



HYGRASGARD® AFF-SD HYGRASGARD® AFTF-SD

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



S+S REGELTECHNIK

The calibratable outdoor humidity/temperature sensors **HYGRASGARD® AFF-SD/AFTF-SD** measure the relative humidity and/or temperature of air. They convert the measurands into standard signals of 0-10 V or 4...20 mA and are available with or without an optional display. Terminal box housing made of impact-resistant plastic with housing cover with quick-locking screws. 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 precise detection of humidity. A digital long-term stable sensor is used as a 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 ($\pm 20\%$); 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:	$R_a \text{ (ohm)} = (U_b - 14 \text{ V}) / 0.02 \text{ A}$ for I variant
Load resistance:	$R_L > 5 \text{ kOhm}$ for U variant
Power consumption:	$< 1.1 \text{ VA} / 24 \text{ V DC}$; $< 2.2 \text{ VA} / 24 \text{ V AC}$
Sensors:	digital humidity sensor with integrated temperature sensor , low hysteresis, high long-term stability
Sensor protection:	plastic sinter filter, $\varnothing 16 \text{ mm}$, $L = 35 \text{ mm}$, exchangeable (optional metal sinter filter, $\varnothing 16 \text{ mm}$, $L = 32 \text{ mm}$)

HUMIDITY

Measuring range, humidity:	0...100 % RH (output corresponding to 0 -10 V or 4...20 mA)
Operating range, humidity:	0...95 % RH (without dew formation)
Accuracy, humidity:	typically $\pm 2.0\%$ (20...80 % RH) at $+25^\circ\text{C}$, otherwise $\pm 3.0\%$
Output, humidity:	0 -10 V for U variant 4...20 mA for I variant, see load resistance diagram

TEMPERATURE

Measuring range, temperature:	multi-range switching (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)
Accuracy, temperature:	typically $\pm 0.6 \text{ K}$ at $+25^\circ\text{C}$
Output, temperature:	0 -10 V or 4...20 mA or Ohm value
Ambient temperature:	storage $-35...+85^\circ\text{C}$, operation $-30...+70^\circ\text{C}$, non-precipitating
Electrical connection:	2-, 3-, or 4-wire connection (see connecting diagram), 0.14 - 1.5 mm ² , via terminal screws
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 without display) 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 on request)
Protective tube:	stainless steel V2A (1.4301), $\varnothing = 16 \text{ mm}$, $NL = 55 \text{ mm}$
Process connection:	by screws
Long-term stability:	$\pm 1\%$ per year
Protection class:	III (according to EN 60730)
Protection type:	IP 65 (according to EN 60529) 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:	two-line display with illumination , cutout approx. 36 x 15 mm (W x H), for displaying ACTUAL temperature and/or ACTUAL humidity

ACCESSORIES

see last chapter

**AFF-SD
AFTF-SD**
compact form



SF-M
Metal sinter filter
(optional)





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HYGRASGARD® AFF-SD
HYGRASGARD® AFTF-SD

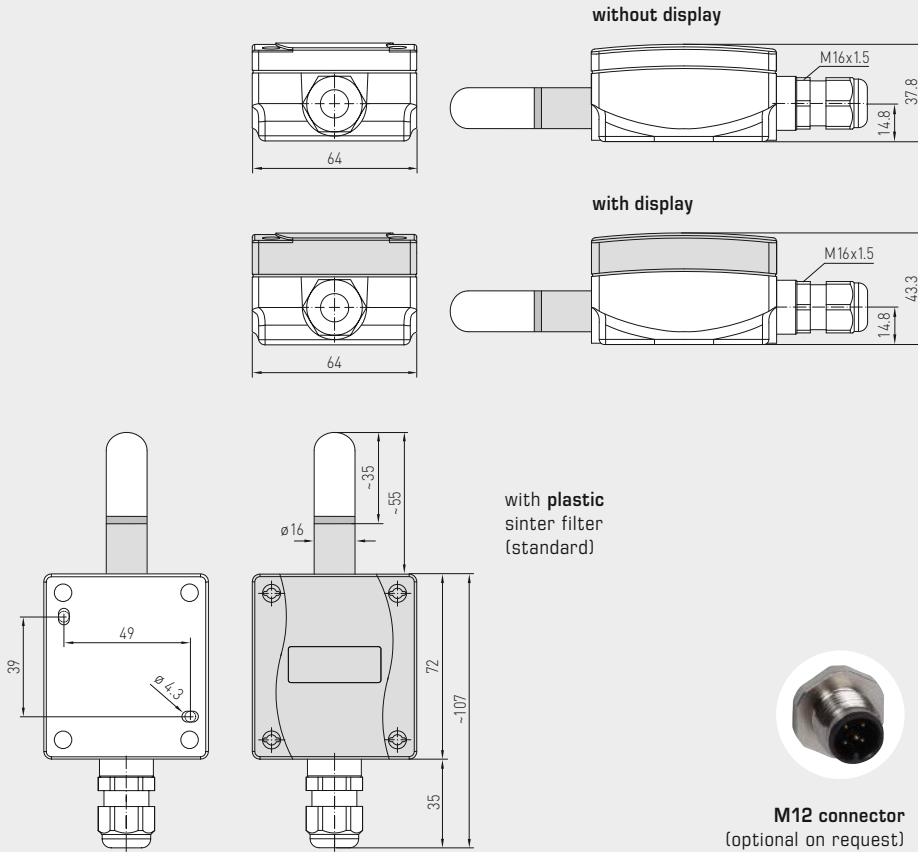
On-wall humidity and temperature sensors ($\pm 2.0\%$),
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and active output



Dimensional drawing

AFF-SD
AFTF-SD

AFF-SD
AFTF-SD
compact form
with display



SF-M
Metal sinter filter
(optional)



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-SD HYGRASGARD® AFTF-SD

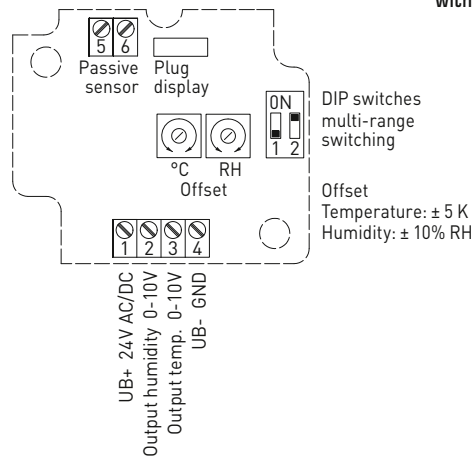
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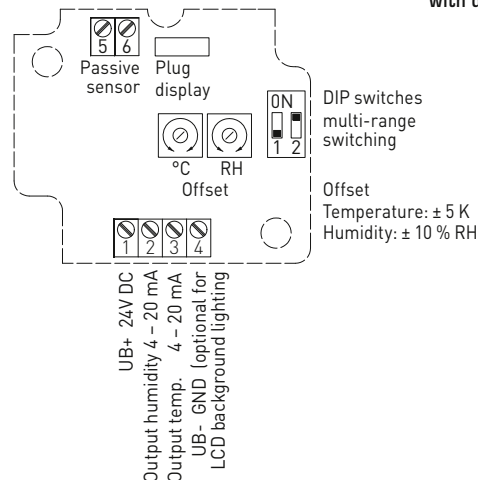
Schematic diagram

AFTF-SD-U
with display



Schematic diagram**

AFTF-SD-I
with display



3-wire
connection

AFF-SD-U

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

2- or 3-wire
connection*

AFF-SD-I
(Transmitter)

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

4-wire
connection

AFTF-SD-U

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

3- or 4-wire
connection**

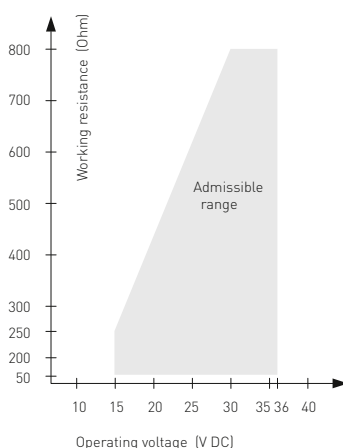
AFTF-SD-I
(Transmitter)

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

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

Load resistance
diagram

AFF-SD / AFTF-SD
4...20 mA



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!



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WS-04

Weather and sun protection hood
(optional)



AFF-SD

AFTF-SD

compact form
with display



HYGRASGARD® AFF-SD		On-wall humidity sensors, compact form ($\pm 2.0\%$), <i>Standard</i>				
HYGRASGARD® AFTF-SD		On-wall humidity and temperature sensors, compact form ($\pm 2.0\%$), <i>Standard</i>				
Type/WG01B	Measuring Range/Readout		Output		Display	Item No.
	Humidity	Temperature	Humidity	Temperature		
AFF-SD-I						I-variant
AFF-SD-I	0...100 % RH	–	4...20 mA	–		1201-1122-0000-100
AFF-SD-I LCD	0...100 % RH	–	4...20 mA	–	■	1201-1122-0200-000
AFF-SD-U						U-variant
AFF-SD-U	0...100 % RH	–	0-10 V	–		1201-1121-0000-100
AFF-SD-U LCD	0...100 % RH	–	0-10 V	–	■	1201-1121-0200-000
AFTF-SD-I						I-variant
AFTF-SD-I	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA		1201-1122-1000-100
AFTF-SD-I LCD	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	4...20 mA	4...20 mA	■	1201-1122-1200-100
AFTF-SD-U						U-variant
AFTF-SD-U	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V		1201-1121-1000-100
AFTF-SD-U LCD	0...100 % RH	–35...+75 °C –35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10 V	■	1201-1121-1200-100
Optional:		Cable connection with M12 connector according to DIN EN 61076-2-101				on request

ACCESSORIES		
SF-M	Metal sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel V4A (1.4404)	7000-0050-2200-100
WS-01	Sun and ball-impact protection hood, 184 x 180 x 80 mm, stainless steel V2A (1.4301)	7100-0040-2000-000
WS-04	Weather and sun protection hood, 130 x 180 x 135 mm, stainless steel V2A (1.4301)	7100-0040-7000-000
For further information, see last chapter Accessories!		