Resource
Data Management

Indoor Air Quality Duct Monitor

Commissioning/User Guide

Revision1.3

PR0237-XXX

Contents

The Indoor Air Quality Monitor (Duct Mount)

From Resource Data Management

Description

The Indoor Air Quality Monitor (IAQM) series are designed to gather data for the assessment of air quality in an indoor space. It does this by measuring temperature, relative humidity, air pressure and CO_2 level then transmitting this across a network for analysis and data retention purposes. The unit contains three temperature sensors and two humidity sensors for increased accuracy and multiple redundancy.

The IP variant of the IAQM can be used as a standalone unit which can be connected to a front end, such as a DMTouch, via an ethernet connection using the XML protocol and allows data logging of all measured values in the front end. The values shown when logged onto a DMTouch are listed here: IO: Input/Output Menu

The CAN bus variant allows the unit to be connected to an RDM CAN bus network enabling all the inputs, outputs and parameters to be utilized by a CAN bus equipped device such as an Intuitive TDB Controller or DMTouch running a TDB application.

The IAQM has a single relay available providing a set of low voltage, normally closed dry contacts which can be utilized using a TDB program.

The duct mount sensor is supplied with a detachable 20mm diameter probe which can be inserted into a duct or any area where the air quality is to be monitored, ideally the air should be moving over the probe.

If static non-moving air is to be monitored a wall mounted version is also available, part number PR0238.

Build Options and Ordering Information

Part Number	Description
PR0237-C-NFCO	Indoor Air Quality Duct Monitor with CANbus network.
PR0237-E-NFCO	Indoor Air Quality Duct Monitor with Ethernet network.
PR0239	Replacement Air Filter.

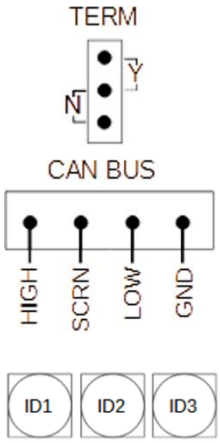
Supported Products

The IAQM can currently be used by the following RDM product ranges:

Part Number	Description
PR05XX-XX	DMTouch
PR06XX-TDB	Intuitive V2 and Mini Intuitive TDB Controller
PR0617-XXX	TouchXL TDB Controller
PR0680-CD-NF MDM	miniDM

Optional Network Interfaces

CANbus

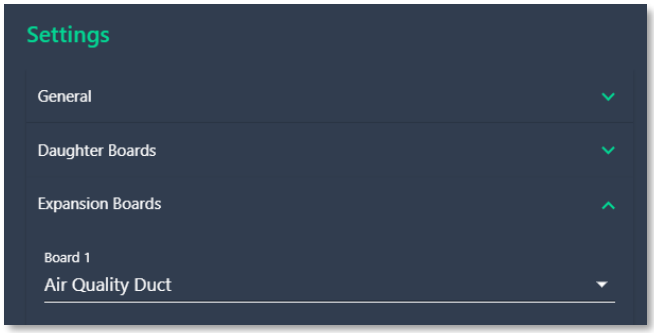


CANbus communication cable must be of a standard to meet ISO11898 or equivalent and the screen cable must be connected.

Firstly, wire the CAN bus network from the Intuitive Plant TDB controller or DM Touch to each IAQM unit. The Controller and IAQM unit have a termination resistor built in which is selected by a jumper, the termination jumper should be in the "Y" position on the Intuitive controller and the last IAQM device on the CAN bus network (The DM Touch does not require a termination resistor). The network should be wired in a daisy chain configuration. Only one Intuitive Plant controller / DM Touch should be connected to a single CAN bus network. The maximum allowable network cable length is 500M in total from one end of the network to the other providing a CAN bus network cable which meets ISO11898 or equivalent is used.

Each CANbus IAQM has a unique network identifier which is set using rotary switch ID3 (rotary switches ID1 and ID2 are not used in the CANbus variant).

Incorporating the IAQM into a TDB Strategy (CAN Bus type only)



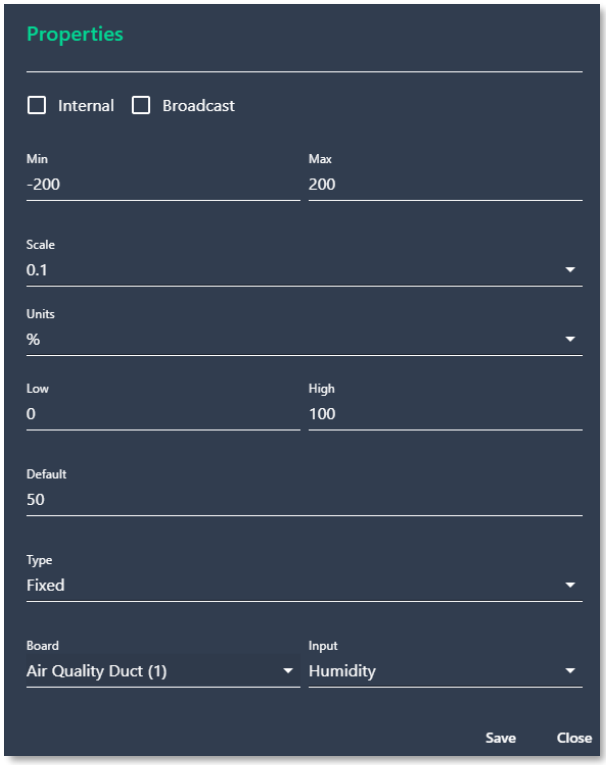
In the associated Intuitive Plant or DM Touch TDB program the expansion "Air Quality Duct" should be selected with the expansion board number matching the ID rotary switch number of the IAQM.

All inputs and outputs, such as temperature input and relay output, are then available to be used in the TDB program.

As an example, select an analogue input block, right click and select "Properties", select the board "Air Quality Duct" followed by the ID number, (1) in this example.

Select the analogue input required, "Humidity" for example and fill in all the other field as required such as input name and units.

The humidity value will now appear in the controller's input list and can be used in the TDB control strategy as required.



Ethernet.

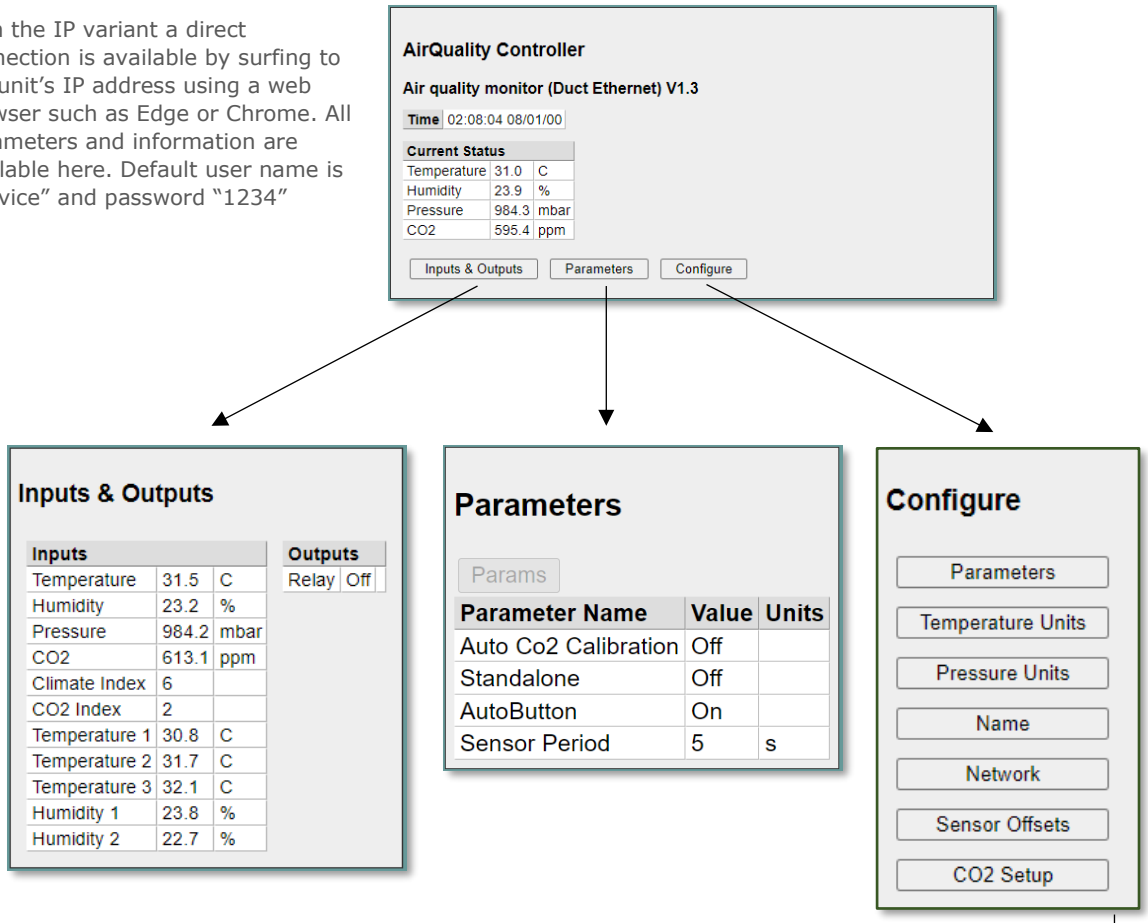
The IAQM ethernet variant has an embedded Ethernet port to allow for connection to a DM touch or Mini DM system using standard IP, or a third-party system using IP.
Use a standard CAT5 patch lead to connect to other equipment, such as an Intuitive Switch, into the 10/100 Base-T ports 1 – 3/4.

Each Ethernet IAQM has a unique network identifier which is set using the three ID rotary switches. On an RDM DM Touch which is set to issue IP addresses automatically the IAQM will appear on the device list with a name corresponding to the rotary switch position, 123 for example. This name can be re-aliased as required.

Direct Connection (IP Type only)

With the IP variant a direct connection is available by surfing to the unit's IP address using a web browser such as Edge or Chrome. All parameters and information are available here. Default user name is "service" and password "1234"

Homepage



Parameters, see: PArA: Parameter Menu

Temperature Units, see: Unit: Temperature Units Menu

Pressure Units, see: PrES: Pressure Units Menu

Name: Allows the unit to be given a unique name to differentiate it from other devices on the network.

Network: If the rotary address switches are set to 000 then a static IP address, Netmask Length and Gateway Address can be set. If rotary switches are set to non-zero values, then these values can be viewed only.

Sensor Offsets, see: OFSt: Offset Menu

CO2 Setup: Allows a calibration value to be set.

Parameters (IP Variant)

Parameter	Description	Step	Units	Range	Default
Auto Co2 Calibration	Provides an automatic calibration of the CO2 sensor every 7 days when enabled.	1	-	On/Off	Off
Standalone	If the Air Quality Monitor is being used by a TDB program (CANbus variant only) then this parameter should be set to Off. Otherwise set to On	1	-	On/Off	Off
Auto Button	Used in the CANbus variant to decide how buttons press information is sent. If set to auto then data be sent periodically. If set to Off then the data will be polled by the TDB program.	1	-	On/Off	On
Sensor Period	Used in the CANbus variant to specify how often data is transmitted on the CANbus network.	1	Seconds	0 - 3600	5

Temperature Units

Selects centigrade or Fahrenheit.

Pressure Units

Selects millibar (mbar) or value or Inch of Mercury (inHg).

Name

The controller can be given a name to distinguish it from other units on the same network.

Network

The current IP Address, Netmask Length and Gateway Address can be viewed (information only).

Sensor Offsets

Parameter	Description	Step	Units	Range	Default
Probe 1 Offset	Allows calibration of temperature sensor 1	0.1	ºC	-10 - +10	0
Probe 2 Offset	Allows calibration of temperature sensor 2	0.1	ºC	-10 - +10	0
Probe 3 Offset	Allows calibration of temperature sensor 3	0.1	ºC	-10 - +10	0
Probe 4 Offset	Allows calibration of humidity sensor 1	0.1	%	-10 - +10	0
Probe 5 Offset	Allows calibration of humidity sensor 2	0.1	%	-10 - +10	0

CO2 Setup (IP Variant)

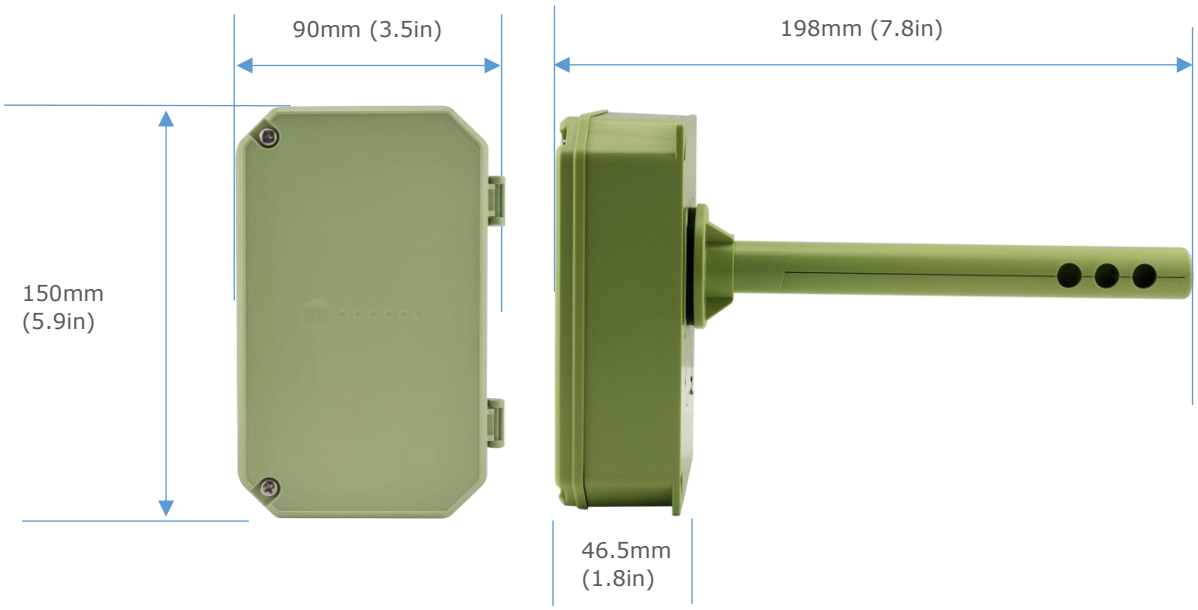
The CO2 sensor can be calibrated with fresh air which normally has a CO2 level of around 400ppm. Manual calibration can only be carried out using the IP interface.

In the configuration menu select "Configure" followed by "CO2 Setup". The parameter field shows "CO2 Current Value", this can be set to a known calibration level or a typical fresh air level (400ppm for example), the IAQM will now be calibrated to this level.

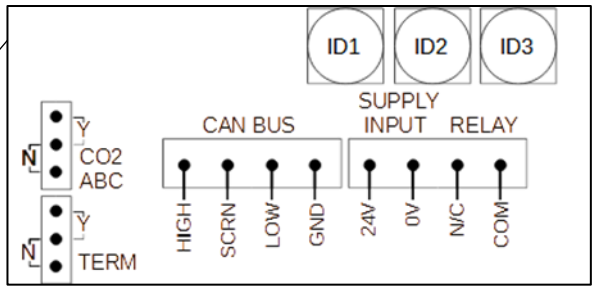
In the parameter menu there is a setting "Auto CO2 Calibration", if this is set to On then the IAQM will calibrate automatically to the parameter "CO2 Current Value" every 7 days starting from when the unit was first powered on.

For this feature to work correctly the IAQM must be in a fresh air environment at the same time every 7 days. If the Auto Calibration occurs when the unit is measuring a CO2 level different than the value set in the CO2 Current Value Field then the calibration will not be correct, for this reason the Auto Calibration setting should be left at the default Off setting.

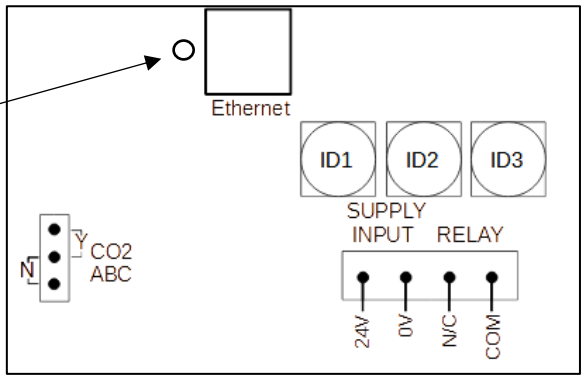
Dimensions



Connection Details



CANbus Variant



Ethernet Variant

Network Activity LED (Green), ON indicates there is an Ethernet link. Flashing indicates activity on the Ethernet network connection.

Status LEDs

There are three LEDs visible under the terminal cover that provide a simple status interface:

Green – Status: Flashing indicates the unit is operational.

Red – Reset: Continuous or frequent resetting indicates hardware fault.

Orange – Network: Flashing indicates activity on the network connection.

Air Filter

There is a filter to protect the sensors from particulate that can easily be accessed for cleaning/inspection and replacement. The filter can be accessed by removing the sensor probe, this is attached using 4 x M3 crosshead screws.

The filter should be inspected/replaced on an annual basis.

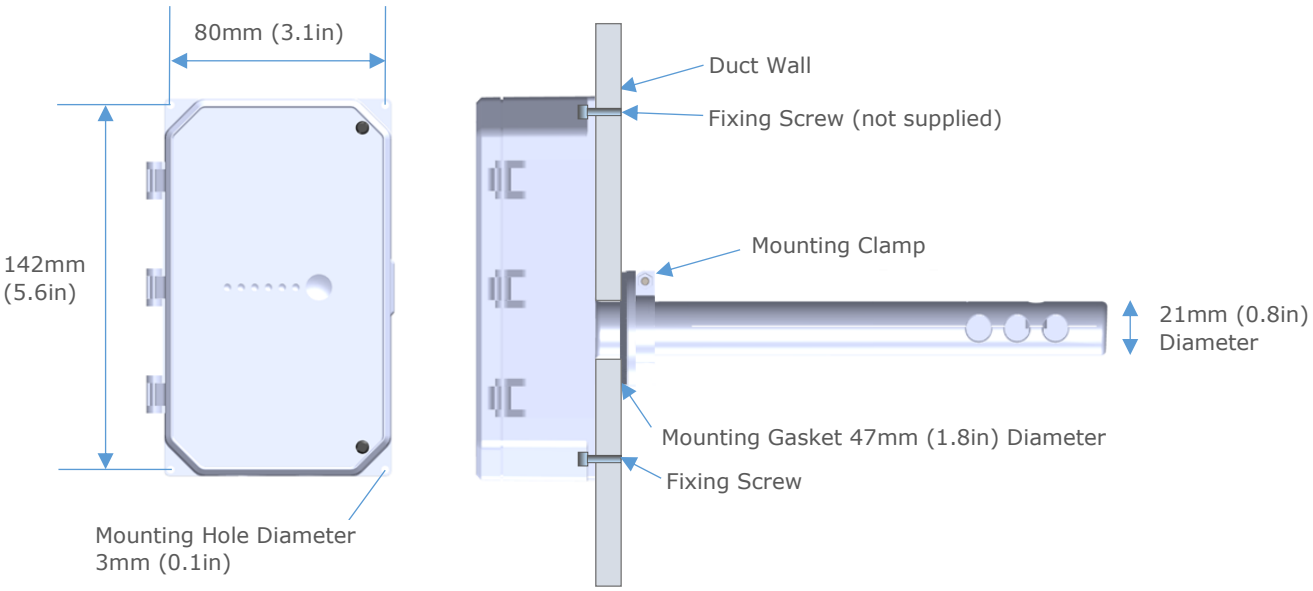
In harsher environments the filter should be inspected/replaced more often.

Replacement filters can be purchased by contacting sales@resourcedm.com.

Initially the filter will be held in place with two labels marked “Remove Before Closing” these labels should be removed before attaching the probe.

Replacement filters can be ordered using part number PR0239.

Mounting Instructions



Loosen the M3 mounting clamp screw using a crosshead screwdriver and slide the clamp and gasket off the insertion probe.

Insert the probe into an aperture in the duct (greater than 21mm in diameter).

Slide the gasket and clamp onto the probe and locate against the duct wall creating a seal, tighten the clamp screw to hold the sensor in place.

The main body of the sensor has four 3mm diameter mounting holes which can be utilized to attached the sensor to the duct wall.

The bottom side of the product has knockout locations for an M16 and an M12 size cable gland that provide for straightforward wiring to the internal connectors.

Specification

Indoor Air Quality Monitor Duct Mount PR0237-XXX	
Power Requirements	
Supply Voltage Range	24VDC ±10% or 24VAC ±10%
Supply Frequency	DC or 50-60Hz ±10%
Typical Supply Current	0.21A (24VDC)
General	
Operating Temperature Range	0°C to +50°C (32°F to +122°F).
Operating Humidity	80% maximum
Storage Temperature Range	0°C to +65°C (32°F to +149°F).
Environmental	Indoor use at altitudes up to 2000m (6562ft), Pollution Degree II, Installation Category I.
Body Size	150mm (5.9in) x 94mm (3.7in) x 46.5mm (1.83in).
Probe Size	198mm (7.79in) x 21mm (0.83in)
Weight	0.3kg (0.66 lb)
Safety	This product operates at voltages lower than the limits defined in the Low Voltage Directive, and therefore does not require CE marking with respect to the Low Voltage Directive
EMC	EN 61326-1:2013 FCC CFR 47 Parts 15.107 & 15.109 ICES-003 Issue 7
IP Rating	IP65 (excluding measuring probe)
Ventilation	There is no requirement for forced cooling ventilation
Class 3 Insulation	**No** protective Earth is required and **none** should be fitted
The host equipment must provide a suitable external over-current protection device such as:	
External Supply Fuse	2A 240 Vac Anti-surge (T) HRC conforming to IEC 60127
Or External Supply MCB	2A, 240 VAC Type D conforming to BS EN 60898
Mechanical Relay	
Maximum Contact Current	0.5A (cos θ = 1)
Maximum Contact Voltage	24VAC 30VDC
Sensor Inputs	
Temperature	Resolution 0.1 ºC, Accuracy ±0.5 ºC [0 to 50 ºC]
Relative Humidity	Resolution 0.1 %RH, Accuracy ±2 %RH [20 to 80 %RH] ±5 %RH [0 to 100 %RH]
CO2	Resolution 0.1 ppm, Accuracy ±30 ppm + 3% of Measured Value [400 to 10000 ppm]
Warranty	
The Air Quality Monitory is covered by the standard RDM five year warranty period with the exception of the sensor head which has a one year warranty period.	

Revision History

Revision	Date	Changes
1.3	22/05/2023	First Issue.

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