



FS4083

Multi-sensor measuring device room for CO₂, VOC, temperature and humidity, active output (0-10 V)

Measuring size: CO₂, VOC, humidity, temperature

Output: 0-10 V

Highlights: modern housing design, optional LCD-Display



Description

Depending on the device version, the multi-sensor measuring device records the measured variables CO₂ (0-2000/5000/10000 ppm), air quality VOC (low/med/high), relative humidity (0-100% RH) and temperature (0...+50°C). The transmitter converts the measured values into a standardized, analog output signal 0-10 V.

As an option, the measuring device has a backlit display or LED traffic light and potential-free changeover contact. The CO₂ concentration is visualized via the LED traffic light (green/yellow/red). The version with a backlit LCD display shows the measured values and min/max values of CO₂, VOC, relative humidity and temperature.

The switching function of the changeover contact can be defined to one of the measured variables using a DIP switch and the switching threshold can be set using a potentiometer.

The CO₂ concentration is measured using a non-dispersive infrared sensor (NDIR). There are 3 different CO₂ scales 0-2000 ppm, 0-5000 ppm, 0-10000 ppm to choose from. The air quality is measured by a VOC sensor and detects the pollution of the ambient air by volatile organic substances such as breathing air, cigarette smoke, body vapours, material emissions, etc. The device has the setting options "low", "medium" or "high" for VOC sensitivity ". The humidity and temperature are measured by a digital sensor, which guarantees a highly accurate and long-term stable measurement result. 16 scalings are available as temperature output. The humidity output signal can be determined from the four measured variables% r.h., g / m³, g / kg and dew point temperature.

The measuring device carries out an automatic calibration for CO₂ and VOC at regular intervals, which ensures long-term stable measurement. This can be deactivated if necessary or performed manually on the device at any time.

In addition, the measuring device has a heating function for sensor protection in the high humidity range of 95 ... 99% r.h. If the relative humidity exceeds the threshold value set ex-works for a certain period of time the heating function is activated. The sensor is heated for a limited time, thus dried and protected from condensation. During the heating and subsequent temperature compensation phase, the output signal is kept stable at the last measured value before the protective function was activated.

The modern room housing has a quick-release fastener, extra-large ventilation slots, thermal decoupling and much



more. The multi-sensor measuring device is ideally suited for use in workplaces, schools, living rooms, medical facilities.

Technical Specifications

Measurement range CO2	0-10000 ppm, scales: 0-2000/5000/10000 ppm
Measurement range r.H.	0-100% r.H.
Measurement range abs. humidity	0-50 g/m ³ , 0-80 g/m ³ (calculated) selectable by DIP switch
Measurement range air fuel ratio	0-50 g/kg, 0-80 g/kg (calculated) selectable by DIP switch
Measurement range dew point	-20...+50°C DP, -20...+80°C DP, 0...+50°C DP (calculated) selectable by DIP switch
Measurement range temp.	0...+50°C
Measurement range VOC	0-100% (good / bad air quality, referring to the calibration gas)
Accuracy	CO2: 0-2000 ppm: ±50 ppm + 2% f. mv, 0-5000 ppm: ±50 ppm + 3% f. mv, else: ±100 ppm + 5% f. mv; VOC: ±15% FS; (20°C, 1013 mbar, Auto-Calibration ON), Humidity: ±3% r.h. (30-70% r.h., else ±5% r.h., at 20°C), Temperature: ±0,5 K
Temperature dependency	CO2: ±5 ppm / K, Humidity: ±0,02% r.F. / K, Temperature: ±0,05°C / 10 K
Pressure dependency	CO2: 0,16% f. mv/hPa
Running-in time	10 min
Response time (t90)	< 5 min
Long term stability	±1% FS/year
Sensor	CO2: nondispersive infrared sensor (NDIR), Humidity/Temperature: combined electronic sensor, VOC: metal oxide sensor
Sensor protection	mounted inside housing
Supply voltage analog 0-10 V	24 V AC/DC (±5%)
Current consumption	Ø 100 mA
Analogue output 0-10 V	3-wire connection
Alarm output	1 x potential-free change-over contact, 48 V, 1 A
Switching Hysteresis Relay	2% FS (without Display), 0,5...5% FS adjustable (with Display)
Electrical connection	screw terminals max. 1,5 mm ²
Housing	ABS polyman, colour signal white like RAL 9003
Cable gland	on the back or housing side (predetermined breaking point)
Display	traffic light display for CO2 with 3 LEDs (green/yellow/red), optional LCD display with backlight on/off/auto
Dimensions	Housing: L 82 x W 82 x H 25 mm
Protection type	IP30, IP20 (with display)
Protection class	III
Working range r.H.	0...98% r.H. in contaminant-free, non-condensing air
Working temperature	0...+50°C
Storage temperature	-20...+50°C
Initial operation	After switch-on of the device follows a self-test and the tempering, which takes ca. 10 minutes depending on the environmental conditions. At this time the analogue output drifts from the actual measurement value.



Automatic calibration	<p>The automatic CO₂/VOC calibration takes place every 7 days, this compensates for any drifts and achieves excellent long-term stability. To ensure this function, the device must be supplied with power for at least 7 days without interruption and ventilated once with fresh air (CO₂ 300...400 ppm) for approx. 10 minutes within this period.</p> <p>For the CO₂ calibration, the device saves the minimum CO₂ value measured during this period internally. After 7 days, this minimum value is normalized to 400 ppm CO₂ and the output signal corrected accordingly. The maximum correction is limited to half of the determined drift. If the measured value falls below approx. 300 ppm, the calibration is initialized to 400 ppm.</p> <p>The automatic calibration can be deactivated and performed manually if necessary.</p>
Manual calibration	<p>The manual CO₂ calibration of the output signal to 400 ppm (zero point) is started by pressing the button on the circuit board (hold it down for approx. 5 seconds until the LED flashes). Before that, continuous operation of min. 10 minutes in fresh air. The LED is deactivated after successful calibration.</p> <p>The manual VOC calibration of the output signal to 1V (zero point) is started by pressing the button on the circuit board (hold down for approx. 5 seconds until the LED flashes). Before that, continuous operation of min. 2 hours with air defined as normal air quality. The LED is deactivated after successful calibration.</p>
Installation	on-wall or on flush-mounted box
Approvals	CE, EAC, RoHS

Variants

Article Number					
CO ₂	VOC	Humidity	Temperature	Output	Equipment
FS4083-U-A2A4H1T1-6L					
0-10000 ppm	0-100%	0-100% r.H.	0...+50°C	4 x 0-10 V	6 LED traffic lights
FS4083-U-A2A4H1T1-6LR					
0-10000 ppm	0-100%	0-100% r.H.	0...+50°C	4 x 0-10 V	6 LED traffic lights, Relay
FS4083-U-A2A4H1T1-D					
0-10000 ppm	0-100%	0-100% r.H.	0...+50°C	4 x 0-10 V	Display
FS4083-U-A2A4H1T1-DR					
0-10000 ppm	0-100%	0-100% r.H.	0...+50°C	4 x 0-10 V	Display, Relay
FS4083-U-A2A4H1T1-R					
0-10000 ppm	0-100%	0-100% r.H.	0...+50°C	4 x 0-10 V	Relay
FS4083-U-A2A4H1T1-X					
0-10000 ppm	0-100%	0-100% r.H.	0...+50°C	4 x 0-10 V	-
FS4083-U-A2H1T1-6L					
0-10000 ppm	-	0-100% r.H.	0...+50°C	3 x 0-10 V	6 LED traffic lights



Article Number					
CO2	VOC	Humidity	Temperature	Output	Equipment
FS4083-U-A2H1T1-6LR					
0-10000 ppm	-	0-100% r.H.	0...+50°C	3 x 0-10 V	6 LED traffic lights, Relay
FS4083-U-A2H1T1-D					
0-10000 ppm	-	0-100% r.H.	0...+50°C	3 x 0-10 V	Display
FS4083-U-A2H1T1-DR					
0-10000 ppm	-	0-100% r.H.	0...+50°C	3 x 0-10 V	Display, Relay
FS4083-U-A2H1T1-R					
0-10000 ppm	-	0-100% r.H.	0...+50°C	3 x 0-10 V	Relay
FS4083-U-A2H1T1-X					
0-10000 ppm	-	0-100% r.H.	0...+50°C	3 x 0-10 V	-
FS4083-U-A4H1T1-6L					
-	0-100%	0-100% r.H.	0...+50°C	3 x 0-10 V	6 LED traffic lights
FS4083-U-A4H1T1-6LR					
-	0-100%	0-100% r.H.	0...+50°C	3 x 0-10 V	6 LED traffic lights, Relay
FS4083-U-A4H1T1-D					
-	0-100%	0-100% r.H.	0...+50°C	3 x 0-10 V	Display
FS4083-U-A4H1T1-DR					
-	0-100%	0-100% r.H.	0...+50°C	3 x 0-10 V	Display, Relay
FS4083-U-A4H1T1-R					
-	0-100%	0-100% r.H.	0...+50°C	3 x 0-10 V	Relay
FS4083-U-A4H1T1-X					
-	0-100%	0-100% r.H.	0...+50°C	3 x 0-10 V	-



Accessories



FS9510

Table stand for room housing



Dimensional Drawing

