

Duct humidity and temperature sensors ( $\pm 2\%$  /  $\pm 3\%$ ), including mounting flange, calibratable, with multi-range switching and active/passive output

Quality product for HVAC sector, accuracy  $\pm 2\%$  or  $\pm 3\%$

Calibratable duct humidity/temperature sensors **HYGRASGARD® KFF/KFTF** ( $\pm 3\%$ ) or **KFF-20/KFTF-20** ( $\pm 2\%$ ), with plastic sinter filter (optional metal sinter filter), terminal box enclosure made of impact-resistant plastic, enclosure cover with quick-locking screws, **with/without optional display**. It measures the relative humidity and/or the temperature of the air and converts the measurands into a standard signal of 0-10V or 4...20mA. It has four switchable temperature ranges and is applied in non-aggressive dust-free atmospheres in refrigeration, air conditioning, ventilation and clean room technology. Relative humidity (in % r. H.) is the quotient of water vapour partial pressure divided by the saturation vapour pressure at the respective gas temperature. These measuring transducers are designed for exact detection of humidity. A digital long-term stable sensor is used as measuring element for humidity measurement. Fine adjustment by the user is possible.

#### TECHNICAL DATA

Power supply:	24 V AC ( $\pm 20\%$ ); 15...36V DC for U variant 15...36V DC for I variant, depending on working resistance, residual ripple stabilised $\pm 0.3V$
Working resistance:	$R_a(\text{ohm}) = (U_b - 14V) / 0.02A$ for I variant
Load resistance:	$R_L > 5k\Omega$ for U variant
Power consumption:	$< 1.1VA / 24V DC$ ; $< 2.2VA / 24V AC$
Sensors:	<b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability
Sensor protection:	<b>plastic sinter filter</b> , $\varnothing 16\text{ mm}$ , $L = 35\text{ mm}$ , exchangeable (optional <b>metal sinter filter</b> , $\varnothing 16\text{ mm}$ , $L = 32\text{ mm}$ )

#### HUMIDITY

Measuring range, humidity:	0...100% r. H. (output corresponding to 0 -10 V or 4...20 mA)
Permissible air humidity:	$< 95\%$ r. H., non-precipitating air
Deviation, humidity:	<b>KFF / KFTF: <math>\pm 3\%</math> r. H.</b> (20...80%) at $+20^\circ\text{C}$ , otherwise $\pm 5\%$ r. H. <b>KFF-20 / KFTF-20: <math>\pm 2\%</math> r. H.</b> (20...90%) at $+20^\circ\text{C}$ , otherwise $\pm 3\%$ r. H.
Output, humidity:	0 -10 V for U variant 4...20 mA for I variant, see load resistance diagram

#### TEMPERATURE

Measuring range, temperature:	<b>multi-range switching with 4 switchable measuring ranges</b> (see table) $-35...+35^\circ\text{C}$ ; $-35...+75^\circ\text{C}$ ; $0...+50^\circ\text{C}$ ; $0...+80^\circ\text{C}$ (output corresponding to 0 -10 V or 4...20 mA)
Ambient temperature:	storage $-35...+85^\circ\text{C}$ ; operation $-30...+75^\circ\text{C}$ , non-precipitating
Deviation, temperature:	$\pm 0.2K$ at $+25^\circ\text{C}$
Output, temperature:	0 -10V or 4...20 mA or Ohm value
Electrical connection:	2-, 3-, or 4-wire connection (see connecting diagram), 0.14 - 1.5 mm <sup>2</sup> , via terminal screws on circuit board
Enclosure:	plastic, material polyamide, 30% glass-globe-reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016) enclosure cover for display is transparent!
Enclosure dimensions:	<b>KFF / KFTF / KFF-20 / KFTF-20 without display:</b> 72 x 64 x 37.8 mm (Tyr 1) <b>KFF / KFTF with display:</b> 72 x 64 x 43.3 mm (Tyr 1) <b>KFF-20 / KFTF-20 with display:</b> 26 x 90 x 50 mm (Tyr 2)
Cable gland:	M16 x 1.5, including strain relief, exchangeable, max. inner diameter 10.4 mm
Protective tube:	<b>PLEUROFORM™</b> , material polyamide (PA6), with torsion protection $\varnothing 20\text{ mm}$ , $NL = 235\text{ mm}$ , $v_{\text{max}} = 30\text{ m/s}$ (air) (on request, optional <b>stainless steel</b> , $\varnothing 16\text{ mm}$ )
Process connection:	by mounting flange, plastic (included in the scope of delivery)
Long-term stability:	$\pm 1\%$ per year
Protection class:	III (according to EN 60730)
Protection type:	IP 65 (according to EN 60529) enclosure only!
Standards:	CE conformity, according to EMC directive 2014 / 30 / EU, according to EN 61326-1, according to EN 61326-2-3
Optional:	<b>display with illumination</b> , for displaying ACTUAL temperature and / or ACTUAL humidity <b>KFF / KFTF</b> (Tyr 1): two-line, cutout approx. 36 x 15 mm (W x H) <b>KFF-20 / KFTF-20</b> (Tyr 2): three-line, cutout approx. 70 x 40 mm (W x H)
ACCESSORIES:	see last chapter

#### SF-K

Plastic sinter filter (standard)



#### SF-M

Metal sinter filter (optional)



#### Protective tube stainless steel

(optional on request)

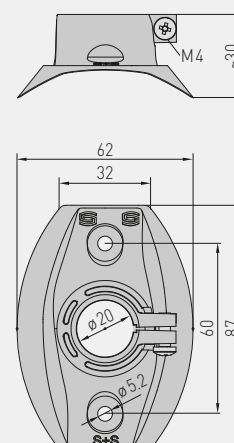
#### MFT-20-K

Mounting flange, plastic



Dimensional drawing

#### MFT-20-K





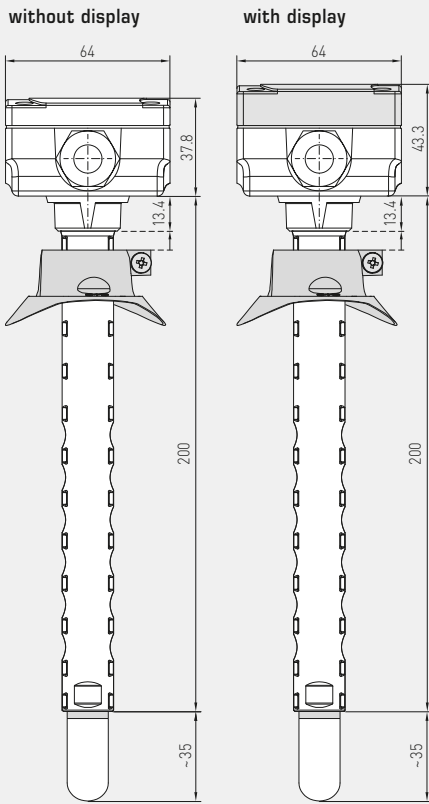
S+S REGELTECHNIK

# HYGRASGARD® KFF /KFTF HYGRASGARD® KFF-20 /KFTF-20

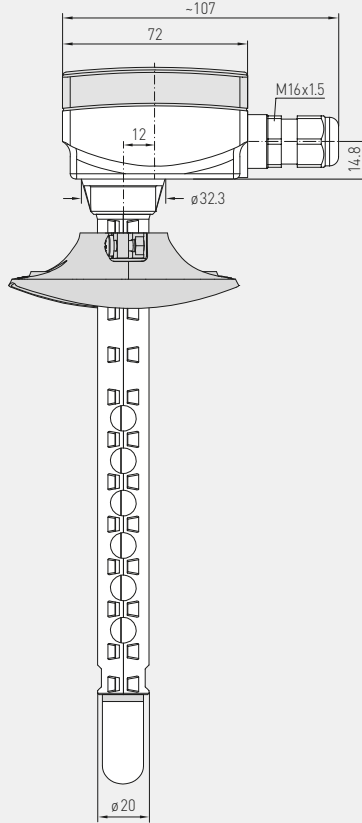
Duct humidity and temperature sensors ( $\pm 2\%$  /  $\pm 3\%$ ), including mounting flange, calibratable, with multi-range switching and active/passive output



Dimensional drawing



KFF /KFTF with/without display  
KFF-20 /KFTF-20 without display



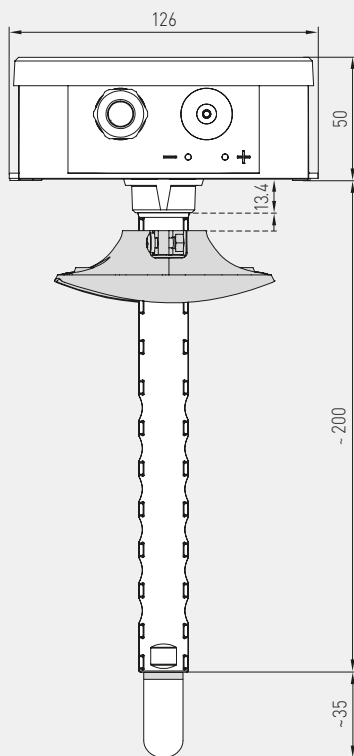
KFF /KFTF ( $\pm 3\%$ )  
KFF-20 /KFTF-20 ( $\pm 2\%$ )  
with plastic sinter filter  
(standard)



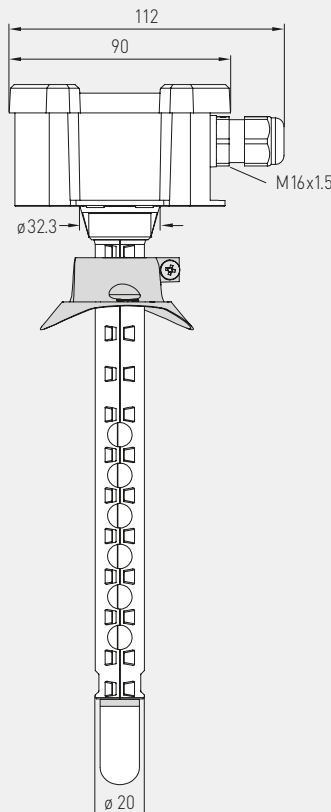
KFF /KFTF ( $\pm 3\%$ )  
with display and  
plastic sinter filter  
(standard)



Dimensional drawing



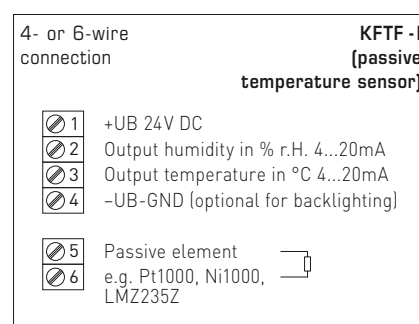
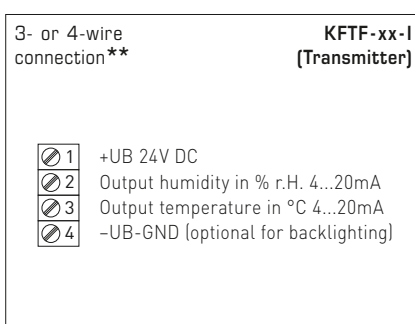
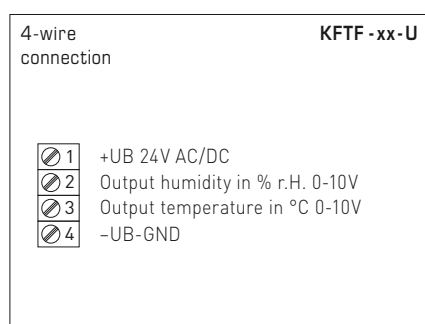
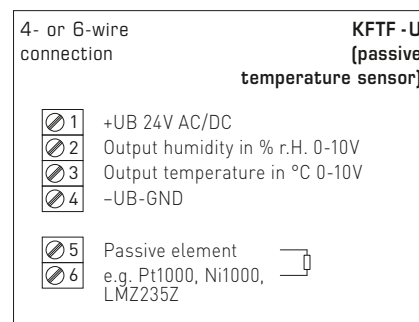
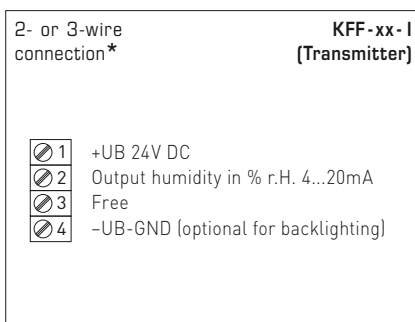
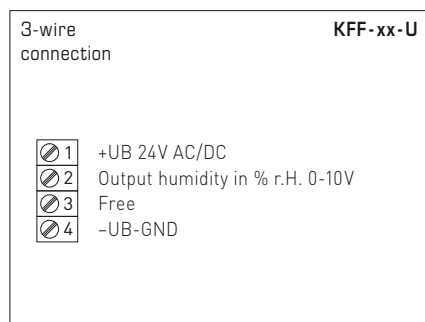
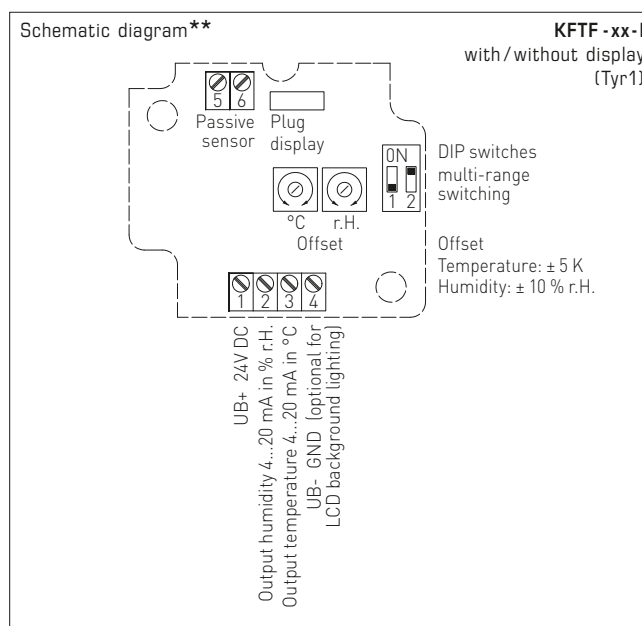
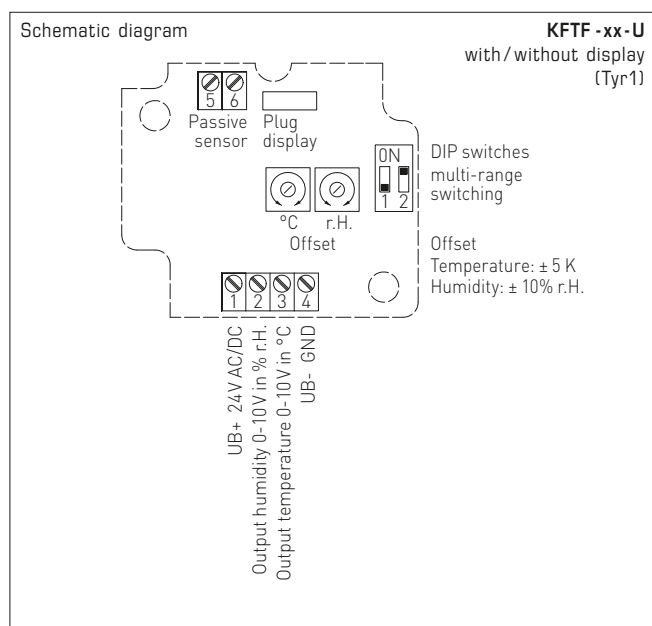
KFF-20 /KFTF-20  
with display



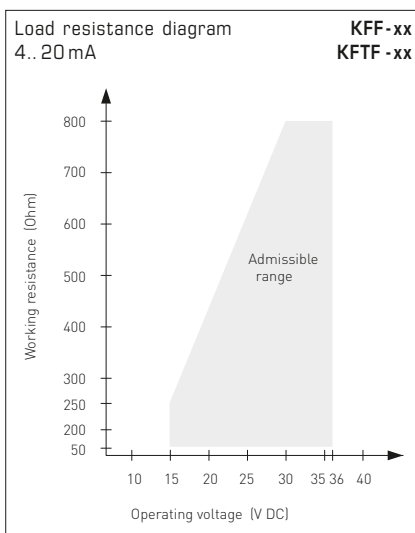
KFF-20 /KFTF-20 ( $\pm 2\%$ )  
with display and  
plastic sinter filter  
(standard)



Duct humidity and temperature sensors ( $\pm 2\%$  /  $\pm 3\%$ ), including mounting flange, calibratable, with multi-range switching and active/passive output



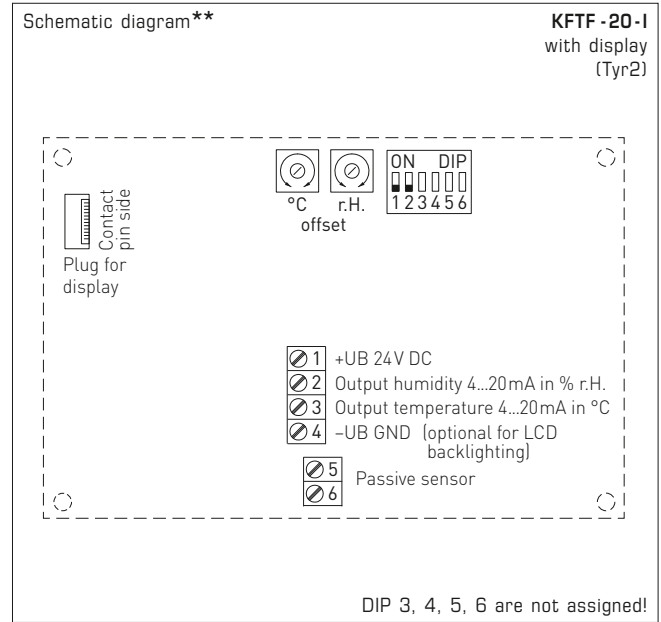
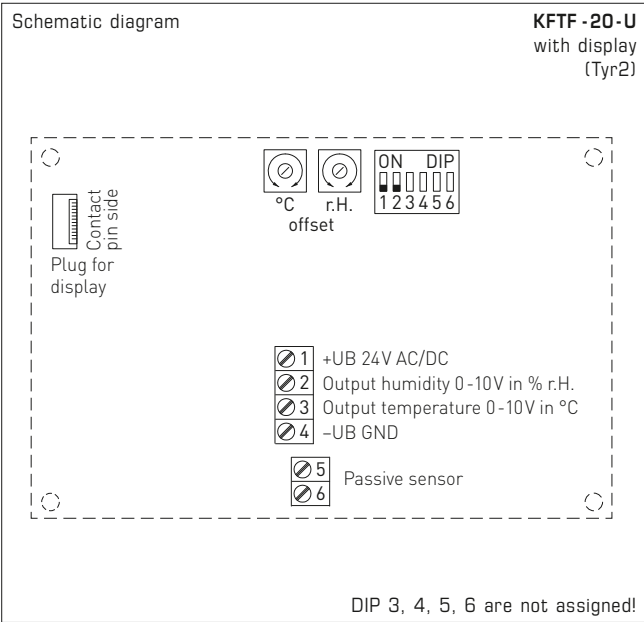
Temperature measuring ranges (adjustable)	DIP 1	DIP 2
-35...+75 °C	ON	ON
-35...+35 °C	OFF	OFF
0...+50 °C	OFF	ON
0...+80 °C	ON	OFF



Connection\*:  
 2-wire connection for devices with / without display (not illuminated)  
 3-wire connection for devices with illuminated display

Connection\*\*:  
 3-wire connection for devices with / without display (not illuminated)  
 4-wire connection for devices with illuminated display

For the **I** variant the humidity path must be connected!



Temperature table  
MR: -35...+75 °C

°C	U <sub>A</sub> in V	I <sub>A</sub> in mA
-35	0.0	4.0
-30	0.5	4.7
-25	0.9	5.5
-20	1.4	6.2
-15	1.8	6.9
-10	2.3	7.6
-5	2.7	8.4
0	3.2	9.1
5	3.6	9.8
10	4.1	10.5
15	4.5	11.3
20	5.0	12.0
25	5.5	12.7
30	5.9	13.5
35	6.4	14.2
40	6.8	14.9
45	7.3	15.6
50	7.7	16.4
55	8.2	17.1
60	8.6	17.8
65	9.1	18.5
70	9.5	19.2
75	10.0	20.0

Temperature table  
MR: -35...+35 °C

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

Temperature table  
MR: 0...+50 °C

°C	U <sub>A</sub> in V	I <sub>A</sub> in 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...+80 °C

°C	U <sub>A</sub> in V	I <sub>A</sub> in mA
0	0.0	4.0
5	0.6	5.0
10	1.3	6.0
15	1.9	7.0
20	2.5	8.0
25	3.1	9.0
30	3.8	10.0
35	4.4	11.0
40	5.0	12.0
45	5.6	13.0
50	6.3	14.0
55	6.9	15.0
60	7.5	16.0
65	8.1	17.0
70	8.8	18.0
75	9.4	19.0
80	10.0	20.0

Humidity table  
MR: 0...100% r.H.

% r.H.	U <sub>A</sub> in V	I <sub>A</sub> in 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

Duct humidity and temperature sensors ( $\pm 3\%$ ), including mounting flange, calibratable, with multi-range switching and active/passive output

KFF / KFTF  
without display  
(Tyr1)

KFF / KFTF  
with display  
(Tyr1)



HYGRASGARD® KFF – Humidity sensors ( $\pm 3\%$ ), Standard  
HYGRASGARD® KFTF – Humidity and temperature sensors ( $\pm 3\%$ ), Standard

Type / WG01	Measuring Range / Readout		Output		Display	Item No.	Price
	Humidity	Temperature	Humidity	Temperature			
<b>KFF-I</b>							(active)
KFF-I	0...100% r. H.	–	4...20 mA	–		1201-3112-0000-029	147,10 €
KFF-I DISPLAY DISPLAY	0...100% r. H.	–	4...20 mA	–	■	1201-3112-0200-029	190,05 €
<b>KFF-U</b>							(active)
KFF-U	0...100% r. H.	–	0-10 V	–		1201-3111-0000-029	147,10 €
KFF-U DISPLAY DISPLAY	0...100% r. H.	–	0-10 V	–	■	1201-3111-0200-029	190,05 €
<b>KFTF-I</b>							(active)
KFTF-I	0...100% r. H.	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA		1201-3112-1000-029	150,86 €
KFTF-I DISPLAY DISPLAY	0...100% r. H.	(4x as above)	4...20 mA	4...20 mA	■	1201-3112-1200-029	193,82 €
<b>KFTF-U</b>							(active)
KFTF-U	0...100% r. H.	(4x as above)	0-10 V	0-10 V		1201-3111-1000-029	150,86 €
KFTF-U DISPLAY DISPLAY	0...100% r. H.	(4x as above)	0-10 V	0-10 V	■	1201-3111-1200-029	193,82 €

HYGRASGARD® KFTF-U xx – Humidity and temperature sensors ( $\pm 3\%$ ), Standard

Type / WG01	Measuring Range / Readout		Output		Item No.	Price	
	Humidity	Temperature	Humidity	Temperature			
<b>KFTF-U xx</b>							(active / passive)
KFTF-U PT100	0...100% r. H.	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V + Pt100	1201-3111-2001-029	156,77 €	
KFTF-U PT1000	0...100% r. H.	(4x as above)	0-10 V	0-10 V + Pt1000	1201-3111-2005-029	157,31 €	
KFTF-U NI1000	0...100% r. H.	(4x as above)	0-10 V	0-10 V + Ni1000	1201-3111-2009-029	157,84 €	
KFTF-U NI1000TK5000	0...100% r. H.	(4x as above)	0-10 V	0-10 V + Ni1000TK5000	1201-3111-2010-029	158,70 €	
KFTF-U LM235Z	0...100% r. H.	(4x as above)	0-10 V	0-10 V + LM235Z, 10mV / K	1201-3111-2021-029	157,63 €	
<b>KFTF-U xx</b>							(active / passive)
KFTF-U NTC1,8K	0...100% r. H.	(4x as above)	0-10 V	0-10 V + NTC 1.8kOhm	1201-3111-2012-029	157,84 €	
KFTF-U NTC10K	0...100% r. H.	(4x as above)	0-10 V	0-10 V + NTC 10kOhm	1201-3111-2015-029	156,87 €	
KFTF-U NTC20K	0...100% r. H.	(4x as above)	0-10 V	0-10 V + NTC 20kOhm	1201-3111-2016-029	156,87 €	

Accessories

SF-M	Metal sinter filter, $\varnothing$ 16 mm, L = 32 mm, exchangeable stainless steel (VA 1.4404)	7000-0050-2200-100	35,70 €
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S+S REGELTECHNIK

HYGRASGARD® KFF - 20 / KFTF - 20

Duct humidity and temperature sensors ( $\pm 2\%$ ), including mounting flange, calibratable, with multi-range switching and active/passive output

KFF-20 / KFTF-20  
with display  
(Tyr2)



KFF-20 / KFTF-20  
without display  
(Tyr1)



HYGRASGARD® KFF - 20 – Humidity sensors ( $\pm 2\%$ ), Premium  
HYGRASGARD® KFTF - 20 – Humidity and temperature sensors ( $\pm 2\%$ ), Premium

Type / WG02	Measuring Range / Readout		Output		Display	Item No.	Price	
	Humidity	Temperature	Humidity	Temperature				
<b>KFF-20-I</b>	<b>(active)</b>							
KFF-20-I	0...100 % r. H.	–	4... 20 mA	–		1201-3112-0000-030	<b>203,47 €</b>	
KFF-20-I TYR-2 DISPLAY	0...100 % r. H.	–	4... 20 mA	–	■	1201-8112-0400-030	<b>246,43 €</b>	
<b>KFF-20-U</b>	<b>(active)</b>							
KFF-20-U	0...100 % r. H.	–	0-10 V	–		1201-3111-0000-030	<b>203,47 €</b>	
KFF-20-U TYR-2 DISPLAY	0...100 % r. H.	–	0-10 V	–	■	1201-8111-0400-030	<b>246,43 €</b>	
<b>KFTF-20-I</b>	<b>(active)</b>							
KFTF-20-I	0...100 % r. H.	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4... 20 mA	4... 20 mA		1201-3112-1000-030	<b>223,38 €</b>	
KFTF-20-I TYR-2 DISPLAY	0...100 % r. H.	(4x as above)	4... 20 mA	4... 20 mA	■	1201-8112-1400-030	<b>264,18 €</b>	
<b>KFTF-20-U</b>	<b>(active)</b>							
KFTF-20-U	0...100 % r. H.	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V		1201-3111-1000-030	<b>223,38 €</b>	
KFTF-20-U TYR-2 DISPLAY	0...100 % r. H.	(4x as above)	0-10 V	0-10 V	■	1201-8111-1400-030	<b>264,18 €</b>	
<b>Accessories</b>								
<b>SF-M</b>	<b>Metal</b> sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel (VA 1.4404)						7000-0050-2200-100	<b>35,70 €</b>