



**CE** QDT 24

## Features

- Used to determine the air quality, based on a mixed gas sensor (VOC sensor)
- VOC = Volatile Organic Compounds
- To measure the air quality in offices, hotels, meeting rooms, convention centres, schools, airports, apartments, stores, restaurants etc.
- 0-10 Vdc or 4-20 mA output (selectable)  
 0-10 Vdc: 0 Vdc = clean air, 10 Vdc = polluted air  
 4-20 mA: 4 mA = clean air, 20 mA = polluted air
- Changeover contact
- Including duct mounting flange
- IP65 enclosure with quick locking screws

## Detectable gases

- |                                     |                       |
|-------------------------------------|-----------------------|
| • Cigarette smoke                   | • Hydrogen sulfide    |
| • Automobile exhaust                | • Isobutane           |
| • Breath air                        | • Methane             |
| • Carbon dioxide (CO <sub>2</sub> ) | • Methanol            |
| • Carbon monoxide (CO)              | • Methyl chloride     |
| • Solvent fumes                     | • Methylene chloride  |
| • Alcohol fumes                     | • Methy ether         |
| • Acetone                           | • Methyl acetate      |
| • Acrylonitrile                     | • Methyl ethyl ketone |
| • Ammonia                           | • n-Hexane 2          |
| • Benzene                           | • n-Petane            |
| • Chlorine                          | • Propane             |
| • Dimethyl amine                    | • R-11                |
| • Ethane                            | • R-12                |
| • Ethylene                          | • R-502               |
| • Ethylene oxide                    | • R-123               |
| • Formaldehyde                      | • Sulfur dioxide      |
| • Hydrogen                          | • Vinyl chloride      |

## Ordering

Type no.	Description
QDT 24	Duct Air Quality (VOC) transmitter 0-10 Vdc or 4-20 mA output (selectable) Changeover contact

## Technical data

<b>Sensor</b>	VOC sensor (metal oxide) with automatic self-calibration
<b>Measuring range</b>	0-100% air quality referred to calibration gas multi-range switching (selectable DIP switches) VOC sensibility: LOW - MEDIUM - HIGH
<b>Measuring accuracy</b>	+/- 20% EW of final value (referred to calibration gas)
<b>Power supply</b>	24 Vac/dc (+/-10%)
<b>Power consumption</b>	< 1.5 W at 24 Vdc typical < 2.9 VA at 24 Vac typical peak current 200 mA
<b>Output(s)</b>	0-10 Vdc (0 V 0 clean air, 10 V contaminated air) or 4-20 mA (selectable switches) switch point adjustable from 0 to 100% output signal
<b>Service life</b>	> 60 months
<b>Gas exchange</b>	by diffusion
<b>Warm-up period</b>	approx 1 hour
<b>Response time</b>	approx 1 minute minimum flow rate 0.2-0.5 m/s
<b>Ambient temp.range</b>	-10 to +60°C
<b>Housing</b>	Plastic, material polyamide 30% glass-globe-reinforced with quick-locking screws, 72 x 64 x 37.4 mm
<b>Cable gland</b>	M 16 x 1.5, incl. strain relief, max inner dia. 10.4 mm
<b>Probe tube</b>	Poliamide (PA6) dia 20 mm, lenght 202.5 mm, with torsion protection
<b>Process connection</b>	by mounting plastic flange (including in the scoope of delivery)
<b>Protection type</b>	IP 65 (according to EN 60529) enclosure only
<b>Protection class</b>	III (according to EN 60730)
<b>Approval</b>	CE-conformity, electromagnetic compatibility according to EN 61326, EMC directive 2004/108/EC

## Description

The self-calibrating microprocessor-controlled duct air quality transmitter QDT 24 is used to determine the air quality on basis of a mixed gas sensor / VOC sensor (VOC = volatile organic compounds).

It is used for:

- Air quality measurement in offices, hotels, meeting rooms and convention centres, apartments, stores, and restaurants, etc.
- Quantitative evaluation of room air pollution with contaminating gases (cigarette smoke, body perspiration, exhaled breathing air, solvent vapours, emissions from building members and cleaning agents).
- Adjustable sensitivity regarding the maximum air contamination to be expected.
- For room ventilation as-needed, enabled by air changes only taking place when air is polluted while conserving energy at the same time.

Room air quality is understood as subjective air quality, felt by human beings with their olfactory organs.

As perception varies from person to person and therefore, air quality is assessed differently, a general definition of criteria for room air quality is not possible.

By linearising and high operating temperatures, the air quality sensor achieves marginal drift and good stability.

The sensor is automatically self-calibrating.

The air quality sensor does not trace the concentrations of individual gases, but assesses the mixed gas as such, i.e. gas concentrations are not measured selectively.

Therefore, it is not possible to specify gas concentrations by the unit ppm.

Detectable gases: mixed gas, vapours of alcohols, cigarette smoke, automobile exhaust gases, exhaled breathing air, combustion smoke (from wood, paper, plastics).

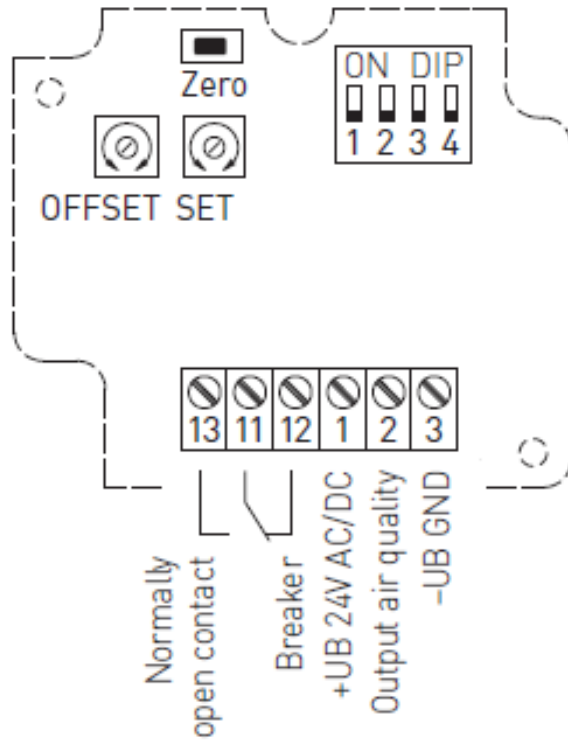
In addition, compounds of alkanes, alkenes, aromats, terpenes, halogenated hydrocarbons, esters, aldehydes and ketones as well as native VOCs such as terpenes and isoprene are ranking among volatile organic compounds VOC.

VOCs also evaporate from chemical products used in construction such as coating compounds, adhesives, or sealing compounds, furnishing objects, cleaning and care products, office chemicals and floor carpeting.

The sensor's service life is depending on the type of burden and gas concentration and is more than 60 months under normal load conditions.

The new design implies the alternative to choose between three sensibility ranges by means of DIP switches, comparable to three measuring ranges:  
LOW for low, MEDIUM (default, equivalent to the hitherto existing type of this device) for medium, and HIGH for high noxious gas contaminations.

### Electrical Connection



- 1 UB+ 24V AC/DC
- 2 Output air quality 0-10V / 4...20mA
- 3 UB- GND

- 12 Breaker changeover
- 11 Normally 24V/1A
- 13 open contact

**ATTENTION!**

There is no universally uniform standard, which could be applied to a VOC sensor (Volatile Organic Compounds). The monitored air contains a large number of substances to which the sensor responds, and gas mixtures are adjusted. Therefore this sensor does not act selectively, but rather reflects the overall air quality. In principle, one also cannot state precisely what is "bad air" or what is "good air" because this is a purely subjective sensation. The gas inter-exchange in the sensor element happens by diffusion. Depending on the changes to the concentration and the flow velocity of the air surrounding the sensor, the reaction of the device to the change of concentration may take place with a delay. It is essential to choose an installation location for the device in which the air stream flows around the sensor. Otherwise the gas exchange may be considerably delayed or prevented.

**Automatic calibration of carbon dioxide measurement (default)**

The automatic background logic is a self-calibrating mechanism that is suitable for use in applications in which the air quality regularly drops to fresh air level. This should typically occur during times in which the rooms are unoccupied. The sensor reaches its normal accuracy after 24 hours of continuous operation in an environment that has been subjected to a fresh air supply. The deviation errors remain minimal if the sensor is exposed to fresh air at least 4 times within 28 days. The ABC logic needs continuous operating cycles of more than 24 hours to operate correctly.

**Manual calibration of air quality**

After connecting the device, ensure continuous operation for at least 2 hours using air defined as "normal" air quality. Manual calibration can be started by pressing the DIP 3 -switch, irrespective of the button position. The calibration procedure is started by pressing the "ZERO" button (for approx. five seconds). This is signalled via the flashing LED. Then calibration takes place. During this phase, the LED is continuously active and a 600 second countdown runs.

**Putting in operation**

After switching on the device, a self-test and tempering period follows. This process takes around 30 - 50 minutes, depending on the ambient conditions. It is imperative to perform manual calibration once this process is completed. The ABC logic can then be optionally activated.

**Switching point setting**

A switching point between 10 % and 95 % of the measuring range can be selected using the SET potentiometer. A potential-free changeover contact is available as a switch output.

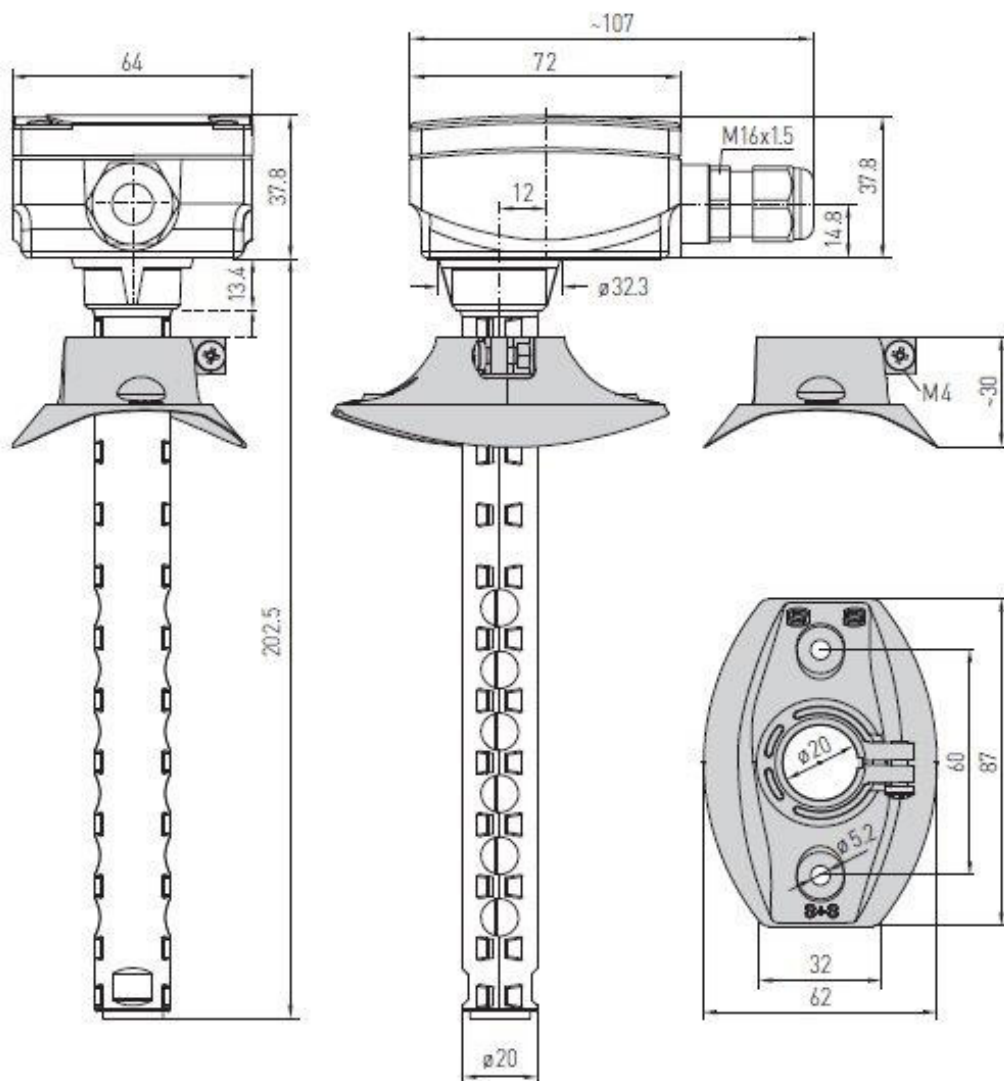
**Offset**

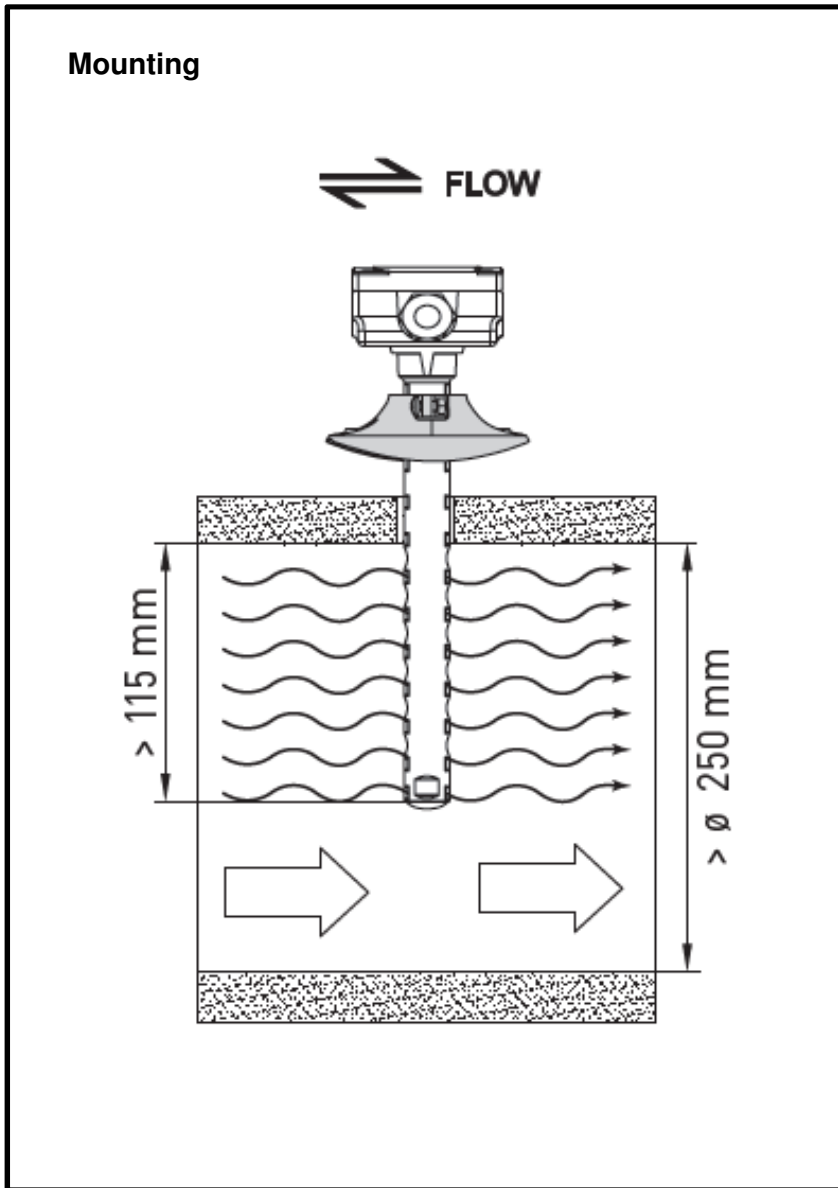
The VOC measured value can be adjusted subsequently using the offset potentiometer. The adjusting range is — 10 % of the measuring range.

**DIP switches**

VOC sensitivity	DIP 1	DIP 2
LOW	OFF	OFF
MEDIUM (default)	ON	OFF
HIGH	OFF	ON
VOC automatic zero point	DIP 3	
deactivated	OFF	
activated (default)	ON	
Output	DIP 4	
Voltage 0-10V (default)	OFF	
Current 4...20mA	ON	

**Dimensions**





This units should not be used as a safety device .

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