HYGRASGARD® KFF-xx
HYGRASGARD® KFTF-xx

Duct humidity and temperature sensors (± 1.8 % / ± 2.0 %), including mounting flange, calibratable, with multi-range switching and active / passive output

S+S REGELTECHNIK

Calibratable duct humidity-/temperature sensor **HYGR**ASGARD® **KFF-SD/KFTF-SD** (± 2,0 %), with plastic sinter filter (optional metal sinter filter), housing made from impact-resistant plastic with snap-on lid, with cable gland (optional M12 connector according to DIN EN 61076-2-101).

Calibratable duct humidity-/temperature sensor **HYGR**ASGARD® **KFF/KFTF** (± 2,0 %) or **KFF-20/KFTF-20** (± 1,8 %), with plastic sinter filter (optional metal sinter filter), housing made of impact-resistant plastic with quick-locking screws, optionally with / without display, with cable gland (optional M12 connector according to DIN EN 61076-2-101).

It measures the relative humidity and/or the temperature of the air and converts the measurands into a standard signal of 0 - 10 V or 4...20 mA. It has four switchable temperature ranges and is applied in non-aggressive dust-free atmospheres in refrigeration, air conditioning, ventilation and clean room technology. These measuring transducers are designed for exact detection of humidity. A digital long-term stable sensor is used as measuring element for humidity measurement. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

TECHNICAL DATA

Power supply:	24 V AC (± 20 %); 15...36 V DC for U variant 15...36 V DC for I variant, depending on working resistance, residual ripple stabilised ± 0.3 V
Working resistance:	R_a (ohm) = (U_b -14 V) / 0.02 A for I variant, see load resistance diagram
Load resistance:	R_L > 5 kOhm for U variant
Power consumption:	< 1.1 VA / 24 V DC; < 2.2 VA / 24 V AC
Sensors:	**digital humidity sensor with integrated temperature sensor,** low hysteresis, high long-term stability
HUMIDITY	
Measuring range, humidity:	0...100 % RH
Permissible air humidity:	< 95 % RH, non-precipitating air
Deviation, humidity:	**KFF / KFTF / KFF-SD / KFTF-SD:** typically **± 2.0** % (20...80 % RH) at +25 °C, otherwise ± 3.0 % **KFF-20 / KFTF-20:** typically **± 1.8** % (10...90 % RH) at +25 °C, otherwise ± 2.0 %
Output, humidity:	0 -10 V for U variant; 4...20 mA for I variant
TEMPERATURE	
Measuring range, temperature:	**multi-range switching with** **4 switchable measuring ranges** (see table) –35...+35 °C; –35...+75 °C; 0...+50 °C; 0...+80 °C
Ambient temperature:	storage –35...+85 °C; operation –30...+75 °C, non-precipitating
Deviation, temperature:	typically ± 0.2 K at +25 °C
Output, temperature:	0 -10 V for U variant; 4...20 mA for I variant; **KFTF-Uxx** (passive temperature sensor) see table
Electrical connection:	2-, 3-, or 4-wire connection (see connecting diagram), 0.14 - 1.5 mm², via terminal screws
Cable connection:	**cable gland**, plastic (M 16 x 1.5; with strain relief, exchangeable, max. inner diameter 10.4 mm) **or** **M12 connector** according to DIN EN 61076-2-101 (optional)
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:	**KFF-xx / KFTF-xx** (without display): 72 x 64 x 37.8 mm (Tyr 1/01) **KFF / KFTF** (with display): 72 x 64 x 43.3 mm (Tyr 1) **KFF-20 / KFTF-20** (with display): 26 x 90 x 50 mm (Tyr 2)
Protective tube:	**PLEUROFORM**™, material polyamide (PA6), with torsion protection Ø 20 mm, NL = 235 mm (optionally 100 mm), v_{max} = 30 m/s (air) (on request, optional **stainless steel V2A** (1.4301), Ø 16 mm)
Sensor protection:	**plastic** sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional **metal** sinter filter, Ø 16 mm, L = 32 mm)
Process connection:	by mounting flange, plastic (included in the scope of delivery)
Long-term stability:	± 1 % per year
Protection class:	III (according to EN 60 730)
Protection type:	**KFF-SD / KFTF-SD** **IP 54** (according to EN 60 529) Housing tested, TÜV SÜD, Report No. 713160960A (Tyr 01) **KFF-xx / KFTF-xx** **IP 65** (according to EN 60 529) Housing tested, TÜV SÜD, Report No. 713139052 (Tyr 1)
Standards:	CE conformity, according to EMC directive 2014 / 30 / EU, according to EN 61326-1, according to EN 61326-2-3
Optional:	**display with illumination,** for displaying ACTUAL temperature and / or ACTUAL humidity **KFF / KFTF** (Tyr 1)**:** two-line, cutout approx. 36 x 15 mm (W x H) **KFF-20 / KFTF-20** (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)

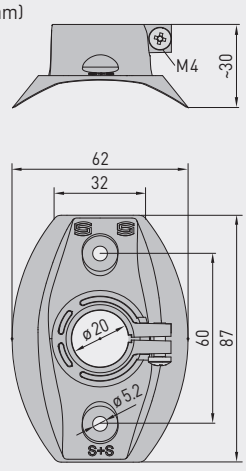


M12 connector
(optional)

MFT-20-K
Mounting flange, plastic



Dimensional drawing (mm) **MFT-20-K**



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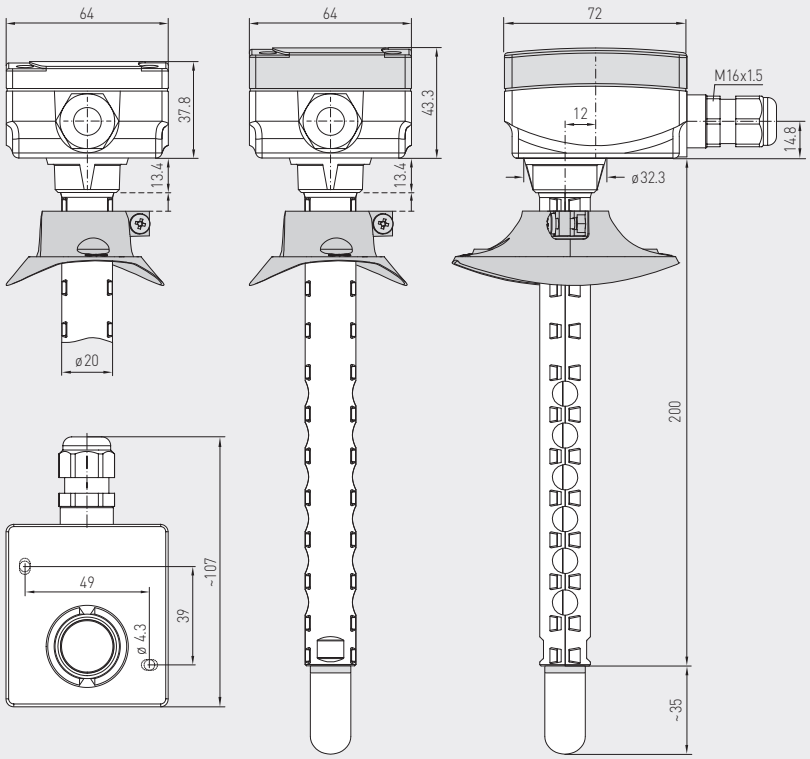
HYGRASGARD® KFF-xx
HYGRASGARD® KFTF-xx

Duct humidity and temperature sensors (± 1.8 % / ± 2.0 %), including mounting flange, calibratable, with multi-range switching and active/passive output

Dimensional drawing
[mm]

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

without display **with display**



KFF-SD/KFTF-SD (± 2,0 %)
with snap-on lid
(IP 54)

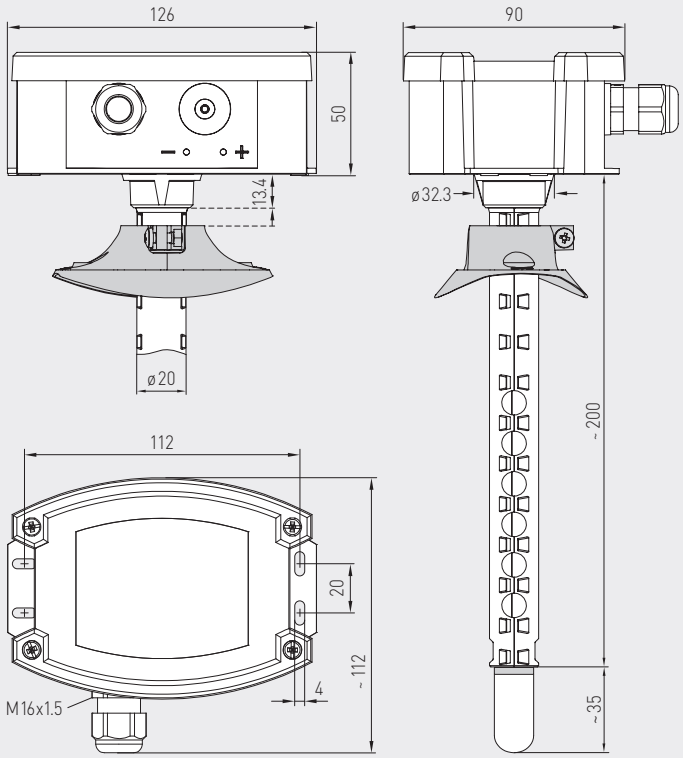


KFF/KFTF (± 2,0 %)
KFF-20/KFTF-20 (± 1,8 %)
without display
(IP 65)



Dimensional drawing
[mm]

KFF-20/KFTF-20 with display



KFF/KFTF (± 2,0 %)
with display
(IP 65)



KFF-20/KFTF-20 (± 1,8 %)
with display
(IP 65)

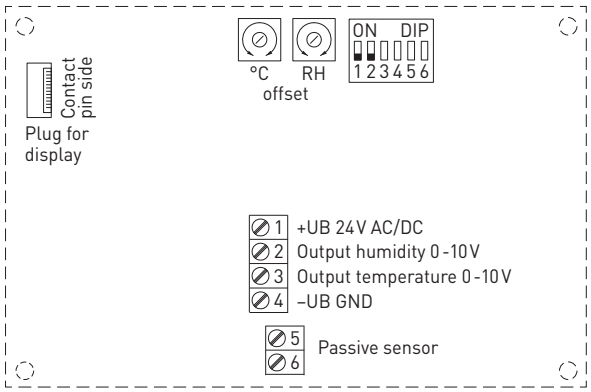


HYGRASGARD® KFF-xx
HYGRASGARD® KFTF-xx

Duct humidity and temperature sensors (± 1.8 % / ± 2.0 %), including mounting flange, calibratable, with multi-range switching and active/passive output

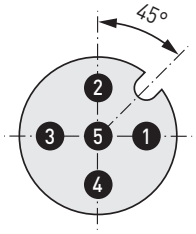
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Schematic diagram **KFTF-20-U** with display (Tyr2)



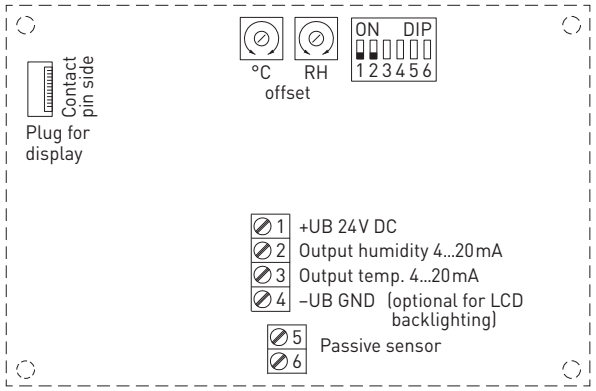
DIP 3, 4, 5, 6 are not assigned!

Pin assignment (M12) **KFTF-xx-U**



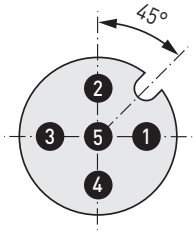
1 +UB 24 V AC/DC
2 Output humidity 0-10 V [% r.H.]
3 Output temperature 0-10 V [°C]
4 –UB GND
5 Shield

Schematic diagram **KFTF-20-I** with display (Tyr2)



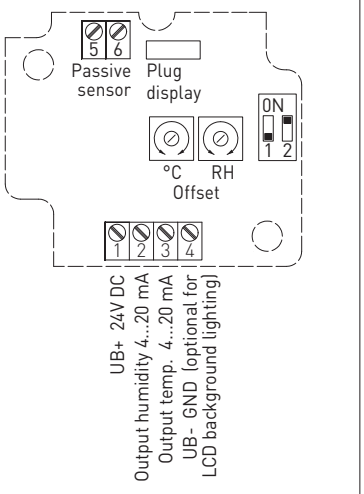
DIP 3, 4, 5, 6 are not assigned!

Pin assignment (M12) **KFTF-xx-I**

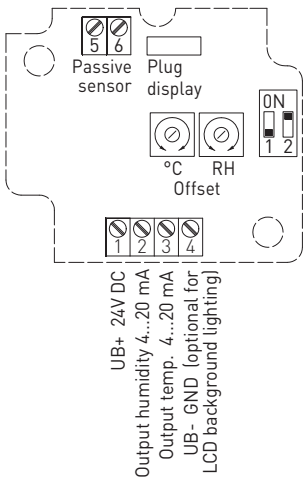


1 +UB 24 V DC
2 Output humidity 4...20 mA [% r.H.]
3 Output temperature 4...20 mA [°C]
4 –UB GND (optional for LCD backlighting)
5 Shield

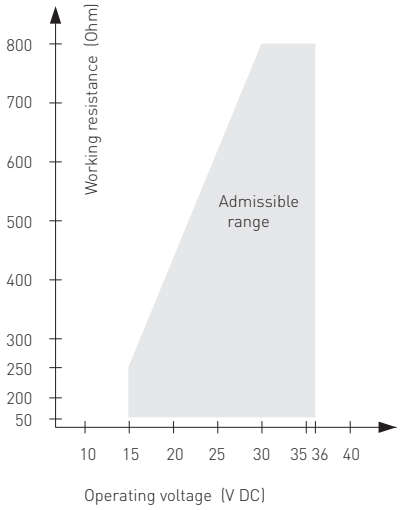
Schematic diagram **KFTF-xx-U** with / without display (Tyr1)



Schematic diagram **KFTF-xx-I** with / without display (Tyr1)



Load resistance diagram 4..20 mA **KFF-xx-I** **KFTF-xx-I**



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HYGRASGARD® KFF-xx
HYGRASGARD® KFTF-xx

Duct humidity and temperature sensors (± 1.8 % / ± 2.0 %), including mounting flange, calibratable, with multi-range switching and active / passive output

3-wire connection — **KFF-xx-U**

1	+UB 24V AC/DC
2	Output humidity 0-10V
3	Free
4	–UB-GND

2- or 3-wire connection * — **KFF-xx-I (Transmitter)**

1	+UB 24V DC
2	Output humidity 4...20mA
3	Free
4	–UB-GND (optional for backlighting)

4- or 6-wire connection — **KFTF-U (passive temperature sensor)**

1	+UB 24V AC/DC
2	Output humidity 0-10V
3	Output temperature 0-10V
4	–UB-GND
5	Passive element
6	e.g. Pt1000, Ni1000, LMZ235Z

4-wire connection — **KFTF-xx-U**

1	+UB 24V AC/DC
2	Output humidity 0-10V
3	Output temperature 0-10V
4	–UB-GND

3- or 4-wire connection ** — **KFTF-xx-I (Transmitter)**

1	+UB 24V DC
2	Output humidity 4...20mA
3	Output temp. 4...20mA
4	–UB-GND (optional for backlighting)

4- or 6-wire connection — **KFTF-I (passive temperature sensor)**

1	+UB 24V DC
2	Output humidity 4...20mA
3	Output temp. 4...20mA
4	–UB-GND (optional for backlighting)
5	Passive element
6	e.g. Pt1000, Ni1000, LMZ235Z

Temperature measuring ranges (adjustable)	DIP 1	DIP 2
–35...+75 °C	**ON**	**ON**
–35...+35 °C	OFF	OFF
0...+50 °C (default)	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_A [V]	I_A [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_A [V]	I_A [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_A [V]	I_A [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_A [V]	I_A [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 % RH

% RH	U_A [V]	I_A [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

HYGRASGARD® KFF-SD
HYGRASGARD® KFTF-SD

Duct humidity and temperature sensors (± 2.0 %), including mounting flange, calibratable, with multi-range switching and active output

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KFF-SD / KFTF-SD
with snap-on lid
(IP 54)



HYGRASGARD® KFF-SD Duct humidity sensors (± 2.0 %), *Standard* **HYGRASGARD® KFTF-SD** Duct humidity and temperature sensors (± 2.0 %), *Standard*						
Type / WG01B	**Measuring Range / Readout** Humidity	Temperature	**Output** Humidity	Temperature	**Item No.**	**Price**
KFF-SD					**IP 54**	
KFF-SD-I	0...100 % RH	–	4...20 mA	–	1201-3182-0000-029	**167,18 €**
KFF-SD-U	0...100 % RH	–	0-10 V	–	1201-3181-0000-029	**167,18 €**
KFTF-SD					**IP 54**	
KFTF-SD-I	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA	1201-3182-1000-029	**171,76 €**
KFTF-SD-U	0...100 % RH	(4x as above)	0-10 V	0-10 V	1201-3181-1000-029	**171,76 €**
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101 shortened protective tube **PLEUROFORM**™, NL = 100 mm				on request on request	

ACCESSORIES			
SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel **V4A** (1.4404)	7000-0050-2200-100	**43,60 €**
	For further information, see chapter Accessories!		

S+S REGELTECHNIK

HYGRASGARD® KFF
HYGRASGARD® KFTF

Duct humidity and temperature sensors (± 2.0 %), including mounting flange, calibratable, with multi-range switching and active / passive output

KFF / KFTF
with quick-locking screws
(IP 65)





HYGRASGARD® KFF **HYGRASGARD® KFTF**	Duct humidity sensors (± 2.0 %), *Standard* Duct humidity and temperature sensors (± 2.0 %), *Standard*						
Type / WG01	**Measuring Range / Readout** Humidity	Temperature	**Output** Humidity	Temperature	**Display**	**Item No.**	**Price**
KFF						**IP 65**	
KFF-I	0...100 % RH	–	4...20 mA	–		1201-3112-0000-029	**179,64 €**
KFF-I **LCD**	0...100 % RH	–	4...20 mA	–	■	1201-3112-0200-029	**232,09 €**
KFF-U	0...100 % RH	–	0-10 V	–		1201-3111-0000-029	**179,64 €**
KFF-U **LCD**	0...100 % RH	–	0-10 V	–	■	1201-3111-0200-029	**232,09 €**
KFTF						**IP 65**	
KFTF-I	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA		1201-3112-1000-029	**184,23 €**
KFTF-I **LCD**	0...100 % RH	(4x as above)	4...20 mA	4...20 mA	■	1201-3112-1200-029	**236,68 €**
KFTF-U	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V		1201-3111-1000-029	**184,23 €**
KFTF-U **LCD**	0...100 % RH	(4x as above)	0-10 V	0-10 V	■	1201-3111-1200-029	**236,68 €**
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101 shortened protective tube **PLEUROFORM**™, NL = 100 mm					on request on request	

HYGRASGARD® **KFTF-U xx**	Duct humidity and temperature sensors (± 2.0 %), *Standard* (passive temperature sensor)					
Type / WG01	**Measuring Range / Readout** Humidity	Temperature	**Output** Humidity	Temperature	**Item No.**	**Price**
KFTF-U xx	**Pt, Ni, LM235Z, NTC**			(active / **passive**)	**IP 65**	
KFTF-U Pt100	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V + **Pt100**	1201-3111-2001-029	**191,44 €**
KFTF-U Pt1000	0...100 % RH	(4x as above)	0-10 V	0-10 V + **Pt1000**	1201-3111-2005-029	**192,10 €**
KFTF-U Ni1000	0...100 % RH	(4x as above)	0-10 V	0-10 V + **Ni1000**	1201-3111-2009-029	**192,75 €**
KFTF-U NiTK	0...100 % RH	(4x as above)	0-10 V	0-10 V + **Ni1000TK5000**	1201-3111-2010-029	**193,79 €**
KFTF-U LM235Z	0...100 % RH	(4x as above)	0-10 V	0-10 V + **LM235Z**, 10mV / K	1201-3111-2021-029	**192,49 €**
KFTF-U NTC1,8K	0...100 % RH	(4x as above)	0-10 V	0-10 V + **NTC 1,8 kOhm**	1201-3111-2012-029	**192,75 €**
KFTF-U NTC10K	0...100 % RH	(4x as above)	0-10 V	0-10 V + **NTC 10 kOhm**	1201-3111-2015-029	**191,57 €**
KFTF-U NTC20K	0...100 % RH	(4x as above)	0-10 V	0-10 V + **NTC 20 kOhm**	1201-3111-2016-029	**191,57 €**
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101 shortened protective tube **PLEUROFORM**™, NL = 100 mm				on request on request	

HYGRASGARD® KFTF-20-Q

Duct humidity and temperature sensors (± 1.8 %), incl. mounting flange, calibratable, with multi-range switching and active output

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KFTF-20-Q
with M12 connector,
with display (Tyr2)





KFTF-20-Q
with M12 connector,
without display (Tyr1)



HYGRASGARD® KFTF-20-Q	Duct humidity and temperature sensors (± 1,8 %), *Premium* (**with M12 connector**)						
Type / WG02	**Measuring Range / Readout** Humidity	Temperature	**Output** Humidity	Temperature	**Display** ● = **Q**	**Item No.**	**Price**
KFTF-20-Q						**IP65**	
KFTF-20-I **Q**	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA	●	2003-4151-2100-001	**315,96 €**
KFTF-20-I **Q LCD**	0...100 % RH	(4x as above)	4...20 mA	4...20 mA	● ■	2003-4172-2100-001	**365,78 €**
KFTF-20-U **Q**	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V	●	2003-4151-1100-001	**315,96 €**
KFTF-20-U **Q LCD**	0...100 % RH	(4x as above)	0-10 V	0-10 V	● ■	2003-4172-1100-001	**365,78 €**
Housing variant "Q":	Cable connection **with M12 connector** (male, **5-pin**, A-code)						

ACCESSORIES			
SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel **V4A** (1.4404)	7000-0050-2200-100	**43,60 €**
	For further information, see chapter Accessories!		

HYGRASGARD® KFF-20
HYGRASGARD® KFTF-20

Duct humidity and temperature sensors (± 1.8 %), incl. mounting flange, calibratable, with multi-range switching and active output

KFF-20 / KFTF-20
with cable gland,
with display (Tyr2)





KFF-20 / KFTF-20
with cable gland,
without display (Tyr1)



HYGRASGARD® KFF-20
Duct humidity sensors (± 1,8 %), *Premium*
(with cable gland)

Type / WG02	Measuring Range / Readout Humidity	Temperature	Output Humidity	Temperature	Display	Item No.	Price
KFF-20						IP 65	
KFF-20-I	0...100 % RH	–	4... 20 mA	–		1201-3112-0000-030	**248,48 €**
KFF-20-I **LCD**	0...100 % RH	–	4... 20 mA	–	■	1201-8112-0400-030	**300,92 €**
KFF-20-U	0...100 % RH	–	0-10 V	–		1201-3111-0000-030	**248,48 €**
KFF-20-U **LCD**	0...100 % RH	–	0-10 V	–	■	1201-8111-0400-030	**300,92 €**
Housing variant:	Cable connection **with cable gland** (M12 connector on request)						

HYGRASGARD® KFTF-20
Duct humidity and temperature sensors (± 1,8 %), *Premium*
(with cable gland)

Type / WG02	Measuring Range / Readout Humidity	Temperature	Output Humidity	Temperature	Display	Item No.	Price
KFTF-20						IP 65	
KFTF-20-I	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4... 20 mA	4... 20 mA		1201-3112-1000-030	**272,77 €**
KFTF-20-I **LCD**	0...100 % RH	(4x as above)	4... 20 mA	4... 20 mA	■	1201-8112-1400-030	**322,62 €**
KFTF-20-U	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V		1201-3111-1000-030	**272,77 €**
KFTF-20-U **LCD**	0...100 % RH	(4x as above)	0-10 V	0-10 V	■	1201-8111-1400-030	**322,62 €**
Housing variant:	Cable connection **with cable gland** (M12 connector see **KFTF-20-Q**)						

ACCESSORIES

SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel **V4A** (1.4404)	7000-0050-2200-100	**43,60 €**
	For further information, see chapter Accessories!		