

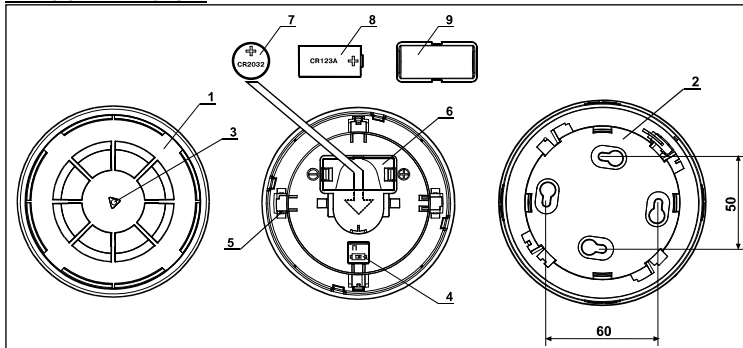
# HOCHIKI RMD-E-AS

## WIRELESS MULTI-CRITERIA DETECTOR

### GENERAL DESCRIPTION

The wireless multi-criteria detector samples the air and temperature 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 or the level of temperature or the thermal variation versus time 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

1. Detector
2. Mounting base
3. Bicolour LED
4. Link - Program switch
5. Tamper switch
6. Batteries housing
7. Secondary battery
8. Main battery
9. Battery cover

Table 1

### DETECTOR VISUAL LED INDICATOR

The wireless multi-criteria 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 multi-criteria 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).

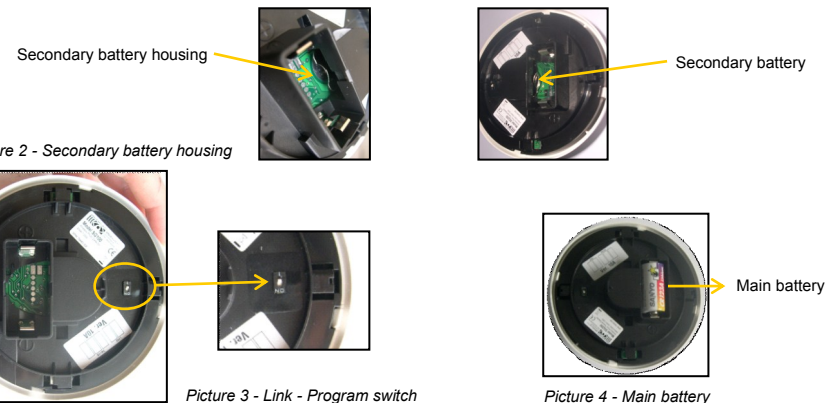
#### Ensure that battery polarity is correct.

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. 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.



### 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.**

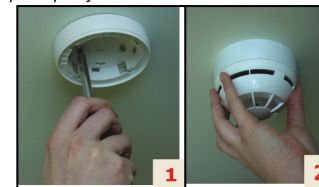
Communication quality	Assessment	Device's indication
No communication	Fail	Two red blinks
Communication quality: 0 dB - 10 dB (Mark 2)	Poor	One red blink
Communication quality: 10 dB - 20 dB (Mark 3)	Medium-low	One green blink
Communication quality: 20 dB - 30 dB (Mark 4)	Good	Two green blinks
Communication quality: > 30 dB (Mark 5)	Excellent	Two green blinks

Table 2

### DETECTOR PLACEMENT

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.

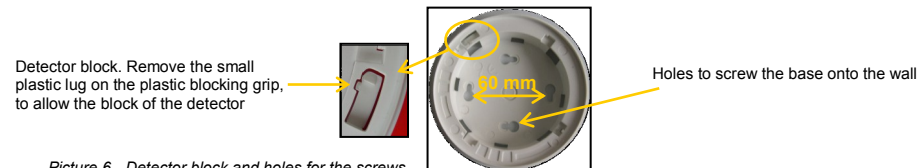
- 1) Select the position of the detector before installing and fixing its supporting base. **Verify, from that position, that the communication between the detector and translator or the expander is correctly established and working (see the COMMUNICATION QUALITY ASSESSMENT paragraph).**
- 2) Install 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).
- 4) Carry out a test of the device to meet local regulations.



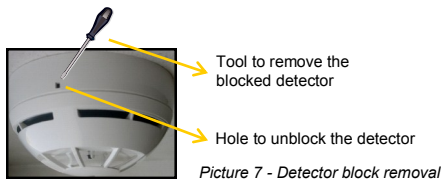
Picture 5 - Detector placement

### WIRELESS DETECTOR ANTI-TAMPER BLOCK AND REMOVAL

The base for the wireless multi-criteria 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). 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 6 - Detector block and holes for the screws



Picture 7 - Detector block removal



Picture 8 - Magnetic test area: correct position for magnet test

## TESTING

**Detectors should be tested after installation and during periodic maintenance visits.**  
Detectors can be tested as follows:

### Magnet test

The wireless optical smoke detector has been designed to permit a magnetic functional test. To perform the magnetic test put and hold the magnet near the surface of the indicated area (Picture 8).

### Aerosol (simulated smoke) test

For this test only use test aerosols from an approved manufacturer, in accordance with their application instructions, in order to prevent contamination or possible damage to the detector. We suggest to spray the aerosol into the detector by using a recommended applicator.

### Heat test

Use a hair dryer of 1000-1500 W or an heat tool from an approved manufacturer. Direct the heat towards the sensor from its side. Hold the heat source at about 15 cm away from the sensor in order to prevent damage to its cover during testing.

When one of these tests is performed:

- 1) The detector must enter into alarm condition, activating the central LED indicator (blink red as per Table 1).
- 2) Transmit the fire alarm message to the control panel via translator / expander.
- 3) An alarm condition on the control panel should be triggered.

If the detector does not respond to the tests correctly it may be necessary to clean it: in this case follow the instructions indicated in the "MAINTENANCE" paragraph.

**If testing fails again after maintenance then replace the detector with a new one and return the faulty one for servicing.**

After every test, the detector must be reset by the specific command on the control panel (see the RESET paragraph).

## RESET

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

Picture 9 - Tamper switch



## TAMPER DETECTION FEATURE

The wireless multi-criteria 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).

## 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 the thermistor area: 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 and from the thermistor.
- 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 multi-criteria 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) Fault on the thermal electronic circuit, etc.
- c) High level of contamination inside the optical chamber.
- d) Low batteries level.

## TECHNICAL SPECIFICATIONS

Communication range with the translator or expander	100 m	Open space
Operating frequency	916 MHz	
Modulation type	FSK	
Operating frequency channels	6	
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	
Required programming software	"Wirelex-Fire" revision 5.1.3 and successive	
Minimum required Vega interface firmware version for the translator	FW v2.01	For magnet test

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

Threshold levels	Value	Notes
High	3.1 %/m	Most sensitive level
<b>Normal</b>	<b>3.8 %/m</b>	<b>Default level</b>
Low	4.4 %/m	Least sensitive level

Table 4 - Sensitivity in percentage of obscuration per meter units (per EN 54)

Threshold levels	Value	Notes
High	7.020 %/m	Most sensitive level
<b>Normal</b>	<b>8.389 %/m</b>	<b>Default level</b>
Low	10.12 %/m	Least sensitive level

Table 5 - Sensitivity in percentage of obscuration per meter units (per UL 268)

## IMPORTANT! - SENSITIVITY LEVEL AND THERMAL ALARM THRESHOLD SETTING

Optical sensitivity setting can be programmed **ONLY THROUGH THE PC'S WIRELEX CONFIGURATION PROGRAM AND ONLY DURING WIRELESS SYSTEM CONFIGURATION; IT CANNOT BE CHANGED AFTER!**

This applies completely to the thermal alarm threshold setting.

Threshold level characteristics are illustrated in table 4 and 5 for smoke detection (default is "Normal"); thermal threshold levels are illustrated in table 6 (default is A1R).

## 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.**

Table 3

Threshold levels	Value
Fixed	58 °C
<b>A1R (rate of rise)</b>	<b>58 °C</b>
High temperature	78 °C

Table 6 - Thermal alarm thresholds

