

**Duct Sensor CO<sub>2</sub>**

For CO<sub>2</sub> measurement in duct applications.  
Dual channel CO<sub>2</sub> technology.  
NEMA 4X / IP65 rated enclosure.


**Type Overview**

Type	Output Signal Active CO <sub>2</sub>	Output Signal Active VOC	Output Signal Active Temperature	Output Signal Passive Temperature	Output Signal Active CO <sub>2</sub> /VOC	Output Signal Active Humidity	Display Type
22DC-11	DC 0...5 V, DC 0...10 V	-	-	-	-	-	-
22DC-110L	DC 0...5 V, DC 0...10 V	-	-	NTC10k (10k2)	-	-	-
22DCK-11	DC 0...5 V, DC 0...10 V	DC 0...5 V, DC 0...10 V	DC 0...5 V, DC 0...10 V	-	DC 0...5 V, DC 0...10 V	-	-
22DCM-11	DC 0...5 V, DC 0...10 V	DC 0...5 V, DC 0...10 V	DC 0...5 V, DC 0...10 V	-	-	-	-
22DCV-11	DC 0...5 V, DC 0...10 V	DC 0...5 V, DC 0...10 V	-	-	-	-	-
22DTC-11	DC 0...5 V, DC 0...10 V	-	DC 0...5 V, DC 0...10 V	-	-	-	-
22DTM-11	DC 0...5 V, DC 0...10 V	-	DC 0...5 V, DC 0...10 V	-	-	DC 0...5 V, DC 0...10 V	-
22DTM-1106	DC 0...5 V, DC 0...10 V	-	DC 0...5 V, DC 0...10 V	-	-	DC 0...5 V, DC 0...10 V	LCD

**Technical Data**

<b>Electrical data</b>	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 <sup>2</sup>
	Cable entry	Cable gland PG11 Ø6...10 mm, with strain relief Ø6...8 mm
<b>Functional data</b>	Sensor Technology	NDIR (non dispersive infrared) with stainless steel wire mesh filter
	Output signal active note	Output DC 0...5/10 V with Jumper adjustable Voltage output: min. 10 kΩ load
	Display	LCD, Measured values: CO <sub>2</sub> , temperature, rH
	Media	Air

<b>Measuring data</b>	Measured values	CO <sub>2</sub> VOC Mix CO <sub>2</sub> /VOC Temperature Relative humidity	
	Measuring range CO <sub>2</sub>	0...2000 ppm	
	Measuring range humidity	0...100% rH	
	Measuring range temperature	0...50 °C [32...120 °F]	
	Accuracy CO <sub>2</sub>	±(50 ppm + 3% of measuring value)	
	Accuracy humidity	±2% between 10...90% r.H. @ 21 °C	
	Accuracy temperature passive	±0.5 °C @ 21 °C [±0.9 °F @ 70 °F] NTC.. : ±0.2 °C @ 25 °C [±0.3 °F @ 77 °F]	
	Operating condition air flow	min. 0.3 m/s max. 10 m/s	
	<b>Materials</b>	Cable gland	PA6, black
		Housing	Cover: Lexan, Belimo orange NCS S0580-Y6OR Bottom: Lexan, Belimo orange NCS S0580-Y6OR Seal: 0467 NBR70, black
Probe material		PA6, black	
<b>Safety data</b>	Ambient humidity	85% r.H., non-condensing	
	Ambient temperature	0...50 °C [32...120 °F]	
	Medium temperature	0...50 °C [32...120 °F]	
	Operating condition air flow	min. 0.3 m/s max. 10 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, CE acc. to 2004/108/EC and 2006/95/EC, NEMA 4X, IP65, UL Enclosure Type 4X	
	Degree of protection IEC/EN	IP65	
	Degree of protection NEMA/UL	NEMA 4X	
	Quality Standard	ISO 9001	
	Weight	0.26 lbs	

Safety notes



The installation and assembly of electrical equipment should only be performed by authorized personnel.

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 human, animals or assets.

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

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

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 ( $\pm 0.2$  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. In case of a fixed operating voltage ( $\pm 0.2$  V) this is normally done by adding or reducing a constant offset value. 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 CO<sub>2</sub>**

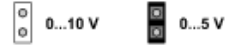
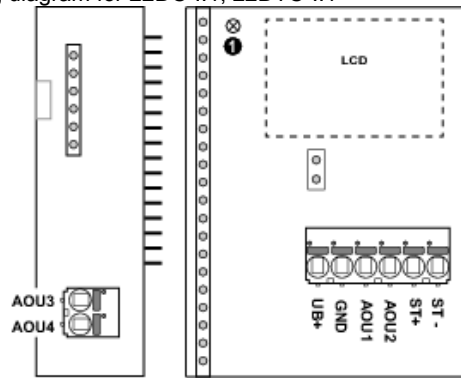
All CO<sub>2</sub> sensors are subject to drift caused by the aging process of the components, resulting in regular re-calibration or replacement units. However the dual channel technology integrates automatic self-calibration technology vs common used ABC-Logic sensors. Dual channel self-calibration technology is ideally suited for applications operating 24/7 hours such as hospitals or other commercial applications. Manual calibration is not required.

Accessories

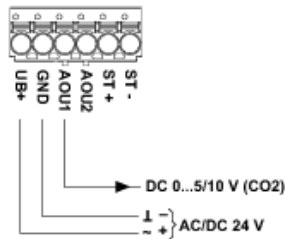
Scope of delivery	Mounting flange	
Optional Accessories	Description	Type
	Replacement filter Stainless steel, wire mesh	A-22D-A06

Wiring diagram

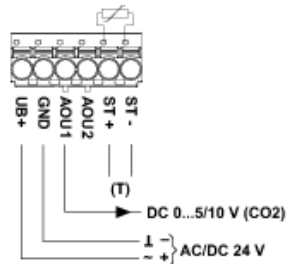
Wiring diagram for 22DC-..1, 22DTC-..1



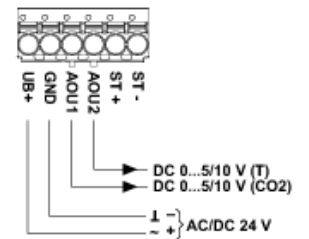
**22DC-11 / 22DC-51**  
DC 0...5/10 V



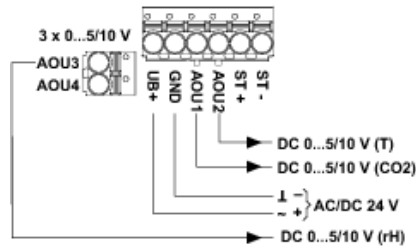
**22DC-110.. / 22DC-510..**  
DC 0...5/10 V + ST



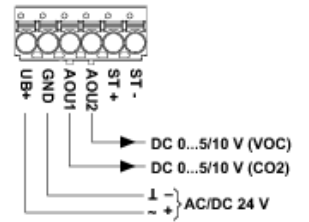
**22DTC-11 / 22DTC-51**  
2 x DC 0...5/10 V



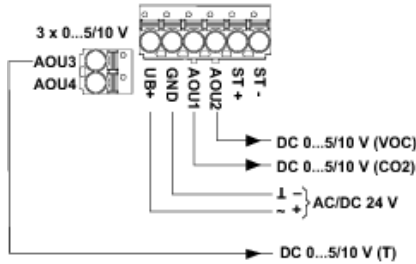
**22DTM-..1 / 22DTM-..106**



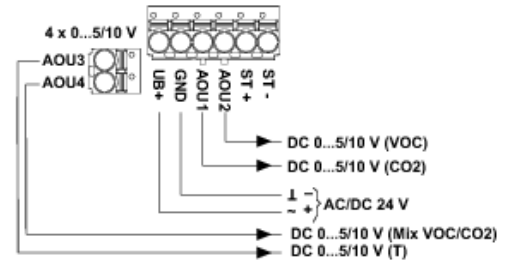
**22DCV-11 / 22DCV-51**  
2 x DC 0...5/10 V



**22DCM-11 / 22DCM-51**



**22DCK-11 / 22DCK-51**



① Status LED

Dimensions

