

# Air Quality Sensor

Microprocessor Based Air Quality Sensor Datasheet. Modified 07-09-24 by Andrew

## Air Quality Sensor AIR QUALITY

Air Quality Sensor, Humidity, Temperature, RS485 port and 0-5V transducer outputs

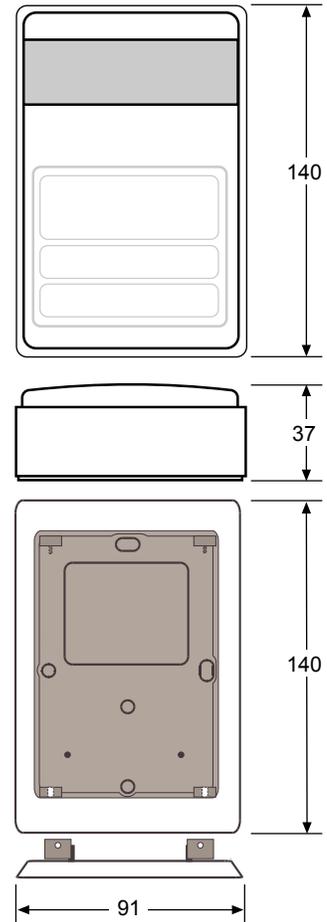
This full-featured CPU based device combines an air quality sensor, humidity sensor and temperature sensor in a single package. The IAQ-1 is useful for measuring the overall indoor air environment of residential and commercial buildings. The air quality sensor element is sensitive to a wide range of indoor pollutants such as smoke, CO<sub>2</sub>, VOC's and odorous gases. The sensor can communicate to the other BMS systems using either the RS485 network port or the transducer output signals.

- Japanese made sensor element exhibits high sensitivity to VOCs and odorous gases
- High impact plastic enclosure suitable for commercial buildings
- Three important indoor environment parameters in a single device
- RS485 communication port ( using modbus protocol, bacnet coming soon)
- 0-5V Analog output signals for easy interface to any BMS system
- Customized units available on request:  
local I/O, private label, other protocols, other sensor elements.  
other switch configurations, open source code.



## TECHNICAL DATA

Temperature range.....	10-50°C (50-99°F)
Supply voltage.....	12~24Vac ±20%, 50-60Hz 12~24Vdc ±20%, 50-60Hz
Power consumption.....	.55mA at 24Vdc
Ambient temperature:	
Operation.....	10-50°C (50-99°F)
Storage.....	2-50°C (35-120°F)
Ambient humidity range.....	0-100%Rh
Humidity Sensor Element.....	Humirel HS1101
Air Quality Sensor Element.....	Figaro TGS2600 Figaro TGS2602
Material, enclosure.....	Flame proof plastic
Enclosure rating.....	IP31
Temperature sensor.....	10K thermistor ±0.5°C
Colour.....	White/Off-white
Weight .....	200g



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## SENSORS

The controller monitors the temperature, humidity and air quality conditions in the room. Changes in any of the mentioned elements are monitored continuously, with the shortest time constant possible.

Humidity monitoring is done with the Humirel HS1101 sensor element.

Air Quality monitoring is done with the Figaro TGS2602 sensor element.

Temperature monitoring is done with a 10K Thermistor.

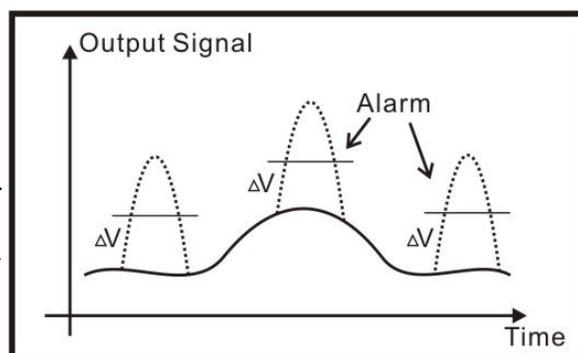
## AIR QUALITY CALIBRATION

Special consideration must be made for the Air Quality Calibration to avoid false alarms. The Figaro sensing element is dependent on temperature humidity or basic environmental changes.

To counter this effect, the Microprocessor of the thermostat calculates the average value of the sensor and determines if there are any air pollutants present. Any sudden change in the sensor will trigger the alarm telling the user hazardous air is present.

Adjust internal parameters through the communication port, registers #313 and 314 to set the sensitivity of the air quality alarm trigger points.

Contact the factory if you need assistance for connecting to the sensors and adjusting the parameters



## TEMPERATURE CALIBRATION

The controller monitors the temperature conditions in the room with its built-in thermistor sensor. It is located in such a way that it is not affected by the temperature of the wall on which it is mounted, nor internal heat created in the device cavity.

Changes in temperature are monitored continuously, with the shortest time constant possible. Calibration of the sensor is possible through the controller's internal menu at any time.

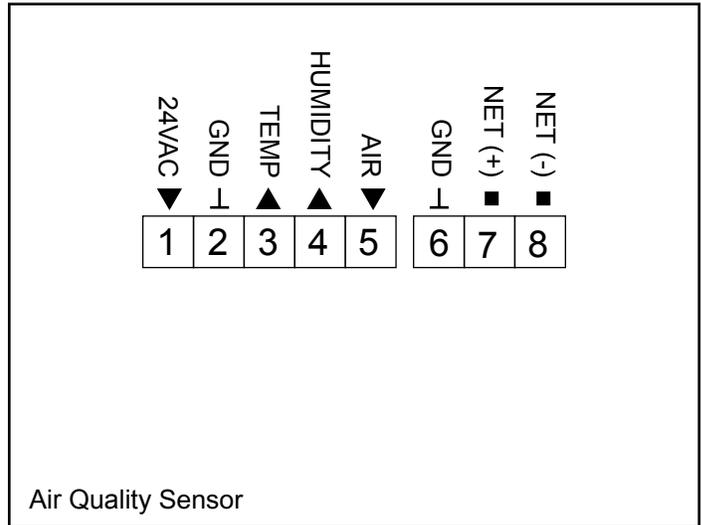
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## INSTALLATION

### Terminal Block Connections (Tstat5A/B)

1.....	24VAC live
2.....	Measurement neutral
3.....	Temperature Analog output 0-10V
4.....	Humidity Analog output 0-10V
5.....	Air Quality Analog output 0-10V
6,7,8.....	Network communication



## MOUNTING

External wiring is connected to a terminal block on the circuit board.

The enclosure comprises a base section and a cover. The base section can be mounted directly on a wall or on a wall box. If mounted on a wall box, the cables should enter the enclosure via the hole in the base section.

If mounted directly on a wall, the cables should enter from above.

### Length of cables

Max 200m area 0.5mm<sup>2</sup>