WATTECO

VAQA'O +

LoRaWAN

The VAQA'O+ sensor measures temperature, relative humidity, atmospheric pressure, Volatile Organic Compounds (VOC) and Carbon Dioxide (CO2) concentrations in the ambient air of a room in a building, a flat, a house. VAQA'O+ is used to monitor Indoor Air Quality (IAQ) according to presence thanks to the detection of luminosity (lighting) and the movement of people (PIR) in the room.
The data is transmitted via a public or private LoRaWAN® radio frequency network.

APPLICATIONS

- Supervision of heating, ventilation and air conditioning installations.
- Energy optimisation of buildings (residential, tertiary).
- Monitoring of Indoor Air Quality (IAQ) in places open to the public (schools, nurseries, hospitals, etc.).

BENEFITS & FEATURES

- LoRaWAN®, Class A
- Easy to install and use
- 3 years of battery autonomy
- Measuring ranges / accuracies :
  - Temperature: 0°C to +55°C / ± 0.2°C
  - Hygrometry: 0% to 100%rH / ± 2%
  - Atmospheric pressure: 300 to 1100hPa / ± 0.6hPa
  - CO2: 0 to 5000ppm
  - VOC: index 0 to 500 / ± 5
  - Brightness: 0.01Lux to 83,000 Lux / 5%
  - Motion: up to 12m, 102° x 92° detection, 68 zones

CERTIFICATION

- RED, RoHS

Sensors delivered without WATTECO marking

The VAQA'O+ measures temperature, humidity, atmospheric pressure, CO2 and VOC concentrations inside buildings.
Measurements can be correlated with presence in the room: brightness measurement and motion detection.
The data transmission over public or private LoRaWAN® network is done periodically and/or upon variation of the measured variable or in case thresholds are exceeded (everything can be configured remotely):
- Min. and max. temperature
- Min. and max. humidity
- Min. and max. brightness
- Min. and max. atmospheric pressure
- CO2 min. and max.
- VOC min. and max.
- Minimum and maximum occupancy rate

If the Sensor is unclipped from its wall mounting or moved, an alert is transmitted.

Installation and commissioning are quick and easy. The sensor is equipped with :
- a switch (ILS) used for network pairing and various interventions (e.g. prolonged standby),
- LEDs to monitor the network pairing and the main status of the sensor.

Measurement data is transmitted individually or aggregated and compressed (batch mode) before being transmitted over the LoRaWAN® network.

This transfer method considerably reduces the amount of data transmitted while preserving the autonomy of the sensor.

Powered by a pack of 3 x 3.6V/2500mAh batteries, the sensor's autonomy exceeds 3 years with the default configuration: one measurement on all sensors every 10 minutes and 1 transmission every hour, with the data compressed.

The battery level can be regularly monitored remotely.

THE LARGEST IOT PRODUCTS RANGE FOR YOUR PROJECT

WATTECO is a European leader in the design and manufacture of smart IoT devices to suit all remote reading and data collection solutions.

WATTECO is a LoRa Alliance® member.

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TECHNICAL DATA

RADIOFREQUENCY	
Frequency	EU: 863-870 MHz
Transmit power	14 dBm
Sensitivity	-140 dBm

FIRMWARE	
Protocol	LoRaWAN®, Class A
Measurement periodicity	From 10min to 24hrs
Transmission interval	From 30min to 48hrs
Data compression	Yes by default; can be disabled.
Activation method	Activation by Personalization (ABP) or Over-The-Air Activation (OTAA)
Data encryption	AES128

	Temperature	Hygrometry	Brightness	Atmospheric pressure	CO2	Motion	VOC Index
Range	0°C to +55 °C	0% to 100% rH	0.01 to 83,000 Lux	300 to 1100 hPa	0 to 5000 ppm	12m	0 to 500
Accuracy	± 0.2°C between [12°C to +25°C] otherwise ± 0.5°C	2% between [+12°C to +25°C].	5%	0.6 hPa	±100 ppm self calibration	102° horizontal, 92° vertical	± 5
Resolution	0.1°C	1%	-	2 Pa	10 ppm		1

POWER SUPPLY	
Voltage	3 x 3.6V / 2500mAh – Lithium battery pack (optional see below) Battery voltage level measured and transmitted regularly (configurable interval)
Autonomy (in the range of +12°C to +25°C)	3 years with 1 sensor reading (Temp + Hum + CO2 + VOC + Lux + Pressure) every 10 minutes and 1 radio transmission every hour, with measurement data compressed and IAQ LEDs

USER INTERFACE	
ILS switch + LEDs	Association to the network, sensor status.

ALARMS	
Temperature	Min & Max values configurable from 0°C to 50°C in 1°C steps; default min = 14°C; max = 28°C
Moisture	Min & Max values configurable from 0%rH to 100%rH in 1%rH steps; default min = 20%rH; max = 70%rH
CO2	Min & Max values configurable from 0 ppm to 5000 ppm; default max = 1500 ppm
VOC Index	Min & Max values configurable from 1 to 500; default max = 300
Presence detection	On motion detection
Alerts	On battery level below 2.7 Volts; on unclipping the sensor / wall mounting or when moving

ENCLOSURE	
Size / Weight	120 x 80 x 25mm / 235g

ENVIRONMENT	
Operation	0°C / +55°C ; +0%rH / +95%rH (non-condensing)
Storage	10°C / +30°C; +0%rH / +60%rH

STANDARDS & REGULATIONS
Radio Equipment Directive 2014/53/EU, RoHS

CE ☒ RoHS 2011/65/EU

PRODUCT NUMBER

REFERENCE	DESCRIPTION
50-70-074	LoRaWAN® VAQA'O+ Sensor Temp, rH, HPa, CO2, VOC, Lux, Motion