



Overview:

- Temperature, Humidity and CO₂ measurements
- Wireless communication based on IEEE 802.15.4 (2,4 GHz)
- Auto configurable
- Modbus RTU wireless transmission
- AC/DC power adapter included
- LCD screen which shows real time sensor levels


General description

The IAQM-THCO2 is a IEEE 802.15.4 wireless sensor compatible with DM-124 Modbus networks. Its main role is to measure indoor air quality, specifically the temperature, relative humidity and CO₂ levels.

The IAQM-THCO2 is auto configurable, which means that it adds itself seamlessly to an existing DM-124 network, acting as another link node.

Once installed, a DM-124, or more precisely the controller connected to it must interrogate the IAQM-THCO2 for its data, in the same way as the rest of Modbus devices.

Characteristics

<p>Power</p> <p>Input: External AC/DC Power adapter</p>		<p>Sensors Specification</p> <table border="1"> <tr> <td rowspan="3">Temperature</td> <td>Range</td> <td colspan="2">-40 ~ 123.8 °C</td> </tr> <tr> <td>Resolution</td> <td colspan="2">0.1 °C</td> </tr> <tr> <td>Accuracy</td> <td colspan="2">± 0.3 °C</td> </tr> <tr> <td rowspan="3">Humidity</td> <td>Range</td> <td colspan="2">0 ~ 100 %RH</td> </tr> <tr> <td>Resolution</td> <td colspan="2">0.1 %RH</td> </tr> <tr> <td>Accuracy</td> <td colspan="2">± 3.0 %RH</td> </tr> <tr> <td rowspan="4">CO₂</td> <td>Range</td> <td colspan="2">0 ~ 3000 ppm</td> </tr> <tr> <td>Resolution</td> <td colspan="2">1 ppm</td> </tr> <tr> <td>Response Time</td> <td colspan="2">0~80% <= 30 sec</td> </tr> <tr> <td>Accuracy</td> <td colspan="2">±2%(Full Scale @ 10 ~50 °C</td> </tr> <tr> <td></td> <td>Warm-up Time</td> <td colspan="2">@ 25°C < 90 sec</td> </tr> </table>		Temperature	Range	-40 ~ 123.8 °C		Resolution	0.1 °C		Accuracy	± 0.3 °C		Humidity	Range	0 ~ 100 %RH		Resolution	0.1 %RH		Accuracy	± 3.0 %RH		CO ₂	Range	0 ~ 3000 ppm		Resolution	1 ppm		Response Time	0~80% <= 30 sec		Accuracy	±2%(Full Scale @ 10 ~50 °C			Warm-up Time	@ 25°C < 90 sec	
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<p>Radio</p> <p>Band 2.4GHz ~ 2.485GHz Sensitivity -95dBm typical Transfer Rate 250Kbps Antenna External (SMA connector) Range 100 m (indoors) Topology Cluster -tree topology</p>																																								
<p>Protocols</p> <p>Modbus RTU IEEE 802.15.4</p>																																								
<p>Operating conditions</p> <p>Operating Temperature: -25 .. +70°C Storage Temperature: -40 .. +70°C Humidity Range: 5 – 95%, w/o condensation</p>																																								
<p>Mechanical</p> <p>Dimensions: 112x112x35 mm Material: PC/ABS IP rating: IP20</p>		<p>Certifications</p> <p>UNE EN 60950-1:2007 + Corr: 2007+A11:2009+A1:2011 UNE-EN 61000-6-1:2007 UNE-EN 61000-6-3:2007 UNE-EN 55 022:2011 + Err UNE-EN55022:2011/AC UNE-EN 55 024:2011 EN 301489-1 v1.8.1 (2008-02)</p> 																																						

Dimensions

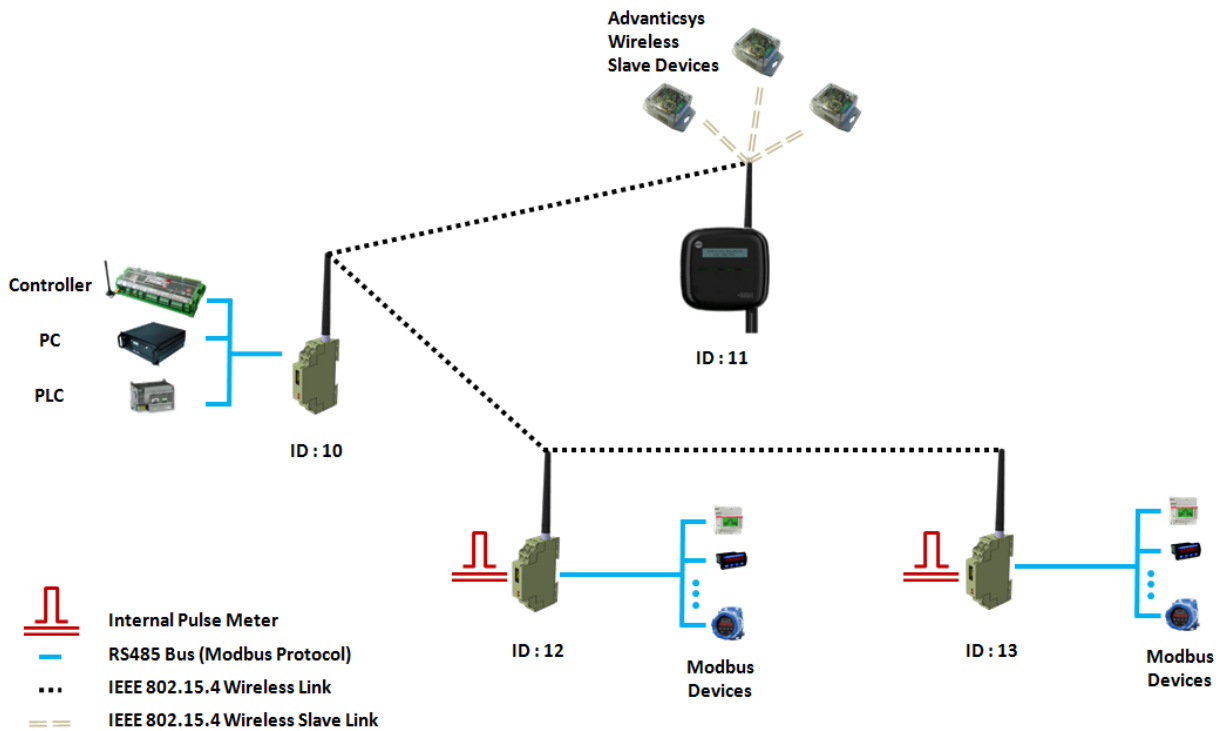


External Connections



Theory of Operation

The following diagram shows the interconnection of different Modbus RTU compatible equipments through a wireless network created with the DM-124, together with a IAQM-THCO2:



The Modbus master device, which can be a PLC, a PC or an Advanticsys controller, interrogates the Modbus devices within the network. The RS485 serial packets are converted to wireless packet frames by the connected DM-124 (id 10 in the picture) and broadcasted to the rest of the DM-124 in the network, and also to the IAQM-THCO2. Whenever the IAQM-THCO2 is addressed it replies a compatible Modbus packet to the network coordinator.

The IAQM-THCO2 does not have a RS-485 interface, therefore it **cannot** act as coordinator of the network.

The IAQM-THCO2 can be configured with the **DM-124 Config Tool**, but, as it only has a radio interface, configuration of the device must be done via radio with the use of a **UD1000**. Among other parameters it is possible to configure:

- The Modbus identifier
- The IEEE 802.15.4 radio channel, and the radio cluster identifier, allowing different networks to coexist

Precautions

- Installation and wiring must be made only by qualified personnel.
- Remove power supply before connecting or disconnecting the input/output terminal blocks.
- Double-check connections and polarities before switching on the power supply to avoid permanent damages.

The information contained in this datasheet is subject to change without notice. Make sure you're using the latest version.

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