Universal Air Quality Sensor THVPL(C)-X-IQ

T, rH, VOC, P, lx, CO2 sensor LoRa, on-wall mount sensor

	THVPL-0-IQ	THVPL-1-IQ	THVPLC-0-IQ	THVPLC-1-IQ
Communication interface				
Wi-Fi AP	⊕	⊕	⊕	⊕
Wi-Fi client	⊕	⊕	⊕	⊕
Modus TCP + MQTT + HTTP/REST	⊕	⊕	⊕	⊕
Modbus RTU via RS485	⊕	⊕	⊕	⊕
LoRaWAN 868 MHz	⊗	⊕	⊗	⊕
Binary output	⊕	⊕	⊕	⊕
Measured quantities				
Temperature + humidity	⊕	⊕	⊕	⊕
Ambient light intensity	⊕	⊕	⊕	⊕
VOC	⊕	⊕	⊕	⊕
CO_2	⊗	⊗	⊕	⊕
Power supply				
5V power supply (MicroUSB)	⊕	⊕	⊕	⊕
24V power supply (screw terminals)	⊕	⊕	⊕	⊕

Applications

The sensor is designed primarily as a source of data for the control system in „smart" buildings to provide an optimal environment in households, factory buildings or office spaces. The data can be used to effectively regulate heating, cooling, heat recovery, lighting etc.

Parameters

Measured parameters of indoor environments*	Air temperature Air humidity CO$_2$ concentration VOC (volatile organic compound) concentration – air quality index Barometric pressure Ambient light intensity	
Power supply	5-24 V DC, 0.6 W average consumption micro USB 5 V DC, max. 1 A (typ. 120 mA), long tip cable required	
Measuring range	Air temperature Relative air humidity CO$_2$ concentration VOC concentration Barometric pressure Ambient light intensity	-40 až +85 °C 0–90 % non-condensing 300–5000 ppm AQ index 0–500 300–1100 hPa 0–7500 lx
Measurement accuracy	Air temperature Relative air humidity CO$_2$ concentration VOC concentration Barometric pressure Ambient light intensity	± 0,5 °C ± 2 % (in range of 20–80 %) ± 30 ppm and ± 3 % from the value indicative value ± 5 hPa indicative value
Communication interfaces*	Wi-Fi LoRaWAN RS-485	802.11 b/g/n 2,4 GHz Class A, 14 dBm, SF 7-12, 868 MHz ABP support and OTAA activation
Communication protocols	Wi-Fi RS485	MQTT, HTTP/REST, Modbus TCP Modbus RTU
Digital output	Galv. isolated open collector, max 20 mA / 24 V	
Indication and visualisation	RGB LED for indication of indoor air quality and device status	
Internal storage	Up to 7 days with 5 quantities values at a 5-minute interval. Power supply outage results in a loss of the data.	
Comply with	EN 300 328; EN 300 220; EN 301 489 EN 60730; EN 60950; EN 62311; EN 62479 RoHS; WEEE	

* Available measured quantities and communication interfaces depends on the particular sensor variant

Dimension

The sensor's cover is made from white ABS plastics. Dimensions are shown in millimetres.
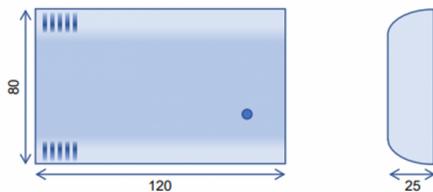
Installation instruction

Air quality sensors are intended for installation on interior walls of residential buildings. To ensure maximum measurement accuracy it is necessary to place the sensor correctly to allow for an optimal airflow inside the case.

Within individual rooms, the sensor should be installed ideally at 100-150 cm height from the floor (eg. in places where occupants of the building spend most of the time – in bedrooms the sensor can be placed lower). In any case, WE DO NOT RECOMMEND installing the sensor too low (floor level) or too high (ceiling level), as some measurements (especially temperature and CO$_2$) could be distorted.
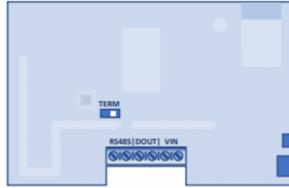
Wiring

Before the connection, it is necessary to disassemble the sensor's plastic cover and remove the circuit board. Perform this operation carefully, ideally using a small flat screwdriver. Take special care to not damage the cable connecting the circuit board to the antenna mounted in the upper part of the case (applies only for the corresponding variants).

The sensor can be powered either by 5-24 V voltage connected to the screw terminal or by 5 V input with MicroUSB connector placed on the sensor's side – in this case, make sure to use a suitable power supply (adapter) able to supply at least 1 A current at 5 V voltage. Connect the power source with a short cable featuring a sufficient gauge and **long tip**. The device is not designed for being powered by batteries or accumulators

The sensor features the following connectors:

- **Screw terminal with paired pins:**
    - **RS485** – communication bus
    - **DOUT** – binary output (**N**egative, **P**ositive)
    - **VIN** – 12-24 V DC power input
- **MicroUSB** connector – 5 V DC voltage input

The **TERM** switch in **ON** position is used for connecting a 120 Ω terminal resistor to the RS485 bus.