HYGRASGARD® AFF-xx
HYGRASGARD® AFTF-xx

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

S+S REGELTECHNIK

Calibratable outdoor humidity/temperature sensor **HYGR**ASGARD® **AFF/AFTF** (± 2,0 %) and **AFF-20/AFTF-20** (± 1,8 %) with plastic sinter filter (optional metal sinter filter) or **AFF-25/AFTF-25** (± 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 - 10 V 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.

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
Permitted humidity:	< 95 % RH, non-precipitating air
Deviation in humidity:	**AFF / AFTF:** typically **± 2.0** % (20...80 % RH) at +25 °C, otherwise ± 3.0 % **AFF-20 / AFTF-20, AFF-25 / AFTF-25:** 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** (see table) **–35...+35 °C; –35...+75 °C; 0...+50 °C; 0...+80 °C**
Ambient temperature:	storage –35...+85 °C; operation –30...+80 °C, non-precipitating
Deviation, temperature:	**AFF / AFTF:** typically ± 0.4 K at +25 °C **AFF-20 / AFTF-20, AFF-25 / AFTF-25:** typically ± 0.2 K at +25 °C
Output, temperature:	0 - 10 V for U variant; 4...20 mA for I variant; **AFTF-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:	126 x 90 x 50 mm (Typ 2)
Protective tube:	**stainless steel V2A** (1.4301), Ø 16 mm **AFF / AFTF:** NL = 55 mm **AFF-20 / AFTF-20:** NL = 137 mm **AFF-25 / AFTF-25:** NL = 88.5 mm
Sensor protection:	**AFF / AFTF, AFF-20 / AFTF-20:** **plastic** sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional metal sinter filter, Ø 16 mm, L = 32 mm) **AFF-25 / AFTF-25:** **pluggable measuring head** (probe), stainless steel **V2A** (1.4301), with metal sinter filter, Ø 16 mm, L = 88.5 mm, exchangeable
Process connection:	by screws
Long-term stability:	± 1 % per year
Protection class:	III (according to EN 60 730)
Protection type:	**IP 65** (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 **display with illumination**, cutout 70 x 40 mm (W x H), for displaying ACTUAL temperature and / or ACTUAL humidity
ACCESSORIES	see last chapter

AFF / AFTF (± 2.0 %)
with plastic sinter filter
(standard)



AFF-20 / AFTF-20 (± 1.8 %)
with plastic sinter filter
(standard)



AFF-25 / AFTF-25 (± 1.8 %)
pluggable measuring head
with metal sinter filter



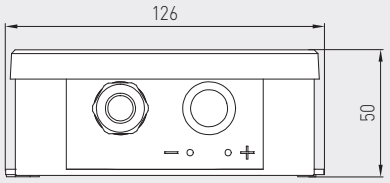
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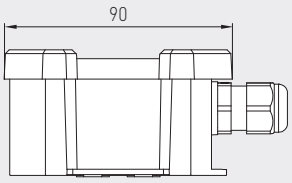
HYGRASGARD® AFF-xx
HYGRASGARD® AFTF-xx

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

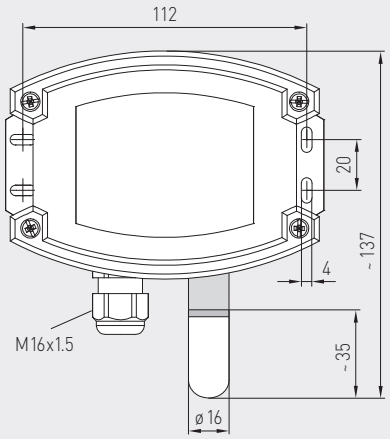
Dimensional drawing

AFF/AFTF
AFF-20/AFTF-20

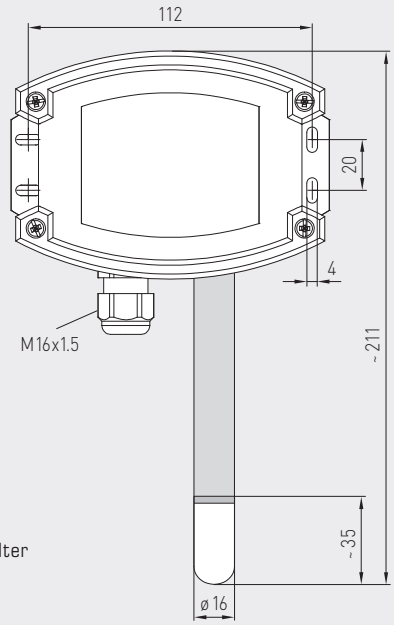




AFF/AFTF



AFF-20/AFTF-20





SF-K
Plastic sinter filter
(standard)



SF-M
Metal sinter filter
(optional)



M12 connector
(optional)

AFF/AFTF (± 2.0 %)
with display and
plastic sinter filter
(standard)

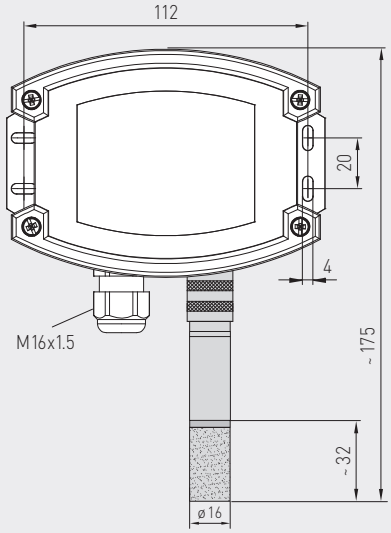


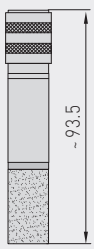
AFF-20/AFTF-20 (± 1.8 %)
with display and
plastic sinter filter
(standard)



Dimensional drawing

AFF-25/AFTF-25





pluggable measuring head
with **metal** sinter filter

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

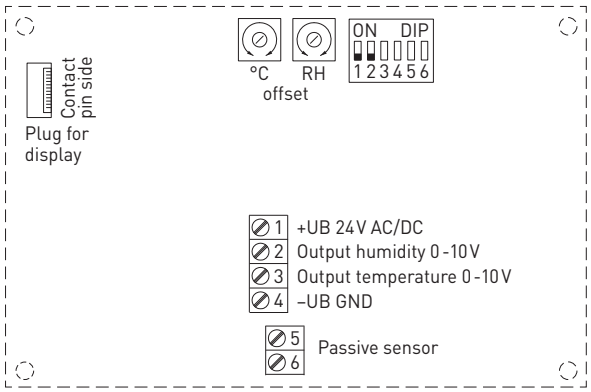


HYGRASGARD® AFF-xx
HYGRASGARD® AFTF-xx

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

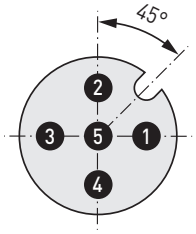
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Schematic diagram **AFTF-xx-U**



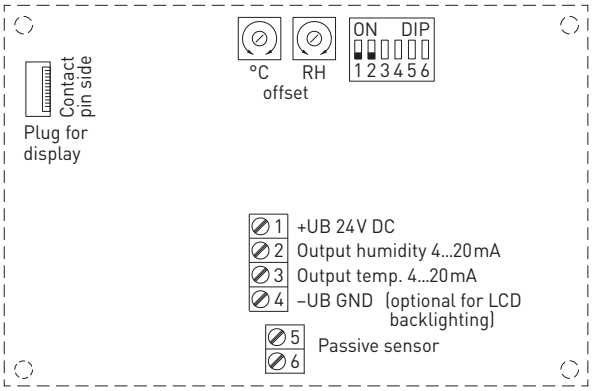
DIP 3, 4, 5, 6 are not assigned!

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



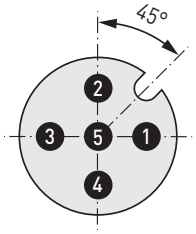
1. +UB 24V AC/DC
2. Output humidity 0-10V [% r.H.]
3. Output temperature 0-10V [°C]
4. –UB GND
5. Shield

Schematic diagram **AFTF-xx-I**



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

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

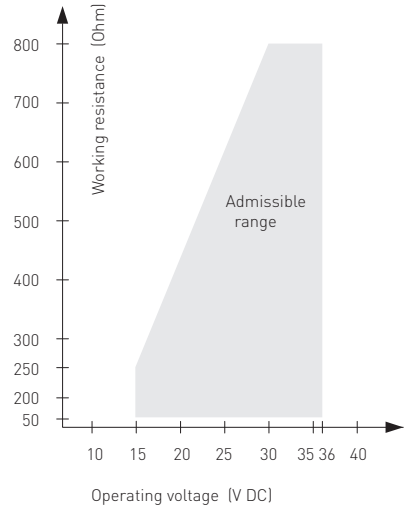


1. +UB 24V DC
2. Output humidity 4...20mA [% r.H.]
3. Output temperature 4...20mA [°C]
4. –UB GND (optional for LCD backlighting)
5. Shield

AFF-xx / AFTF-xx
with display, hinged



Load resistance diagram 4..20mA **AFF-xx-I** **AFTF-xx-I**



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HYGRASGARD® AFF-xx
HYGRASGARD® AFTF-xx

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

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_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® AFF
HYGRASGARD® AFTF

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

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AFF / AFTF (± 2,0%)
with cable gland







WS-03
Weather and sun protection hood

HYGRASGARD® AFF **HYGRASGARD® AFTF**	On-wall humidity sensors (± 2.0 %), *Standard* On-wall humidity and temperature sensors (± 2.0 %), *Standard*						
Type / WG02	**Measuring Range / Readout** Humidity	Temperature	**Output** Humidity	Temperature	**Display**	**Item No.**	**Price**
AFF							
AFF-I	0...100 % RH	–	4...20 mA	–		1201-7112-0000-000	**196,03 €**
AFF-I **LCD**	0...100 % RH	–	4...20 mA	–	■	1201-7112-0400-000	**248,48 €**
AFF-U	0...100 % RH	–	0-10 V	–		1201-7111-0000-000	**196,03 €**
AFF-U **LCD**	0...100 % RH	–	0-10 V	–	■	1201-7111-0400-000	**248,48 €**
AFTF							
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	**215,04 €**
AFTF-I **LCD**	0...100 % RH	(4x as above)	4...20 mA	4...20 mA	■	1201-7112-1400-000	**267,49 €**
AFTF-U	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V		1201-7111-1000-000	**215,04 €**
AFTF-U **LCD**	0...100 % RH	(4x as above)	0-10 V	0-10 V	■	1201-7111-1400-000	**267,49 €**
Housing variant:	Cable connection **with cable gland** (M12 connector on request)						

HYGRASGARD® **AFTF-U xx**	On-wall humidity and temperature sensors (± 2.0 %), *Standard* (passive temperature sensor)					
Type / WG02	**Measuring Range / Readout** Humidity	Temperature	**Output** Humidity	Temperature	**Item No.**	**Price**
AFTF-U xx	**Pt, Ni, LM235Z, NTC**			(active / **passive**)		
AFTF-U Pt100	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V + **Pt100**	1201-7111-2001-000	**216,35 €**
AFTF-U Pt1000	0...100 % RH	(4x as above)	0-10 V	0-10 V + **Pt1000**	1201-7111-2005-000	**217,66 €**
AFTF-U Ni1000	0...100 % RH	(4x as above)	0-10 V	0-10 V + **Ni1000**	1201-7111-2009-000	**218,32 €**
AFTF-U NiTK	0...100 % RH	(4x as above)	0-10 V	0-10 V + **Ni1000TK5000**	1201-7111-2010-000	**218,97 €**
AFTF-U LM235Z	0...100 % RH	(4x as above)	0-10 V	0-10 V + **LM235Z**, 10mV / K	1201-7111-2021-000	**217,79 €**
AFTF-U NTC1,8K	0...100 % RH	(4x as above)	0-10 V	0-10 V + **NTC 1,8 kOhm**	1201-7111-2012-000	**218,71 €**
AFTF-U NTC10K	0...100 % RH	(4x as above)	0-10 V	0-10 V + **NTC 10 kOhm**	1201-7111-2015-000	**215,70 €**
AFTF-U NTC20K	0...100 % RH	(4x as above)	0-10 V	0-10 V + **NTC 20 kOhm**	1201-7111-2016-000	**215,70 €**
Housing variant:	Cable connection **with cable gland** (M12 connector on request)					

HYGRASGARD® AFF-25
HYGRASGARD® AFTF-25

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



AFF-25 / AFTF-25 (± 1,8 %)
with cable gland

HYGRASGARD® AFF-25	On-wall humidity sensors, **pluggable** (± 1.8 %), *Deluxe*
HYGRASGARD® AFTF-25	On-wall humidity and temperature sensors, **pluggable** (± 1.8 %), *Deluxe*

Type / WG02	Measuring Range / Readout Humidity	Temperature	Output Humidity	Temperature	Display	Item No.	Price
AFF-25							
AFF-25-I	0...100 % RH	–	4... 20 mA	–		1201-7132-0000-101	**367,13 €**
AFF-25-I **LCD**	0...100 % RH	–	4... 20 mA	–	■	1201-7132-0400-101	**418,45 €**
AFF-25-U	0...100 % RH	–	0-10 V	–		1201-7131-0000-101	**367,13 €**
AFF-25-U **LCD**	0...100 % RH	–	0-10 V	–	■	1201-7131-0400-101	**418,45 €**
AFTF-25							
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	**389,42 €**
AFTF-25-I **LCD**	0...100 % RH	(4x as above)	4... 20 mA	4... 20 mA	■	1201-7132-1400-101	**440,75 €**
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	**389,42 €**
AFTF-25-U **LCD**	0...100 % RH	(4x as above)	0-10 V	0-10 V	■	1201-7131-1400-101	**440,75 €**
Housing variant:	Cable connection **with cable gland**		(M12 connector 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 €**
MSK-25	Pluggable **measuring head** (probe) stainless steel **V2A** (1.4301), **Metal** sinter filter, Ø 16 mm, L = 88.5 mm, exchangeable replacement element for **AFF-25 / AFTF-25**	7201-1131-0000-000	**221,60 €**
WS-01	**Sun and ball-impact protection hood**, 184 x 180 x 80 mm, stainless steel **V2A** (1.4301)	7100-0040-2000-000	**32,72 €**
WS-03	**Weather and sun protection hood**, 200 x 180 x 150 mm, stainless steel **V2A** (1.4301)	7100-0040-6000-000	**46,08 €**
	For further information see last chapter!		

HYGRASGARD® AFTF-20-Q

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

S+S REGELTECHNIK

AFTF-20-Q (± 1,8 %)
with M12 connector



HYGRASGARD® AFTF-20-Q	On-wall humidity sensors and temperature sensors (± 1,8 %), *Premium* (**with M12 connector**)						
Type / WG02	**Measuring Range / Readout** Humidity	Temperature	**Output** Humidity	Temperature	**Display** ● = **Q**	**Item No.**	**Price**
AFTF-20-Q							
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	**315,96 €**
AFTF-20-I **Q LCD**	0...100 % RH	(4x as above)	4...20 mA	4...20 mA	● ■	2003-6122-2100-001	**365,78 €**
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	**315,96 €**
AFTF-20-U **Q LCD**	0...100 % RH	(4x as above)	0-10 V	0-10 V	● ■	2003-6122-1100-001	**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 last chapter!		

HYGRASGARD® AFF-20
HYGRASGARD® AFTF-20

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



AFF-20 / AFTF-20 (± 1,8 %)
with cable gland

HYGRASGARD® AFF-20 — On-wall humidity sensors (± 1.8 %), *Premium* (with cable gland)

Type / WG02	Measuring Range / Readout Humidity	Temperature	Output Humidity	Temperature	Display	Item No.	Price
AFF-20							
AFF-20-I	0...100 % RH	–	4... 20 mA	–		1201-7112-0000-201	**248,48 €**
AFF-20-I **LCD**	0...100 % RH	–	4... 20 mA	–	■	1201-7112-0400-201	**300,92 €**
AFF-20-U	0...100 % RH	–	0-10 V	–		1201-7111-0000-201	**248,48 €**
AFF-20-U **LCD**	0...100 % RH	–	0-10 V	–	■	1201-7111-0400-201	**300,92 €**
Housing variant:	Cable connection **with cable gland** (M12 connector on request)						

HYGRASGARD® AFTF-20 — On-wall humidity and temperature sensors (± 1.8 %), *Premium* (with cable gland)

Type / WG02	Measuring Range / Readout Humidity	Temperature	Output Humidity	Temperature	Display	Item No.	Price
AFTF-20							
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	**272,77 €**
AFTF-20-I **LCD**	0...100 % RH	(4x as above)	4... 20 mA	4... 20 mA	■	1201-7112-1400-201	**322,62 €**
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	**272,77 €**
AFTF-20-U **LCD**	0...100 % RH	(4x as above)	0-10 V	0-10 V	■	1201-7111-1400-201	**322,62 €**
Housing variant:	Cable connection **with cable gland** (M12 connector see **AFTF-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 last chapter!		