



FS3101

Humidity / temperature transducer, protection tube 190mm

Measuring size: temperature, dew point temperature, rel. humidity, abs. humidity, mixing ratio

Output: 2 x 0-10 V, 2 x 4-20 mA, Relay

Highlights: heating function for condensation protection, 190mm protective tube, easy-to-install surface-mounted housing



Description

The humidity and temperature transducer registers the temperature and, optionally, the relative humidity, absolute humidity, the mixing ratio or the dew point of the air in the environment and converts this measured value into a linear output signal 0-10 V respectively 4-20 mA.

The transducer has a 190mm long protective tube.

As an option the device has a potential-free changeover contact and a backlit display.

The changeover contact can be defined for one of the two measured values.

The display content can be rotated in 90° steps using a menu and the measured value, the switching threshold set, the state of the respective relay, the MIN/MAX measured values for the selected intervals (1 h / 6 h / 12 h / 24 h) etc. can be read out. The value measured in addition to the temperature can be selected from the 4 parameters % r.h., g/m³, g/kg, dp can easily be selected per DIP switch.

In addition the humidity measuring device has a heating function to protect the sensor at high humidity 95...99% r.h.. If the relative humidity exceeds the threshold value set ex-works for more than 10 minutes the heating function is activated. The sensor is heated for a limited time and thus dried and protected against condensation. During the heating and the subsequent temperature balancing phase the output signal is kept stable at the last measured value before the heating function was triggered.

The humidity and temperature sensor is very well protected against contamination by a screwable sintered filter and can, if required, be finely calibrated in situ using an offset controller.



Technical Specifications

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.	-20...+80°C
Scales	-20...+80°C, -0...+50°C, -50...+50°C, 0...+100°C selectable by DIP switch
Accuracy humidity	±3% r.H. (30-70% r.H., else ±5% r.H., at 20°C); Version C: ±2% r.H. (30-70% r.H., else ±3% r.H. at 20°C)
Accuracy temperature	±0,5 K; Version C: ±0,3 K (10...40°C, else ±0,5 K)
Temperature dependency	±0,02% r.H. / K (voltage output), ±0,04% r.H. / K (current version); ±0,05°C / 10 K (voltage version), ±0,07°C / 10 K (current output)
Long term stability	±1%/year
Sensor	Combined electronic humidity and temperature sensor
Sensor protection	screwable stainless steel sinter filter, condensation protection by heating function in the range of 95...99% r.H.
Flow rate	< 2 m/s
Supply voltage analog 0-10 V	24 V AC/DC (±5%)
Supply voltage analog 4-20 mA	15...36 V DC (U _{min} = 15 V + R _{Load} *0,02A)
Current consumption at 0-10 V	typ. 10 mA, 30 mA peak current consumption for 50 ms at switching moment at option relay
Current consumption at 4-20 mA	max. 20 mA / output, 40 mA peak current consumption for 50 ms at switching moment at option relay
Analogue output 0-10 V	3-wire connection, load current < 0,1 mA
Analogue output 4-20 mA	2-wire connection (transmitter), max. R _{Load} (Ohm) = (+U _b - 15 V) / 0,02 A
Alarm output	1 x potential-free change-over contact, 48 V, 1 A
Switching Hysteresis Relay	2% of the selected scaling (without display), 0,5...5% of the selected scaling adjustable (with display)
Electrical connection	screw terminals max. 1,5 mm ²
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 16 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	Probe: -20...+80°C, Electronic: -20...+70°C
Storage temperature	-20...+50°C
Installation	screw fastening
Approvals	CE, EAC, RoHS



Variants

Article Number				
Humidity	Temperature	Accuracy	Output	Equipment
FS3101-I-H1T1-190-CD				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 4-20 mA	Display
FS3101-I-H1T1-190-CDR				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 4-20 mA	Display, Relay
FS3101-I-H1T1-190-CR				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 4-20 mA	Relay
FS3101-I-H1T1-190-CX				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 4-20 mA	-
FS3101-I-H1T1-190-D				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 4-20 mA	Display
FS3101-I-H1T1-190-DR				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 4-20 mA	Display, Relay
FS3101-I-H1T1-190-R				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 4-20 mA	Relay
FS3101-I-H1T1-190-X				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 4-20 mA	-
FS3101-U-H1T1-190-CD				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 0-10 V	Display
FS3101-U-H1T1-190-CDR				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 0-10 V	Display, Relay
FS3101-U-H1T1-190-CR				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 0-10 V	Relay
FS3101-U-H1T1-190-CX				
0-100% r.H.	-20...+80°C	±2% r.h., ±0,3 K	2 x 0-10 V	-
FS3101-U-H1T1-190-D				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 0-10 V	Display
FS3101-U-H1T1-190-DR				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 0-10 V	Display, Relay
FS3101-U-H1T1-190-R				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 0-10 V	Relay
FS3101-U-H1T1-190-X				
0-100% r.H.	-20...+80°C	±3% r.h., ±0,5 K	2 x 0-10 V	-



Accessories



SB/E
Snap-on mounting for DIN rails



SWS/A
Radiation and weather protection



Dimensional Drawing

