

Duct Air Quality Sensor

Active sensor (0...10 V) for measuring CO₂ or with integrated temperature sensor. See options below for integrated sensors. Dual channel CO₂ technology. NEMA 4X / IP65 rated enclosure.


Type Overview

| Type | Output signal active CO ₂ | Output signal active temperature |
|----------|--------------------------------------|----------------------------------|
| 22DC-51 | 0...5 V, 0...10 V | - |
| 22DTC-51 | 0...5 V, 0...10 V | 0...5 V, 0...10 V |

Technical Data

| | | |
|------------------------|---------------------------------|--|
| Electrical Data | Power supply DC | 15...24 V, ±10%, 1.5 W |
| | Power supply AC | 24 V, ±10%, 2.9 VA |
| | Electrical connection | Removable spring loaded terminal block max. 2.5 mm ² |
| | Cable entry | Cable gland with strain relief Ø6...8 mm (1/2" NPT conduit adapter included) |
| Functional Data | Sensor Technology | CO ₂ : NDIR (non dispersive infrared) dual channel |
| | Output signal active note | output 0...5/10 V with jumper adjustable voltage output: min. 10 kΩ load |
| | Application | air |
| Measuring Data | Measuring values | CO ₂ temperature |
| | Measuring range CO ₂ | 0...2000 ppm |
| | Measuring range temperature | 40...140°F [4...60°C] |
| | Accuracy CO ₂ | ±(50 ppm + 3% of measuring value) |
| | Accuracy temperature active | ±0.9°F @ 70°F [±0.5°C @ 21°C] |
| Materials | Cable gland | PA6, black |
| | Housing | cover: lexan, orange base: lexan, orange seal: 0467 NBR70, black UV resistant |
| | Probe material | PA6, black |

| | | |
|--------------------|------------------------------|---|
| Safety Data | Ambient humidity | max. 95% r.H., non-condensing |
| | Fluid humidity | max. 95% r.H., non-condensing |
| | Ambient temperature | 30...120°F [0...50°C] |
| | Fluid temperature | 30...120°F [0...50°C] |
| | Operating condition air flow | min. 1 ft/s [0.3 m/s] max. 40 ft/s [12 m/s] |
| | Protection class IEC/EN | III safety extra-low voltage (selv) |
| | Protection class UL | UL Class 2 Supply |
| | EU Conformity | CE Marking |
| | Certification IEC/EN | IEC/EN 60730-1 |
| | Certification UL | cULus acc. to UL60730-1A/-2-9, CAN/CSA E60730-1:02/-2-9 |
| | Degree of protection IEC/EN | IP65 |
| | Degree of protection NEMA/UL | NEMA 4X |
| | Quality Standard | ISO 9001 |

Safety Notes


This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application. Unauthorised modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten humans, animals or assets.

Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.

The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Remarks
General Remarks Concerning Sensors

Sensing devices with a transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of the transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage (± 0.2 V). When switching the supply voltage on/off, onsite power surges must be avoided.

Build-up of Self-Heating by Electrical Dissipative Power

Temperature sensors with electronic components always have a dissipative power which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. This dissipative power should be taken into account when measuring temperature. As Belimo transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0...10 V / 4...20 mA have a standard setting at an operating voltage of DC 24 V. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

Information Self-Calibration Feature CO₂

All CO₂ sensors are subject to drift caused by the aging process of the components, resulting in regular re-calibration or replacement of units. However, the dual channel technology integrates automatic self-calibration technology vs. common used ABC-Logic sensors. Dual channel self-calibration technology is ideally suited for applications operating 24/7 hours such as those in hospitals or other commercial applications. Manual calibration is not required.

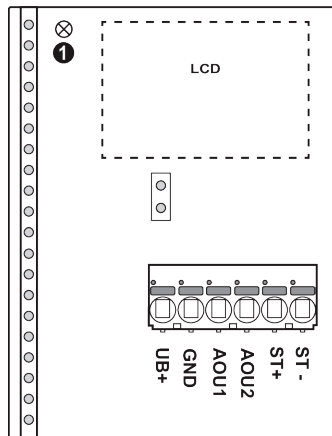
Scope of delivery

| Scope of delivery | Description | Type |
|-------------------|--|-----------|
| | Mounting flange for duct sensor 19.5 mm, up to max. 120°C [248°F], Plastic | A-22D-A34 |
| | 1/2" NPT conduit adapter | |

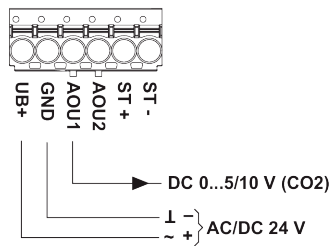
Accessories

| Optional accessories | Description | Type |
|----------------------|--|-----------|
| | Replacement filter, wire mesh, Stainless steel | A-22D-A06 |
| | Mounting plate L housing | A-22D-A10 |

Wiring Diagram

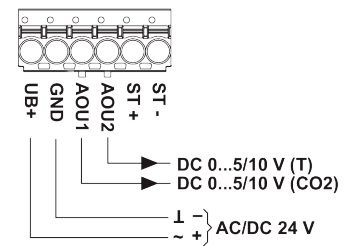


22DC-11 / 22DC-51
DC 0...5/10 V



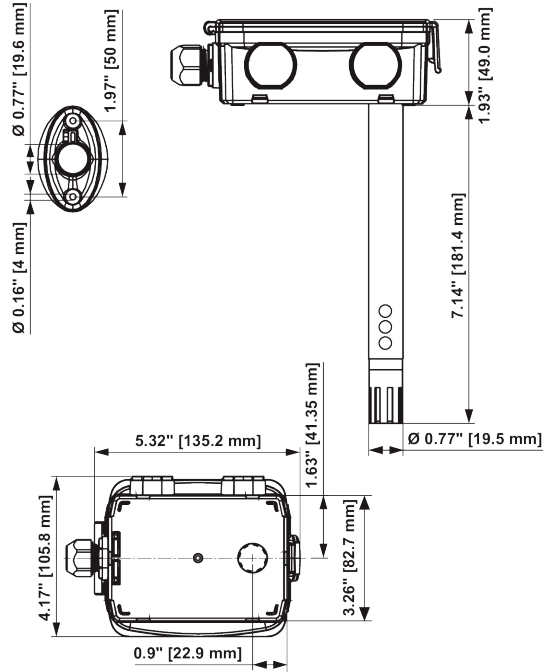
① Status LED

22DTC-11 / 22DTC-51
2 x DC 0...5/10 V



Dimensions

Dimensions



| Type | Probe length | Weight |
|----------|--------------|-------------------|
| 22DC-51 | 7'' [180 mm] | 0.57 lb [0.26 kg] |
| 22DTC-51 | 7'' [180 mm] | 0.62 lb [0.28 kg] |