



SG100

WIRELESS OPTICAL SMOKE DETECTOR



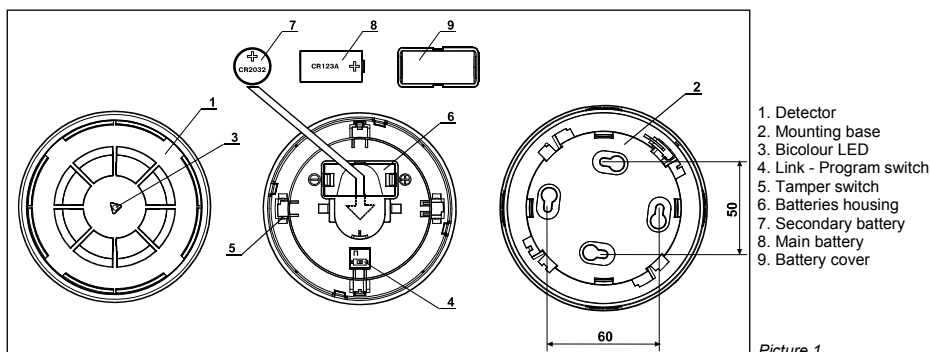
GENERAL DESCRIPTION

The wireless optical smoke detector continuously samples the air in the protected area to provide the earliest warning of fire and yet offers a high level of false alarm rejection. An alarm condition is determined when the level of smoke inside the optical chamber exceeds the alarm threshold; consequently an alarm message is sent to the control panel through its wire to wireless translator module and, eventually, one or more wireless expander modules.

The advanced design of the smoke inlet of the optical chamber guarantees a very high rejection to the introduction of dust, effectively increasing the time between maintenance periods.

Communication between the detector and the translator / expander modules is wireless, via the 'Sagittarius' bidirectional protocol.

PARTS OF THE PRODUCT



Picture 1

DETECTOR'S VISUAL LED INDICATOR

The wireless optical smoke detector is equipped with a bicolour LED (red / green) that provides visual indication for functional conditions and battery levels as indicated in table 1.

DEVICE'S POWER SUPPLY AND LINKING

The linking operation permits the configuration of the wireless optical smoke detector on the translator module.

The linking operation described below does not change if made directly from the translator module or from the PC configuration program; please, refer also to the "Guide to wireless system installation" and similar documentation.

- 1) Verify that the secondary battery is present; if not, insert the battery into its housing with the positive pole facing up (Picture 2).
- 2) Move the switch to position ON (Picture 3).
- 3) Insert the main battery (Picture 4).
Ensure that battery polarity is correct.
The visual LED indicator switches green once, then four times red (programming mode) and will, successively, turn off. This indicates that the detector is ready to be linked to the translator module.
- 4) Move the switch in position 1 to trigger the communication between the detector and the translator.
The green LED switches on once, then it blinks many times (operating mode), successively the red LED blinks many times (self-adjustment mode) and, finally, after alternating green-red for one second, the indicator turns off: this indicates that the linking procedure has been performed correctly and the detector has programmed itself.

Status description	LED indicator signal
Switching into "operating mode"; occurs after main battery insertion.	4 short red LED blinks.
Switching into "programming mode"; occurs immediately after the linking phase is started.	Green LED Short blinks.
"Self-adjustment" mode; occurs during the linking phase: device is programming itself with the wireless system parameters.	Red LED blinking: 1 second on and 0.1 second off.
Normal active mode or device unpowered	No signal from LED.
Alarm condition	Red LED blinking: 0.5 second on and 0.5 second off.
Main battery fault (low level)	Orange blinking: 0.1 second on and 5 seconds off.
Secondary battery fault (low level)	Green LED blinking: 0.1 second on and 5 seconds off.
Both batteries fault	Sequential orange-green LED blinking: 0.1 second on and 5 seconds off.
Tamper fault	No signal from LED
Other fault type (fault on the optical analysis path, high level of contamination inside the optical chamber...)	Sequential orange-green LED blinking: 0.5 second each colour.

Table 1

The detector is linked and all the parameters (address, system code etc.) necessary to work correctly are stored.

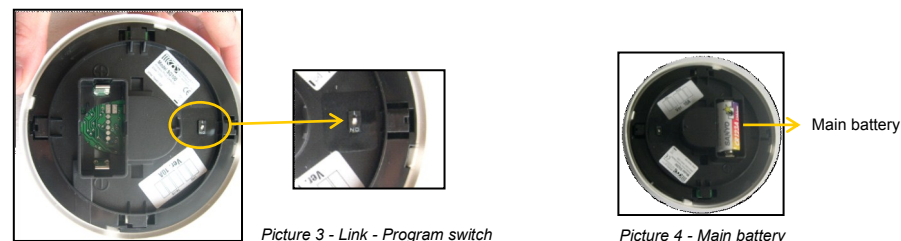
If the LED remains switched on the red light it means that the linking operation failed. In this case remove the main battery, switch alternatively the ON / 1 switch a few times in order to discharge the internal capacitor and then start again from point 2).

IMPORTANT NOTE! Programming is considered to be completed successfully only if there is an indication of programming success on the detector and on the translator or on the window of the PC configuration program.

- 5) Put on the battery cover.



Picture 2 - Secondary battery housing



Picture 3 - Link - Program switch

Picture 4 - Main battery

COMMUNICATION QUALITY ASSESSMENT

It is possible to assess the wireless communication quality of the sensor by using a testing feature built in the device.

After a successful linking operation, by moving the Link-Programming switch on the ON position, the sensor's indicator will start blinking according to table 2.

Always remember to reposition the switch to 1 after the assessment operation: device will NOT work operatively while the switch is on the ON position.

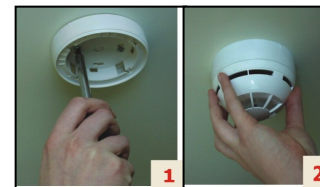
Communication quality	Assessment	Device's indication
No connection	Fail	Two red blinks
Link margin is less than 10 dB	Poor	One red blink
Robust communication with link margin from 10 dB to 20 dB	Good	One green blink
Robust communication with link margin over 20 dB	Excellent	Two green blinks

Table 2

For specific information regarding detector spacing, placement and special applications refer to your specific national standards.

It is strongly advised to mount the device as far as possible from metal objects, metal doors, metal window openings, etc. as well as cable conductors, cables (especially from computers), otherwise the operating distance may greatly drop. The device should not be installed near electronic devices and computer equipment that can interfere with the reception quality.

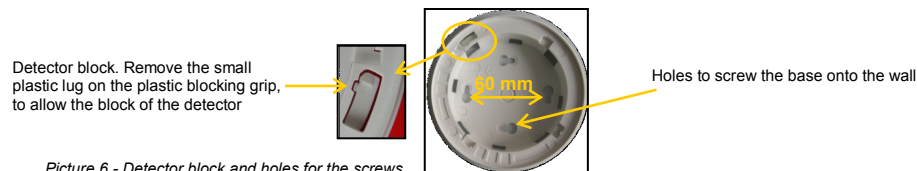
- 1) Select the position of the detector before installing and fixing its supporting base. **Verify, from that position, that the communication between the detector and the translator or the expander is correctly established and working (see the COMMUNICATION QUALITY ASSESSMENT paragraph).**
- 2) Install and fix the base, in the selected position, with the screws provided (Picture 5 and Picture 6).
- 3) Insert the detector onto the base (Picture 5).



Picture 5 - Detector placement

WIRELESS DETECTOR ANTI-TAMPER BLOCK AND REMOVAL

The base for the wireless optical smoke detector has a special anti-tamper device block. To lock the sensing device onto the base, cut off the small plastic lug on the plastic blocking grip on the detector base (Picture 6).



Picture 6 - Detector block and holes for the screws

To remove the blocked detector from the base, insert a tool, like a small screwdriver, into the hole and remove the detector (Picture 7).



Picture 7 - Detector block removal

TESTING

The wireless optical smoke detector has been designed to permit a magnetic functional test. When the test is performed with an appropriate magnet, a fire alarm message is sent to the control panel via translator / expander. To perform the magnetic test put and hold the magnet near the surface of the indicated area (Picture 8). The detector must enter into alarm condition, activate the central LED indicator (blink red as per Table 1) and transmit the alarm message to the control panel. The detector must be reset by the specific command on the control panel (see the RESET paragraph).

All detectors must be tested after installation and, successively, on a periodic basis.



Picture 8 - Magnetic test area

RESET

To reset the detector from alarm or fault condition it is necessary to send the reset command from the control panel.

TAMPER DETECTION FEATURE

The wireless optical smoke detector is provided with a tamper switch and, in case of removal of the detector from its base, it sends a tamper detection message to the control panel (Picture 9).



Picture 9 - Tamper switch

MAINTENANCE

- 1) Before starting any maintenance work, isolate and disable the system, in order to avoid accidental and unwanted alarm conditions.
- 2) Remove the detector from its mounting base to allow inspection and servicing at ground level and in good light. Inspect the smoke entry ports around the sensor and use a small, soft bristle brush to dislodge any obvious contaminants such as insects, spider webs, hairs, etc.
- 3) Use a small vacuum tube or dry, clean, compressed air to suck up or blow any remaining small particles away from the smoke entry screen area.

- 4) Wipe the exterior housing of the detector with a clean, damp, lint-free cloth to remove any surface film that can later attract airborne contaminants.
- 5) After all detectors have been inspected and serviced, reinstall them in their mounting bases, re-apply power to the system and check correct operation as described under the TESTING paragraph.

FAULT SELF-TEST

The wireless optical smoke detector periodically performs a self-test and, if a fault condition is detected, a fault message is sent to the control panel via translator / expander. The fault condition is locally signaled by the visual LED indicator located at the center of the detector (see Table 1). A fault condition is determined by:

- a) Fault on the optical analysis path (chamber, electronic circuit, etc).
- b) High level of contamination inside the optical chamber.
- c) Low batteries level.

TECHNICAL SPECIFICATIONS **		
Communication range with the translator or expander	200 m	Open space
Operating frequency	868 MHz	
Modulation type	FSK	
Operating frequency channels	7	
Radiated power	5 dBm (3 mW)	Typical
Transmission message period	60 sec	Default
Main battery *	Type CR123A (3 Vdc)	5 years typical
Secondary battery *	Type CR2032A (3 Vdc)	2 months typical
Dimensions	110 mm x 65 mm	Including adaptor wall base
Weight	130 g	Including adaptor wall base
IP rating	21C	
Max tolerated humidity (no condensing)	95% RH	
Operating temperature range	From -10 °C to +55 °C	

Table 3

* When a low battery condition is indicated, both, main and secondary, batteries must be changed altogether.

** Check latest version of document TDS-SG100 for further data, obtainable from your supplier.

WARNINGS AND LIMITATIONS

Our devices use high quality electronic components and plastic materials that are highly resistant to environmental deterioration. However, after 10 years of continuous operation, it is advisable to replace the devices in order to minimize the risk of reduced performance caused by external factors. Ensure that this device is only used with compatible control panels. Detection systems must be checked, serviced and maintained on a regular basis to confirm correct operation. Smoke sensors may respond differently to various kinds of smoke particles, thus application advice should be sought for special risks. Sensors cannot respond correctly if barriers exist between them and the fire location and may be affected by special environmental conditions. 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.

WARRANTY

All devices are supplied with the benefit of a limited 3 year warranty relating to faulty materials or manufacturing defects, effective from the production date indicated on each product. This warranty is invalidated by mechanical or electrical damage caused in the field by incorrect handling or usage. Product must be returned via your authorized supplier for repair or replacement together with full information on any problem identified. Full details on our warranty and product's returns policy can be obtained upon request.

The warranty does not cover the provided batteries.



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SG100

For use in compatible fire
detection and alarm system