

**On-wall humidity and temperature sensors ( $\pm 1.8\%$  /  $\pm 2.0\%$ ),  
calibratable, with multi-range switching  
and active/passive output**

Calibratable outdoor humidity/temperature sensor **HYGRASGARD® AFF/AFTF** ( $\pm 2.0\%$ ) and **AFF-20/AFTF-20** ( $\pm 1.8\%$ ) with plastic sinter filter (optional metal sinter filter) or **AFF-25/AFTF-25** ( $\pm 1.8\%$ ) with pluggable measuring head with 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 temperature of the air and converts the measurand into a standard signal of 0 - 10V or 4...20 mA. They have four switchable temperature ranges and are applied in non-aggressive, dust-free atmospheres in refrigeration, air conditioning, ventilation and clean room technology. Relative humidity (in % RH) 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. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

**AFF / AFTF ( $\pm 2.0\%$ )**  
with plastic sinter filter  
(standard)



**AFF-20 / AFTF-20 ( $\pm 1.8\%$ )**  
with plastic sinter filter  
(standard)



**AFF-25 / AFTF-25 ( $\pm 1.8\%$ )**  
pluggable measuring head  
with metal sinter filter



#### TECHNICAL DATA

Power supply:	24 V AC ( $\pm 20\%$ ); 15...36 V DC for U variant 15...36 V DC for I variant, depending on working resistance, residual ripple stabilised $\pm 0.3$ V
Working resistance:	$R_b$ (ohm) = $(U_b - 14 V) / 0.02 A$ for I variant, see load resistance diagram
Load resistance:	$R_L > 5 k\Omega$ for U variant
Power consumption:	$< 1.1 VA / 24 V DC$ ; $< 2.2 VA / 24 V AC$
Sensors:	<b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability

#### HUMIDITY

Measuring range, humidity:	0...100% RH
Permitted humidity:	$< 95\%$ RH, non-precipitating air
Accuracy in humidity:	<b>AFF / AFTF:</b> typically $\pm 2.0\%$ (20...80% RH) at $+25^\circ C$ , otherwise $\pm 3.0\%$ <b>AFF-20 / AFTF-20, AFF-25 / AFTF-25:</b> typically $\pm 1.8\%$ (10...90% RH) at $+25^\circ C$ , otherwise $\pm 2.0\%$
Output humidity:	0-10 V for U variant; 4...20 mA for I variant

#### TEMPERATURE

Measuring range, temperature:	<b>multi-range switching</b> (see table) <b><math>-35...+35^\circ C</math>; <math>-35...+75^\circ C</math>; <math>0...+50^\circ C</math>; <math>0...+80^\circ C</math></b>
Ambient temperature:	storage $-35...+85^\circ C$ ; operation $-30...+80^\circ C$ , non-precipitating
Accuracy, temperature:	<b>AFF / AFTF:</b> typically $\pm 0.4 K$ at $+25^\circ C$ <b>AFF-20 / AFTF-20, AFF-25 / AFTF-25:</b> typically $\pm 0.2 K$ at $+25^\circ C$
Output, temperature:	0-10 V for U variant; 4...20 mA for I variant; <b>AFTF-Uxx</b> (passive temperature sensor) see table
Electrical connection:	2-, 3-, or 4-wire connection (see connecting diagram), 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) or <b>M12 connector</b> 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:	126 x 90 x 50 mm (Tyr 2)
Protective tube:	<b>stainless steel V2A</b> (1.4301), $\varnothing$ 16 mm <b>AFF / AFTF:</b> NL = 55 mm <b>AFF-20 / AFTF-20:</b> NL = 137 mm <b>AFF-25 / AFTF-25:</b> NL = 88.5 mm
Sensor protection:	<b>AFF / AFTF, AFF-20 / AFTF-20:</b> <b>plastic sinter filter</b> , $\varnothing$ 16 mm, L = 35 mm, exchangeable (optional metal sinter filter, $\varnothing$ 16 mm, L = 32 mm) <b>AFF-25 / AFTF-25:</b> <b>pluggable measuring head</b> (probe), stainless steel V2A (1.4301), with metal sinter filter, $\varnothing$ 16 mm, L = 88.5 mm, exchangeable
Process connection:	by screws
Long-term stability:	$\pm 1\%$ per year
Protection class:	III (according to EN 60 730)
Protection type:	<b>IP 65</b> (according to EN 60 529)
Standards:	CE conformity, according to EMC directive 2014 / 30 / EU, according to EN 61326-1, according to EN 61326-2-3
Optional:	three-line <b>display with illumination</b> , cutout 70 x 40 mm (W x H), for displaying ACTUAL temperature and / or ACTUAL humidity

#### ACCESSORIES

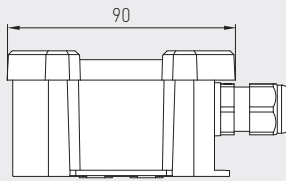
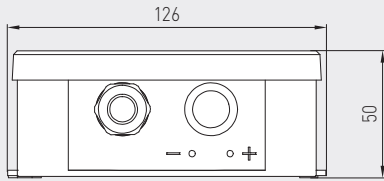
see last chapter



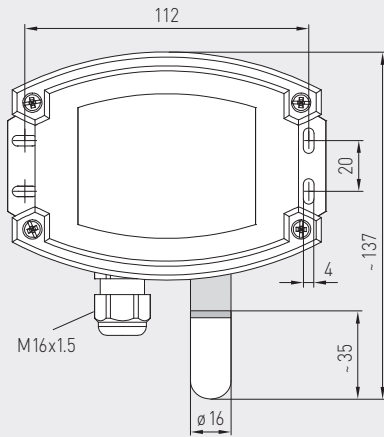
Dimensional drawing

AFF / AFTF  
AFF-20 / AFTF-20

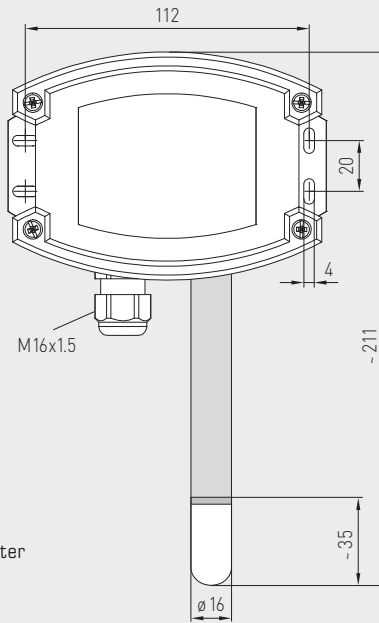
AFF / AFTF ( $\pm 2.0\%$ )  
with display and  
plastic sinter filter  
(standard)



AFF / AFTF



AFF-20 / AFTF-20



AFF-20 / AFTF-20 ( $\pm 1.8\%$ )  
with display and  
plastic sinter filter  
(standard)



SF-K  
Plastic sinter filter  
(standard)



SF-M  
Metal sinter filter  
(optional)

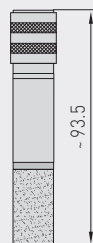
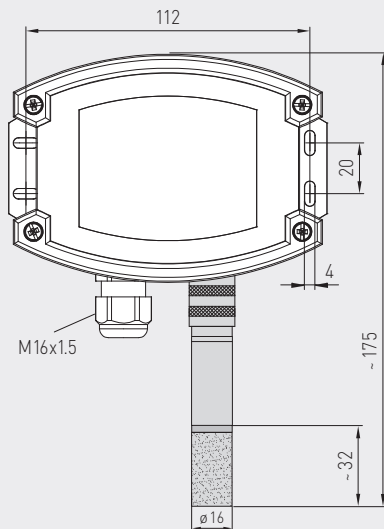


M12 connector  
(optional)

Dimensional drawing

AFF-25 / AFTF-25

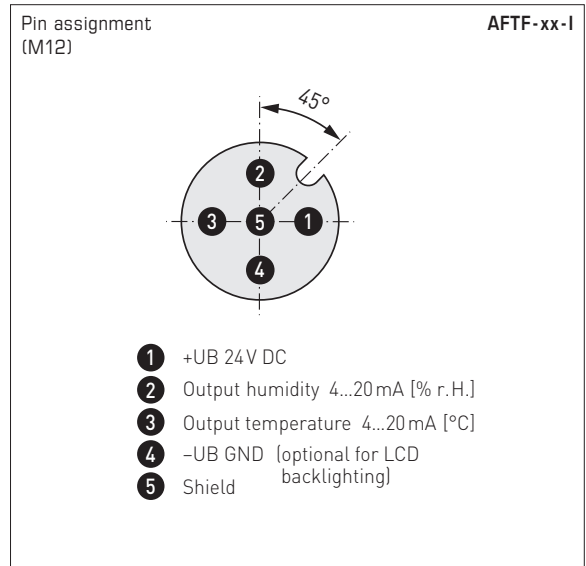
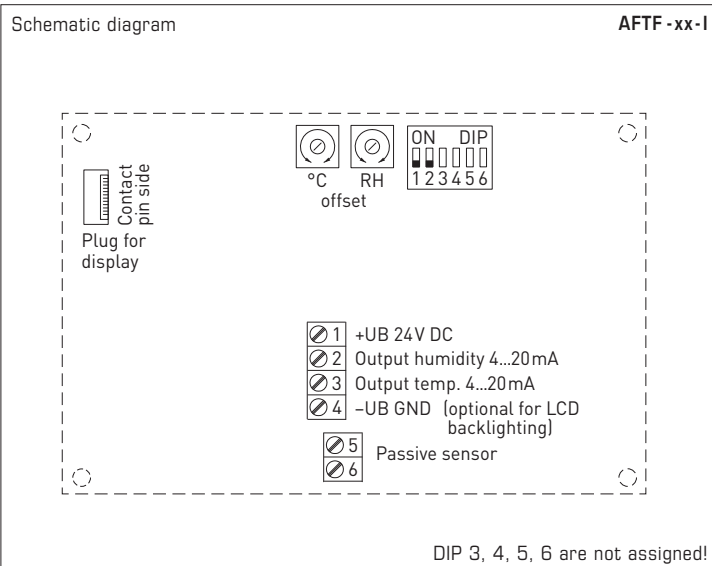
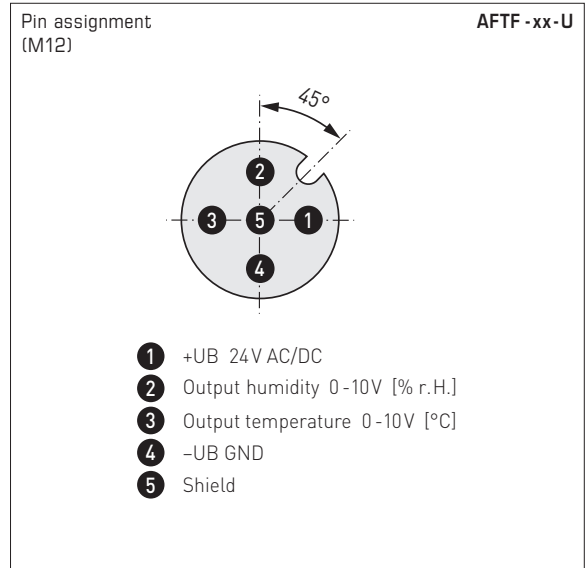
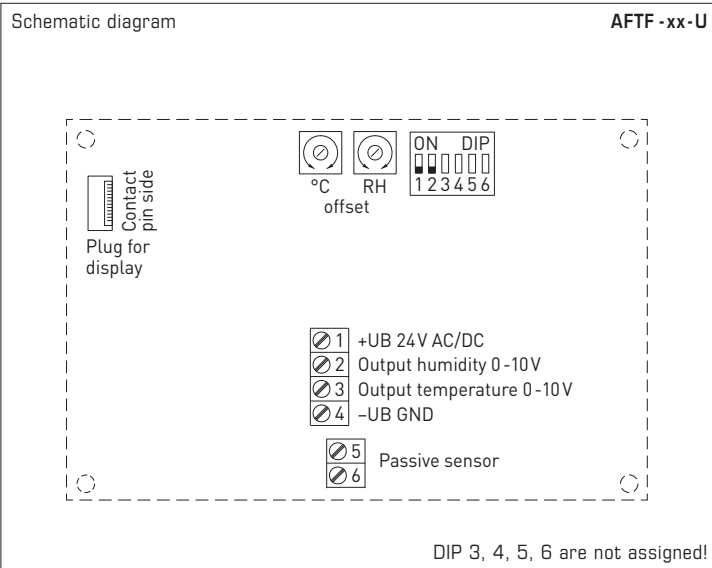
AFF-25 / AFTF-25 ( $\pm 1.8\%$ )  
pluggable measuring head  
with metal sinter filter  
and display



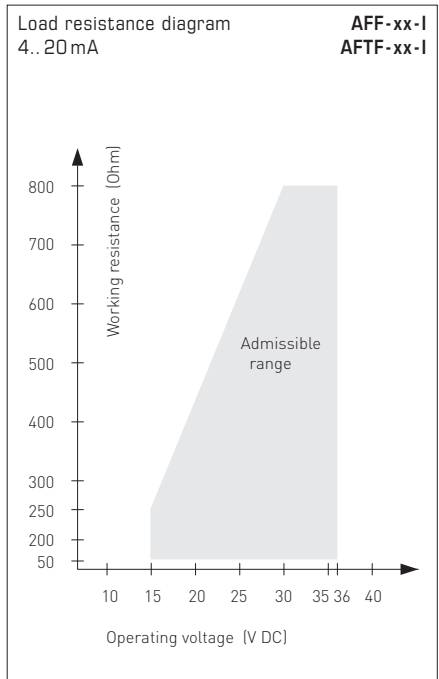
pluggable  
measuring head  
with metal  
sinter filter



On-wall humidity and temperature sensors ( $\pm 1.8\%$  /  $\pm 2.0\%$ ),  
 calibratable, with multi-range switching  
 and active/passive output



**AFF-xx / AFTF-xx**  
 with display,  
 hinged





**3-wire connection** **AFF-xx-U**

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

**2- or 3-wire connection \*** **AFF-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** **AFTF-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** **AFTF-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 \*\*** **AFTF-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** **AFTF-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 <sub>A</sub> [V]	I <sub>A</sub> [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> [V]	I <sub>A</sub> [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> [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...+80 °C

°C	U <sub>A</sub> [V]	I <sub>A</sub> [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 <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

On-wall humidity and temperature sensors ( $\pm 2.0\%$ ),  
calibratable, with multi-range switching  
and active/passive output

AFF / AFTF ( $\pm 2,0\%$ )  
with cable gland



**WS-03**  
Weather and sun  
protection hood

**HYGRASGARD® AFF** On-wall humidity sensors ( $\pm 2.0\%$ ), *Standard*  
**HYGRASGARD® AFTF** On-wall humidity and temperature sensors ( $\pm 2.0\%$ ), *Standard*

Type / WG02	Measuring Range / Readout		Output		Display	Item No.	Price
	Humidity	Temperature	Humidity	Temperature			
<b>AFF</b>							
AFF-I	0...100% RH	–	4...20 mA	–		1201-7112-0000-000	203,87 €
AFF-I LCD	0...100% RH	–	4...20 mA	–	■	1201-7112-0400-000	258,42 €
AFF-U	0...100% RH	–	0-10V	–		1201-7111-0000-000	203,87 €
AFF-U LCD	0...100% RH	–	0-10V	–	■	1201-7111-0400-000	258,42 €
<b>AFTF</b>							
AFTF-I	0...100% RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA		1201-7112-1000-000	223,64 €
AFTF-I LCD	0...100% RH	(4x as above)	4...20 mA	4...20 mA	■	1201-7112-1400-000	278,19 €
AFTF-U	0...100% RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10V	0-10V		1201-7111-1000-000	223,64 €
AFTF-U LCD	0...100% RH	(4x as above)	0-10V	0-10V	■	1201-7111-1400-000	278,19 €
<b>Housing variant:</b>	Cable connection <b>with cable gland</b> (M12 connector on request)						

**HYGRASGARD® AFTF-U xx** On-wall humidity and temperature sensors ( $\pm 2.0\%$ ), *Standard*  
(passive temperature sensor)

Type / WG02	Measuring Range / Readout		Output		Item No.	Price
	Humidity	Temperature	Humidity	Temperature		
<b>AFTF-U xx</b>	<b>Pt, Ni, LM235Z, NTC</b>		<b>(active / passive)</b>			
AFTF-U Pt100	0...100% RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10V	0-10V + <b>Pt100</b>	1201-7111-2001-000	225,00 €
AFTF-U Pt1000	0...100% RH	(4x as above)	0-10V	0-10V + <b>Pt1000</b>	1201-7111-2005-000	226,37 €
AFTF-U Ni1000	0...100% RH	(4x as above)	0-10V	0-10V + <b>Ni1000</b>	1201-7111-2009-000	227,05 €
AFTF-U NiTK	0...100% RH	(4x as above)	0-10V	0-10V + <b>Ni1000TK5000</b>	1201-7111-2010-000	227,73 €
AFTF-U LM235Z	0...100% RH	(4x as above)	0-10V	0-10V + <b>LM235Z</b> , 10mV / K	1201-7111-2021-000	226,50 €
AFTF-U NTC1,8K	0...100% RH	(4x as above)	0-10V	0-10V + <b>NTC 1,8 kOhm</b>	1201-7111-2012-000	227,46 €
AFTF-U NTC10K	0...100% RH	(4x as above)	0-10V	0-10V + <b>NTC 10 kOhm</b>	1201-7111-2015-000	224,33 €
AFTF-U NTC20K	0...100% RH	(4x as above)	0-10V	0-10V + <b>NTC 20 kOhm</b>	1201-7111-2016-000	224,33 €
<b>Housing variant:</b>	Cable connection <b>with cable gland</b> (M12 connector on request)					



S+S REGELTECHNIK

**HYGRASGARD® AFF-25**  
**HYGRASGARD® AFTF-25**

On-wall humidity sensors and temperature sensors ( $\pm 1.8\%$ ),  
calibratable, with multi-range switching  
and active output



AFF-25 / AFTF-25 ( $\pm 1,8\%$ )  
with cable gland



HYGRASGARD® AFF-25		On-wall humidity sensors, <b>pluggable</b> ( $\pm 1.8\%$ ), <i>Deluxe</i>				
HYGRASGARD® AFTF-25		On-wall humidity and temperature sensors, <b>pluggable</b> ( $\pm 1.8\%$ ), <i>Deluxe</i>				
Type / WG02	Measuring Range / Readout	Output	Display	Item No.	Price	
	Humidity	Humidity				
	Temperature	Temperature				
<b>AFF-25</b>						
AFF-25-I	0...100 % RH	–		1201-7132-0000-101	<b>381,82 €</b>	
AFF-25-I LCD	0...100 % RH	–	■	1201-7132-0400-101	<b>435,19 €</b>	
AFF-25-U	0...100 % RH	–		1201-7131-0000-101	<b>381,82 €</b>	
AFF-25-U LCD	0...100 % RH	–	■	1201-7131-0400-101	<b>435,19 €</b>	
<b>AFTF-25</b>						
AFTF-25-I	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4... 20 mA	4... 20 mA	1201-7132-1000-101	<b>405,00 €</b>
AFTF-25-I LCD	0...100 % RH	(4x as above)	4... 20 mA	4... 20 mA	■ 1201-7132-1400-101	<b>458,38 €</b>
AFTF-25-U	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V	1201-7131-1000-101	<b>405,00 €</b>
AFTF-25-U LCD	0...100 % RH	(4x as above)	0-10 V	0-10 V	■ 1201-7131-1400-101	<b>458,38 €</b>
<b>Housing variant:</b>	Cable connection <b>with cable gland</b> (M12 connector on request)					

ACCESSORIES					
<b>SF-M</b>	Metal sinter filter, $\varnothing$ 16 mm, L=32 mm, exchangeable stainless steel <b>V4A</b> (1.4404)			7000-0050-2200-100	<b>45,34 €</b>
<b>MSK-25</b>	Pluggable <b>measuring head</b> (probe) stainless steel <b>V2A</b> (1.4301), Metal sinter filter, $\varnothing$ 16 mm, L=88.5 mm, exchangeable replacement element for <b>AFF-25/AFTF-25</b>			7201-1131-0000-000	<b>230,46 €</b>
<b>WS-01</b>	Sun and ball-impact protection hood, 184 x 180 x 80 mm, stainless steel <b>V2A</b> (1.4301)			7100-0040-2000-000	<b>34,03 €</b>
<b>WS-03</b>	Weather and sun protection hood, 200 x 180 x 150 mm, stainless steel <b>V2A</b> (1.4301)			7100-0040-6000-000	<b>47,92 €</b>

For further information see last chapter!

On-wall humidity sensors and temperature sensors ( $\pm 1.8\%$ ),  
calibratable, with multi-range switching  
and active output

AFTF-20-Q ( $\pm 1.8\%$ )  
with M12 connector



**HYGRASGARD® AFTF-20-Q** On-wall humidity sensors and temperature sensors ( $\pm 1.8\%$ ), *Premium*  
(with M12 connector)

Type / WG02	Measuring Range / Readout		Output		Display	Item No.	Price
	Humidity	Temperature	Humidity	Temperature	● = Q		
<b>AFTF-20-Q</b>							
AFTF-20-I Q	0...100% RH	-35...+75 °C -35...+35 °C 0...+50 °C 0...+80 °C	4... 20 mA	4... 20 mA	●	2003-6121-2100-001	<b>328,60 €</b>
AFTF-20-I Q LCD	0...100% RH	(4x as above)	4... 20 mA	4... 20 mA	● ■	2003-6122-2100-001	<b>380,41 €</b>
AFTF-20-U Q	0...100% RH	-35...+75 °C -35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V	●	2003-6121-1100-001	<b>328,60 €</b>
AFTF-20-U Q LCD	0...100% RH	(4x as above)	0-10 V	0-10 V	● ■	2003-6122-1100-001	<b>380,41 €</b>
<b>Housing variant "Q":</b>		Cable connection with M12 connector (male, 5-pin, A-code)					

**ACCESSORIES**

<b>SF-M</b>	Metal sinter filter, $\varnothing$ 16 mm, L = 32 mm, exchangeable stainless steel V4A (1.4404)	7000-0050-2200-100	<b>45,34 €</b>
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For further information see last chapter!



S+S REGELTECHNIK

HYGRASGARD® AFF-20  
HYGRASGARD® AFTF-20

On-wall humidity sensors and temperature sensors ( $\pm 1.8\%$ ),  
calibratable, with multi-range switching  
and active output



AFF-20 / AFTF-20 ( $\pm 1.8\%$ )  
with cable gland



HYGRASGARD® AFF-20		On-wall humidity sensors ( $\pm 1.8\%$ ), <i>Premium</i> (with cable gland)					
Type / WG02	Measuring Range / Readout Humidity	Readout Temperature	Output Humidity	Temperature	Display	Item No.	Price
<b>AFF-20</b>							
AFF-20-I	0...100% RH	–	4...20 mA	–		1201-7112-0000-201	258,42 €
AFF-20-I LCD	0...100% RH	–	4...20 mA	–	■	1201-7112-0400-201	312,96 €
AFF-20-U	0...100% RH	–	0-10 V	–		1201-7111-0000-201	258,42 €
AFF-20-U LCD	0...100% RH	–	0-10 V	–	■	1201-7111-0400-201	312,96 €
<b>Housing variant:</b>	Cable connection <b>with cable gland</b> (M12 connector on request)						

HYGRASGARD® AFTF-20		On-wall humidity and temperature sensors ( $\pm 1.8\%$ ), <i>Premium</i> (with cable gland)					
Type / WG02	Measuring Range / Readout Humidity	Readout Temperature	Output Humidity	Temperature	Display	Item No.	Price
<b>AFTF-20</b>							
AFTF-20-I	0...100% RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA		1201-7112-1000-201	283,68 €
AFTF-20-I LCD	0...100% RH	(4x as above)	4...20 mA	4...20 mA	■	1201-7112-1400-201	335,52 €
AFTF-20-U	0...100% RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V		1201-7111-1000-201	283,68 €
AFTF-20-U LCD	0...100% RH	(4x as above)	0-10 V	0-10 V	■	1201-7111-1400-201	335,52 €
<b>Housing variant:</b>	Cable connection <b>with cable gland</b> (M12 connector see <b>AFTF-20-Q</b> )						

ACCESSORIES								
<b>SF-M</b>	Metal sinter filter, $\varnothing$ 16 mm, L = 32 mm, exchangeable stainless steel V4A (1.4404)						7000-0050-2200-100	45,34 €
For further information see last chapter!								

