

Patented quality product (AOS patent no. DE 10 2015 015 941 B4)

Calibratable duct humidity and temperature sensor **HYGRASGARD® KFTF-SD** ($\pm 2.0\%$), with plastic sinter filter (exchangeable), housing made from impact-resistant plastic with snap-on lid, with cable gland (optional M12 connector according to DIN EN 61076-2-101), incl. mounting flange, with active output, to exactly detect the relative humidity (0...100% RH) and the temperature with 4 switchable measuring ranges (max. $-35^{\circ}\text{C}/-31^{\circ}\text{F}$ to $+80^{\circ}\text{C}/+176^{\circ}\text{F}$), without display. The measuring transducer converts the measured variables into a standard signal of 0-10V or 4...20mA. The unit with **Automatic Output Switching** (AOS variant) detects the required output type and **automatically** switches to U or I output.

Calibratable duct humidity and temperature sensor **HYGRASGARD® KFF/KFTF** ($\pm 2.0\%$) and **KFF-20/KFTF-20** ($\pm 1.8\%$) with plastic sinter filter (exchangeable), housing made from impact-resistant plastic with quick-locking screws, with cable gland (optional M12 connector according to DIN EN 61076-2-101), incl. mounting flange, with active and passive (optional) output, to exactly detect the relative humidity (0...100% RH) and the temperature with 4 switchable measuring ranges (max. $-35^{\circ}\text{C}/-31^{\circ}\text{F}$ to $+80^{\circ}\text{C}/+176^{\circ}\text{F}$), optionally with/without display. The display can be changed from SI [$^{\circ}\text{C}$] to imperial [$^{\circ}\text{F}$] units via DIP switch. The measuring transducer converts the measured variables into a standard signal of 0-10V or 4...20mA. The unit with **Automatic Output Switching** (AOS variant) detects the required output type and **automatically** switches to U or I output. Alternatively, a **type version** (I2W) with 2-wire connection and I output is available.

The duct sensor is applied in a non-aggressive, dust-free environment. It is used in the refrigeration, air conditioning and clean room technology. A long-term stable, **digital humidity and temperature sensor** guarantees exact measurement results. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

Unit type **KFF-20/KFTF-20 with display** (in Tyr2 housing) and alternative parameters see data sheet 'KFF-20 LCD / KFTF-20 LCD'.

TECHNICAL DATA**KF(T)F-xx-I (I2W)**

Power supply:	15...36 V DC, depending on working resistance, residual ripple stabilised $\pm 0.3\text{V}$
Working resistance:	$R_b \text{ (Ohm)} = (U_b - 14\text{V}) / 0.02\text{A}$
Connection type:	2-wire connection
Output:	4...20 mA

KF(T)F-xx-A (AOS)

Power supply:	24 V AC / DC ($\pm 10\%$)
Load resistance:	$R_L = 25...450 \text{ Ohm}$ with AOS I variant $R_L > 15 \text{ kOhm}$ with AOS U variant
Connection type:	3-wire connection
Output:	automatic 0-10V / 4...20 mA (Automatic Output Switching – the unit detects the required output type and automatically switches to U or I output)

GENERAL

Power consumption:	$< 1.0\text{W} / 24\text{V DC}; < 2.2\text{VA} / 24\text{V AC}$
System of units:	SI (default) or Imperial (switchable via DIP switch)
Data points:	relative Humidity [%RH], Temperature [$^{\circ}\text{C}$] [$^{\circ}\text{F}$]
Sensors:	digital humidity sensor with integrated temperature sensor , low hysteresis, high long-term stability (passive temperature sensor optional, see table)
Measuring range, humidity:	0...100% RH
Operating range, humidity:	0...95% RH (without formation of dew)
Accuracy in humidity:	typically $\pm 2.0\%$ (20...80% RH) at $+25^{\circ}\text{C}$, otherwise $\pm 3.0\%$ K(F)TF-20: typically $\pm 1.8\%$ (10...90% RH) at $+25^{\circ}\text{C}$, otherwise $\pm 2.0\%$
Measuring range temp.:	multi-range switching with 4 measuring ranges (via DIP switch) 0... $+50^{\circ}\text{C}$ / $+32...+122^{\circ}\text{F}$ 0... $+80^{\circ}\text{C}$ / $+32...+176^{\circ}\text{F}$ $-35...+75^{\circ}\text{C}$ / $-31...+167^{\circ}\text{F}$ $-35...+35^{\circ}\text{C}$ / $-31...+95^{\circ}\text{F}$
Operating range temp.:	$-10...+60^{\circ}\text{C}$ / $+14...+140^{\circ}\text{F}$
Accuracy temperature:	typically $\pm 0.4\text{K} / \pm 0.7^{\circ}\text{F}$ at $+25^{\circ}\text{C}$ K(F)TF-20: typically $\pm 0.2\text{K} / \pm 0.5^{\circ}\text{F}$ at $+25^{\circ}\text{C}$
Ambient temperature:	storage $-35...+85^{\circ}\text{C}$; operation $-30...+70^{\circ}\text{C}$, non-precipitating

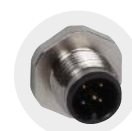
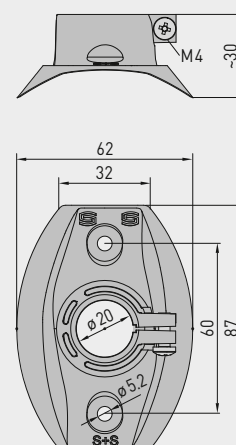
ACCESSORIES

see table

Continued on next page!

SF-KPlastic sinter filter
(standard)**SF-M**Metal sinter filter
(optional)**Protective tube
stainless steel**

(optional on request)

**M12 connector**
(optional)**MFT-20-K**Mounting flange,
plasticDimensional
drawing
[mm]**MFT-20-K**



S+S REGELTECHNIK

NEW

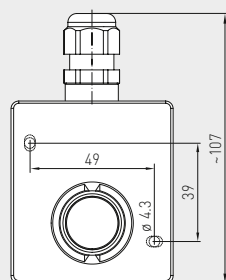
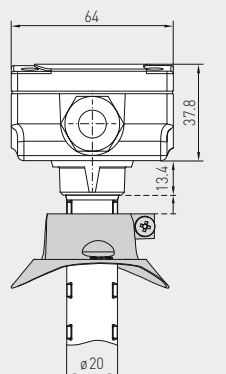
HYGRASGARD® KFF-xx
HYGRASGARD® KFTF-xx

Duct humidity and temperature sensors ($\pm 1.8\%$ / $\pm 2.0\%$),
incl. mounting flange, calibratable, with multi-range switching,
with active (Automatic Output Switching) and passive output

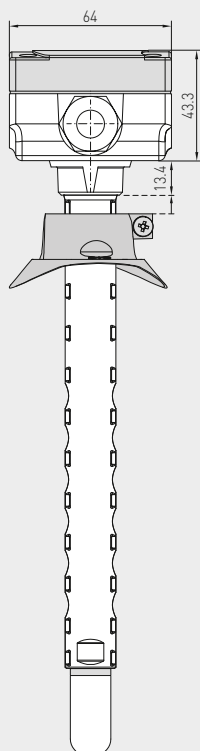


Dimensional drawing
[mm]

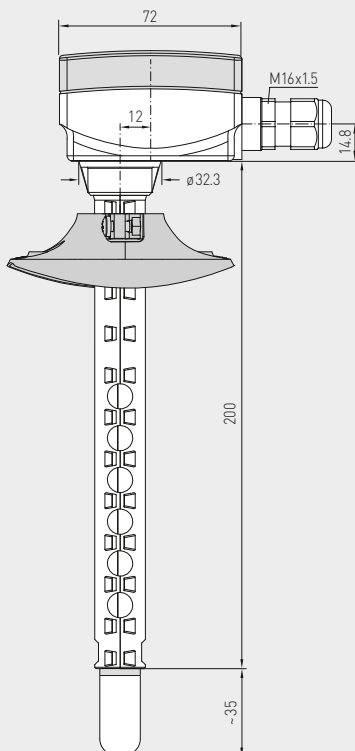
without display



with display



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



KFTF-SD ($\pm 2.0\%$)
with snap-on lid
(IP 54)



KFF/KFTF ($\pm 2.0\%$)
KFF-20/KFTF-20 ($\pm 1.8\%$)
without display
(IP 65)



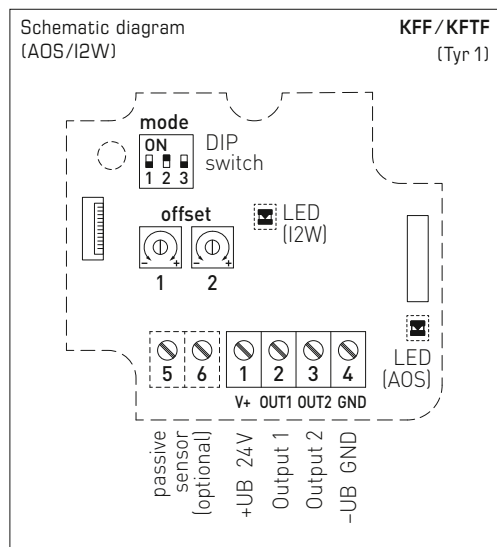
KFF/KFTF ($\pm 2.0\%$)
with display
(IP 65)



TECHNICAL DATA

(continued)

Sensor protection:	plastic sinter filter, $\varnothing$ 16 mm, L = 35 mm, exchangeable (optional metal sinter filter, $\varnothing$ 16 mm, L = 32 mm)
Protective tube:	PLEUROFORM™, material polyamide (PA6), with torsion protection, v_{max} = 30 m/s (air), $\varnothing$ 20 mm, NL = 200 mm (optionally 120 mm), L = 235 mm (with filter) (on request, optional stainless steel V2A (1.4301), $\varnothing$ 16 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:	72 x 64 x 37,8 mm (Tyr 1) 72 x 64 x 43,3 mm (Tyr 1 with display)
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)
Electrical connection:	2-, 3-, or 4-wire connection (see connecting diagram), 0.14 - 1.5 mm², via terminal screws
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); KFTF-SD: IP 54 (according to EN 60529)
Standards:	CE conformity according to EMC directive 2014/30/EU
Optional:	display with illumination, two-line, cutout approx. 36 x 15 mm (W x H), for displaying ACTUAL temperature and/or ACTUAL humidity



DIP swtch		KFF-xx / KFTF-xx	
Measuring range temperature		DIP 1	DIP 2
-35...+75 °C / -31...+167 °F		ON	ON
0...+50 °C / +32...+122 °F (default)		OFF	ON
0...+80 °C / +32...+176 °F		ON	OFF
-35...+35 °C / -31... +95 °F		OFF	OFF
System of units			DIP 3
Imperial: [°F]			ON
SI (default): [°C]			OFF
Temperature Value indicated in display depends on system of units set (DIP 3).			

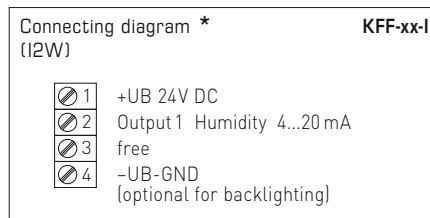
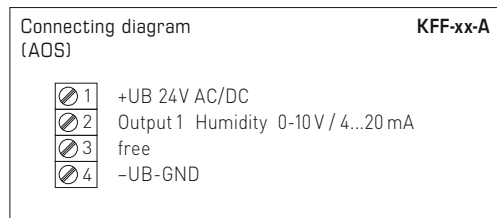


Note:

The offset potentiometers are assigned to the corresponding output of the measurand

Output 1 → Offset 1 (humidity)

Output 2 → Offset 2 (temperature)

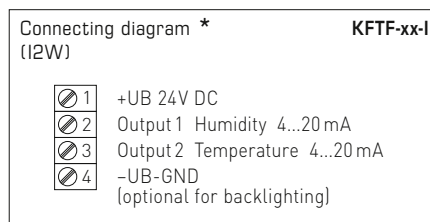
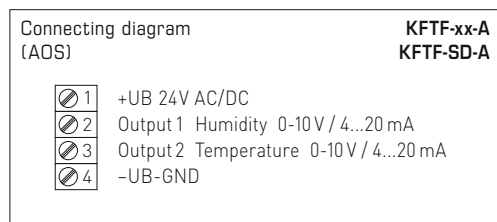


For the I variant (I2W) the humidity path must be connected!

Connection*:

2-wire connection for devices with / without display (not illuminated)

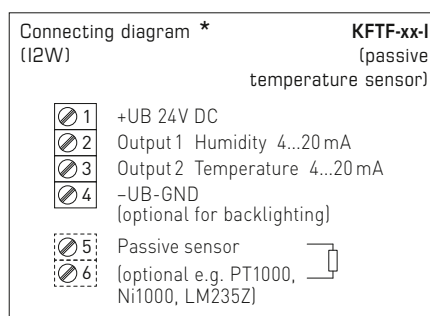
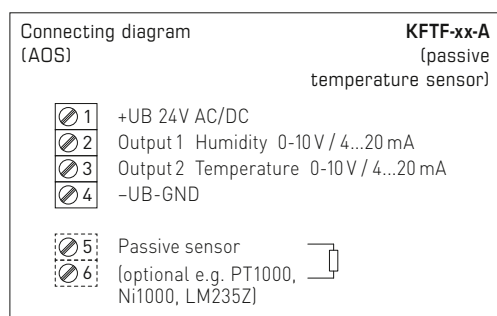
3-wire connection for devices with illuminated display



Connection:**

3-wire connection for devices with / without display (not illuminated)

4-wire connection for devices with illuminated display



Automatic detection and switching to standard signal 0...10V or 4...20 mA



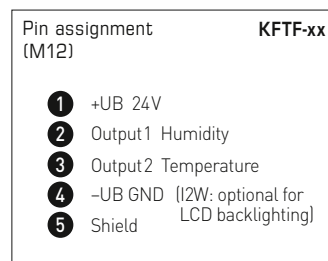
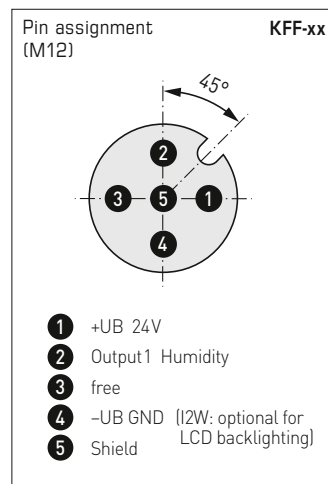
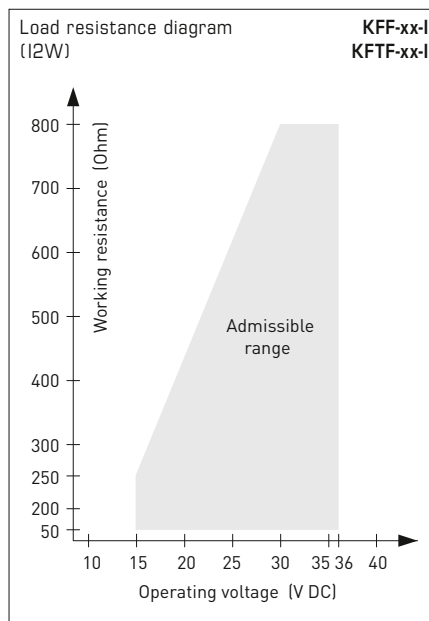
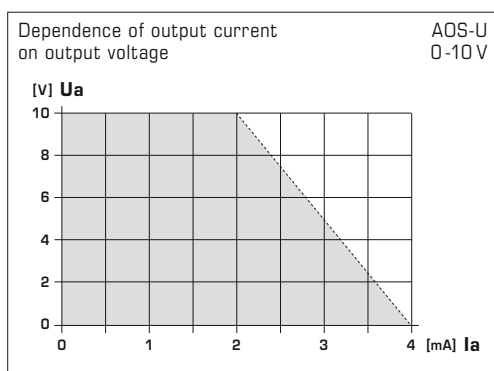
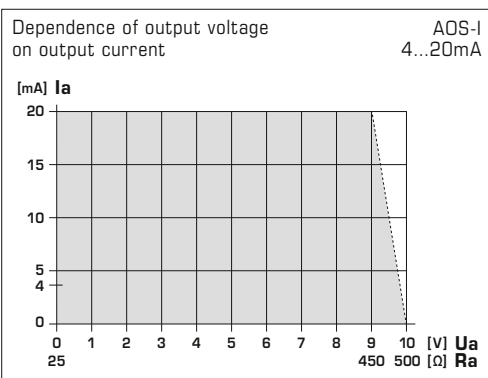


NEW

S+S REGELTECHNIK

HYGRASGARD® KFF-xx
HYGRASGARD® KFTF-xx

Duct humidity and temperature sensors ($\pm 1.8\%$ / $\pm 2.0\%$),
incl. mounting flange, calibratable, with multi-range switching,
with active (Automatic Output Switching) and passive output



KFTF-SD ($\pm 2.0\%$)
with snap-on lid
(IP 54)



HYGRASGARD® KFTF-SD Duct humidity and temperature sensors ($\pm 2.0\%$), *Standard*
(with snap-on lid)

Type / WG01B	Measuring range	Temperature	Output	Item No.
KFTF-SD	Humidity	(switchable)		
KFTF-SD-A	0...100 % RH	0...+50 °C / +32...+122 °F 0...+80 °C / +32...+176 °F -35...+75 °C / -31...+167 °F -35...+35 °C / -31... +95 °F	0-10 V / 4...20 mA	1201-318E-1000-029
Optional:	Cable connection with M12 connector according to DIN EN 61076-2-101 shortened protective tube PLEUROFORM™ , NL = 120 mm passive temperature sensor (e.g. PT1000, Ni1000, LM235Z)			on request on request on request

ACCESSORIES

SF-K	Plastic sinter filter, Ø 16 mm, L = 35 mm, exchangeable	7000-0050-2310-000
SF-M	Metal sinter filter, Ø 16 mm, L = 32 mm, exchangeable, stainless steel V4A (1.4404)	7000-0050-2200-100
For further information see last chapter!		

Duct humidity and temperature sensors ($\pm 2.0\%$),
incl. mounting flange, calibratable, with multi-range switching,
with active (Automatic Output Switching) and passive output

KFF / KFTF
with / without display
(IP65)



HYGRASGARD® KFF Duct humidity sensors ($\pm 2.0\%$), *Standard*
HYGRASGARD® KFTF Duct humidity and temperature sensors ($\pm 2.0\%$), *Standard*

Type / WG01	Measuring range Humidity	Temperature	Output	Display	Item No.
KFF					
KFF-I	0...100% RH	–	4...20 mA		1201-3112-0000-10L
KFF-I LCD	0...100% RH	–	4...20 mA	■	1201-3112-0200-10L
KFF-A	0...100% RH	–	0-10 V / 4...20 mA		1201-311E-0000-029
KFF-A LCD	0...100% RH	–	0-10 V / 4...20 mA	■	1201-311E-0200-029
KFTF (switchable)					
KFTF-I	0...100% RH	0...+50 °C / +32...+122 °F 0...+80 °C / +32...+176 °F –35...+75 °C / –31...+167 °F –35...+35 °C / –31... +95 °F	4...20 mA		1201-3112-1000-10L
KFTF-I LCD	0...100% RH	(4x as above)	4...20 mA	■	1201-3112-1200-10L
KFTF-A	0...100% RH	(4x as above)	0-10 V / 4...20 mA		1201-311E-1000-029
KFTF-A LCD	0...100% RH	(4x as above)	0-10 V / 4...20 mA	■	1201-311E-1200-029
Outputs:	4...20 mA (fixed setting) for I variant (I2W) or 0-10 V / 4...20 mA (automatically via AOS) Number of active outputs depends on unit type: relative humidity (OUT1) and temperature (OUT2).				
System of units:	display can be changed from SI to imperial units.				
Optional:	Cable connection with M12 connector according to DIN EN 61076-2-101 shortened protective tube PLEUROFORM™ , NL = 120 mm passive temperature sensor (e.g. Pt1000, Ni1000, LM235Z)				on request on request see below

HYGRASGARD® KFTF Duct humidity and temperature sensors ($\pm 2.0\%$), *Standard*
(passive temperature sensor)

Type / WG02	Measuring range Humidity	Temperature	Output	Item No.
KFTF-A xx			(2x) active + passive	
KFTF-A Pt100	0...100% RH	(4x as above)	0-10 V / 4...20 mA + Pt100	1201-311E-2001-029
KFTF-A Pt1000	0...100% RH	(4x as above)	0-10 V / 4...20 mA + Pt1000	1201-311E-2005-029
KFTF-A Ni1000	0...100% RH	(4x as above)	0-10 V / 4...20 mA + Ni1000	1201-311E-2009-029
KFTF-A NiTK	0...100% RH	(4x as above)	0-10 V / 4...20 mA + Ni1000TK5000	1201-311E-2010-029
KFTF-A LM235Z	0...100% RH	(4x as above)	0-10 V / 4...20 mA + LM235Z, 10mV/K	1201-311E-2021-029
KFTF-A NTC1,8K	0...100% RH	(4x as above)	0-10 V / 4...20 mA + NTC 1,8 kOhm	1201-311E-2012-029
KFTF-A NTC10K	0...100% RH	(4x as above)	0-10 V / 4...20 mA + NTC 10 kOhm	1201-311E-2015-029
KFTF-A NTC20K	0...100% RH	(4x as above)	0-10 V / 4...20 mA + NTC 20 kOhm	1201-311E-2016-029
Outputs:	0-10 V / 4...20 mA (automatic via AOS) + passive temperature sensor			

**NEW**

S+S REGELTECHNIK

HYGRASGARD® KFF-20
HYGRASGARD® KFTF-20Duct humidity and temperature sensors ($\pm 1.8\%$),
incl. mounting flange, calibratable, with multi-range switching,
with active (Automatic Output Switching) and passive output**KFF-20 / KFTF-20**with display (housing Tyr 2)
see separate data sheet!**KFTF-20 Q**

with M12 connector

KFF-20 / KFTF-20without display
(IP65)

HYGRASGARD® KFF-20		Duct humidity sensors (± 1.8 %), <i>Premium</i>			
HYGRASGARD® KFTF-20		Duct humidity and temperature sensors (± 1.8 %), <i>Premium</i>			
Type / WG02	Measuring range		Output	Display	Item No.
	Humidity	Temperature			
KFF-20					
KFF-20-I	0...100% RH	–	4...20 mA		1201-3112-0000-11L
KFF-20-A	0...100% RH	–	0-10 V / 4...20 mA		1201-311E-0000-030
KFF-20-xx LCD				■	see extra data sheet!
KFTF-20		(switchable)			
KFTF-20-I	0...100% RH	0...+50 °C / +32...+122 °F 0...+80 °C / +32...+176 °F –35...+75 °C / –31...+167 °F –35...+35 °C / –31... +95 °F	4...20 mA		1201-3112-1000-11L
KFTF-20-A	0...100% RH	0...+50 °C / +32...+122 °F 0...+80 °C / +32...+176 °F –35...+75 °C / –31...+167 °F –35...+35 °C / –31... +95 °F	0-10 V / 4...20 mA		1201-311E-1000-030
KFTF-20-xx LCD				■	see extra data sheet!
Outputs:	4...20 mA (fixed setting) for I-variant (I2W) or 0-10 V / 4...20 mA (automatically via AOS) Number of active outputs depends on unit type: relative humidity (OUT1) and temperature (OUT2). AOS units KFTF-20 with display (in Tyr2 housing) comes with an additional output (OUT3) for alternative parameters (see extra data sheet 'KFF-20 LCD / KFTF-20 LCD')				
System of units:	The display can be switched from SI to imperial units.				
Optional:	Cable connection with M12 connector according to DIN EN 61076-2-101 shortened protective tube PLEUROFORM™ , NL = 120 mm passive temperature sensor (e.g. Pt1000, Ni1000, LM235Z)				see below on request on request

HYGRASGARD® KFTF-20 Q		Duct humidity and temperature sensors (± 1.8 %), <i>Premium</i> (with M12 connector)			
Type / WG02	Measuring range		Output	Display	Item No.
	Humidity	Temperature		M12 ●	
KFTF-20 Q		(switchable)	(2x) active		
KFTF-20-I Q	0...100 % RH	(4x as above)	4...20 mA	●	2003-4151-2100-002
KFTF-20-A Q	0...100 % RH	(4x as above)	0-10 V / 4...20 mA	●	2003-4151-B100-001
KFTF-20-xx Q LCD				● ■	see extra data sheet!
Design and options such as device version with cable gland (top)					