FuehlerSysteme eNET International
Die Marke für Sensorik

FS1320

Air quality transducer duct for CO2, VOC, humidity and temperature, digital output

Measuring size: CO2, VOC, humidity, temperature
Output: Modbus RTU, Relay
Highlights: easy to install with included mounting flange

MADE IN GERMANY   EAC   CE   RoHS COMPLIANT

Description

The air quality transducer FS1320 registers CO2, VOC, humidity and temperature. The measuring transducer converts the measured values into a digital output signal.

In the register the switching threshold, hysteresis, offset value etc can be specified. A zero point adjustment can be performed using a command.

The air quality sensor performs an automatic recalibration at regular interval, thus ensuring a long-term stable CO2 measurement.

The manual calibration to 400pm (""fresh air"") can be done by entering a register or by pressing the display buttons. Before doing this, ensure continuous operation of at least 10 minutes in fresh air.

As special equipment a potential-free alternating contact and/or a backlit display are available The contents of the display can be rotated in steps of 90° by using a command.

As special functions a series of defined measured values from other bus-participants (also cross-manufacturers) can be shown in the display. To display measured values from other bus-participants these are entered into the corresponding register by the bus-Master. The optional alternating contact can be configured for measured values from other bus-participants.

The configuration of address, transmission mode/speed, terminating resistor and master/slave function of the bus-devices can easily be done using the innovative DIP switch technology. Thus devices can quickly and easily integrated into the system and later parameterised via the master.

The bus-devices can even be reset to the works settings during operation of the master. Thus the basic functionality of the device is recreated in a matter of seconds. This can be necessary in the event of incorrect parameterisations of, e.g. offset, switching threshold, display modes etc..

By means of the FS master/slave topology autarkic nodes without additional SPS master can be installed within the device series. Hereby a bus-device assumes the master function in the node. This requests the measured values from other bus-participants, automatically enters these into the corresponding register and shows them in the internal display. Furthermore the master can evaluate and operate additional actuators in the device series (analogue in- and outputs, relay station).

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	0-80 g/m³ (calculated)
Measurement range air fuel ratio	0-80 g/kg (calculated)
Measurement range dew point	-20...+80°C DP (calculated)
Measurement range temp.	-30...+100°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, 2000-5000 ppm: ±50 ppm + 3% f. mv, > 5000 ppm: ±100 ppm + 5% f. mv (at 20°C, 1013 mbar, auto-calibration ON)
Accuracy humidity	±3% r.H. (30-70% r.H., else ±5% r.H., at 20°C)
Accuracy temperature	±0,3 K (10...40°C, else ±0,5 K),
Accuracy voc	±15% FS
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	CO2: 10 min, Humidity: 1 min, Temperature: 1 min, VOC: 1 h
Response time (t90)	< 5 min
Long term stability	CO2: ±1% FS/year, Humidity: ±1%/year, VOC: ±10% FS/year
Offset	can be entered in the register
Sensor	CO2: nondispersive infrared sensor (NDIR), Humidity/Temperature: combined electronic sensor, VOC: metal oxide sensor
Sensor protection	sinter filter
Supply voltage	24 V DC (±5%)
Current consumption	max. 100-200 mA, depending on the selected measurand and equipment
Digital output	Modbus RTU
Alarm output	1 x potential-free change-over contact, 48 V, 1 A
Switching Hysteresis Relay	can be entered in the register
Electrical connection	push-in terminal, no tools required, time-saving
Housing	Polycarbonate PC UL 94 V0 with hinge locks, color signal white similar to RAL 9003
Cable gland	PG11 high-strength cable gland with strain relief
Display	optional LCD display with backlight on/off/auto
Material	Protection tube: stainless steel V2A
Dimensions	Housing: L 89 x W 80 x H 47 mm, Protection tube: Ø 25 x 190 mm
Protection type	Housing/electronic: IP65, Sensor: IP30
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 it runs a self-test and the zero-point calibration. Depending on the ambient conditions, this process takes approx. 1 min., during this time, the digitally output value deviates from the actual value.

Automatic calibration	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. 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. The automatic calibration can be deactivated and performed manually if necessary.
Manual calibration	Manual calibration to 400pm ("fresh air") can be done by register entry or by pressing the display buttons. Prior to this, continuous operation of at least 10 minutes in fresh air must be ensured.
Installation	mounting flange (in scope of delivery)
Approvals	CE, EAC, RoHS

Variants

Article Number					
CO2	VOC	Humidity	Temperature	Output	Equipment
FS1320-MBR-A2-D					
0-10000 ppm	-	-	-	Modbus RTU	Display
FS1320-MBR-A2-DR					
0-10000 ppm	-	-	-	Modbus RTU	Display, Relay
FS1320-MBR-A2-R					
0-10000 ppm	-	-	-	Modbus RTU	Relay
FS1320-MBR-A2-X					
0-10000 ppm	-	-	-	Modbus RTU	-
FS1320-MBR-A2A4-D					
0-10000 ppm	0-100%	-	-	Modbus RTU	Display
FS1320-MBR-A2A4-DR					
0-10000 ppm	0-100%	-	-	Modbus RTU	Display, Relay
FS1320-MBR-A2A4-R					
0-10000 ppm	0-100%	-	-	Modbus RTU	Relay
FS1320-MBR-A2A4-X					
0-10000 ppm	0-100%	-	-	Modbus RTU	-
FS1320-MBR-A2A4H1T1-D					
0-10000 ppm	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	Display

Article Number					
CO2	VOC	Humidity	Temperature	Output	Equipment

FS1320-MBR-A2A4H1T1-DR					
0-10000 ppm	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	Display, Relay

FS1320-MBR-A2A4H1T1-R					
0-10000 ppm	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	Relay

FS1320-MBR-A2A4H1T1-X					
0-10000 ppm	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	-

FS1320-MBR-A2H1T1-D					
0-10000 ppm	-	0-100% r.H.	-30...+100°C	Modbus RTU	Display

FS1320-MBR-A2H1T1-DR					
0-10000 ppm	-	0-100% r.H.	-30...+100°C	Modbus RTU	Display, Relay

FS1320-MBR-A2H1T1-R					
0-10000 ppm	-	0-100% r.H.	-30...+100°C	Modbus RTU	Relay

FS1320-MBR-A2H1T1-X					
0-10000 ppm	-	0-100% r.H.	-30...+100°C	Modbus RTU	-

FS1320-MBR-A4-D					
-	0-100%	-	-	Modbus RTU	Display

FS1320-MBR-A4-DR					
-	0-100%	-	-	Modbus RTU	Display, Relay

FS1320-MBR-A4-R					
-	0-100%	-	-	Modbus RTU	Relay

FS1320-MBR-A4-X					
-	0-100%	-	-	Modbus RTU	-

FS1320-MBR-A4H1T1-D					
-	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	Display

FS1320-MBR-A4H1T1-DR					
-	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	Display, Relay

FS1320-MBR-A4H1T1-R					
-	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	Relay

FS1320-MBR-A4H1T1-X					
-	0-100%	0-100% r.H.	-30...+100°C	Modbus RTU	-

Dimensional Drawing

PG11 / SW22

Ø 4,25

80

65

63

Ø 6,5

16,5

63

25,5

52

80

47

190

Ø 25

30

89

14,5

6 x 17