



Company: Small Data Garden
 Product name: IOTSU® AQ Combo for LoRaWAN®
 Product code: IOTSU®L3 AQ01
 Rev: 1.9_21stDec 2023



IOTSU® AQ Combo for LoRaWAN®

IOTSU® AQ Combo is a wireless indoor device designed for measuring air quality for monitoring purposes. Air quality is assessed as a combination of temperature, humidity, the concentration of carbon dioxide, and the concentration of volatile organic compound (tVOC).

The device can be mounted using screws or adhesive tape. Installation of this maintenance-free device is quick and easy. Transmission and measurement cycles can be adjusted according to the need using downlinks.

IOTSU® AQ Combo uses the global LoRaWAN® network connection. There is no need for external power supply. Depending on transmission settings and environmental factors the battery of the device can last 5 years.

MEASURING AND RECORDING:	
	<ul style="list-style-type: none"> Temperature, Humidity CO₂ tVOC
TECHNICAL SPECIFICATIONS:	
Dimensions	: 63 x 114 x 30 mm
Weight	: 117 g with battery
Sensors	: CO ₂ , tVOC, temperature, humidity
Transmission cycle	: 2 h, configurable via downlink
Measurement cycle	: Transmission cycle /4
Connectivity	: LoRaWAN® 1.0.4
Battery	: Size C, 3.6 V, replaceable
Expected battery life	: 5 years with default setting, Transmissions at SF12/DR0
Operating Conditions	: 0 °C...+50 °C, Relative humidity 10...85 % (Non-condensing)
Typical Accuracy	: Temperature: ±0.2 °C Humidity: ±2 %, CO ₂ : ±30 ppm ±3 % of reading
Certifications	: CE
Mounting	: Screws, adhesive tape

Small Data Garden Oy's (SDG) products (IOTSU® Products) shall be used according to the manual and other instructions and not be used in any other way than their intended use defined by SDG. IOTSU® Products are designed for LPWAN technologies collecting non-critical information. SDG will not be held liable for any damage which may result from inaccurate readings and delayed data transmission. In case regular calibration of IOTSU® Products is needed, SDG shall not be responsible for this, and it is the Customer's responsibility to obtain calibration from a suitable service provider. For more information see SDG's General Terms and conditions for the supply of products and Legal Notices.



Measurement ranges

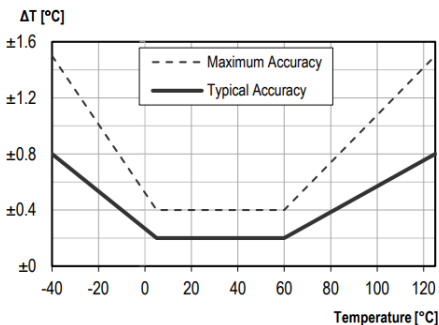
Range and resolution of the measurements depends on sensor type and the data transfer structure. To ensure the long battery life of IOTSU®, data packets sent over wireless networks are optimized.

CO₂

Sensor model: Senseair Sunrise
Resolution: 10 ppm
Range: 400—2940 ppm
Accuracy: ± 30 ppm ± 3 % of reading

Temperature

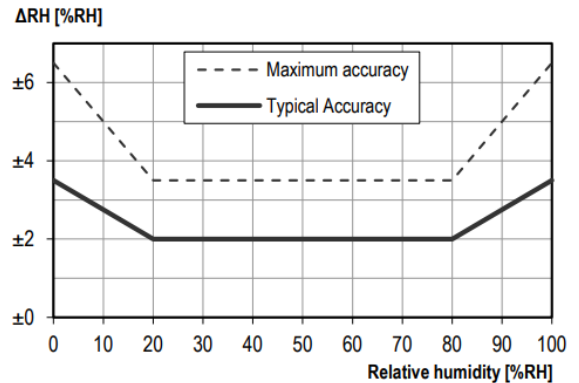
Sensor model: Sensirion SHTC3
Resolution: 0.1 °C
Range: 0...+50 °C
Sensor accuracy: typical ± 0.2 °C



Sensor's accuracy. Source: Sensirion SHTC3 datasheet Version 3

Relative humidity

Sensor model: Sensirion SHTC3
Resolution: 1 % RH
Range: 0...100 % RH, non-condensing
Sensor accuracy: typical ± 2.0 %RH



Sensor's accuracy. Source: Sensirion SHTC3 datasheet Version 3

tVOC

Sensor model: Sensirion SGPC3
Resolution: 5/25/50/100 ppb
Range: 0—8000 ppb

Small Data Garden Oy's (SDG) products (IOTSU® Products) shall be used according to the manual and other instructions and not be used in any other way than their intended use defined by SDG. IOTSU® Products are designed for LPWAN technologies collecting non-critical information. SDG will not be held liable for any damage which may result from inaccurate readings and delayed data transmission. In case regular calibration of IOTSU® Products is needed, SDG shall not be responsible for this, and it is the Customer's responsibility to obtain calibration from a suitable service provider. For more information see SDG's General Terms and conditions for the supply of products and Legal Notices.



CALIBRATION

The IOTSU® device has been configured to periodically perform automatic reference calibration to any onboard sensors that require it. The following describes the calibration methods for each sensor:

Temperature and humidity sensor

Factory calibrated. Temperature long-term drift <0.02 °C/year. Relative humidity long-term drift <0.25 %rH/year.

CO₂ sensor

An automatic calibration method has been integrated to this sensor. The device calibrates itself once every week by analysing the weekly data and assuming that the lowest measurements are equal to the outdoor standard CO₂ concentration of 400 ppm. In situations where the device is never exposed to outdoor CO₂-levels it is recommended to switch off the automatic calibration. The automatic calibration feature can be toggled on or off and the cycle length can be set by modifying the device configuration parameters.

tVOC sensor

The sensor has an automatic calibration cycle with baseline correction.

Small Data Garden Oy's (SDG) products (IOTSU® Products) shall be used according to the manual and other instructions and not be used in any other way than their intended use defined by SDG. IOTSU® Products are designed for LPWAN technologies collecting non-critical information. SDG will not be held liable for any damage which may result from inaccurate readings and delayed data transmission. In case regular calibration of IOTSU® Products is needed, SDG shall not be responsible for this, and it is the Customer's responsibility to obtain calibration from a suitable service provider. For more information see SDG's General Terms and conditions for the supply of products and Legal Notices.



Legal Notices

Small Data Garden Oy's (SDG) products (IOTSU® Products) shall be used according to the manual and other instructions and not be used in any other way than their intended use defined by SDG.

The user right of the firmware of SDG is limited to the version and specifications confirmed by SDG. Any unauthorised usage of device is prohibited and must be suspended by request of SDG. In addition, SDG is entitled to charge for unauthorised usage including administrative and solving cost. SDG shall not be responsible for damages caused by the user connecting the SDG's products (IOTSU® Products) and/or using the IOTSU® Products in any other way than their intended use nor for any damages caused by materials or product design defined by the client or by the working or manufacturing processes the client has determined.

IOTSU® Products are designed for collecting non-critical information for optimising energy consumption in long term usage and the IOTSU® Products are not intended to be used for life and security critical solutions. We rely on high-quality sensor, component and software suppliers and manufacturers and IT, LP-WAN and cloud service providers. However, for the reason that the accuracy and redundancy is depended among other things on operating circumstances, radiotechnology specifications and coverage, and because SDG relies on specifications provided by its suppliers, SDG will not be held liable for any damage which may result from inaccurate readings.

All information, including product design and specifications, in this document is subject to change without notice. SDG reserves all rights to revise or update information in this document without prior notice. SDG assumes no responsibility for any errors that may appear in this document.

In case regular calibration of IOTSU® Products is needed, SDG shall not be responsible for this, and it is the customer's responsibility to obtain calibration from a suitable service provider. For more information see SDG's General Terms and conditions for the supply of products and Legal Notices.

For more information see SDG's General Terms and conditions for the supply of products.

