



ELECTRONICS BY DESIGN

Indoor Air Quality Technology












Product overview

Designed and developed in Australia by Electronics By Design, the IAQ sensor monitors up to ten air quality parameters to calculate the wellness of the work environment.

These parameters include: temperature, relative humidity, light, sound, carbon dioxide CO₂, Total Volatile Organic Compounds (TVOCs), particulate PM2.5 and PM10 particle density.

Select from 9 parameters

-  Temperature
-  Relative Humidity
-  CO₂
-  TVOC
-  PM2.5
-  PM10
-  Light
-  Sound
-  PIR



Easy to install

- Simple AC or DC connection to the building's power source (wall mounted version)
- Plug pack connection (desk mounted version).

Configuration

Select from:

1. Wall mounted or desktop sensor
2. HVAC / Ductwork sensor
3. Car park sensor (available Q3 2024)
4. Equipment monitoring

Power Supply

Select from:

- Main external power
- Battery operation with up to 10 years life.

Integration

Easily integrates with most HVAC, controls and dashboards using RS485, Modbus, LoRa, narrowband IOT.

Low voltage solution

Wireless system

- Cellular NB-IoT or LoRa

Personalised branding with your logo

At Electronics by Design, we collaborate with indoor air quality specialists, service providers and OEMs to tailor an indoor air quality solution for your brand.

Engineered in Australia, the Electronics by Design IAQ Sensor has been purpose built to meet local regulations. Our white label services means we can design, engineer, manufacture, package and supply a customised indoor air quality sensor to suit your needs and your budget.

Leave the entire process to us – we take care of everything from design to packaging, all you need to provide is your logo!



HVAC version monitors the health of the air conditioning system. In addition to the IAQ parameters, it can also sense when the filters need replacing with a pressure differential measurement

The IAQ Sensor is available as a desktop version, for a simple plug-and-play solution

Equipment monitoring version monitors the health of mechanical equipment such as water tanks, sprinkler systems, lighting and just about anything else. It allows connection to analogue sensors, water meters, electricity meters, and many other sensors directly or through Modbus.



The IAQ Sensor is available as a wall mounted version. Easy to install, it is available as both mains power or battery operation

Technical Overview

- 8 air quality sensors including temperature, humidity, light, sound, CO₂ TVOC, PM2.5, PM1.0, and accelerometer.
- PIR (the 9th sensor) detects occupation of the space.
- Differential pressure sensor to detect when air conditioning filters need to be cleaned.
- Graphics display (optional) to indicate sensing values, battery level and LoRa or cellular signal strength.
- Front panel switches to view and change settings, view data. Also includes a beeper to alert when alarmed.
- Zero maintenance. Sensors auto calibrate or have a minimum 10 year lifespan before calibration is required.
- 4 external inputs for connecting remote sensors including thermistors, 0-10V sensors, pulse meters. Powered from a 9VDC to 24VDC plugpack, 24VAC or 4 AA batteries
- Fully wireless communications using cellular NB-IoT or LoRa.
- Industry standard Modbus RTU through an RS-485 or RS-232 interface.
- LEDs to indicate power, LoRa or NB-IoT signal strength and battery life.
- Cable entry points (if required) from the underside and rear, thus catering for any environment.
- Can be mounted on a wall, plant room, or virtually anywhere else. Two screws into the wall is all it needs.
- Modern moulded enclosure with a decal that can be branded with your logo. Suitable for offices and conference rooms. Edge processing and alarming will notify facility managers instantly if there is an issue.
- Sensor data uploaded to the portal using MQTT. Enough memory to store at least 20,000 samples if Internet is lost.



Specification	Value			
Size	100mm x 100mm x 29mm depth. PIR sensor protrudes a further 4mm			
Weight	150g			
Enclosure	Moulded ABS plastic in a variety of colours with a custom decal			
Mounting	Two countersunk 6G wall screws through the base			
Versions	<ol style="list-style-type: none"> 1. Indoor air quality 2. HVAC and mechanical equipment data logging. 3. Equipment monitoring 			
Operating environment	-10°C to +60°C, 5% to 95% relative humidity non-condensing, indoor use only			
Voltage source	9V to 30VAC or DC or 4 x AA batteries			
Power consumption	Approximately 1W nominal and 3W peak			
Wireless system	Cellular NB-IoT or LoRa			
Data protocol	Modbus RTU, 4800 to 38400 baud			
Network	Cellular 4G NB-IoT, LoRa and LoRaWAN			
Sensor Performance	Sensor	Range	Accuracy	Response time (after initial settling)
	PIR (proximity)	7m with 105° viewing angle	Not applicable	1s
	Temperature	-10°C to +60°C	0.2°C	10s
	Relative humidity	0% to 100%	5%	10s
	Light	0-32000 lux	10%	10s
	Audio	40-90 dBA	3dBA	10s
	CO ₂	0-5000ppm	5%	10s
	VOC	300-5000 ppb Detects Formaldehyde, Alcohols, Aldehydes, Ketones, Organic Acids, Amines, Aliphatic and Aromatic Hydrocarbons	10ppb	10s
	Particle PM2.5 & PM10	0-1000ug/m3	15%	10s
Differential Pressure	+/- 500Pa	10%	10s	