Data and installation

Sensor, Sounder & Strobe

SenTRI range

These instructions are for the SenTRI Sensor product range. A SenTRI Sensor product integrates smoke and heat detection with electronic sounder and LED flasher (Strobe) in one assembly.

Product range

All LPCB approved Sensor STATES are listed in the *Description and commissioning* information

These products are not visual alarm devices and do not meet EN 54-23.

Part number	Description	Symbol
SEN-720	Heat Sensor	H
SEN-780	Heat Sensor plus Sounder	HS
SEN-780-ST	Heat Sensor plus Sounder & Strobe	HSSt
SEN-715 #	Optical Sensor	O
SEN-710	Optical & Heat Sensor	OH
SEN-770	Optical & Heat Sensor plus Sounder	OHS
SEN-770-ST	Optical & Heat Sensor plus Sounder & Strobe	OHSSt

This 'Optical' Sensor is also used in the Duct sensor.

Associated products

S4-700 (previously SEN-700)	Base
SEN-FLUSH	Semi-Flush fixing kit
805589	Sensor dust cover (pack of 50)
805580	Removal tool kit
SEN-COVER-REMOVER	Dust cover remover tool (spare adaptor)
805576	Label plate (pack of 50)

General specification

Operating voltage	35V - 41V
Weight	110g with base - 170g SEN-720 only: 88g (with base - 148g)
Dimensions in mm	117 diameter by 49.6 height With base the height increases to 63.8
IP rating	IP30 IP20 when mounted on a metal back box
Enclosure	ABS
Colour	RAL 9010
Approval	LPCB approved
Storage temperature	-20°C to +70°C
Ambient operating temperature	-10°C to +50°C
Relative humidity	95% non condensing (+5°C to +45°C)
Heat (H) Standard	EN54 : Part 5 :2002
Optical (O) Standard	EN54 : Part 7 : 2002
Sounder (S) Standard	EN54 : Part 3 : 2002
Multi sensor Standard	CEA 4021 : 2003-07

EN54-18 : 2005 - Input/ output devices

EN54-17 : 2005 Short-circuit isolator (section 4.8) data:	V_{max}	42V	$I_{C\ max}$	0.4A
	V_{nom}	40V	$I_{S\ max}$	1A
	V_{min}	24V	$I_{L\ max}$	20µA
	$V_{SO\ max}$	16V	$Z_{C\ max}$	0.16Ω
	$V_{SO\ min}$	8V		

Information on minimum sound output levels to include polar dispersion is covered in a technical note TECH7018.033, available on request from manufacturer.

Siting

A *Sensor, Sounder & Strobe* device plugs into a dedicated Base that is installed in the protected premises. The Bases should be sited in locations as defined by the project plans and by BS5839 : Part 1 : 2002.

Do's and Don't

DO NOT locate smoke detectors where products of combustion may be present such as in kitchens, garages, furnace rooms, welding shops etc.

DO NOT locate heat detectors above boilers or heaters or where the temperature is normally very high or liable to sudden fluctuations.

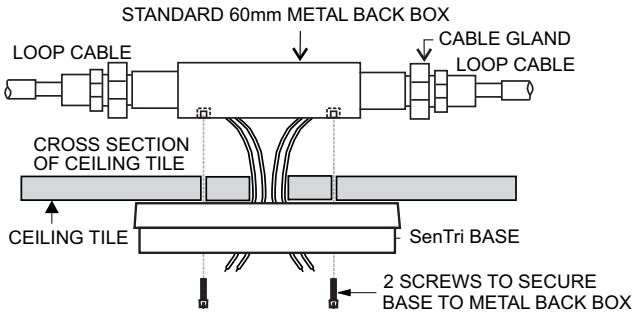
DO NOT locate smoke or heat detectors: -

- **In dusty or dirty environment.**
- **Near heating or air-conditioning grilles**
- **Outdoors in stables, sheds etc.**
- **In excessively damp areas**
- **In dead air spaces at the junctions of ceilings and walls**
- **At ceiling locations where a 'thermal barrier' may exist.**

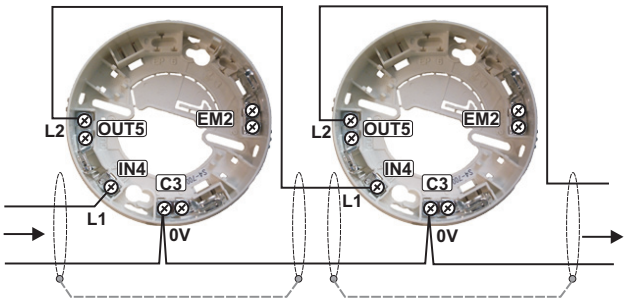
Follow recommendations detailed in section 22 of BS5839 : Part 1 : 2002

Metal back box

A metal back box must be used for base or semi-flush mounting. The earth continuity must be maintained throughout the whole loop circuit. The earth must be securely connected to the back box.



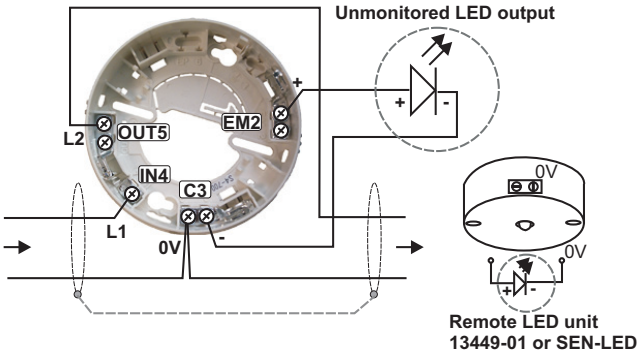
In - Out wiring to Sensor bases

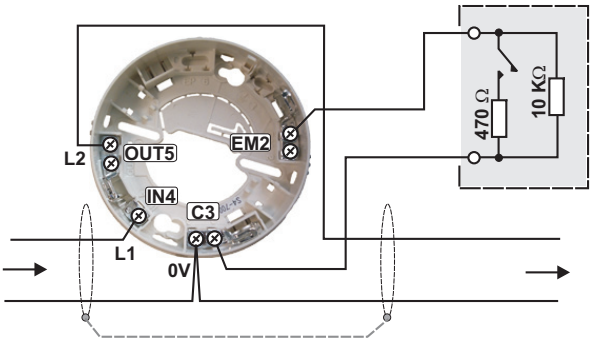


Programmable input/output

All SenTRI devices have terminals that can be configured as a monitored input or unmonitored output. The factory setting of the programmable input / output is an unmonitored output to drive an external repeat LED without a series resistor.

There is a maximum cable limit of 15 metres from the Sensor base to the I/O Unit.





The input can accept signals such as fire, non fire or fault, these are configured during commissioning. As a fire input it is possible to connect a conventional Manual Call Point (non UK application only) with a series resistor of value 470 Ohms coupled with an end-of-line 10Kohms resistor. In this case the fire input is fully monitored for open or short circuit faults.

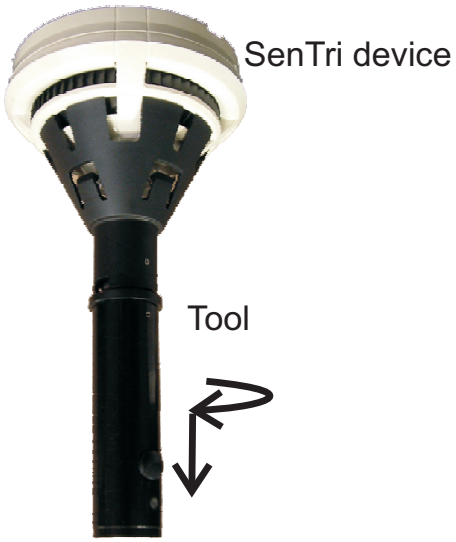
The input can be setup as a non-fire or fault input using a similar arrangement, with series and parallel resistors as shown. It is possible for such an input to trigger a command that is configured to action an output elsewhere in the system to control plant equipment such as the ventilation system.

Tools

An extractor tool allows removal and fitting of the Sensor device head into the base. By fitting a screw-on adaptor, the tool can be used to remove the sensor dust cover.

To remove the SenTRI device

Fit the tool onto the SenTRI device. Turn SenTRI device anticlockwise until it stops and then remove the SenTRI device from the base.



To fit a SenTRI device

Fit the SenTRI device on to the tool. Offer SenTRI device to base and rotate clockwise until it moves upwards on to the base and rotate it again until it clicks and goes no further, the lines on the base and SenTRI device will align.

To fit the dust cover using tool

Place the dust cover onto the tool inside the cradle. Offer the cover to the SenTRI device, locate and push to fit it onto the assembly. Withdraw the tool when the dust cover is in place.

To remove the dust cover using tool

A dust cover remover tool must be fitted to the main tool to extract the dust cover. Press the pad of the dust cover remover tool onto the dust cover, this creates an air tight grip, to allow the cover to be pulled off from the SenTRI device.

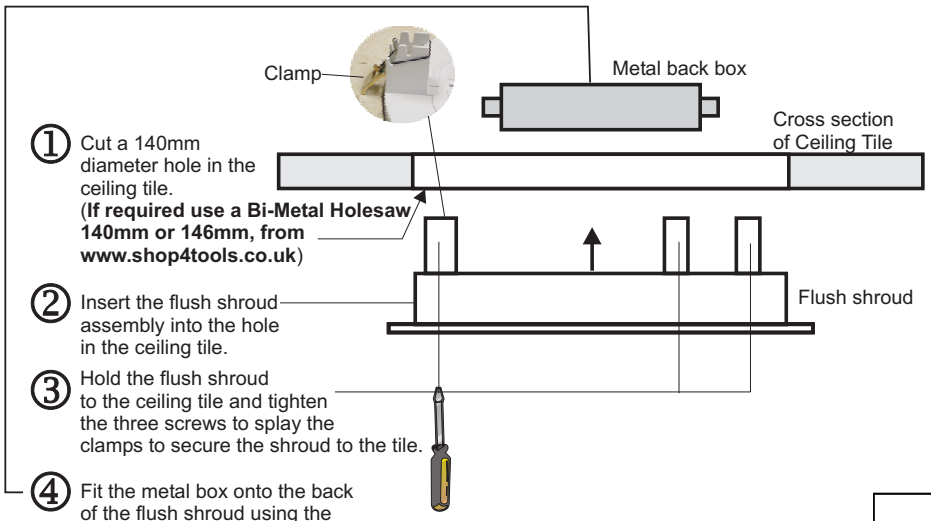
SenTRI device Semi-flush fixing kit (S4-FLUSH)

A SenTRI device can be semi-flush mounted to a ceiling tile to an approximate depth of 20mm, which is slightly deeper than the base assembly. To semi-flush mount a special housing must be used, which consists of a main assembly and a trim ring.

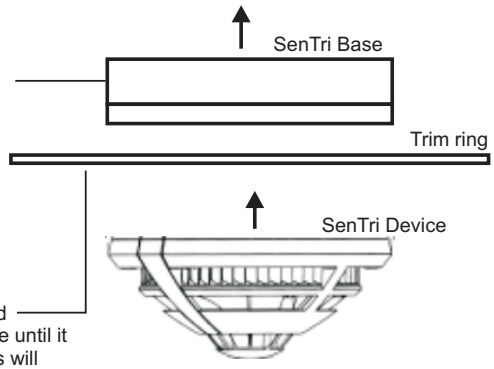
Technical data

Weight	164g with trim ring
Dimensions	174mm diameter by 50mm depth
Enclosure	ABS
Colour	RAL 9010
Storage Temperature	-20°C to +70°C
Ambient temperature	-10°C to +50°C
Relative Humidity	95% non condensing (+5 to +45°C)

There is an enhanced volume output of sound from a flush mounted SenTRI device.



1. Cut a 140mm diameter hole in the ceiling tile. (**If required use a Bi-Metal Holesaw 140mm or 146mm, from www.shop4tools.co.uk**)
2. Insert the flush shroud assembly into the hole in the ceiling tile.
3. Hold the flush shroud to the ceiling tile and tighten the three screws to splay the clamps to secure the shroud to the tile.
4. Fit the metal box onto the back of the flush shroud using the appropriate fixing screws to secure the box to the flush shroud.



5. Locate the SenTri Base into the flush shroud, such that the two locating pillars on the shroud feeds through the two elongated holes on the Base. Push the Base into the shroud until the Base click locks into the shroud.
6. Make the cable connections.
7. Offer the trim ring to the shroud and slowly rotate ring clockwise until it clicks and goes no further. This will lock the ring in position.
8. Offer the Sentri device to the Sentri Base and rotate the SenTri device clockwise until it moves upwards into Base, and then rotate the device again until it clicks and goes no further.

Do not over tighten the clamping screws as this will cause the clamps to cut into the ceiling tile.

CE
2811

SMS by Honeywell (Novar Systems Limited)
Manufactured by: Honeywell Life Safety Systems,
140 Waterside Road, Hamilton Industrial Park,
Leicester, LE5 1TN, United Kingdom

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DoP	Product No.
018-CPR-2013	SEN-710
018-CPR-2013	SEN-715
018-CPR-2013	SEN-720
018-CPR-2013	SEN-770
018-CPR-2013	SEN-770-ST
019-CPR-2013	SEN-780
019-CPR-2013	SEN-780-ST

EN54-3:2001, A1: 2002, A2:2006, EN54-5:2002, A1:2002, EN54-7:2000, A1:2002, A2:2006, EN54-17:2005, EN54-18:2005

SEN-710	(EN54-5, 7, 17 & 18)
SEN-715	(EN54-7, 17 & 18)
SEN-720	(EN54-5, 17 & 18)
SEN-770	(EN54-3, 5, 7,17 & 18)
SEN-770-ST	(EN54-3, 5, 7, 17 & 18)
SEN-780	(EN54-3, 5, 17 & 18)
SEN-780-ST	(EN54-3, 5, 17 & 18)

Intended for use in fire detection and fire alarm systems in and around buildings

Refer to DOP 018-CPR-2013 and 019-CPR-2013 for level or class of performance declared, for details see website www.smsfire.co.uk

At the end of their useful life, the packaging, product and batteries should be disposed of via a suitable recycling centre and in accordance with national or local legislation.

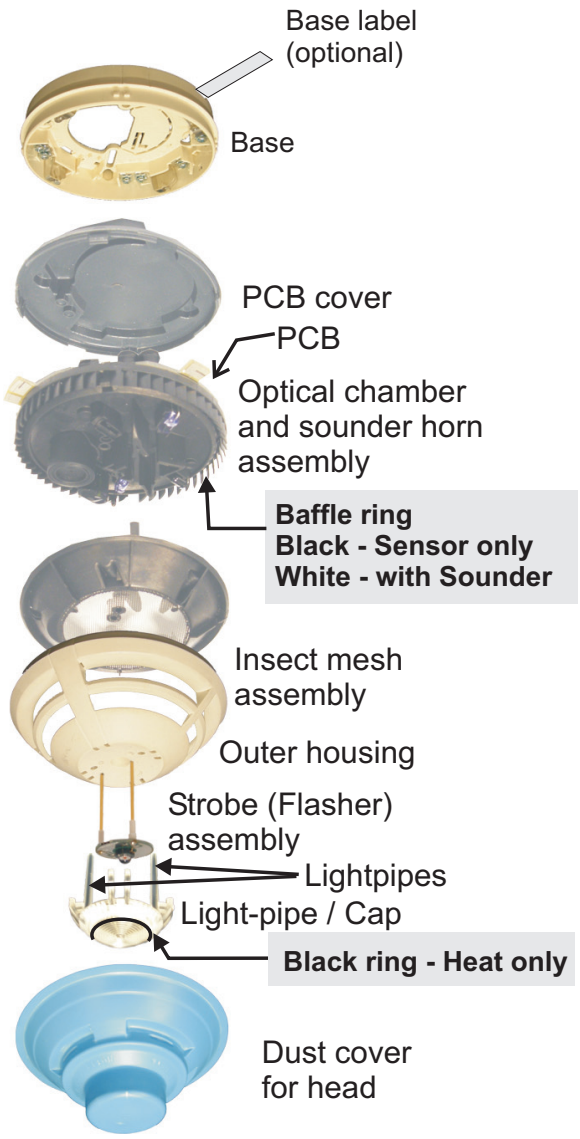
WEEE Directive:
At the end of their useful life, the packaging, product and batteries should be disposed of via a suitable recycling centre.
Do not dispose of with your normal household waste. Do not burn.

SMS | Hamilton Industrial Park, Waterside Road, Leicester LE5 1TN, UK | Website: www.smsfire.co.uk
Telephone +44 (0) 116 246 2100 | Technical support: www.smstoolbox.co.uk | Fax (UK): +44 (0)116 246 2016

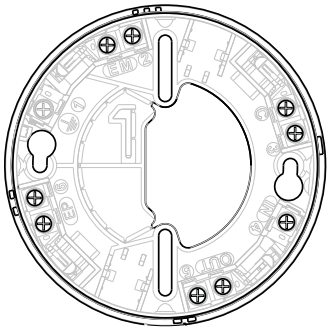
Sensor, Sounder & Strobe

SenTRI range

Sensor Sounder Strobe device



Base



The base has terminals for external cables to allow it to be electrically connected to the panel loop circuit and to the monitored input or output circuit. Any *Sensor, Sounder & Strobe* device can be plugged into a SenTRI base.

Base labels

An optional label (Part No: 805576) can be fitted to the base. The label can be marked up with device location information.

Indicators

A Sensor Sounder Strobe device has a red LED to give an indication in the event of a fire. The LED can be configured to flash periodically, as an 'in operation' confirmation, this indication is given system wide at all *Sensor, Sounder & Strobe* devices.

Dust Cover

A dust cover is supplied with each Sensor, Sounder & Strobe device, to prevent dust from building work contaminating the sensor. The cover is removed prior to the commissioning of the fire alarm system.

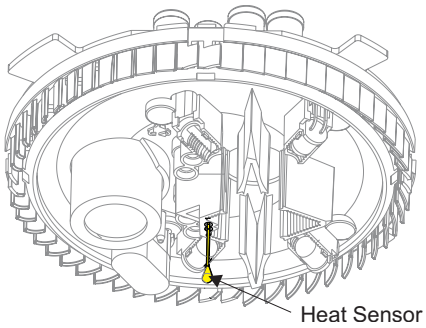
Monitoring

Under normal conditions the *Sensor, Sounder & Strobe* devices are monitored regularly and the data is used to create a background performance record. When there is a potential event, the *Sensor, Sounder & Strobe* device will flag the control panel for attention. The control panel will take further readings from the device and compare all the measurements with patterns and rules to determine if it is a fire event.

Device functionality

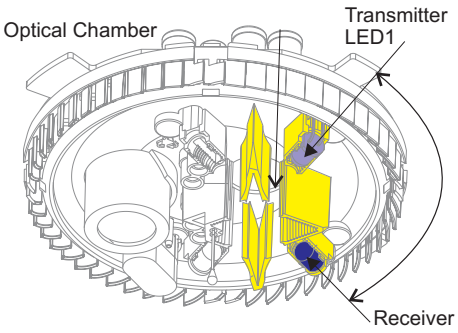
All *Sensor, Sounder & Strobe* devices are monitored periodically to check if they are working correctly, an indication of a fault is given if there is a failure. For example the infrared signals through the optical chamber is regularly checked, the thermistor is checked for failure. The strobe and sounder circuits are monitored for failure.

Heat sensor (H)



The heat sensing is provided by a thermistor. The temperature at which the device goes into fire is defined by the configuration settings in the control panel. The control panel also calculates any rate of rise elements required in the fire decision.

Optical sensors



Single Optical Sensor

The optical sensing is performed in the optical chamber using transmitting LED 1 and an infrared receiver. Measurements are taken at regular intervals. The control panel uses these readings to detect the presence of smoke.

Bell tone

The bell tone function is stored on a flash memory chip within the assembly of *Sensor, Sounder & Strobe* device .

Message 1	Bell tone

Sounder (S)

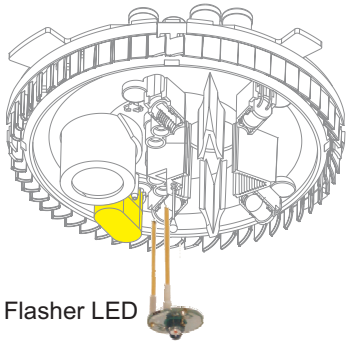
The sounder function in a *Sensor, Sounder & Strobe* device is designed to meet the requirement of EN54 : Part 3. The EN54 : Part 3 average output from the sounder is 85dBA at 1m or 75dBA at 3m at a bedhead, making it suitable for installation in hotel bedrooms. The sounder can operate a turbo mode if configured during commissioning to provide further 3dB output. The sound outputs are based on the settings of the FABs and SABs at the panel that gives changing levels over 2 seconds duration in 8 time slots. The standard outputs are synchronised with the S^3 devices installed in the same system.

A piezo disk within a *Sensor, Sounder & Strobe* device assembly outputs the sound via a horn, which is constructed in the chamber moulding. The volume of the sound output can be individually set at the device, note that the sound level should not be set lower than 65dBA at 1m for standards compliance. The system prevents adjustment of volume down to zero. Another feature that can be configured is the soft start that ramps the sound volume gradually to the maximum level set at the device.

The *Sensor, Sounder & Strobe* device will have a white baffle to identify it as having Sound functionality.

The Sound Pressure Level at 90° will far exceed the more useful average Sound Pressure Level quoted.

Strobe (St)



The Strobe utilises a high-power red LED that receives its power from a super capacitor in the *Sensor, Sounder & Strobe* device assembly. The high light output from the LED is made possible by the low impedance of the capacitor. When compared with the conventional Xenon flasher the *Sensor, Sounder & Strobe* device, the strobe outputs a lower level of light over longer duration to achieve the same intensity. The strobe is designed for installation on a ceiling and provides a wide viewing angle to allow the light to be seen all around. As factory set the strobe provides a pulsed output every 2s with signal 1, 1 second with signal 2 and 1 second with signal 3, however the operation of the strobe with the signals 1, 2 and 3 can be changed at the commissioning stage. The strobe is synchronised with any S-Cubed strobe installed in the same system.

The Disability Act 1995 recommends visual alarms, like the Strobe when installed in the protected premises to warn occupants who are hard of hearing.

A metal back box must be used for surface and semi-flush mounting and earth continuity must be maintained throughout the whole loop. The earth must be securely connected to the metal back box.

Compatibility

At the time of releasing this data sheet the *Sensor, Sounder & Strobe* devices were compatible for installation on the loop circuits of fire alarm system based on panels having the following cards:

≥ mean - equal to or greater than	EN panels			
	Senator Advance	**SENTRI2 panel**	**SENTRI4 panel**	
Card ->	MCC	MCB	MCC	LPC
Sentri	≥4.30	≥4.37	≥4.37	≥4.30
Sentri supports SEN-710	≥4.30	≥4.37	≥4.37	≥4.30
Sentri supports STATES 2 & 4 Optical	≥4.37	≥4.37	≥4.37	≥4.35
Sentri supports STATE 7 heat	≥4.47	≥4.47	≥4.47	≥4.45

How to check card software version

The *Master Control Board* MCB is always **Card 0**.

There can be up to 2 loop cards installed in a Senator Advance Panel and SENTRI2 Panel. The SENTRI 4 Panel have up to 4 loops cards 1 to 4.

a. Press the **MENU ON/OFF** button.

b. Press the F3 button to select **[Info].**

c. Press the F4 button to select **<etc>** until **[Status]** appears on the display.

d. Press the F2 button to select **[Status].**

e. Press the F3 button to select **[Card].**

f. Enter the Card number: For MCC/MCB this is card 0 and for the Loop processor card LPC this can be card 1,2,3 or 4 dependent on panel type.

g. Press the F2 button to select **[Enter]**. Notice the selected card status is displayed to include the software version number.

Sensor, Sounder & Strobe device STATES

The STATE in which a *Sensor* device operate can be changed from the default factory set STATE to another STATE during commissioning. The environment in which a *Sensor, Sounder & Strobe* device is installed will determine what STATE is used.
- factory default settings

	Device	LPCB approved STATES	Meets ~EN54 : Part 5 :2002 * EN54 : Part 5 :2002
Heat sensor -	SEN-720	STATE 0 **#**	Class A1 heat *
(With Sounder)	SEN-780	STATE 5	Class B heat *
(With Strobe)	SEN-780-ST		
Optical & Heat sensor variant -	SEN-710		
(With Sounder)	SEN-770	STATE 0 #	Medium optical smoke ~ / Class A1 heat*
(With Sounder and Strobe)	SEN-770-ST		
Optical sensor -	SEN-715	STATE 0 #	Medium optical smoke

All SenTRI sensor sounder devices meet EN54-17:2005, Short-circuit Isolators and EN54-18:2005, Input/Output devices for use on the transmission path of fire detection and alarm systems.

Heat sensor STATES

STATE	Definition / Class	Application in / Suitable for:	Sensitivity a-high- to-e-none
STATE 0**#**	Class A1 heat	Area having high levels of smoke, dust or steam.	a
STATE 13	Class A2 heat	Area where there is moderate temperature changes plus dust, smoke or steam present.	b
STATE 7	Class A2S heat	Area where fixed temperature operation is required, but is totally unaffected by transient temperature variations.	c
STATE 5	High temperature Class B heat	Area having high ambient temperature plus dust, smoke or steam present.	d
STATE 6	High temperature Class BS heat - with no rate of rise component	Area where there is rapid temperature changes plus dust, smoke or steam present	e
STATE 15	No detection		f

Optical sensor STATES

STATE	Definition / Class	Application in / Suitable for:	Sensitivity a-high- to-f-none
STATE 3	High sensitivity optical	Clean area or environment, where early detection is required	a
STATE 4	Medium sensitivity with no spike protection	General area as STATE 0 with less immunity to steam and dust to facilitate witness test	b
STATE 0**#**	Medium sensitivity optical	General area	c
STATE 8	Delayed medium sensitivity optical	General area with transient steam, dust or smoke present	d
STATE 2	Low sensitivity optical	Area with moderate dust, smoke or steam present	e
STATE 15	No detection		f

Optical & Heat sensor STATES

STATE	Definition / Class	Application in / Suitable for:	Sensitivity a-high- to-j-none
STATE 3	High sensitivity optical, Class A1 heat	Clean area or environment, where early detection is required	a
STATE 4	Medium sensitivity with no optical spike protection, Class A1 heat	General area as STATE 0 with less immunity to steam and dust for ease of testing using artificial smoke in normal operating mode, when test / commissioning mode is not active	b
STATE 0#	Medium sensitivity optical, Class A1 heat	General area	c
STATE 8	Delayed medium sensitivity optical, Class A1 heat	General application in area with transient steam, dust or smoke present	d
STATE 7	Medium sensitivity optical, Class A2S heat	General application in area with low dust, smoke or steam present, for fixed temperature operation that is totally unaffected by transient temperature variation	e
STATE 5	Medium sensitivity optical, Class B heat	Area having high ambient temperature with low dust, smoke or steam present	f
STATE 2	Low sensitivity optical, Class A1 heat	Areas with moderate dust, smoke or heat during working hours when used with timing function	g
STATE 11	Low sensitivity optical, Class B heat	Area having high ambient temperature, plus where moderate dust, smoke or steam present	h
STATE 6	Low sensitivity optical, Class BS heat	Area having high ambient temperature that changes, plus moderate dust, smoke or steam present	I
STATE 12	Class A1 heat only	Area where smoke, dust or steam occurs at times	j
STATE 15	No detection		k

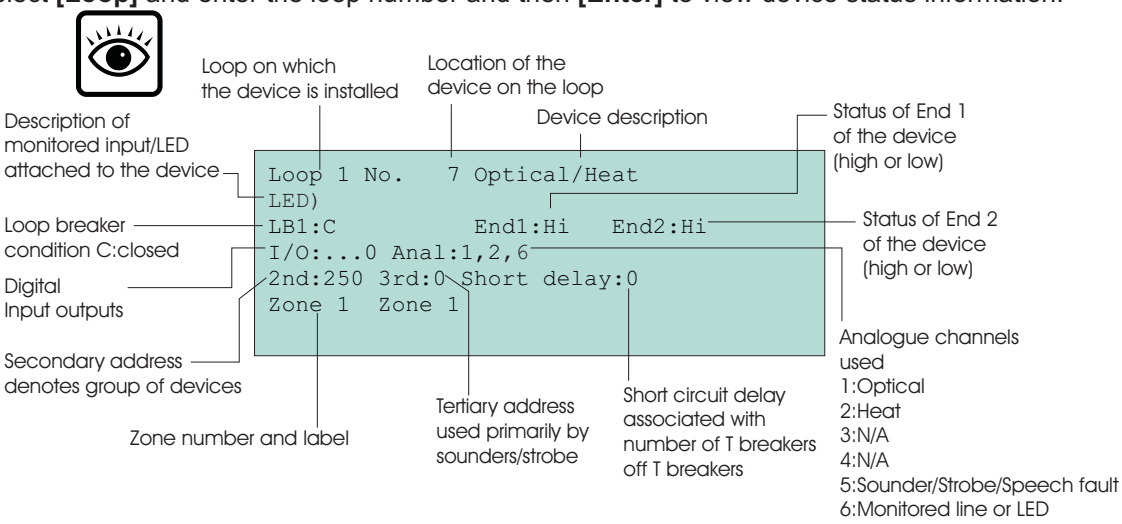
- factory default settings

Sensor, Sounder & Strobe device Status

How to view *Sensor, Sounder & Strobe* device Status

To view the status of a *Sensor, Sounder & Strobe* device following the allocation of the loop circuit on which it is installed.

a. Press **Menu On/Off** button.
b. Select **[Info]**, momentarily press **<etc>** to select [**Status]**
c. Select **[Device]** and enter a device number
d. Select **[Loop]** and enter the loop number and then **[Enter]** to view device status information.



Part No	Product	Digital I/O				Analogue Channels
SEN-720	Heat Sensor	.	.	.	O	2
SEN-780-ST	Heat Sensor plus Sounder & Strobe	O	O	O	O	2,5
SEN-780	Heat Sensor plus Sounder	.	O	O	O	2, 5
SEN-715	Optical Sensor	.	.	.	O	1
SEN-710	Optical & Heat Sensor	.	.	.	O	1,2
SEN-770	Optical & Heat Sensor plus Sounder	.	O	O	O	1,2,5
SEN-770-ST	Optical & Heat Sensor plus Sounder Strobe	O	O	O	O	1,2,5
	+ Monitored input					6
	+ Monitored output					6
		. - Unconnected				
		O - Output				
		- Don't Care				

Analogue Channel 1 is forward scatter optical smoke sensor
Analogue Channel 2 is heat sensor
Analogue Channel 3 is not applicable
Analogue Channel 4 is not applicable
Analogue Channel 5 reports sounder/flasher/bell tone faults to the control panel
Analogue Channel 6 reports monitored input/monitored output faults/operation to the control panel

The correct device type may not be displayed if the loop circuit has allocation faults.

How to check *Sensor, Sounder & Strobe* device Exception codes

The Exception codes are also sometimes called condition codes and these codes provide information about a sensor device. A code indicates small changes in the:

- ☐ environmental condition
- ☐ sensor mechanism
- ☐ how the sensor performs in the system.

To ensure that the sensor exception codes are meaningful, after power up the system should be left undisturbed for at least 24 hours.

Definition

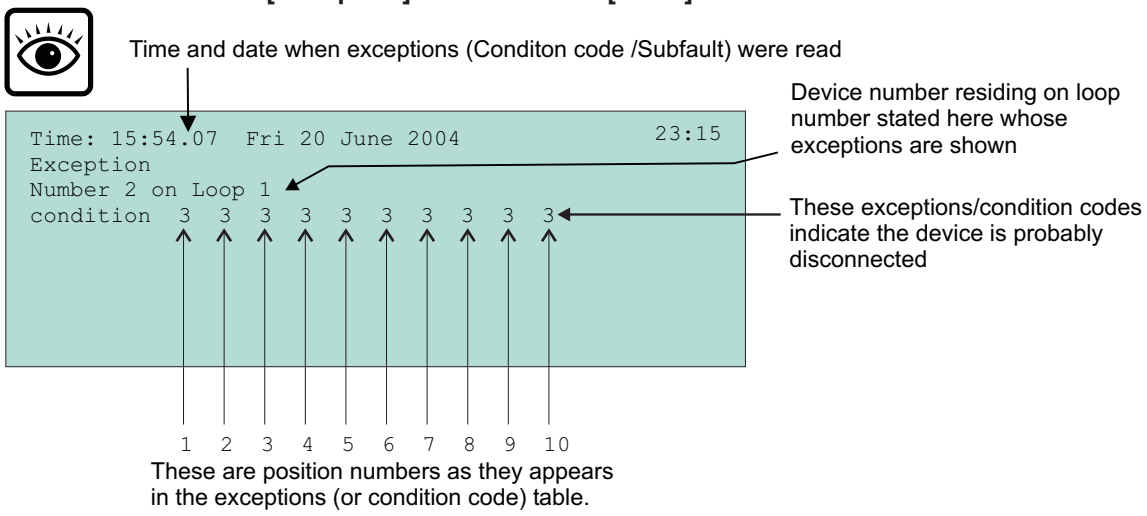
There are ten different conditions possible for each sensor type, although not all of them are defined. Each condition code has a range of **0-3**,

Exception/ Condition Code	Meaning
0	This condition is OK. This code is not displayed unless another non zero code exists.
1 or 2	Suggest preventive maintenance is required, where necessary, to avoid possible false alarms.
3	The sensor is faulty. A fault condition indication is given at the control panel. A message reading 'Sensor Out of Specification' is displayed.

A sensor having *code 3* is automatically disabled by the system to prevent false alarms.

To view the exceptions/condition codes of a device/outstation:

a. Press **Menu On/Off** button
b. Select **[Info]** and press **<etc>** to select **[Event]**
c. Press **<etc>** and select **[Exception]** and then select **[Enter].**



How to interpret Exception Codes

Exceptions /Condition codes	Meaning	Action
1 0 0 0 0 0 0 0 0 0 **or** 0 1 0 0 0 0 0 0 0 0 **or** 1 1 0 0 0 0 0 0 0 0	This is the *sub-fire* band and if set should be taken as showing that the sensor is at its optimum sensitivity for its location.	No action need be taken.
2 0 0 0 0 0 0 0 0 0 **or** 0 2 0 0 0 0 0 0 0 0 **or** 2 2 0 0 0 0 0 0 0 0	A sub-fire has been generated which would suggest that the sensor was either too sensitive for its environment or that the sensor type may be incorrect for the location.	Action should be to check location and alter sensor STATE or type as required. The customer should be made fully aware of this change. Remember to backup all changes of STATES onto the NVM.
0 0 1 0 0 0 0 0 0 0 **or** 0 0 2 0 0 0 0 0 0 0	These codes indicate that the sensor is in a *windy location.* This will cause the chamber voltage to drop. Code Level 1 shows one drop only, Level 2 shows greater than one drop.	The location should be checked and a change in siting made, if required. Note: Wind will not cause the sensor to false alarm.
0 0 0 0 1 0 0 0 0 0 **or** 0 0 0 0 2 0 0 0 0 0 **or** 0 0 0 0 0 1 0 0 0 0 **or** 0 0 0 0 0 2 0 0 0 0	This shows that the sensor time averages are close to acceptable limits.	On commissioning the sensor should be replaced. A sensor with code 2 is worse than code 1. On maintenance sensors with code 2 should be replaced.
0 0 0 0 0 0 1 0 0 0 **or** 0 0 0 0 0 0 2 0 0 0 **or** 0 0 0 0 0 0 0 1 0 0 **or** 0 0 0 0 0 0 0 2 0 0	This shows that high frequency noise events have been detected by the system. A code 1 shows one event and a code 2 shows more than one event.	The sensor should be replaced. On maintenance, sensor with code 2 should be replaced. If it reoccurs then check the environment.
0 0 0 0 0 0 0 0 1 0 **or** 0 0 0 0 0 0 0 0 2 0	This shows sensor hardware faults. 1 for code 1 and more than one for a code 2.	The sensor should be replaced.
0 0 0 0 0 0 0 0 0 1 **or** 0 0 0 0 0 0 0 0 0 2	This shows that transmission faults are being noted. Code 2 is worse than code 1.	The device should be replaced. If it reoccurs then check the environment.

How to clear Exception codes

This can be done by removal and replacement of the *sensor chamber, by re-allocation of the loop having the sensor or by using the menu controls.*

a. Press **Menu On/Off** button.
b. Select **[Test/Eng]** and then **[Usercode].**
c. Select **<etc>** to display and select **[Config].**
d. Select **[Clear]** and then select **[Exception]** and **[Enter]**.

All cleared codes will return if the conditions are still true.

Exception (or Condition) Codes for *Sensor, Sounder & Strobe* devices

Gen type	Pos No.	Description	Exception codes			
			normal band	sub fault band		fault band
			0	1	2	3
ENVIORNMENT	1st	Optical subfire	None	Small signal sensed [Check location, STATE & type]	Subfire [Check location, STATE & type]	-
	2nd	Heat subfire	None	Small signal sensed [Check location, STATE & type]	Subfire [Check location, STATE & type]	-
	3rd	-	-	-	-	-
	4th	-	-	-	-	-
SENSOR	5th	Optical channel drift or out of range	OK	-	Close to acceptable limit	Out of limits [Clean/replace]
	6th	Heat channel drift or out of range	OK	-	-	Out of limits [Clean/replace]
	7th	Optical channel noisy (High frequency)	OK	Single HF noise event detected	Multiple HF noise seen [Check location and report]	-
	8th	Heat channel noisy (High frequency)	OK	Single HF noise event detected	Multiple HF noise seen [check location and report]	-
DEVICE	9th	Outstation firmware	OK	Isolated fault [Note/report]	Repetitive fault [Note/report/ replace]	Total failure [Replace]
	10th	Outstation transmission	OK	Low error rate	Medium error rate [Report]	High error rate [Replace]

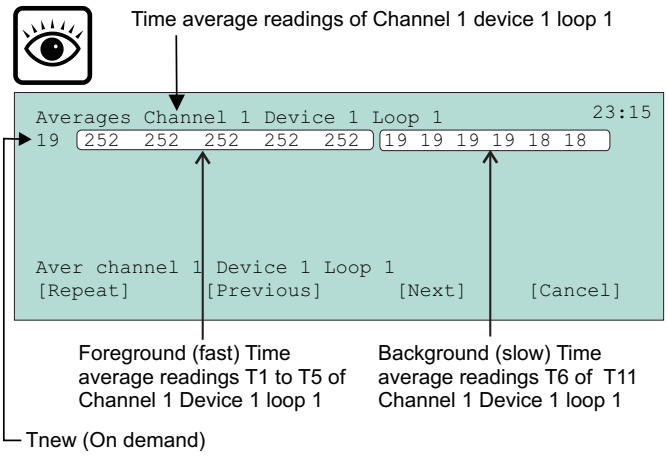
Sensor, Sounder & Strobe devices - Time average reading

The typical time average values for sensors under normal operating condition are shown in the table below.

Part No	Product	Analogue Channels	Time average Tnew
SEN-720	Heat Sensor	2 - heat	66
SEN-780-ST	Heat Sensor Sounder Strobe	2 - heat	66
SEN-780	Heat Sensor Sounder	2 - heat	66
SEN-715	Optical Sensor	1 - optical	25
SEN-710	Optical & Heat Sensor	1 - optical 2 - heat	25 66
SEN-770	Optical & Heat Sensor plus Sounder	1 - optical 2 - heat	25 66
SEN-770-ST	Optical & Heat Sensor + Sounder & Strobe	1 - optical 2 - heat	25 66

	Foreground (fast) time average readings					Background (slow) time average readings					
Tnew	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11
On demand	80mS	320mS	1.28S	5.12S	20.48S	1.36min	5.46min	21.84min	1.45hr	5.82hr	23.3hr
	Normally reads 252, unless there is a threshold.										

Checking the time averages



The following procedure assumes there is no password access required.

a. Press the **Menu On/Off** button.
b. Select **[Info]** and momentarily press **<etc>** to select **[Time Avg].**
c. Type in the channel number from the range 1-6
d. Select **[Device]** and type in the device number for which the time average is required.
e. Select **[Loop]** and enter the loop number of the device and **[Enter].**
f. If necessary select **[Repeat]** to refresh the readings.

The display shows time averages for the device.

Sensor, Sounder & Strobe devices - Message Action List

This list shows the messages that are likely to be displayed at the *control panel* or at a loop *repeat panel* in the fire system.

Message Action list

The messages displayed at the *control panel or loop repeat panels* are given for guidance only:

- ☐ fault message
- ☐ likely meaning of the message
- ☐ along with suggestions on what initial actions may be taken to rectify the problem.

Only the messages that are applicable will appear on the display of the control panel or loop repeat panels.

- ☐ The term **Outstation** and **device** are used interchangeably.

Message	associated with..	meaning..	..possible action
Flash memory checksum error	Device	Memory Checksum Error	Replace the device
Invalid Configuration	Device	EEPROM incorrectly programmed	Replace the device
Invalid configuration	Loop Processor Card	Loop recovered with freeblocks ON.	This is not allowed. Switch OFF the freeblocks and reallocate.
Memory corrupt	Device	EEPROM checksum failure	Replace device
Program memory corrupted	Card	Checksum failure on EPROM at midnight	Clear and ignore single occurrence. Record in log book
Sounder circuit has failed	Device	There is a fault with the sounder hardware on the SenTRI device or S-Cube.	Replace the device
Sounder circuit Restored	Device	The fault on the sounder SenTRI device or S-Cube has been restored	-
Speech circuit has failed	Device	There is a hardware fault possibly associated with the bell chip on the SenTRI device or S-Cube	Replace the device
Speech circuit Restored	Device	The fault on the bell SenTRI device or S-Cube has been restored	-
Strobe circuit has failed	Device	The strobe circuit on the SenTRI device or S-Cube device has failed	Replace the device
Strobe circuit Restored	Device	The hardware fault associated with the strobe has been restored	-

Finding a *Sensor, Sounder & Strobe* device

The 'find device' is a function that gives a visual or audible indication at the respective *Sensor, Sounder & Strobe* device on a loop circuit.

a. Press the Menu On/Off button and then **[Test/Eng]** .
b. Select **[Loop]** and then **[Find Dev]**.
c. Now enter a Loop card number to select the loop circuit.
d. Select **[Start]** and type in a device number (usually device 1 is entered).
e. Select **[Enter]**. The display shows the device and loop number.

```
Number 1 on Loop 1
```

f. Press **[Next]** to find the next device on the loop and at any stage if the previous device needs to be found then select **[Previous].**

A found device will provide visual or audible indication:

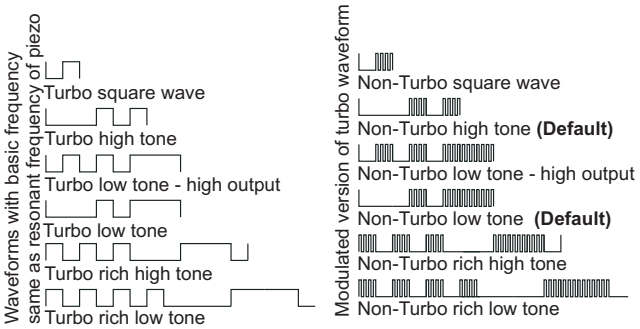
- ☐ On any SenTRI device there will be a flashing indication given by the local LED.
- ☐ An SenTRI device with Sounder, will cause the Sounder to output pulsed tone
- ☐ An SenTRI device with Strobe will cause the strobe to operate.

Loop loading

The battery standby calculator tool is available via SMStoolbox website. The tool must be used to accurately determine the loop loading and to ensure the devices installed on each loop are within the maximum allowed and will meet the control panel's standby requirement.

Turbo and Non Turbo Modes

The *Sensor, Sounder & Strobe* devices can output in **turbo** and/or in **non turbo** modes. When the panel commands a low or high tone output at *Sensor, Sounder & Strobe* devices, if configured during commissioning, the *Sensor, Sounder & Strobe* device will output turbo and/or non turbo tones. The **high and low FAB mappings** are used to change the tone output of the *Sensor, Sounder & Strobe* device sounder. The turbo mode outputs a waveform with a basic frequency that is the same frequency as the resonant frequency of the *Sensor, Sounder & Strobe* device piezo. The non turbo mode outputs modulated turbo waveform.



No.	Description
0	Turbo square wave
1	Turbo high tone
2	Turbo low tone - high output
3	Turbo low tone
4	Turbo rich high tone
5	Turbo rich low tone
8	Non-Turbo square wave
9	Non-Turbo high tone
10	Non-Turbo low tone - high output
11	Non-Turbo low tone
12	Non-Turbo rich high tone
13	Non-Turbo rich low tone

The volume levels and power requirements of the *Sensor, Sounder & Strobe* devices operating in turbo mode are significantly higher than in non-turbo mode.

System test

Preparation

☐ Check to ensure *access* will be provided to areas where installed equipment is to be tested, such as in locked or secure areas.

☐ Ensure all sensor *dust covers* are removed.

☐ Tests may be made easier by having: sensor extractor tool, smoke pole and canister, heat gun.

Health and safety must be observed when using these test tools.

Communication to site occupants

☐ Before undertaking any of these tests and to prevent unnecessary building evacuation, ensure:

- all affected personal on site are informed via a responsible person that the fire alarm system is being commissioned.
- where there is a link to an alarm receiving centre, the appropriate action should be taken to ensure they are informed that tests are being carried out on the system.

Commissioning computer

It is much easier for the panel and system to be configured from a Commissioning computer, see Programming tool manual.

Test / Commissioning mode

The [Reset / No Reset] is a toggle option and is under the Test / Commissioning mode function, it allows the test on sensor devices with or without a panel reset.

The **zone test mode** function must be used to test sensor devices in the system.

☐ A zone may be put in to the test mode when testing devices in a zone. It allows the engineer to test zones without having to return to the panel to silence alarms and reset the system.

While the panel is in the Zone test mode, following a fire event the alarm sounds for 5 seconds and the panel automatically performs a silence alarm sequence and thereafter a panel reset, see note. The panel inhibits the operation of delay block functions, network functions, auxiliary and clean contact relays operation in this mode.

☐ All zones of the system that are not in test mode will operate normally.

☐ **To put the panel in or out of zone test mode:** Press **Menu On/Off** button and select **[Test/Eng]**. Select **[UserCode]** and enter the Engineering password (PIN), this need only be done if an Engineering password is set up. Press **<etc>** and select **[Test]** and select **[Zone]** and toggle select **[Reset / No Reset],** whatever it reads that is what is selected. Now select **[On]** and type in the zone number and select **[Enter]**.

Test 

☐ On completion of tests ensure the Zone mode is switched OFF and notice the Test indicator will also switch Off.

Testing Fire Sensors

It is important to ensure that the panel is in *Test mode* before testing sensors in the system.

1. When testing heat sensors DO NOT use a heat gun to test heat sensors in a hazardous environment.
2. Recommended test equipment and methods must be used to fire test flame detectors off interface units.
4. When smoke testing fire sensors using artificial smoke, avoid excessive spray to prevent accumulation of sticky residue on sensor, see instructions on the smoke canister.
5. The beam sensors should be tested using obscuration filters to simulate smoke at default sensitivity.

The BS5839:Part 1 recommends that all sensors are tested for correct operation.

☐ Unless otherwise instructed all sensors should be tested.

☐ Each sensor should also be checked for any physical obstacles that would inhibit the operation of the sensor in the event of a fire.

☐ Where practical, each *conventional flame detector* operating via an interface unit should be functionally tested.

Testing the devices

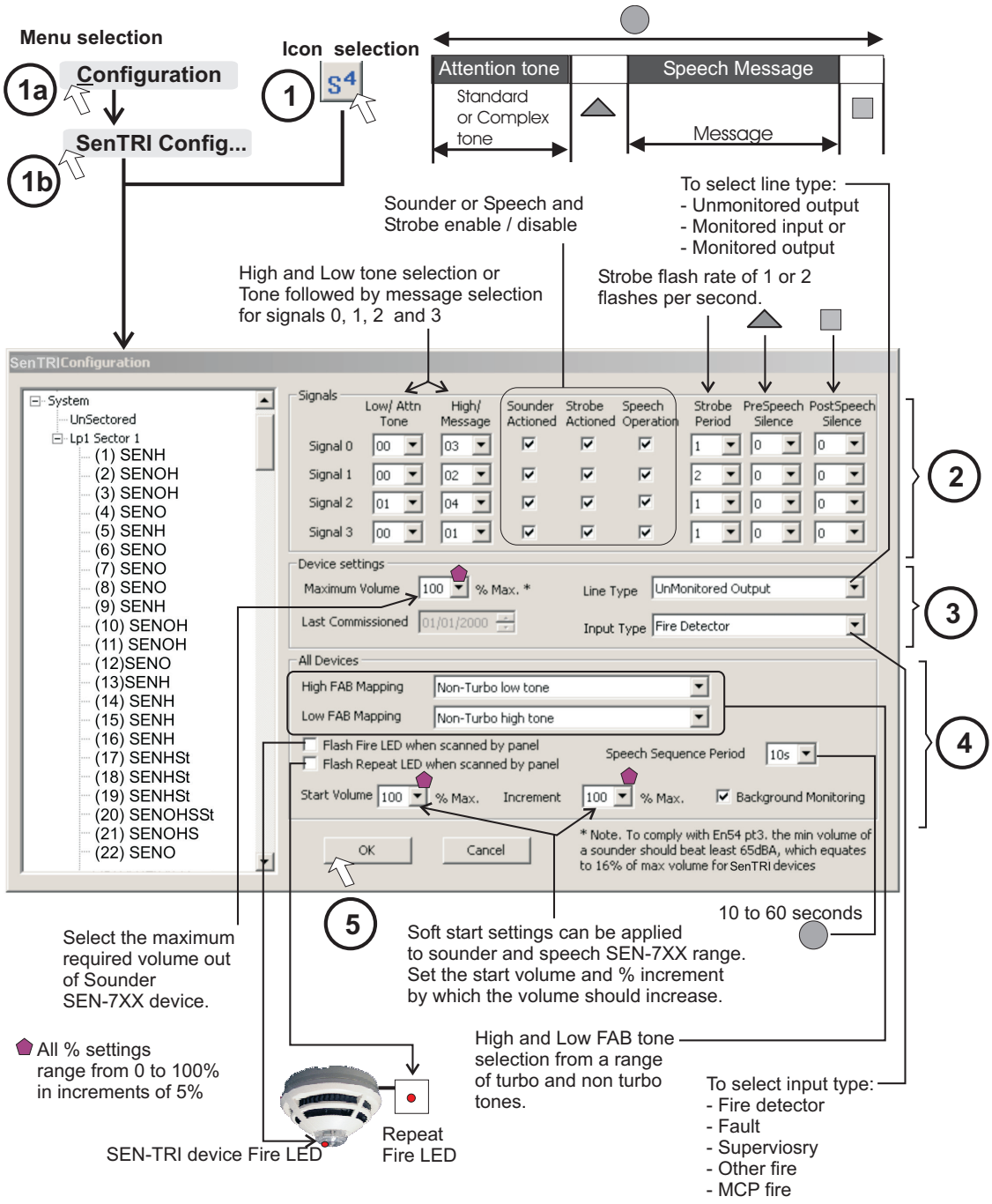
☐ The sensor(s) part of a device must be system tested as per previous section.

☐ For the Sounder part of the device ensure the device outputs correct signal at the appropriate volume level and ensure the strobe operates at the required flash rate. All *Sensor, Sounder & Strobe* devices in the system should have been setup using the commissioning tool.

☐ Each *Sensor, Sounder & Strobe* device should be tested for correct operation in the event of fire.

☐ The sound levels in the areas should be tested in accordance with the British Standard requirements and to meet the site specific needs as agreed with the customer.

Commissioning tool settings



At the end of their useful life, the packaging, product and batteries should be disposed of via a suitable recycling centre and in accordance with national or local legislation.

WEEE Directive:
At the end of their useful life, the packaging, product and batteries should be disposed of via a suitable recycling centre.
Do not dispose of with your normal household waste. Do not burn.

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