



Ventilation Sensor – VS18

Carbon dioxide sensor / transmitter

PRODUCT DESCRIPTION

VS18 is a state-of-the-art non-dispersive infrared (NDIR) carbon dioxide (CO₂) sensor cum transmitter. The direct insertion design and miniature size makes it easy to install in the ventilation duct.

The VS18 measures the CO₂ concentration in the ambient air up to 2,000 ppm and provides measurement in a 0-10 V or 4-20mA output signal.

With CO₂ demand controlled ventilations, VS18 helps to save money by decreasing the energy consumption while maintaining a healthier indoor climate!



***VS18-K (Duct mount)
CO₂ sensor/transmitter***

FEATURES

Using patented state-of-the-art non-dispersive infrared (NDIR) wave-guide technology and offers reliable measurements

- measurement range: 0 - 2 000 ppm CO₂
- analogue outputs:
OUT: 0 - 10 V (= 0 - 2 000 ppm CO₂)
or 4 – 20mA (= 0 - 2 000 ppm CO₂)
- maintenance-free in most HVAC ventilation applications
- high tolerance to extreme humidity environment conditions
- comply to EMC directive 2014/30/EU
- M12 quick connection for easy installation
- non-frill design, direct DDC connection
- optional ranges 0-0.5%, 0-2% or 0-5%
- Two different mounting options:
1) IP65 duct housing (model : VS18-K)
2) IP50 wall mount (model: VS18-W)
(installation note: direction of sensor facing downwards)

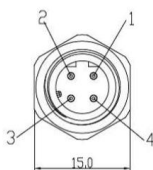
APPLICATIONS

VS18 is a cost-effective sensor/transmitter for building climate control and other processes where measurement of carbon dioxide concentration is required.

By controlling the ventilation based on actual demand, it helps to reduce energy consumption while maintaining an acceptable and healthy indoor climate!

With high tolerance to extreme humidity environment, the VS18 is ideal for applications in greenhouses, mushroom farming and AHUs in high RH regions.

PHYSICAL CONNECTION



M12 Male Connector

WIRE CONNECTIONS

1	G+	Red	24 V AC/DC (+)
2	G0	Black	System ground (-)
3	Out	Yellow	Signal output, 0-10V (by default) or 4-20mA (internal jumper select)
4	NC	White	No connection

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VS18 technical specification (rev nr: 180101)

General Performance

Compliance withEMC directive 2014/30/EU
Operating Temperature Range0 - 50 °C
Storage Temperature Range-40 to +70 °C
Operating Humidity Range0 to 100% RH (sensor in powered-up condition)
Operating Environmentresidential, commercial and industrial spaces ¹
Warm-up Time<1 min. (@ full specs · 15 minutes)
Sensor Life Expectancy> 15 years
Duct air velocity Direct insertion sensor, no minimum air speed requirement
Maintenance Intervalno maintenance required ² (with ABC algorithm)

Electrical

Power Input24 VAC/VDC ±20%, 50 Hz or 60Hz (half-wave rectifier input)
Power Consumption< 1 Watt average
Connection wiresM12 male connector for power input (G+, G0) & voltage/current output (Out)
.....with M12 female quick connection cable (AWG24 wires)

CO₂ Measurement

Sensing methodNon-dispersive infrared (NDIR) wave-guide technology with Automatic Background Calibration (ABC) and passive gas diffusion (no moving parts)
Response Time (T_{1/e})< 10 sec. @ 30 cc/min. flow rate
.....< 3 min. diffusion time
Repeatability± 30 ppm ± 1 % of reading
Accuracy ^{1,2}± 40 ppm ± 3 % of reading (@ 25 °C)
Annual Zero Drift ^{1,2}< ± 10 ppm (with ABC function)
Pressure Dependence+ 1.6 % reading per kPa
Installation support background level calibration adjustment jumper trigger (bCAL).

Outputs

Voltage signal terminal CO₂ ³

Voltage or current output Jumper selection (default 0 – 10V)
Vo linear conversion range0 -10 VDC for 0 - 2 000 ppmvol.
Io linear conversion range.....4 – 20mA for 0 - 2 000 ppmvol.
D/A resolution10 bits, 10 mV or 0.016mA
D/A conversion accuracy± 2 % of reading ± 50 mV
Electrical characteristicsVoltage output - R_{OUT} < 100 Ohm, R_{LOAD} > 5 kOhm
.....Current output – R_{LOAD} < 500 Ohm

Measuring range option

- 0.5% 0 ~ 5,000ppm CO₂
- 2% 0 ~ 2 vol. % CO₂
- 5% 0 ~ 5 vol. % CO₂

Mounting options

DUCT HOUSING (standard)

Dim.: 94mm x 30mm diameter
Duct probe length: 51 mm
Protection class: IP65



VS18-K

WALL HOUSING (option)

Dim.: 94mm x 30mm diameter
Protection class: IP50 (installation dependent)



VS18-W

Note 1: The SO₂ enriched environments are excluded.

Note 2: In normal IAQ applications (@ NTP). Accuracy is defined after minimum 3 weeks of continuous operation.
The tolerance of the span calibration gas (2 % unless otherwise requested) and test gas adds to the total uncertainty.

Note 3: The specifications are valid for the output load connected to ground G0. Other outputs and measurement ranges are available per request.

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