

Condensation-protected duct humidity and temperature sensor for "high humidity", relative/absolute humidity, mixture ratio, dew point, wet bulb temperature and temperature, incl. mounting flange, calibratable, with multi-range switching, with active and switching output

Condensation-protected ductsensor **HYGRASREG® KFTF-35** with active and switching output, housing made of impact-resistant plastic with quick-locking screws, cable gland, plastic sinter filter (replaceable), optionally with/without display, for detecting relative humidity (0...100 % RH) and temperature (4 switchable measuring ranges, max. 0...+100 °C) as well as for determining various parameters of humidity measurement technology. The measuring transducer converts the measured variables into a standard signal of 0-10V or 4...20 mA.

The unit is specially designed for use in the **high humidity range** (95...99 % RH). A long-term stable, **digital humidity and temperature sensor** is used. Overtemperature prevents or hinders dew formation on the humidity sensor. A second, separate temperature measuring element is used to determine the actual relative humidity of the ambient air. The following measured variables are calculated internally from these parameters and are retrievable via output **OUT3**: absolute humidity, mixing ratio, dew point and wet bulb temperature (can be changed via DIP switch).

The sensor is used in medical technology, refrigeration technology, control technology, air conditioning and clean room technology. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

**TECHNICAL DATA**

Power supply:	24 V AC/DC (± 10%)
Working resistance:	> 100 kOhm for U variant; 100...500 Ohm for I variant
Power consumption:	typically < 6W at 24 V DC, peak current 200 mA
Measured variables:	relative humidity [%RH], temperature [°C]
Parameters:	absolute humidity [g/m <sup>3</sup> ], mixture ratio [g/kg], dew point [°C], wet bulb temperature [°C]
Outputs:	3 active outputs (0-10V or 4...20 mA) 1 changeover contact
Sensor:	<b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability, with condensation protection through heating function (plus a second, separate temperature measuring element)
Sensor protection:	<b>plastic</b> sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional <b>metal</b> sinter filter, Ø 16 mm, L = 32 mm)

**HUMIDITY**

Measuring range, humidity:	0...100 % RH
Accuracy in humidity:	typically ± 3.0 % (30...70 % RH) at +25 °C, otherwise ± 3.5 % (deviations of alternative parameters result from deviations from humidity and temperature.)
Output humidity:	0-10V for U variant; 4...20 mA for I variant

**TEMPERATURE**

Temperature measuring range:	<b>multi-range switching with 4 switchable measuring ranges</b> (see table) 0...+50 °C (default); -20...+50 °C; -20...+80 °C; 0...+100 °C
Accuracy in temperature:	typically ± 0.5K at +25 °C
Temperature output:	0-10V for U variant; 4...20 mA for I variant
Long-term stability:	± 1 % per year
Response time (t90):	< 60 s
Warm-up time:	< 10 min
Electrical connection:	0.14 - 1.5 mm <sup>2</sup> , via terminal screws
Cable connection:	<b>cable gland</b> , plastic (M 16 x 1.5; with strain relief, exchangeable, max. inner diameter 10.4 mm)
Housing:	plastic, UV-resistant, material polyamide, 30 % glass-globe reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016), housing cover for display is transparent!
Housing dimensions:	126 x 90 x 50 mm (Tyr 2)
Protective tube:	<b>PLEUROFORM™</b> , material polyamide (PA6), with torsion protection, Ø 20 mm, NL = 235 mm (optionally 100 mm), v <sub>max</sub> = 30 m/s (air)
Process connection:	via mounting flange made of plastic (included in the scope of delivery)
Ambient temperature:	storage -20...+50 °C; operation -20...+50 °C
Permitted humidity:	< 99 % RH, non-precipitating air free of harmful substances
Protection class:	III (according to EN 60 730)
Protection type:	<b>IP 65</b> (according to EN 60 529) housing, IP 20 sensor technology
Standards:	CE-conformity according to EMC Directive 2014 / 30 / EU
Optional:	<b>Display with illumination</b> , three-line, cutout approx. 70 x 40 mm (W x H), to display the ACTUAL humidity and ACTUAL temperature and/or selectable parameters

**FUNCTION**

A constant overtemperature of the humidity sensor makes its dewing considerably more difficult or prevents its formation within the limits of the system. A faster reaction speed is achieved in the case of humidity fluctuations, even in the range above 95 % RH. The sensor (combined humidity and temperature measuring element) is heated approx. 3K above the ambient temperature. The actual relative humidity is determined from the measured relative humidity at overtemperature, the chip temperature of the sensor and the ambient temperature (via a second, separate temperature measuring element).

**SF-K**

Plastic sinter filter (standard)



**SF-M**

Metal sinter filter (optional)



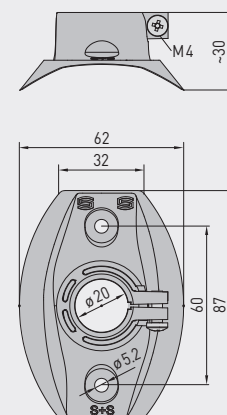
**MFT-20-K**

Mounting flange, plastic



Dimensional drawing [mm]

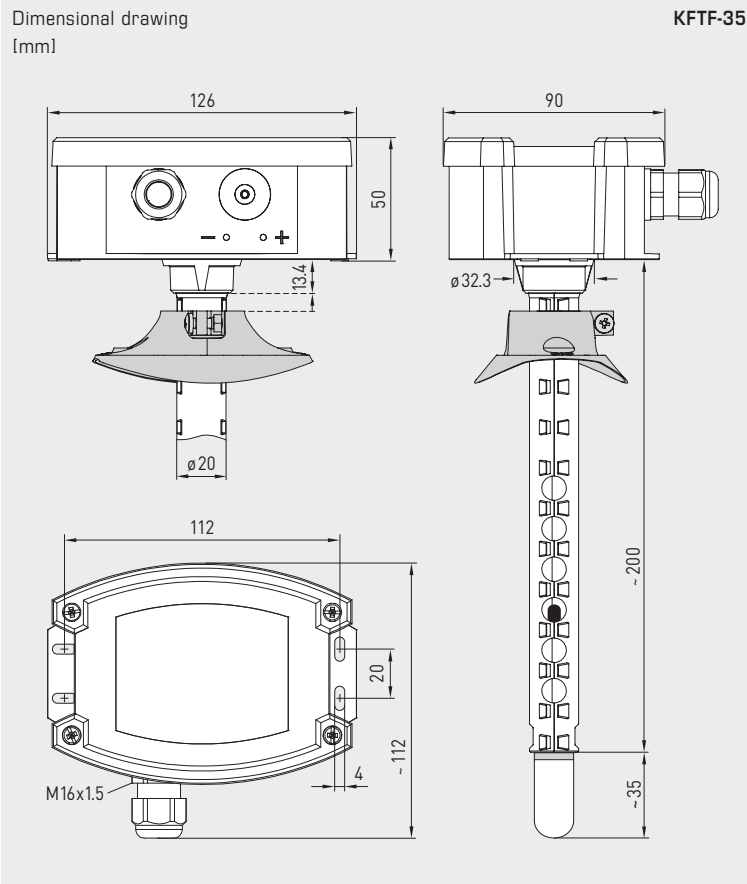
**MFT-20-K**





S+S REGELTECHNIK

Condensation-protected duct humidity and temperature sensor for "high humidity", relative/absolute humidity, mixture ratio, dew point, wet bulb temperature and temperature, incl. mounting flange, calibratable, with multi-range switching, with active and switching output



Temperature table MR: -20...+80 °C

°C	U <sub>A</sub> [V]	I <sub>A</sub> [mA]
-20	0.0	4.0
-15	0.5	4.8
-10	1.0	5.6
-5	1.5	6.4
0	2.0	7.2
5	2.5	8.0
10	3.0	8.8
15	3.5	9.6
20	4.0	10.4
25	4.5	11.2
30	5.0	12.0
35	5.5	12.8
40	6.0	13.6
45	6.5	14.4
50	7.0	15.2
55	7.5	16.0
60	8.0	16.8
65	8.5	17.6
70	9.0	18.4
75	9.5	19.2
80	10.0	20.0

Temperature table MR: -20...+50 °C

°C	U <sub>A</sub> [V]	I <sub>A</sub> [mA]
-20	0.0	4.0
-15	0.7	5.1
-10	1.4	6.3
-5	2.1	7.4
0	2.9	8.6
5	3.6	9.7
10	4.3	10.9
15	5.0	12.0
20	5.7	13.1
25	6.4	14.3
30	7.1	15.4
35	7.9	16.6
40	8.6	17.7
45	9.3	18.9
50	10.0	20.0

Temperature table MR: 0...+50 °C

°C	U <sub>A</sub> [V]	I <sub>A</sub> [mA]
0	0.0	4.0
5	1.0	5.6
10	2.0	7.2
15	3.0	8.8
20	4.0	10.4
25	5.0	12.0
30	6.0	13.6
35	7.0	15.2
40	8.0	16.8
45	9.0	18.4
50	10.0	20.0

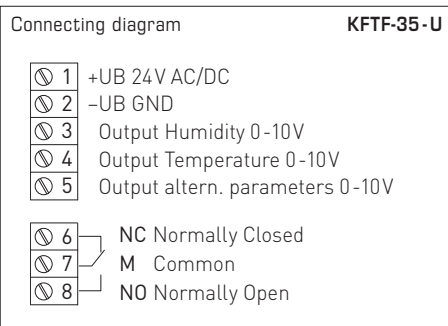
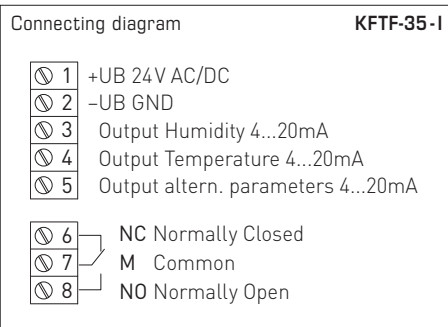
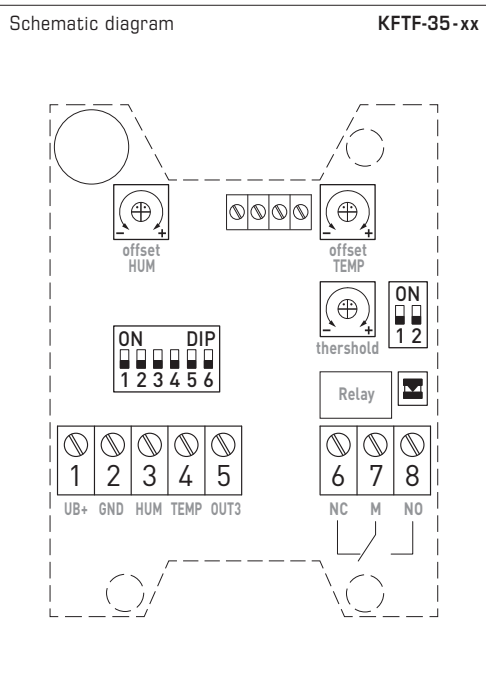
Temperature table MR: 0...+100 °C

°C	U <sub>A</sub> [V]	I <sub>A</sub> [mA]
0	0.0	4.0
5	0.5	4.8
10	1.0	5.6
15	1.5	6.4
20	2.0	7.2
25	2.5	8.0
30	3.0	8.8
35	3.5	9.6
40	4.0	10.4
45	4.5	11.2
50	5.0	12.0
55	5.5	12.8
60	6.0	13.6
65	6.5	14.4
70	7.0	15.2
75	7.5	16.0
80	8.0	16.8
85	8.5	17.6
90	9.0	18.4
95	9.5	19.2
100	10.0	20.0

Humidity table MR: 0...100 %RH

% RH	U <sub>A</sub> [V]	I <sub>A</sub> [mA]
0	0.0	4.0
5	0.5	4.8
10	1.0	5.6
15	1.5	6.4
20	2.0	7.2
25	2.5	8.0
30	3.0	8.8
35	3.5	9.6
40	4.0	10.4
45	4.5	11.2
50	5.0	12.0
55	5.5	12.8
60	6.0	13.6
65	6.5	14.4
70	7.0	15.2
75	7.5	16.0
80	8.0	16.8
85	8.5	17.6
90	9.0	18.4
95	9.5	19.2
100	10.0	20.0

Condensation-protected duct humidity and temperature sensor for "high humidity", relative/absolute humidity, mixture ratio, dew point, wet bulb temperature and temperature, incl. mounting flange, calibratable, with multi-range switching, with active and switching output



Measuring ranges temperature	DIP 1	DIP 2
0...+50 °C (default)	OFF	OFF
-20...+50 °C	ON	OFF
-20...+80 °C	OFF	ON
0...+100 °C	ON	ON

Relay function assignment	DIP 1	DIP 2
inactive (default)	OFF	OFF
Humidity	ON	OFF
Temperature	OFF	ON
alternative parameters	ON	ON

Measuring ranges alternative parameters	DIP 3	DIP 4	DIP 5
(A) 0...20 g/m <sup>3</sup> (default)	OFF	OFF	OFF
(A) 0...25 g/m <sup>3</sup>	ON	OFF	OFF
(R) 0...20 g/kg	OFF	ON	OFF
(R) 0...25 g/kg	ON	ON	OFF
(D) 0...+50 °C	OFF	OFF	ON
(D) -20...+50 °C	ON	OFF	ON
(W) -30...+30 °C	OFF	ON	ON
(W) -20...+50 °C	ON	ON	ON

(A) = absolute humidity [g/m<sup>3</sup>]  
 (R) = mixture ratio [g/kg]  
 (D) = dew point [°C]  
 (W) = wet bulb temperature [°C]

<b>Note:</b> For factory service only, it must be set to "OFF" during operation!	<b>DIP 6</b>
Operation (default)	<b>OFF</b>



S+S REGELTECHNIK

HYGRASREG® KFTF-35

Condensation-protected duct humidity and temperature sensor for "high humidity", relative/absolute humidity, mixture ratio, dew point, wet bulb temperature and temperature, incl. mounting flange, calibratable, with multi-range switching, with active and switching output



HYGRASREG® KFTF-35		Condensation-protected duct sensor for high humidity					
Type/ WG02	Measuring Range Humidity	Temperature	Output active	Output switching	Display	Item No.	Price
<b>KFTF-35-I</b>						<b>I variant</b>	
KFTF-35-I/W	<b>0...100%RH</b> 0...20 g/m <sup>3</sup> (A) 0...25 g/m <sup>3</sup> (A) 0...20 g/kg (R) 0...25 g/kg (R) 0...+50 °C (D) -20...+50 °C (D) -30...+30 °C (W) -20...+50 °C (W)	<b>0...+50 °C</b> -20...+50 °C -20...+80 °C 0...+100 °C	3x <b>4...20 mA</b>	1x Changeover contact	■	1201-814B-1000-000	<b>790,69 €</b>
KFTF-35-I/W LCD	(as above)	(as above)	3x <b>4...20 mA</b>	1x Changeover contact	■	1201-814B-1200-000	<b>903,63 €</b>
<b>KFTF-35-U</b>						<b>U variant</b>	
KFTF-35-U/W	(as above)	(as above)	3x <b>0-10V</b>	1x Changeover contact	■	1201-814A-1000-000	<b>790,69 €</b>
KFTF-35-U/W LCD	(as above)	(as above)	3x <b>0-10V</b>	1x Changeover contact	■	1201-814A-1200-000	<b>903,63 €</b>
Optional:	shortened protection tube <b>PLEUROFORM™</b> NL = 100 mm		on request				
<b>Note</b>	<b>Alternative parameters</b> are calculated internally from the measured variables, which are retrievable via the active output <b>OUT3</b> : absolute humidity, mixing ratio, dew point and wet bulb temperature (can be changed via DIP switch)						
<b>ACCESSORIES</b>							
<b>SF-M</b>	<b>Metal</b> sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel <b>V4A</b> (1.4404)					7000-0050-2200-100	<b>46,70 €</b>
for further information see see chapter Accessories!							