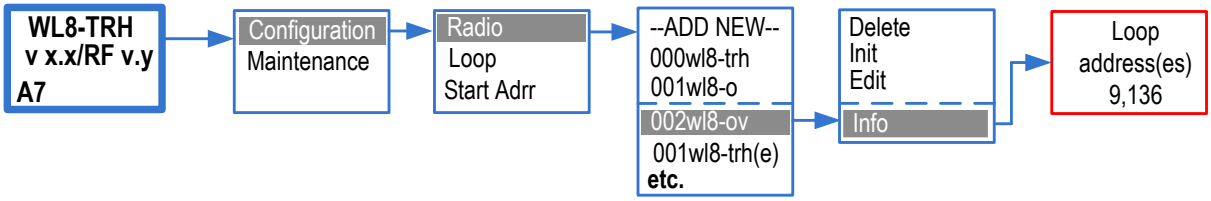


EKHO DEVICES AND ESP DEVICES TYPES

The actual ESP device(s) emulated by the translator on behalf of a EKHO device will be as per the following table:

Wireless EKHO Device	ESP Device type
EK-WL8-TRH Hochiki Wireless Translator Module	CHQ-POM
EK-WL8-CP Wireless MCP	HCP-E
EK-WL8-O Wireless Optical Smoke Sensor	ALK-E/ALG-EN
EK-WL8-OH Wireless Multi-Sensor Sensor	ACA-E
EK-WL8-H Wireless Heat Sensor A1R	ACB-E
EK-WL8-OS Wireless Optical Smoke Sensor with Built in Sounder	ALK-E/ALG-EN (Sensor) CHQ-BS (Sounder)
EK-WL8-HS Wireless Heat A1R Sensor with Built in Sounder	ACB-E (Sensor) CHQ-BS (Sounder)
EK-WL8-IN Wireless Single Input Module	CHQ-S
EK-WL8-OUT Wireless Single Output Module	CHQ-SIO/CHQ-MRC
EK-WL8-OV Wireless Optical Smoke Sensor with Built in Voice Annunciator and VAD	ALK-E/ALG-EN (Sensor) CHQ-BS (Voice)
EK-WL8-SND Wireless Sounder	CHQ-BS
EK-WL8-EXP Wireless Expander Module	CHQ-POM
EK-WL8-RI Wireless remote indicator	CHQ-ARI

You can also view the address(es) occupied by every radio device:



Devices that combine fire sensors and sounders (for example, EK-WL8-OS, EK-WL8-HS, EK-WL8-OV etc.) occupy two addresses on the ESP loop. The sounder within these devices will be addressed automatically by adding 127 to the sensor address and then using this number as the sounder address e.g. 9 (sensor address)+127=136 (sounder address).

When you add a new wireless device, it is added at the end of the list by default.

When you delete a wireless device, the list shifts up automatically.

Example of wireless device deleting:

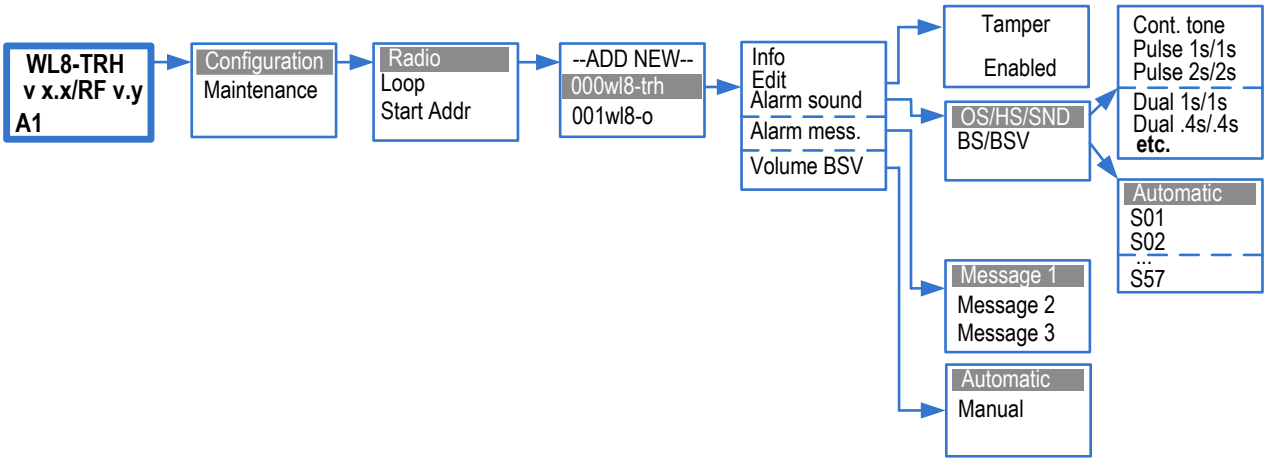
Radio address	Radio Device	Loop address before deleting	Loop address after deleting
000	WL8-TRH	007	007
001	WL8-O	008	008
~~002~~	~~WL8-OV~~	~~009~~	-
		~~136~~	-
003	WL8-IN	010	009
001	WL8-TRH(E)	Unknown	Unknown
etc.		**etc.**	**etc.**

NOTE WL8-TRH(E) radio address will be the same as some wireless device addresses. This is normal as the radio address space for expanders differs from other wireless devices address space.

PARAMETER EDITING

The basic parameters of the EKHO devices have the option to be changed e.g. On/Off. Some parameters are not obvious, for example the EK-WL8-TRH parameters.
Operation mode of all sounders in a fire condition is selected in the settings of the WL8-TRH (menu: Alarm sound).

NOTE By default, the magnet test facility is off.

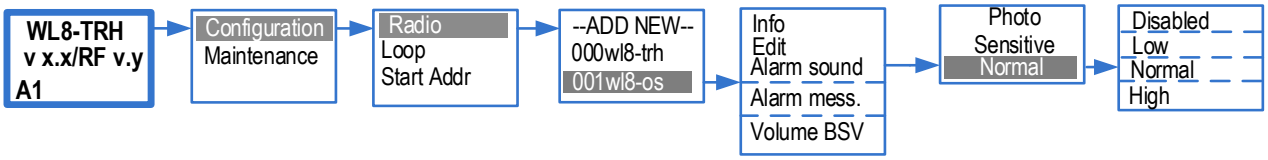


Parameter	Value	Description	
Alarm sound OS/HS/SND	Cont. tone	Tone that is used when the sounder is operated from a fire condition	Continuous Tone1
	Pulse 1s/1s		1s – ON Tone1 / 1s – OFF
	Pulse 2s/2s		2s – ON Tone1 / 2s – OFF
	Dual 1s/1s		1s – ON Tone1 / 1s – ON Tone2
	Dual .4s/.4s		0.4s – ON Tone1 / 0.4s – ON Tone2
	Pulse .2s/1.3s		0.2s – ON Tone1 / 1.3s – OFF
	ISO8201		3x0.5s – ON, 1.5s – OFF then re-peat
	Cont. 1 kHz		Continuous 1 kHz
	Pulse 1 kHz		1s – ON 1 kHz / 1s – OFF
Alarm mess.	Message 1	List of pre-recorded voice messages in the voice annunciator (WL8-OV) that can be played in a fire condition	
	Message 2		
	Message 3		

NOTE The tone frequency depends on the type of sounder being used and is shown in the sounder and combined devices user manuals.
NOTE By default, sounders are automatically turned off after 30 minutes.

OS, OV and HS devices provide the ability to turn off the detector sensing element. It is possible for devices with firmware version 22 and higher.

This can be done by using the PC software or by the WL8-TRH menu, for this ability TRH firmware version should be 27 and higher.



Devices that combine fire sensors and sounders occupy two addresses in the loop. When you turn off the detector sensing element, the loop table shifts automatically.

Example of turning off the detector sensing element:

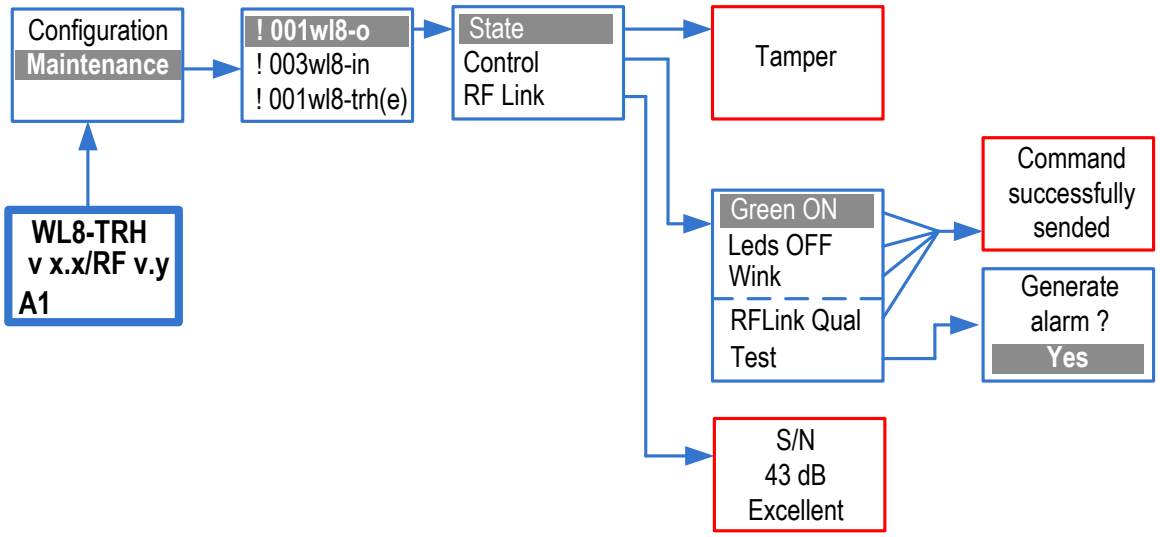
Radio address	Radio Device	Loop address before switching off sensing element	Loop address after switching off sensing element
000	WL8-TRH	007	007
001	WL8-OS	~~008~~	-
		~~136~~	008
etc.		**etc.**	**etc.**

Tones selectable via the DIP switches (for WL8-SND):

Sound alarm parameter	Switches condition on WL8-SND PCB (LEFT-RIGHT)			
	1(OFF) - 1(OFF)	1(OFF) - ON	ON – 1 (OFF)	ON - ON
Cont. tone	Continuous tone 990Hz	Continuous tone 990Hz	Unsynchronized Dual tone 990Hz&650Hz (250ms~250ms)	Unsynchronized Pulsed tone 990Hz (0.5s ON / 0.5s OFF)
Pulse 1s/1s	Pulsed tone (synchronized) 990Hz (1s ON/1s OFF)			
Pulse 2s/2s				
Dual 1s/1s				
Dual .4s/.4s				
Pulse .2s/1.3s				
ISO8201	3x0.5s – 990Hz ON, 1.5s – OFF, then repeat (synchronized)			
Cont. 1 kHz	Continuous tone 990Hz			
Pulse 1 kHz	Pulsed tone (synchronized) 990Hz (1s ON/1s OFF)			

MAINTENANCE

Maintenance menu (not for WL8-TRH(E)) allows you to view the state of wireless devices and send control commands:



"**!**" at the beginning of the line means that there is a problem with a wireless device. By using the "State" menu, a user can obtain information about the general state (alarm/no alarm) and all current fault conditions of the device. Use the "UP" and "DOWN" buttons to scroll through the faults list.

NOTE After battery replacement in a child device wait at least 5 minutes for any unexpected fault messages to disappear.

By using the "Control" menu you can turn the device's LED on or off and activate the "RF link Quality" mode. For sensors, it's also possible to generate an alarm of the system.

In the "RF link Quality" mode, devices indicate their signal strength with the wireless expander via a flashing LED:

- 2 flashes RED – no connection
- 1 flash RED – poor signal strength
- 1 flash GREEN – good signal strength
- 2 flashes GREEN – excellent signal strength

Devices automatically exit the "RF Link Quality" mode after 15 minutes.

In the "RF Link" mode the WL8-TRH displays the link quality with the selected device refer to the table below:

Wireless signal quality (S/N)	Assessment
< 10 dB	Bad (no connection)
10 – 24 dB	Weak
25 – 35 dB	Good
> 35 dB	Excellent

NOTE After installation the signal strength should indicate 'good' or 'excellent'.

WARRANTY

All translators are covered by a 3-year limited warranty. The warranty is voided by mechanical or electrical damage caused by incorrect handling or usage. Translator must be returned via an authorized supplier for repair or replacement along with full information on the identified problem.

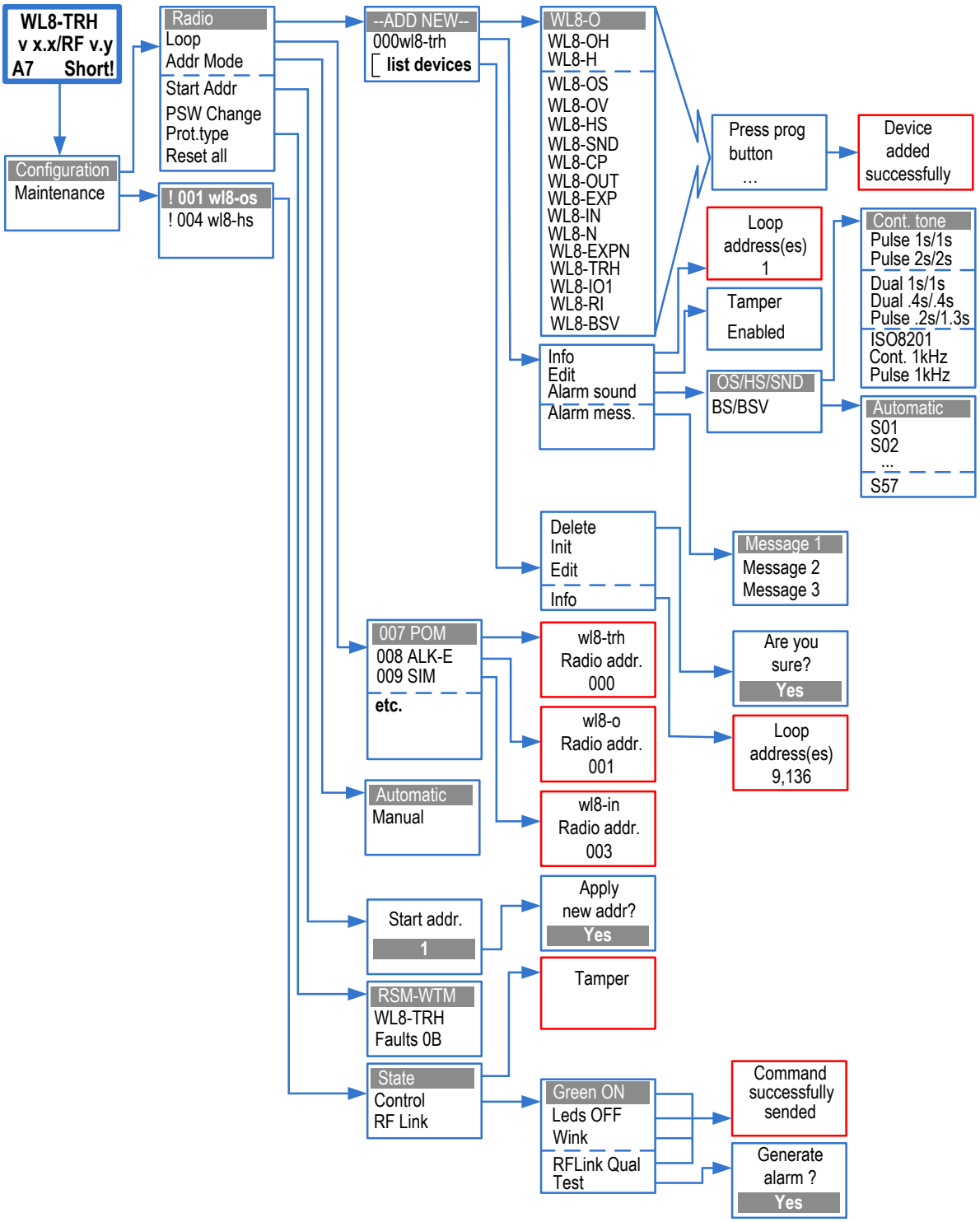
WARNINGS & LIMITATIONS

Devices use high quality electronic components and plastic materials that are highly resistant to environmental deterioration. However, after 10 years continuous operation it is advisable to replace them to reduce the risk of reduced performance caused by external factors. Ensure the devices are only used with compatible control panels. Detection systems must be checked, serviced and maintained on a regular basis to confirm correct operation.

Refer to and follow National Codes of Practice and other internationally recognized fire engineering standards. Appropriate Risk Assessment should be carried out initially to determine correct design criteria and updated periodically.

APPENDIX A

MENU, SUB-MENU AND COMMAND STRUCTURE



NOTE Each radio device has some individual parameters which are not described here. For further detail please refer to the individual product specifications.

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