



Features

VOC transmitter

- Output 0-10 Vdc or 4-20 mA
- Range 0-2000 ppm
- Auto calibration

Options

- Humidity (rH) output 0-10 Vdc or 4-20 mA
- Humidity (rH) accuracy $\pm 2\%$ (20 to 80% rH)
- Temperature (T) output 0-10 Vdc or 4-20 mA
- Temperature (T) accuracy $\pm 0.3^{\circ}\text{K}$ ($+5^{\circ}\text{C}$ to $+60^{\circ}\text{C}$)
- Carbon Dioxide (CO₂) output 0-10 Vdc or or 4-20 mA
- Carbon Dioxide (CO₂) ranges
0-2000 ppm or 0-5000 ppm, jumper selectable
- Carbon Dioxide (CO₂) accuracy
0 to 2000 ppm ± 60 ppm $\pm 2\%$ f.s.
0 to 5000 ppm ± 150 ppm $\pm 2\%$ f.s.
- Carbon Dioxide (CO₂) sensor
NDIR Sensor with auto calibration
- Display
- DIP switch on pcb to select:
 - Relative Humidity,
 - Absolute Humidity,
 - Dew Point or
 - Enthalpy
- Passive temperature sensing element
PT1000, PT100, NTC 10K, NTC 20K, NTC 1.8K , NI1000 etc

Ordering / Types / Options on last page

**Technical data**General

Power supply	12(20)...34 V AC/DC
Connection	3-wired-connection
Connection clamp	Screw clamps, max 1.5 mm ²
Switching output (optional)	Relay 24 V / 1A, potential free changer
Power consumption	40...100 mA
Sensor setting up time	60 min
LED Display (optional)	green: 0...800 ppm orange: 800...1600 ppm red: 1600...2000 ppm

Output signal

QRN 420 (3-wired) Analogue output burden	4...20 mA 50...500 Ohm
QRN 010 (3-Leiter)	0...10 Vdc
Analog Output Load	10...100 kOhm

Casing

Dimensions	87,5x87,5x30 mm
Material	ABS, RAL 9010
Admissible environmental conditions	0...50 °C; 0...98% r.h.
Protection class	IP30

SensorsVOC

Type VOC	TVOC with auto calibration
Measuring range	0...2000 ppm

RH

Type r.h. / C°(optional)	capacitive
Measuring range	0...100 % r.h.
Tolerance	25°C: +/- 2% r.h. (20...80 r.h.) + 2% f.s.

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Type °C (optional)	PT1000 Class B, DIN EN 60751 (2-wired)
Measuring range	24 presetted ranges available
Tolerance	+/- 0.3 °K (5...60 °C) + 2.5% f.s.

Optional: Sensor °C passive, isolated	NTC1,8k /5k /10k /20k / Precon, KTY81-110, KTY81-210, LM235Z, DS18B20, Pt100, Pt1000 (K1, A, B, 1/3DIN), Ni1000, Ni1000TK5000
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Measuring range/tolerance °C passive	see resistance characteristics
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CO₂

Type CO ₂ (optional)	NDIR with Auto-calibration
Measuring range	0...2 000 / 0...5 000 ppm
Tolerance	0...2 000 ppm: +/- 60 ppm +/- 2% f.s. 0...5 000 ppm: +/- 150 ppm +/- 2% f.s.

Directive	
Electromagn. EMC	2014/30/EU
Low voltage LVD	2014/35/EU

Standards	EN 60730-1 2011 EN 60730-2-9 2011 EN14597
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Description

QRN is a wall mounted air quality (VOC) transmitter that can be combined with Humidity (rH) + Temperature (T) + Carbon Dioxide (CO₂) and can also be combined with display to show actual values.

The transmitter to be used in air conditioning, ventilation and clean room technology, interior rooms such as residential rooms, offices, hotels, technical rooms, meeting rooms and convention centres.

The transmitter can be connected with DDC/PLC controller or other automation system such BAS, BMS, BEMS etc

Notes:

The transmitter unit is designed for normal ambient conditions (ambient air), aggressive gases can destroy the sensor unit. The location has a decisive effect on the measurement accuracy. Windows (cold outer wall) or near door (drafts) should be avoided.

E-paper Display

The display versions is an E-Paper display that reflect light just as regular paper, therefore the display is a passive (non-luminating) display.

Thin, light, flexible, good contrast, low energy consumption and no light reflections.

Easy reading even with high insolation and ambient brightness.

E-Paper displays only need energy when the display contents change.

Optics and readability are significantly better than with monochrome LCD's or other bi-stable systems.

High readability independent of the reader's perspective.



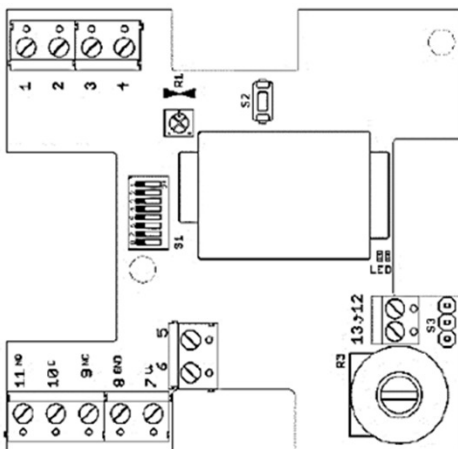
Measuring ranges DIP-switch (S1)

Temperature-Ranges	Range	1	2	3	4	5	6	Range	1	2	3	4	5	6
	-100... 50 °C	OFF	OFF	OFF	OFF	OFF	OFF		N/A	-10...120 °C	OFF	OFF	ON	ON
-50...0 °C	ON	OFF	OFF	OFF	OFF	OFF	N/A	0...40 °C	ON	OFF	ON	ON	OFF	N/A
-50...50 °C	OFF	ON	OFF	OFF	OFF	OFF	N/A	0...50 °C	OFF	ON	ON	ON	OFF	N/A
-50... 150 °C	ON	ON	OFF	OFF	OFF	OFF	N/A	0...70 °C	ON	ON	ON	ON	OFF	N/A
-30 ... 20 °C	OFF	OFF	ON	OFF	OFF	OFF	N/A	0...100 °C	OFF	OFF	OFF	OFF	ON	N/A
-30...60 °C	ON	OFF	ON	OFF	OFF	OFF	N/A	0...150 °C	ON	OFF	OFF	OFF	ON	N/A
-30...70 °C	OFF	ON	ON	OFF	OFF	OFF	N/A	0...160 °C	OFF	ON	OFF	OFF	ON	N/A
-20...50 °C	ON	ON	ON	OFF	OFF	OFF	N/A	0...200 °C	ON	ON	OFF	OFF	ON	N/A
-20...80 °C	OFF	OFF	OFF	ON	OFF	OFF	N/A	0...250 °C	OFF	OFF	ON	OFF	ON	N/A
-20...120 °C	ON	OFF	OFF	ON	OFF	OFF	N/A	0...400 °C	ON	OFF	ON	OFF	ON	N/A
-20...150 °C	OFF	ON	OFF	ON	OFF	OFF	N/A	0...600 °C	OFF	ON	ON	OFF	ON	N/A
-10...15 °C	ON	ON	OFF	ON	OFF	OFF	N/A	10...35 °C	ON	ON	ON	OFF	ON	N/A

Temperature-ranges	Range	1	2	Humidity-Ranges	Range	3	4	5	6	Setting CO ₂ -Ranges	Setting	7	8
	0°C ... +50°C	OFF	OFF		Relative humidity				0 % ... 100%			Range CO ₂	
0°C ... +100°C	ON	OFF	Absolute humidity				0 g/m ³ ... 30g/m ³			0... 2000 ppm			
-20°C ... +80°C	OFF	ON	Mix ratio				0 g/m ³ ... 50g/m ³			0... 5000 ppm			
-30°C ... +70°C	ON	ON	Dew point				0 g/m ³ ... 80g/m ³			Auto-Calibration			
			Enthalpy				0 g/kg ... 30g/kg			OFF			ON
			0 g/kg ... 50g/kg				0 g/kg ... 80g/kg			ON			OFF
			0 g/kg ... 80g/kg										
			0°C ... +50°C										
			-50°C ... +100°C										
			-20°C ... +80°C										
			0 kJ/kg ... 85kJ/kg										

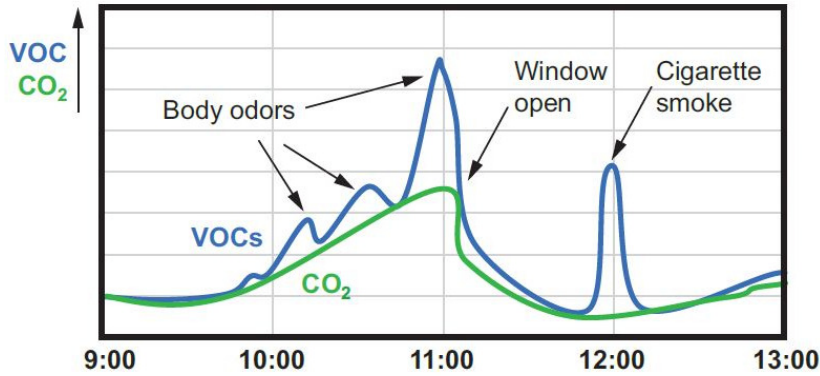
Version without CO₂ output DIP 7 ... 8 are N/A

Electrical connection

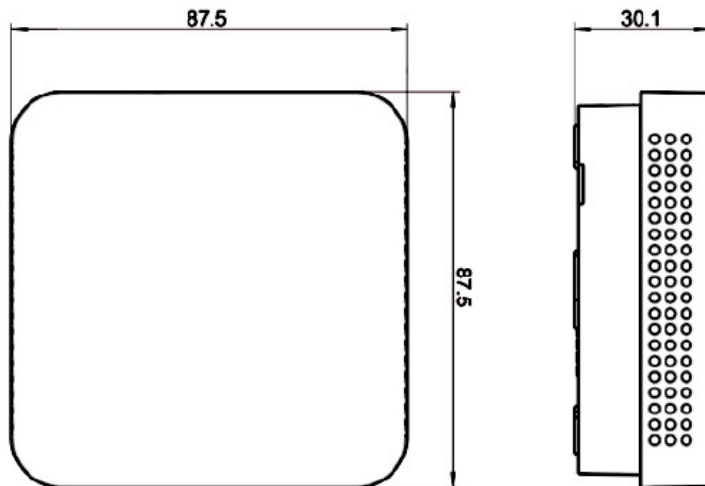


Electrical connection	(0-10 V)			(4-20 mA)		
	Pin	CO ₂	CO ₂ /°C	CO ₂ /°C/rf	CO ₂ /°C	CO ₂
1	ppm	temp	temp	-	-	-
2	(VOC)	ppm	humidity	-	-	-
3	-	(VOC)	ppm	temp	ppm	humidity
4	-	-	(VOC)	ppm	(VOC)	ppm
5	(passive poti)					
6	(passive poti)					
7	V+					
8	GND					
9	(relay NC)					
10	(relay C)					
11	(relay NO)					
12	(passive sensor)					
13	(passive sensor)					
R1	temp. Adjustment					
S3	polarity R3					
S2	CO ₂ Manual adjustment to 400 ppm					

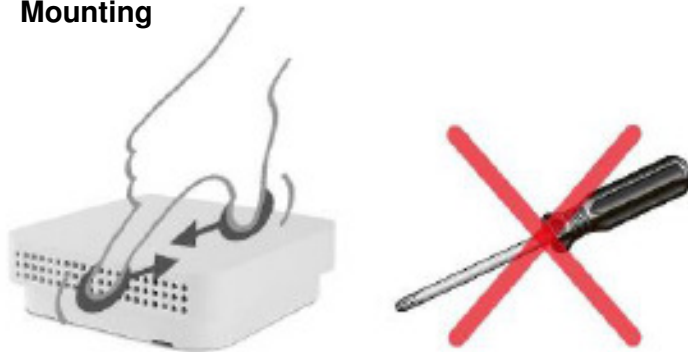
Measuring behaviour



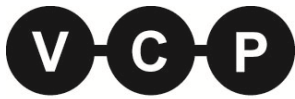
Dimensions



Mounting



The convection must be aligned at the bottom to ensure a flow of air up
The sensor should always be mounted on the opposite wall of the radiator.
Ideal mounting height of 1.5 m above the floor.



Ordering

<u>Type</u>	<u>Description</u>
QRN 010	Air Quality (VOC) transmitter, 0-10 Vdc, 0-2000 ppm
QRN 420	Air Quality (VOC) transmitter, 4-20 mA, 0-2000 ppm

Options

T for Temperatur

TH for Temperature and Humidity

CD for Carbon Dioxide

D for Display

Passive

Sensor PT100, PT100 1/3 DIN, PT1000, PT1000 1/3 DIN,
NI1000, NI1000/TK5000, NTC 1.8K, NTC 5K, NTC 10K, NTC 20K, KTY81-210

Example:

QRN 010 THCD D PT1000

Air Quality (VOC) transmitter with Temperature, Humidity and Carbon Dioxide 0-10 Vdc outputs and with Display and with PT1000 sensing element.