

**On-wall humidity and temperature sensors (± 2.0 %),
compact form, calibratable, with multi-range switching,
with active output (Automatic Output Switching)**

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

Calibratable on-wall humidity and temperature sensor **HYGRASGARD® AFF-SD / AFTF-SD** (± 2.0 %) with active output, in an impact-resistant plastic housing with quick-locking screws, with a plastic sinter filter (exchangeable), to exactly detect the relative humidity (0...100 %RH) and the temperature with 4 switchable measuring ranges (max. -35 °C/-31 °F to +80 °C/+176 °F), optionally with/without display. The standard display can be changed from SI [°C] to imperial [°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 on-wall sensor is applied in a non-aggressive, dust-free environment. It is used in the refrigeration, air conditioning and clean room technology, engineering rooms, hotels and conference facilities. 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.

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



SF-M
Metal sinter filter
(optional)



TECHNICAL DATA

AFF/AFTF-SD-I (I2W)

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

AFF/AFTF-SD-A (AOS)

Power supply:	24 V AC / DC (± 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:	< 1.0W / 24V DC; < 2.2VA / 24V AC
System of units:	SI (default) or Imperial (switchable via DIP switch)
Data points:	Humidity [%RH]; Temperature [°C] [°F]
Sensors:	digital humidity sensor with integrated temperature sensor, low hysteresis, high long-term stability
Measuring range, humidity:	0...100 % RH
Operating range, humidity:	0...95 % RH (without formation of dew)
Accuracy in humidity:	typically ± 2.0 % (20...80 % RH) bei +25 °C, otherwise ± 3.0 %
Measuring range temp.:	multi-range switching with 4 measuring ranges (via DIP switch) 0...+50 °C / +32...+122 °F 0...+80 °C / +32...+176 °F -35...+75 °C / -31...+167 °F -35...+35 °C / -31... +95 °F
Operating range temp.:	-10...+60 °C / +14...+140 °F
Accuracy temperature:	typically ± 0.2K / ± 0.5 °F at +25 °C / +77 °F
Ambient temperature:	storage -35...+85 °C; operation -30...+70 °C, non-precipitating
Long-term stability:	± 1 % per year
Sensor protection:	plastic sinter filter , Ø 16 mm, L = 35 mm, exchangeable (optional metal sinter filter , Ø 16 mm, L = 32 mm)
Protective tube:	stainless steel V2A (1.4301), Ø=16 mm, NL= 55 mm (with filter)
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)
Electrical connection:	2-, 3- or 4-wire (see connecting diagram), 0.14 - 1.5 mm ² , 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 on request)
Process connection:	by screws
Protection class:	III (according to EN 60 730)
Protection type:	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
Optional:	two-line display with illumination , cutout approx. 36 x 15 mm (W x H), to display the ACTUAL temperature and / or ACTUAL humidity

ACCESSORIES see last chapter



NEW

S+S REGELTECHNIK

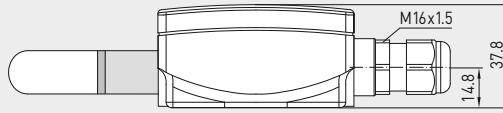
HYGRASGARD® AFF-SD
HYGRASGARD® AFTF-SD

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

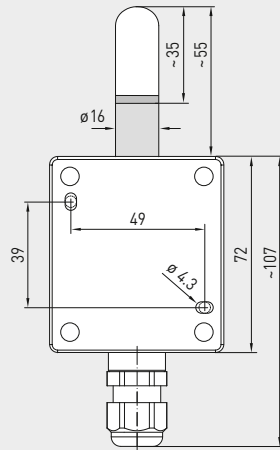
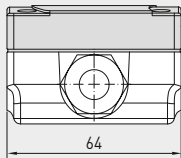
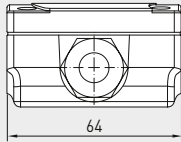
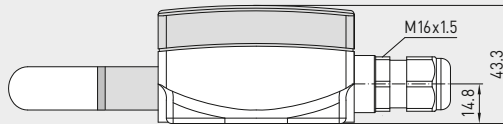
Dimensional drawing [mm]

AFF-SD
AFTF-SD

without display



with display



SF-K
Plastic sinter filter (standard)



SF-M
Metal sinter filter (optional)



M12 connector
(optional on request)



AFF-SD
AFTF-SD
compact form
with display



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

AOS-PATENTED
AUTOMATIC OUTPUT SWITCHING

Temperature
MB: -35...+75 °C / -31...+167 °F

°C	U _A [V]	I _A [mA]	°F
-35	0.0	4.0	-31
-30	0.5	4.7	-22
-25	0.9	5.5	-13
-20	1.4	6.2	-4
-15	1.8	6.9	+5
-10	2.3	7.6	+14
-5	2.7	8.4	+23
0	3.2	9.1	+32
+5	3.6	9.8	+41
+10	4.1	10.5	+50
+15	4.5	11.3	+59
+20	5.0	12.0	+68
+25	5.5	12.7	+77
+30	5.9	13.5	+86
+35	6.4	14.2	+95
+40	6.8	14.9	+104
+45	7.3	15.6	+113
+50	7.7	16.4	+122
+55	8.2	17.1	+131
+60	8.6	17.8	+140
+65	9.1	18.5	+149
+70	9.5	19.2	+158
+75	10.0	20.0	+167

Temperature
MB: -35...+35 °C / -31...+95 °F

°C	U _A [V]	I _A [mA]	°F
-35	0.0	4.0	-31
-30	0.7	5.1	-22
-25	1.4	6.3	-13
-20	2.1	7.4	-4
-15	2.9	8.6	+5
-10	3.6	9.7	+14
-5	4.3	10.9	+23
0	5.0	12.0	+32
+5	5.7	13.1	+41
+10	6.4	14.3	+50
+15	7.1	15.4	+59
+20	7.9	16.6	+68
+25	8.6	17.7	+77
+30	9.3	18.9	+86
+35	10.0	20.0	+95

Temperature
MB: 0...+50 °C / +32...+122 °F

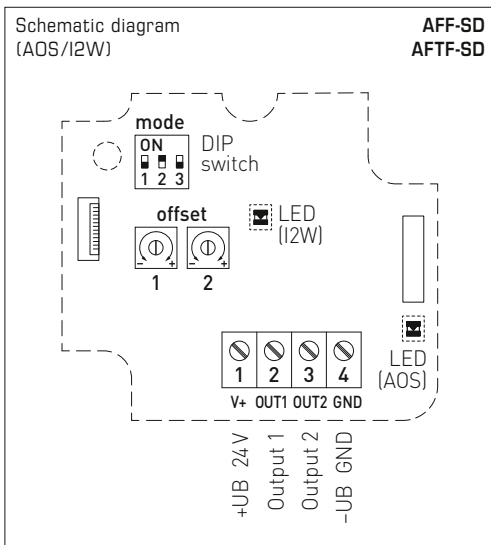
°C	U _A [V]	I _A [mA]	°F
0	0.0	4.0	+32
+5	1.0	5.6	+41
+10	2.0	7.2	+50
+15	3.0	8.8	+59
+20	4.0	10.4	+68
+25	5.0	12.0	+77
+30	6.0	13.6	+86
+35	7.0	15.2	+95
+40	8.0	16.8	+104
+45	9.0	18.4	+113
+50	10.0	20.0	+122

Temperature
MB: 0...+80 °C / +32...+176 °F

°C	U _A [V]	I _A [mA]	°F
0	0.0	4.0	+32
+5	0.6	5.0	+41
+10	1.3	6.0	+50
+15	1.9	7.0	+59
+20	2.5	8.0	+68
+25	3.1	9.0	+77
+30	3.8	10.0	+86
+35	4.4	11.0	+95
+40	5.0	12.0	+104
+45	5.6	13.0	+113
+50	6.3	14.0	+122
+55	6.9	15.0	+131
+60	7.5	16.0	+140
+65	8.1	17.0	+149
+70	8.8	18.0	+158
+75	9.4	19.0	+167
+80	10.0	20.0	+176

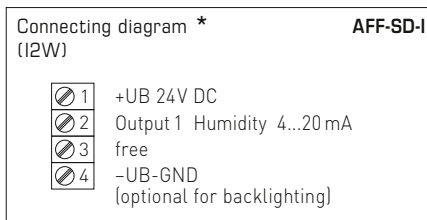
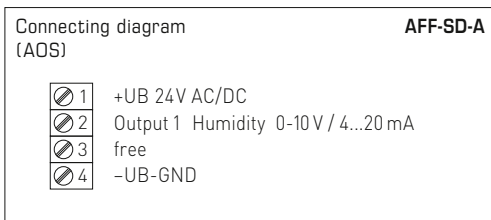
Humidity
MB: 0...100% RH

% 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



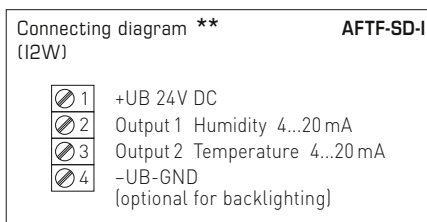
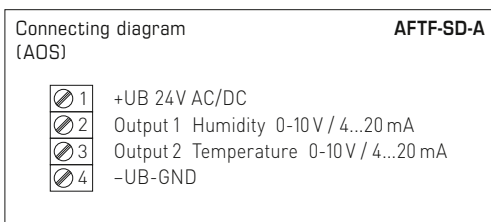
DIP switches	AFF-SD / AFTF-SD	
Measuring range temperature	DIP 1	DIP 2
-35...+35 °C / -31... +95 °F	OFF	OFF
0...+80 °C / +32...+176 °F	ON	OFF
0...+50 °C / +32...+122 °F (default)	OFF	ON
-35...+75 °C / -31...+167 °F	ON	ON
System of units	DIP 3	
Imperial: [°F]	ON	
SI: [°C] (default)	OFF	
Temperature		
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)

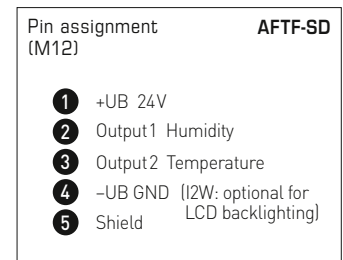
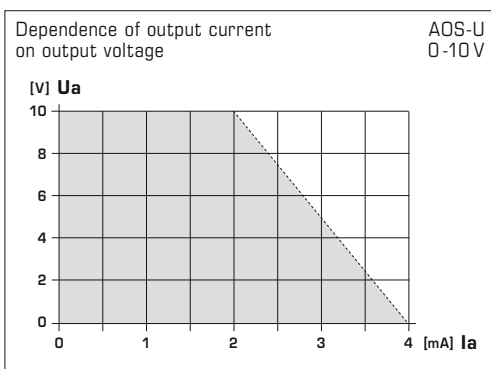
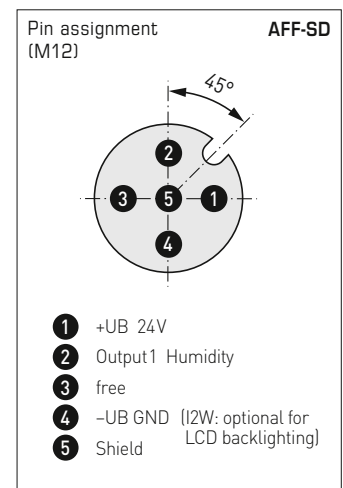
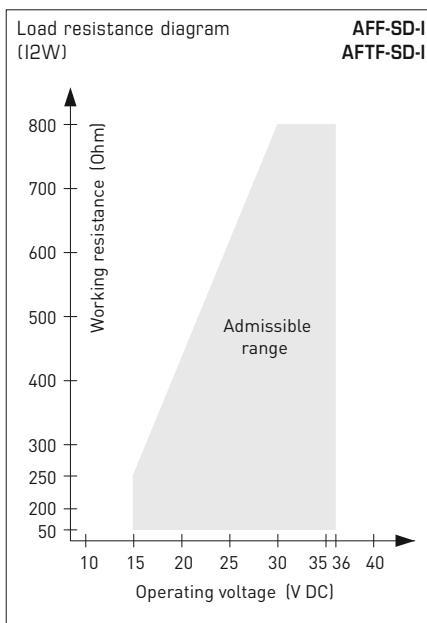
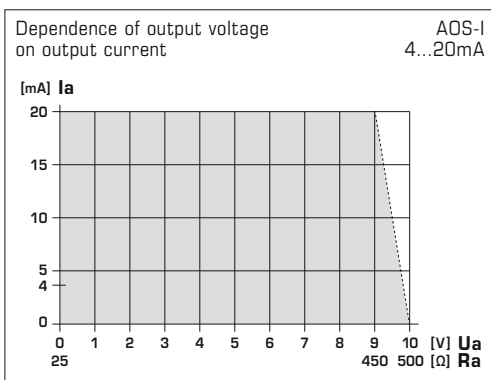


For the I variant (I2W) the humidity path must be connected!

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





NEW

S+S REGELTECHNIK

HYGRASGARD® AFF-SD
HYGRASGARD® AFTF-SD

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



WS-04

Weather and sun protection hood (optional)



AFF-SD
AFTF-SD
compact form



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

Type / WG01B	Measuring range / Readout		Output	Display	Item No.
	Humidity	Temperature			
AFF-SD-I			(fixed)		I2W
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-A			(automatically)		AOS
AFF-SD-A	0...100% RH	-	0-10 V / 4...20 mA		1201-112E-0000-100
AFF-SD-A LCD	0...100% RH	-	0-10 V / 4...20 mA	■	1201-112E-0200-000
AFTF-SD-I		(switchable)	(fixed)		I2W
AFTF-SD-I	0...100% RH	-35...+75 °C / -31...+167 °F -35...+35 °C / -31... +95 °F 0...+50 °C / +32...+122 °F 0...+80 °C / +32...+176 °F	4...20 mA		1201-1122-1000-100
AFTF-SD-I LCD	0...100% RH	(4x as above)	4...20 mA	■	1201-1122-1200-100
AFTF-SD-A		(switchable)	(automatically)		AOS
AFTF-SD-A	0...100% RH	-35...+75 °C / -31...+167 °F -35...+35 °C / -31... +95 °F 0...+50 °C / +32...+122 °F 0...+80 °C / +32...+176 °F	0-10 V / 4...20 mA	■	1201-112E-1000-100
AFTF-SD-A LCD	0...100% RH	(4x as above)	0-10 V / 4...20 mA	■	1201-112E-1200-100
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 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
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!					

