

Kombi-LWEU-RHT-CO2-TVOC-DP

A good indoor climate increases comfort, maintains health and secures the value of the property. Clean and adequate indoor air increases the satisfaction of building users and the productivity of work. For this purpose we have designed Kombi-LWEU-RHT-CO2-TVOC-DP, a wireless and economical multi-sensor indoor air quality transmitter.



Kombi-LWEU measures temperature, humidity, carbon dioxide (CO2) concentration, total volatile organic compound (TVOC) concentration and differential pressure.

Kombi-LWEU uses LoRaWAN for communication with the cloud.

General Specifications

Enclosure	ABS+PC, white painted
Environmental Protection	IP20
Weight	~180 g, including batteries
External Dimensions	75 mm x 48 mm x 105 mm (WHD)
Rated Operating Conditions	-30...+60°C, non-condensing
Allowed Storage Conditions	-40...+80°C, without batteries, non-condensing

Power Supply

Internal Battery Type	3.6V Lithium Thionyl battery pack
Typical Battery Life	5 years with 30 minutes transmission interval
External Power Supply	Micro USB type B, 5 ± 0.5 V, max 200 mA, no suspend function

Measuring and data transmission

Interval	Configurable: 5min / 10min / 15min / 20min / 30min / 1h / 2h / 3h / 4h / 6h
Radio	LoRa radio technology with Murata ABZ-093 LoRaWAN modem
Antenna	Internal
Frequency Band	863-870 MHz (LoRaWAN 1.0.2 EU band)
Transmission Power	Max +14 dBm E.R.P.
Range, Line-of-sight	Depends on installation location and environment, in good conditions 10 km

Temperature measurement

Sensor	High-accuracy semiconductor sensor, Swiss
Measurement Range	-40...+125°C
Accuracy	Typically ±0.1°C (+20...+60 °C)

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Humidity measurement

Sensor	High-accuracy semiconductor sensor, Swiss
Measurement Range	0...100 %RH
Accuracy	Typically ± 2 %RH (+0...+80°C, 0...100 %RH)

Carbon dioxide concentration

Sensor	NDIR sensor
Measurement Range	400...5000 ppm
Accuracy	Typically ± 45 ppm + 3% rdg
Autocalibration	Must see fresh air (unoccupied room) once a week for some hours

Total volatile organic compound concentration

Sensor	Semiconductor sensor, Swiss
Measurement Range	0.3...30 ppm
Accuracy	Typically $\pm 15\%$

Differential pressure measurement

Sensor	High-accuracy flow sensor, Swiss
Measurement Range	-125...+125 Pa
Accuracy	Typically ± 0.08 Pa + 3% rdg

Particulate matter measurement model -Dust13

Measurement range	0...1.2 million particles per litre (up to 10,000 particles per second)
Particle sizes	0.4...12.4 μm
Particle type	For max accuracy, assumed to be spherical, density 1.65 g/ml, refractive index 1.5
Values measured	PM1, PM2.5, PM4, PM10
PM10 range	0.01...1 500 000 $\mu\text{g}/\text{m}^3$

Particulate matter measurement model -Dust40

Measurement range	0...2.8 million particles per litre (up to 10,000 particles per second)
Particle sizes	0.4...40 μm
Particle type	For max accuracy, assumed to be spherical, density 1.65 g/ml, refractive index 1.5
Values measured	PM1, PM2.5, PM4, PM10, non-standard "PM40"
PM10 range	0.01...1 500 000 $\mu\text{g}/\text{m}^3$