

## AQ-Control Datasheet (Air quality monitor with Relays)



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## 1. Features

The AQ-Control carbon dioxide measuring system is specially designed to monitor indoor air quality. With the aid of two independent relay contacts, it can control automatic window openers, air conditioning systems and fans.

AQ-Control quickly and accurately detects the carbon dioxide content in the air mixture within an ambient temperature range of -10 to +50° C. Its interior contains a revolutionary infrared measuring system (NDIR) that works in principle in the same manner as a conventional two-beam photometer. However as the material and design of the sample cell are entirely new, and the measurement signals are evaluated and processed according to a new digital algorithm, the carbon dioxide measuring system is lightweight, compact, maintenance-free in normal applications and long-term stable, but nonetheless affordable. The elegant housing is made of plastic and can be mounted on a wall or straight onto a flush-mounted box.

A traffic light on the housing displays the carbon dioxide content of the air and so indicates the air quality. A green light corresponds to a carbon dioxide concentration below the hygienic guide value for room interiors in accordance with DIN 1946 Part 2 of 1,500 ppm. The yellow LED lights up at a carbon dioxide content between 1,500 and 2,500 ppm, while the red LED indicates a CO<sub>2</sub> concentration above 2,500 ppm. The infrared measuring system determines the absolute CO<sub>2</sub> content of the ambient air, is continuously self-monitoring and signals hardware and software malfunctions. The entire measuring range is linear. Power is supplied via 24 V direct current.

Processing and outputting of the measurement signals (two independent relay contacts) are integral functions of the measuring system. Relay contact 2 sends a short pulse when the CO<sub>2</sub> concentration exceeds 1,500 ppm, and relay contact 1 sends a short pulse when the CO<sub>2</sub> content falls below 1,400 ppm. In normal applications calibration is not necessary. If required, however, calibration can be carried out by a specialist.

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## 2. Construction of the gas measuring system

The two-beam infrared sensor is mounted on a sensor holder in a plastic housing over a diffusion opening. The plastic housing also contains the transmitter that processes and evaluates the measurement signals, two independent relay outputs, as well as three LEDs (green, yellow, red) for visual display of the measured values (see Fig. 1).



**Fig. 1:** AQ-CONTROL gas measuring system.

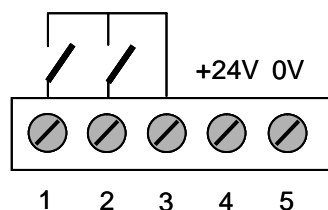
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## 3. Technical data

Transmitter		
Power supply		Screw terminals
	Current	Approx. 100 mA
Connections	Terminal 1	Relay contact, typical pulse 3.5 s, switched current max. 100 V 0.5 A, max. 10 VA / W
	Terminal 2	Relay contact, typical pulse 3.5 s, switched current max. 100 V 0.5 A, max. 10 VA / W
	Terminal 3	Common branch
	Terminal 4	24 V DC $\pm$ 5%
	Terminal 5	0 V
Ambient temperature	-10° C to +50° C	
Air pressure	900 hPa to 1100 hPa	
Permissible humidity	15-95% relative humidity	Non-condensing
Housing	Plastic	White
Protection class of housing	IP 30	
Weight of housing	Approx. 150 g	
Size of housing	Approx. L78 x W78 x H35 mm	
Outputs	Terminal 1, relay contact	Pulse f. [CO <sub>2</sub> ] < 1,400 ppm
	Terminal 2, relay contact	Pulse f. [CO <sub>2</sub> ] > 1,500 ppm
Visual display of measured value	Green LED	[CO <sub>2</sub> ] < 1,500 ppm
	Yellow LED	1,500 ppm < [CO <sub>2</sub> ] < 2,500 ppm
	Red LED	[CO <sub>2</sub> ] > 2,500 ppm
Malfunction	Hardware and software	Yellow LED flashes
Connecting cable	5x0.25 <sup>2</sup> Cu	Shielded cable
Sensor		
Gas access	By diffusion	
Measuring range	0-3,000 ppm CO <sub>2</sub>	
Warm-up time	5 min	
Accuracy	$\pm$ 2% at 25° C	Upper limit of effective range
Reproducibility	$\pm$ 1%	
Reaction time	Approx. 30 s	

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## 4. Connection



**Fig. 2:** Connection layout for AQ-CONTROL. Relay contact terminal 2: pulse at  $[CO_2] > 1,500$  ppm; relay contact terminal 1: pulse at  $[CO_2] < 1,400$  ppm

The gas measuring system is connected to the downstream device by means of a five-core, shielded cable (see Fig. 2). The gas measuring system is connected to the electric circuit via terminals 4 and 5 and the relay pulses are read via terminals 1, 2 and 3.

## 5. Calibrating the gas measuring system

The device is maintenance-free in normal applications, and calibration is usually not necessary. If required, however, calibration can be carried out by a specialist.

## 6. Other

The user should determine the definite suitability of the AQ-CONTROL gas measuring system by carrying out suitable tests under the specified conditions. Special attention should be paid to material compatibility: the sample cell, for example, must not under any circumstances corrode, and the filters must not become tarnished.

<p><b>WARNING</b>  <b>Personal Injury</b>          DO NOT USE these products as safety or Emergency Stop devices or in any other application where failure of the product could result in personal injury.  <b>Failure to comply with these instructions could result in death or serious injury.</b></p>	<p><b>CAUTION</b>          Do not exceed maximum ratings  <b>Failure to comply with these instructions may result in product damage.</b></p> <p><b>It is the customer's responsibility to ensure that this product is suitable for use in their application.</b></p>
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