

## Optimize Indoor Air Quality & Control to Save Energy

### CO<sub>2</sub>, Temperature, RH, Dew Point, Occupancy + Three External Sensor Inputs

#### Overview

The IAQEye™ is a powerful air quality measurement package designed for easy integration into the operation of new and existing HVAC equipment and control systems (BACnet, Modbus) using Enterprise-friendly WiFi communication. Many buildings are out-of-whack today with poor air quality and wasted energy because they cannot control what is not measured. The measurement and control of CO<sub>2</sub>, dew point, occupancy and other elements can lead to significant improvement in air quality, energy use and comfort. The iAQEye™ can be an effective addition as a monitoring system or can be connected to existing equipment and control systems.

#### Key Features

- WiFi Communicating:
  - The IAQEye™ can use an existing WiFi network to relay information over the Internet to the cloud or remote devices. Retrofit costs are minimized.
  - Using an existing WiFi network, all measured values can also be relayed to a local BACnet network using a Babel Buster® Gateway. Up to 200 multi-parameter IAQEye™ devices can be supported by one gateway.
  - WiFi can also be used to send a signal directly peer-to-peer to other devices such as a rooftop air handling unit to modulate CO<sub>2</sub> using an economizer. AirTest offers the TR4201 Communicator that can receive the WiFi signal from the IAQEye™ and provide a 0-10V CO<sub>2</sub> DCV control signal to the economizer.
- The IAQEye™ can be configured to support a variety of high-security, Enterprise-level, WiFi systems including EAP-TLS and MSCHAP v2. Contact AirTest to discuss your Enterprise requirements.
- The IAQEye™ CO<sub>2</sub> sensor is a dual beam, non-dispersive infrared sensor that incorporates on-board pressure correction to ensure consistent readings regardless of altitude or weather. The self-calibration method is internal to the sensor and does not require indoor levels to drop to background levels to function properly.
- The IAQEye™ measures CO<sub>2</sub>, temperature, humidity, dew point and can provide optional occupant sensing. Up to three additional external sensor inputs can also be added including two 4-20mA signals and one 10K2 or 0-5V signal. This is an easy way to add wireless communication capability to any sensing device with an analog signal.
- The IAQEye™ is available in a battery powered version (2 lithium AA) or 24 VAC powered versions.
- The display version of the IAQEye™ utilizes an ultra-low power, white, E-Ink display that is easily readable in low light conditions. Alarm level values can be red highlighted. During product setup and installation, the display parameters can be customized.
- Four front facing colored LEDs can be user programmed to provide visual indication of indoor air quality conditions. Colors are green, amber, red and green/red. An audible alert can also be activated on the presence of alarm level IAQ concentrations.
- The product is available with an optional passive infrared detector (PIR) that utilizes 17 optical lenses that provides 64 detection zones. Detection range is 10-15 meters over a 119° field of view.
- The IAQEye™ features a built-in WiFi web server to support close proximity connection with other WiFi devices including cell phones and tablets. There are two interface functions available.
  - **IAQEye™ Reporter:** By scanning the QR code on the bottom of the sensor, an Apple or Google app is available that creates a time-stamped report of current and historical IAQEye™ measurements with elevated levels highlighted.
  - **IAQEye™ Configurator:** By entering a password, service providers or installers can configure many aspects IAQEye™ communication parameters, scaling, visual and audible alarm levels, display options or configuration of auxiliary inputs.
- Up to 10 mb of on-board memory is available to store historical measurement data. Data can be read through a smartphone connection or relayed to cloud database or remote server if connected to the Internet.



Display, 24VAC



Display, Battery Powered

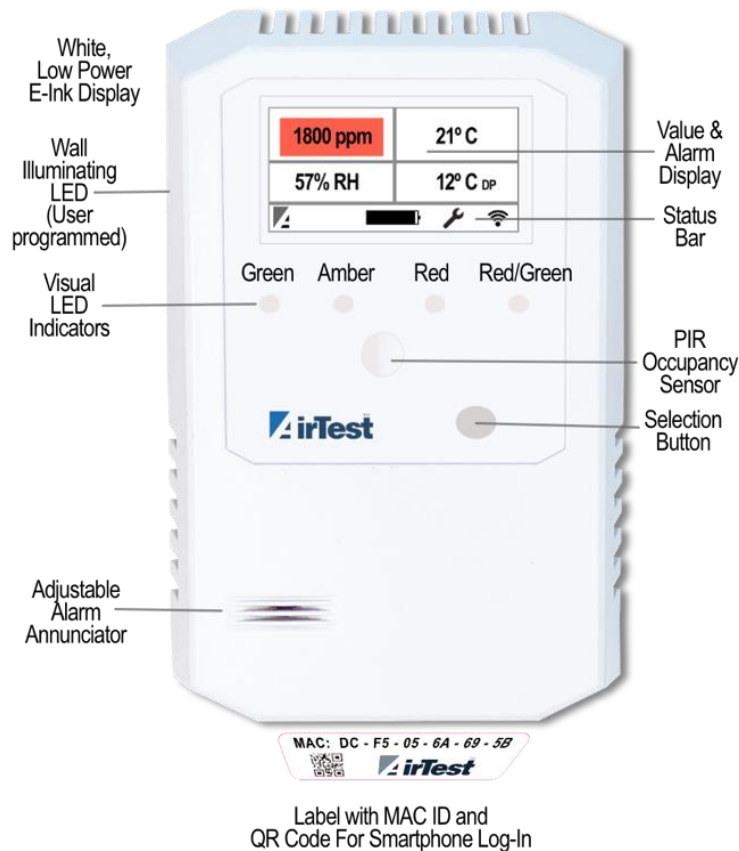


No Display

## IAQEye™ Product Selection

| Model No                         | Power         | Display | CO <sub>2</sub> , Temp, %RH, Dew Point | Occupancy |
|----------------------------------|---------------|---------|--|-----------|
| <b>24VAC Powered</b>             |               |         |  |           |
| TR8910                           | 24VAC         | Y       | Y                                      | Y         |
| TR8911                           | 24VAC         | -       | Y                                      | Y         |
| TR8912                           | 24VAC         | Y       | Y                                      | -         |
| TR8913                           | 24VAC         | -       | Y                                      | -         |
| <b>Battery and 24VAC Powered</b> |               |         |  |           |
| TR8930                           | Battery/24VAC | Y       | Y                                      | Y         |
| TR8931                           | Battery/24VAC | -       | Y                                      | Y         |
| TR8932                           | Battery/24VAC | Y       | Y                                      | -         |
| TR8933                           | Battery/24VAC | -       | Y                                      | -         |

All IAQEye units measure 0-2,000 ppm CO<sub>2</sub>. Ranges up to 5,000 and 10,000 ppm can be custom ordered. Contact AirTest for availability and pricing.



### Measurement

- Values on e-ink display.
- Alarm indication on display, LED and buzzer.
- Data from 7 days can be downloaded to cellphone.
- IAQEye™ Internet cloud monitoring service available.

### Control

- Wireless design supports easy and low cost retrofit.
- Wireless tools available to connect to most HVAC equipment and controls.
- Implements CO<sub>2</sub> DCV which saves energy and optimizes indoor air quality.

## Specifications

### Electronics Platform

- Microprocessor: 32-bit microprocessor, 200 MHz main bus clock
- Memory: 128 KB ROM, 512 KB RAM, 128 MB external Flash with 10MB dedicated data storage.

### WiFi

- IEEE 802.11b/g/n, Wi-Fi compliant.
- FCC ID: TLZ-CU300.
- WPA or WPA2 encryption with ability to support Enterprise level security with EAP-TLS or PEAP-MSCHAPv2.
- Broadcast time interval is adjustable by the user.
- UDP communication packets.

### Power

- 24VAC ±20%, X? Amps
- Battery, two 6.3V Lithium Batteries, with estimated life of 3-5 years depending on reporting interval. The 24VAC power source will override battery power.

### Display, LED and Audible Indicators

- Ultra-low power, white E-ink display, with excellent low light viewing ability. Primarily displays in black and white but red color highlights elevated values.
- Four Front cover LEDs: Green, Amber, Red, Red/Green.
- On board audible indicator can be configured to sound on alarm, or be silent, volume can also be adjusted.
- All indicator settings adjusted through a password protected WiFi interface accessible in close proximity to unit. Settings can also be set via WiFi network broadcast.

### Button Interface

- Single front cover button interface with multiple selection capability.

### Local WiFi Interface Capabilities

- *Report Generation:* By scanning the QR code on the bottom of the device, a report of current and recent readings will be downloaded to the connected WiFi communicating device.
- *Configuration Settings:* If the QR code is scanned and password entered it is possible to adjust many features of the IAQEye™.

### Measurements

#### Carbon Dioxide (CO<sub>2</sub>)

- Non-Dispersive Infrared dual beam sensor with reference channel based self-calibration. Also has on-board temperature correction and real time pressure correction to eliminate altitude and weather effects on reading.
- The dual beam, self-calibrating sensor will maintain calibration for the life of the sensor (15 years).
- For comparative calibration checks, the sensor should be compared to a recently calibrated CO<sub>2</sub> hand held meter (using certified calibration gases) with final comparative readings correct for altitude and uncertainty of the hand-held device and calibration gases.
- Range & Accuracy: 0...2 000 ppm < ± (50 ppm +2% of the measured value), 0...5 000 ppm < ± (50 ppm +3% of the measured value). Up to 10,000 ppm available.

#### Temperature

- Accuracy: ± 0.1°F (± 0.2°C)
- Range: 32 to 130°F (0 to 90°C)

#### Relative Humidity

- Accuracy ± 2% RH, 0-90%, ±3% >90%
- Range: 0-100% RH

#### Dew Point

- Accuracy: ± 0.3 °F Td @72°F, (± 0.6°C Td@20°C)
- Range: 0-100°F Td, (0-38°C Td)

#### Occupancy Sensor

- Utilizes a 17 segment Passive Infrared (PIR) lens designed to provides 64 detection zones. Detection range of 10 meters (15 m in ideal conditions), and 119° field of view.

#### Additional Sensor Inputs:

- Two 4-20 mA inputs
- One 10K2 or 0-5V input