



Electronic Engineering Ltd

### SH-AQ-8F /9F

WIRELESS DIGITAL GAS, HUMIDITY, PRESSURE AND TEMPERATURE SENSOR



INSTRUCTION MANUAL  
P/N 7101427\_B

### PRODUCT FEATURES

The SH-AQ is a unique detector which combines barometric pressure, relative humidity, ambient temperature and air quality.

It is small and user friendly making it easy to integrate to your Shepherd system.

Data is registered in Crow Cloud and user can monitor his ambient indoor air quality for his personal health and quality of life.

- Freewave2™ Two Way ISM
- GFSK with 5 frequencies & LBT
- Frequency Band: 868MHz, 916MHz
- Low current Technology
- Powered by 2 Energizer Lithium Batteries 1.5V, Type: AA L91
- Battery life : up to 5 years
- Back Tamper (removal protection)
- Supervision transmission
- Battery status signal transmission
- Unique ID number (24 bits)

### PRODUCT OVERVIEW

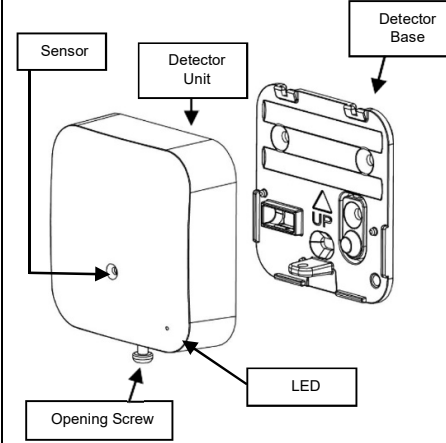


Figure 1

### DETECTOR OPENING

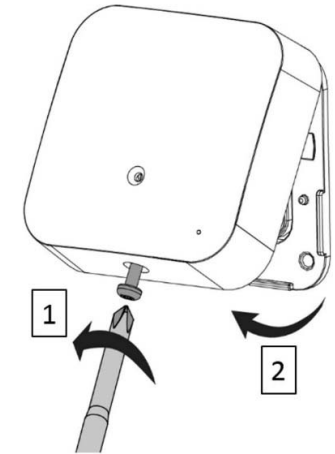


Figure 2

1. Unscrew the bottom screw
2. Tilt out the detector unit and separate it from its base.

### MOUNTING LOCATION

Mounting the detector at the appropriate height is critical to gathering the most accurate data.

The SH-AQ can be located between 120 cm to 140 cm height and on the same wall as you would mount a thermostat.

It should not be near outside doors or windows that can make the space appear to have more fresh air than it actually does.

Locating the sensor close to the potential source of gas should also be considered when determining the location of the sensor.

Areas to avoid:

The SH-AQ should not be located near ventilation fans or openings that could interfere with the airflow you want to detect.

Be sure to identify areas of "dead air" with little air movement. Mounting the detector in a dead zone will result in poor alerts and potential over exposure to the gas you are trying to detect.

Also remember not to install carbon monoxide detectors directly above or beside fuel-burning appliances, as appliances may emit a small amount of carbon monoxide when starting up which could lead to "false" alerts.

### BATTERY INSERTION AND REPLACEMENT

The SH-AQ is supplied with batteries inside. Just pull out the rubber to activate the detector.

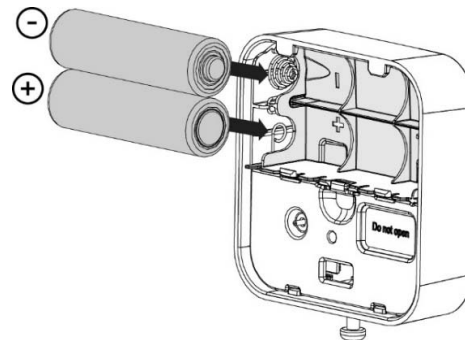


Figure 3

*The battery can be replaced by the user*  
Battery type: 2 Energizer L91 Lithium Batteries  
1.5V, Type: AA

### CAUTION

**RISK OF EXPLOSION  
IF BATTERY IS REPLACED BY DIFFERENT TYPE / MODEL.  
DISPOSE USED BATTERIES  
ACCORDING TO THEIR INSTRUCTIONS**

### DETECTOR MOUNTING

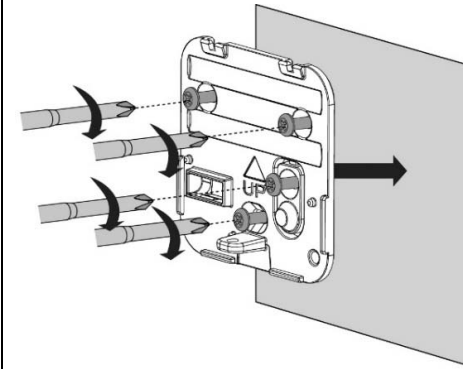


Figure 4

We recommend using the hole in front of the tamper switch to enable the protection against removal.



### LEARNING PROCESS

For pairing process, please refer to your control panel instructions.

To pair your device with Shepherd™ panel, please proceed as follows:

1. Enter in installing mode via the "Installer Webpage"
2. Go to "Zones" and select the zone # you want to learn
3. Add Zone - (Reminder: insert Link Type "ISM", device's ID, Device Type "Air quality detector".)
4. Set the detector configuration: supervision time and save configuration.
5. Remove the plastic film that protect the batteries( the detector is packed with 2 batteries inside) Verify Green & Red are blinking alternately, then the LED will turn Green on for 3 sec. to indicate device learned successfully.
6. The device should register to the Control Panel.
7. When registration process is successfully completed, the Green LED will constantly light ON for 3 seconds and then turn OFF.

If Green LED continues flashing more than 5 minutes and stopped. Please check SH-AQ settings details, remove batteries and repeat step 5,6,7

AIR QUALITY LEVELS					SPECIFICATION		STANDARDS APPROVALS																																																																			
<table border="1"> <thead> <tr> <th>IAQ Standard</th> <th>Description</th> <th>TVOC Level (mg/m³)</th> <th>CO2 equivalent (ppm)</th> <th>Ethanol equiv. @ 1000hPa, 25°C (ppm)</th> </tr> </thead> <tbody> <tr> <td>0 to 50</td> <td>Good</td> <td>&lt; 0.33</td> <td>&lt; (800 – 1000)</td> <td>&lt; 0.18</td> </tr> <tr> <td>51 to 100</td> <td>Average</td> <td>&lt; 1.0</td> <td>&lt; (1000 – 1200)</td> <td>&lt; 0.54</td> </tr> <tr> <td>101 to 150</td> <td>Little Bad</td> <td>&lt; 3.0</td> <td>&lt; (1200 – 1800)</td> <td>&lt; 1.6</td> </tr> <tr> <td>151 to 200</td> <td>Bad</td> <td>&lt; 9.0</td> <td>&lt; (1800 – 2000)</td> <td>&lt; 4.8</td> </tr> <tr> <td>201 to 300</td> <td>Worse</td> <td>&lt; 81.0</td> <td>&lt; 3000</td> <td>&lt; 44.0</td> </tr> <tr> <td>301 to 500</td> <td>Very Bad</td> <td>&gt; 81.0</td> <td>&gt; 3000</td> <td>&gt; 44.0</td> </tr> </tbody> </table>					IAQ Standard	Description	TVOC Level (mg/m³)	CO2 equivalent (ppm)	Ethanol equiv. @ 1000hPa, 25°C (ppm)	0 to 50	Good	< 0.33	< (800 – 1000)	< 0.18	51 to 100	Average	< 1.0	< (1000 – 1200)	< 0.54	101 to 150	Little Bad	< 3.0	< (1200 – 1800)	< 1.6	151 to 200	Bad	< 9.0	< (1800 – 2000)	< 4.8	201 to 300	Worse	< 81.0	< 3000	< 44.0	301 to 500	Very Bad	> 81.0	> 3000	> 44.0	<table border="1"> <tbody> <tr> <td>Detection Method</td> <td>Air Quality Sensor</td> </tr> <tr> <td>Communication Protocol</td> <td>Freewave2™ Two Way ISM GFSK with 5 frequencies &amp; LBT</td> </tr> <tr> <td>Modulation Type</td> <td>GFSK (5 frequencies)</td> </tr> <tr> <td>Frequency</td> <td>868-869MHz / 916-917MHz</td> </tr> <tr> <td>Identification</td> <td>Unique ID serial number – 24 bit</td> </tr> <tr> <td>Events Transmission</td> <td>Alarm, Tamper, Supervision, Low Bat.</td> </tr> <tr> <td>Supervision Time</td> <td>7 min by default (<i>configurable</i>)</td> </tr> <tr> <td>Range</td> <td>Up to 500m in open space</td> </tr> <tr> <td>Batteries</td> <td>2 Energizer L91 Lithium Batteries 1.5V, Type:AA</td> </tr> <tr> <td>Battery life</td> <td>Up to 5 years</td> </tr> <tr> <td>Power supply</td> <td>Type C</td> </tr> <tr> <td>Current Consumptions</td> <td>Standby ~110 µA Transmission Power: up to 14dBm</td> </tr> <tr> <td>Tamper Switch</td> <td>Back Tamper (Removal)</td> </tr> <tr> <td>Operating temperature</td> <td>-10°C to +55°C</td> </tr> <tr> <td>Dimensions</td> <td>63mm x 63mm x 22mm</td> </tr> <tr> <td>Weight (inc. battery)</td> <td>40 gr.</td> </tr> </tbody> </table>		Detection Method	Air Quality Sensor	Communication Protocol	Freewave2™ Two Way ISM GFSK with 5 frequencies & LBT	Modulation Type	GFSK (5 frequencies)	Frequency	868-869MHz / 916-917MHz	Identification	Unique ID serial number – 24 bit	Events Transmission	Alarm, Tamper, Supervision, Low Bat.	Supervision Time	7 min by default ( <i>configurable</i> )	Range	Up to 500m in open space	Batteries	2 Energizer L91 Lithium Batteries 1.5V, Type:AA	Battery life	Up to 5 years	Power supply	Type C	Current Consumptions	Standby ~110 µA Transmission Power: up to 14dBm	Tamper Switch	Back Tamper (Removal)	Operating temperature	-10°C to +55°C	Dimensions	63mm x 63mm x 22mm	Weight (inc. battery)	40 gr.	<p>The SH-AQ conforms to the essential requirements set out by:</p> <p>EN 300220-1</p> <p>EN 300 220-2</p> <p>EN 61000-6-3</p> <p>EN 301489-1</p> <p>EN 301489-3</p> <p>EN 62368-1</p> <p>EN 50130-5</p> 
IAQ Standard	Description	TVOC Level (mg/m³)	CO2 equivalent (ppm)	Ethanol equiv. @ 1000hPa, 25°C (ppm)																																																																						
0 to 50	Good	< 0.33	< (800 – 1000)	< 0.18																																																																						
51 to 100	Average	< 1.0	< (1000 – 1200)	< 0.54																																																																						
101 to 150	Little Bad	< 3.0	< (1200 – 1800)	< 1.6																																																																						
151 to 200	Bad	< 9.0	< (1800 – 2000)	< 4.8																																																																						
201 to 300	Worse	< 81.0	< 3000	< 44.0																																																																						
301 to 500	Very Bad	> 81.0	> 3000	> 44.0																																																																						
Detection Method	Air Quality Sensor																																																																									
Communication Protocol	Freewave2™ Two Way ISM GFSK with 5 frequencies & LBT																																																																									
Modulation Type	GFSK (5 frequencies)																																																																									
Frequency	868-869MHz / 916-917MHz																																																																									
Identification	Unique ID serial number – 24 bit																																																																									
Events Transmission	Alarm, Tamper, Supervision, Low Bat.																																																																									
Supervision Time	7 min by default ( <i>configurable</i> )																																																																									
Range	Up to 500m in open space																																																																									
Batteries	2 Energizer L91 Lithium Batteries 1.5V, Type:AA																																																																									
Battery life	Up to 5 years																																																																									
Power supply	Type C																																																																									
Current Consumptions	Standby ~110 µA Transmission Power: up to 14dBm																																																																									
Tamper Switch	Back Tamper (Removal)																																																																									
Operating temperature	-10°C to +55°C																																																																									
Dimensions	63mm x 63mm x 22mm																																																																									
Weight (inc. battery)	40 gr.																																																																									
<b>EVENT TRANSMISSION</b>		<b>RSSI – RF SIGNAL INDICATION</b>																																																																								
<p><b>SUPERVISION</b>– A periodical transmission (configurable) indicating detector's presence.</p> <p><b>AIR QUALITY ALERT</b> – Alarm transmission triggered by pre-defined Gas, Humidity, Pressure or Temperature levels.</p> <p><b>LOW BAT</b> – Whenever the battery reaches the low level (2.9V), a "Battery Low" signal will be sent. When Battery level drops below Cut Off level (2.5V) the device will stop functioning and the Red LED will blink for 10 seconds and then turned Off.</p> <p><b>TAMPER</b> – Whenever the detector unit is removed from its base or the device is tear off from the wall, a "Tamper" signal will be transmitted to the control panel.</p>		<p>After learning and before installing the detector we recommend to perform transmission tests.</p> <p><b>Tamper Transmission Test</b></p> <p>Changing the tamper switch state (by attaching / removing the device to / from the Base) will cause tamper transmissions.</p> <p>You can view the Tamper open and close transmissions test events from the installer programming mode:</p> <ol style="list-style-type: none"> <li>overview level</li> <li>log level</li> </ol> <p>Or / And</p> <ol style="list-style-type: none"> <li>user personal page</li> <li>Mobila App.</li> </ol>																																																																								
<b>WARRANTY POLICY CERTIFICATE</b>																																																																										
<p>Crow warrants these products to be free from defects in materials and workmanship under normal use and service for a period of 24 months from the last day of the week and year whose numbers are printed on the printed circuit board inside these products.</p> <p>Subject to the provisions of this Warranty Certificate, during the Warranty Period, Crow undertakes, at its sole discretion and subject to Crow's procedures, as such procedures are from time to time, to repair or replace, free of charge for materials and/or labor, products proved to be defective in materials or workmanship under normal use and service. Repaired products shall be warranted for the remainder of the original Warranty Period.</p> <p>All transportation costs and in-transit risk of loss or damage related, directly or indirectly, to products returned to Crow for repair or replacement shall be borne solely by the Purchaser. This Warranty Certificate does not cover products that is defective (or shall become defective) due to: (a) alteration of the products (or any part thereof) by anyone other than Crow; (b) accident, abuse, negligence, or improper maintenance; (c) failure caused by a product which Crow did not provide; (d) failure caused by software or hardware which Crow did not provide; (e) use or storage other than in accordance with Crow's specified operating and storage instructions.</p> <p>There are no warranties, expressed or implied, of merchantability or fitness of the products for a particular purpose or otherwise, which extend beyond the description on the face hereof. This limited Warranty Certificate is the Purchaser's sole and exclusive remedy against Crow and Crow's sole and exclusive liability toward the Purchaser in connection with the products, including without limitation - for defects or malfunctions of the products. This Warranty Certificate replaces all other warranties and liabilities, whether oral, written, (non-mandatory) statutory, contractual, in tort or otherwise.</p> <p>In no case shall Crow be liable to anyone for any consequential or incidental damages (inclusive of loss of profit, and whether occasioned by negligence of the Crow or any third party on its behalf) for breach of this or any other warranty, expressed or implied, or upon any other basis of liability whatsoever.</p> <p>Crow does not represent that these products can not be compromised or circumvented; that these products will prevent any person injury or property loss or damage by burglary, robbery, fire or otherwise; or that these products will in all cases provide adequate warning or protection.</p> <p>Purchaser understands that a properly installed and maintained product may in some cases reduce the risk of burglary, fire, robbery or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss or damage as a result. Consequently, Crow shall have no liability for any personal injury; property damage or any other loss based on claim that these products failed to give any warning. If Crow is held liable, whether directly or indirectly, for any loss or damage with regards to these products, regardless of cause or origin, Crow's maximum liability shall not in any case exceed the purchase price of these products, which shall be the complete and exclusive remedy against Crow.</p>					 <p>sales@crow.co.il support@crow.co.il</p> <p><a href="http://www.thecrowgroup.com">www.thecrowgroup.com</a></p>																																																																					
					<p>These instructions supersede all previous issues in circulation prior to August 2018</p>																																																																					