

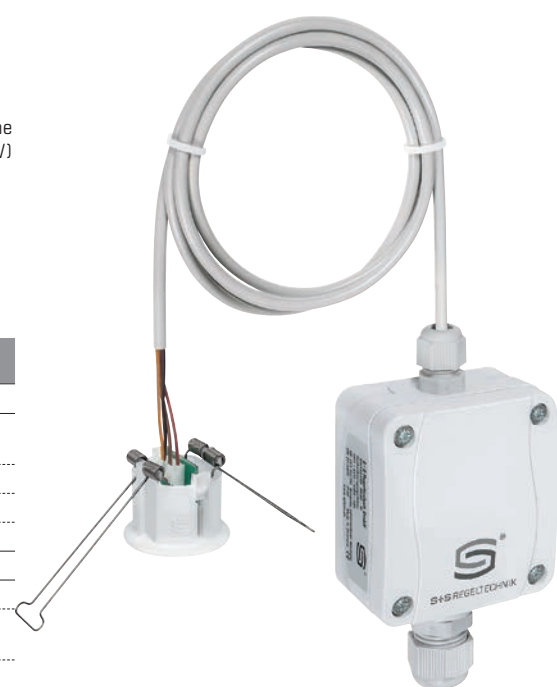
In-ceiling humidity and temperature sensors ( $\pm 2.0\%$ ),  
calibratable, with multi-range switching,  
with active output (Automatic Output Switching)

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

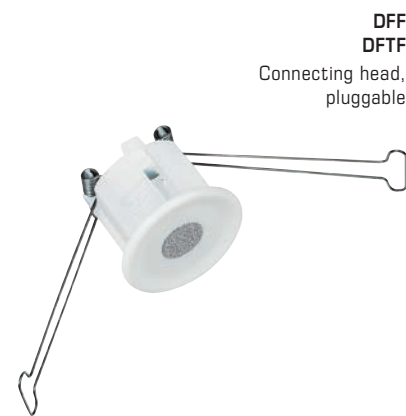
The calibratable humidity and temperature sensor **HYGRASGARD® DFF / DFTF** ( $\pm 2.0\%$ ) with active output, in an impact-resistant plastic housing with quick-locking screws, cable sensor with connecting head (pluggable), to exactly detect the relative humidity (0...100% RH) and the temperature with 4 switchable measuring ranges (max.  $-35\text{ }^{\circ}\text{C}/-31\text{ }^{\circ}\text{F}$  to  $+80\text{ }^{\circ}\text{C}/+176\text{ }^{\circ}\text{F}$ ), optionally with /without display. The standard 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 - 10 V or 4...20 mA. 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 ceiling-installed sensor is used in non-aggressive, dust-free environments and is used for installation in suspended ceilings in corridors, offices, as well as in residential and commercial buildings. The connecting head is pluggable for quick, easy mounting. The measuring transducer is accommodated in a separate housing. 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.

DFF  
DFTF



M12 connector  
(optional on request)



DFF  
DFTF  
Connecting head,  
pluggable

**TECHNICAL DATA**

**DFF/DFTF - I (I2W)**

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

**DFF/DFTF - 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:	<b>automatic 0-10 V / 4...20 mA (Automatic Output Switching –</b> 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:	<b>SI</b> (default) or <b>Imperial</b> (switchable via DIP switch)
Data points:	Humidity [%RH]; Temperature [ $^{\circ}\text{C}$ ] [ $^{\circ}\text{F}$ ]
Sensors:	<b>digital humidity sensor with integrated temperature sensor,</b> 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 $\pm 2.0\%$ (20...80% RH) at $+25\text{ }^{\circ}\text{C}$ , otherwise $\pm 3.0\%$
Measuring range temp.:	<b>multi-range switching with 4 measuring ranges</b> (via DIP switch) 0... $+50\text{ }^{\circ}\text{C}$ / $+32...+122\text{ }^{\circ}\text{F}$ 0... $+80\text{ }^{\circ}\text{C}$ / $+32...+176\text{ }^{\circ}\text{F}$ $-35...+75\text{ }^{\circ}\text{C}$ / $-31...+167\text{ }^{\circ}\text{F}$ $-35...+35\text{ }^{\circ}\text{C}$ / $-31...+95\text{ }^{\circ}\text{F}$
Operating range temp.:	$-10...+60\text{ }^{\circ}\text{C}$ / $+14...+140\text{ }^{\circ}\text{F}$
Accuracy temperature:	typically $\pm 0.2\text{ K} / \pm 0.5\text{ }^{\circ}\text{F}$ at $+25\text{ }^{\circ}\text{C} / +77\text{ }^{\circ}\text{F}$
Ambient temperature:	storage $-35...+85\text{ }^{\circ}\text{C}$ ; operation $-30...+70\text{ }^{\circ}\text{C}$ , non-precipitating
Long-term stability:	$\pm 1\%$ per year
Connecting head:	made of plastic, material polycarbonate (PC), colour white, <b>pluggable</b> , $\varnothing = \text{approx. } 35\text{ mm}$ , H = approx. 29 mm, with metal sinter filter made of stainless steel <b>V4A</b> (1.4404)
Mounting (sensor):	in the suspended ceiling, ceiling cut-out $\varnothing = 30\text{ mm}$ , cover $\varnothing = < 35\text{ mm}$
Connecting cable:	PVC, LiYY, 4 x 0.14 mm <sup>2</sup> , cable length (KL) = approx. 2 m
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 <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 on request)
Protection class:	III (according to EN 60 730)
Protection type:	<b>IP 65</b> (according to EN 60 529) Housing <b>IP 30</b> (according to EN 60 529) Sensor in the built-in state
Standards:	CE conformity according to EMC directive 2014 / 30 / EU
Optional:	two-line <b>display with illumination</b> , cutout approx. 36 x 15 mm (W x H), to display the ACTUAL temperature and / or ACTUAL humidity



**NEW**

S+S REGELTECHNIK

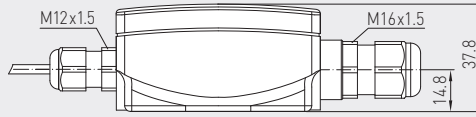
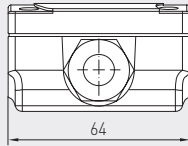
**HYGRASGARD® DFF**  
**HYGRASGARD® DFTF**

In-ceiling humidity and temperature sensors ( $\pm 2.0\%$ ),  
calibratable, with multi-range switching,  
with active output (Automatic Output Switching)

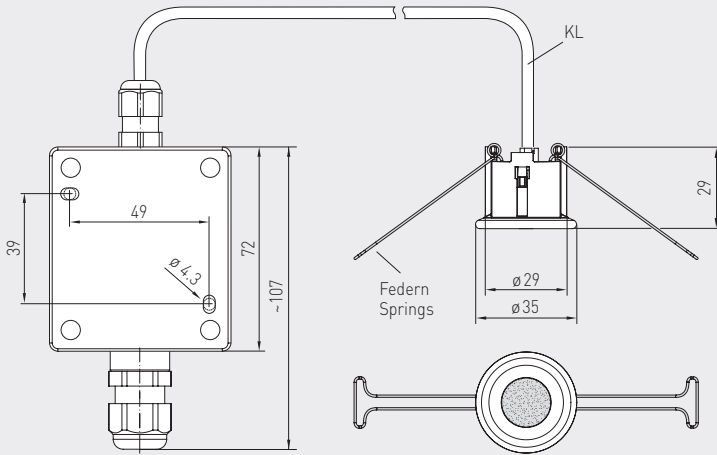
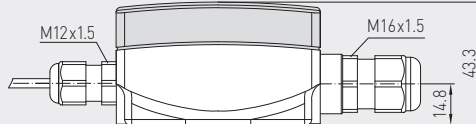
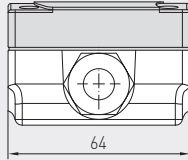
Dimensional drawing  
(mm)

**DFF**  
**DFTF**

without display



with display



**DFF**  
**DFTF**  
with display



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

**AOS-PATENTED**  
AUTOMATIC OUTPUT SWITCHING

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

°C	U <sub>A</sub> [V]	I <sub>A</sub> [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**  
MR: -35...+35 °C /  
-31...+95 °F

°C	U <sub>A</sub> [V]	I <sub>A</sub> [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**  
MR: 0...+50 °C /  
+32...+122 °F

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

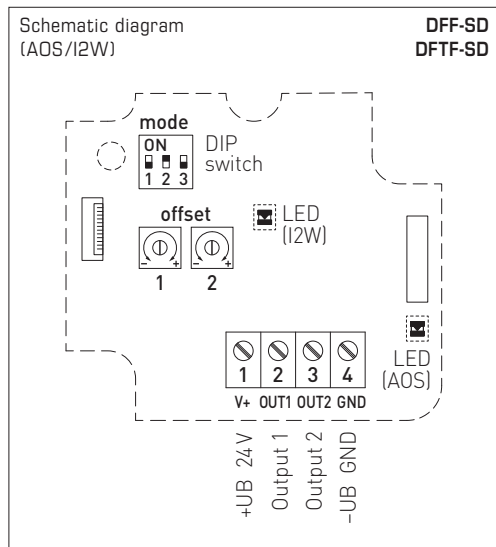
**Temperature**  
MR: 0...+80 °C /  
+32...+176 °F

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

In-ceiling humidity and temperature sensors ( $\pm 2.0\%$ ),  
calibratable, with multi-range switching,  
with active output (Automatic Output Switching)



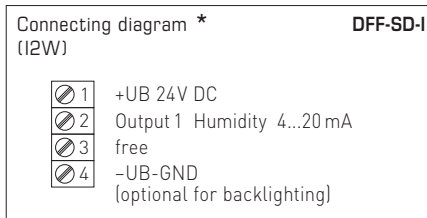
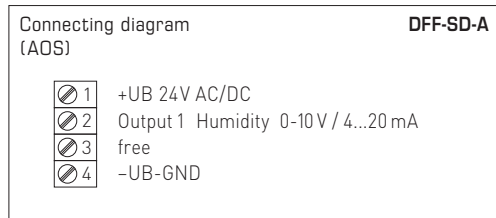
DIP switch	DFF-SD / DFTF-SD	
<b>Measuring range temperature</b>	<b>DIP 1</b>	<b>DIP 2</b>
-35...+35 °C / -31... +95 °F	OFF	OFF
0...+80 °C / +32...+176 °F	ON	OFF
0...+50 °C / +32...+122 °F (default)	OFF	ON
-35...+75 °C / -31...+167 °F	ON	ON
<b>System of units</b>	<b>DIP 3</b>	
Imperial: [°F]	ON	
SI: [°C]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

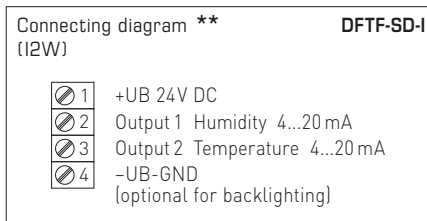
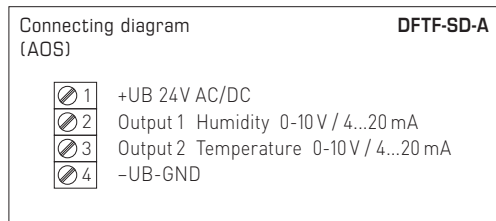


For the I variant (I2W) the humidity path must be connected!

Connection\*:

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

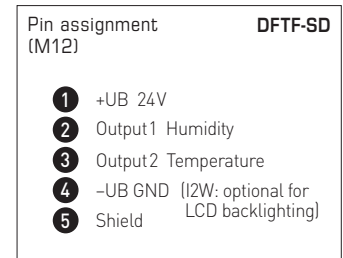
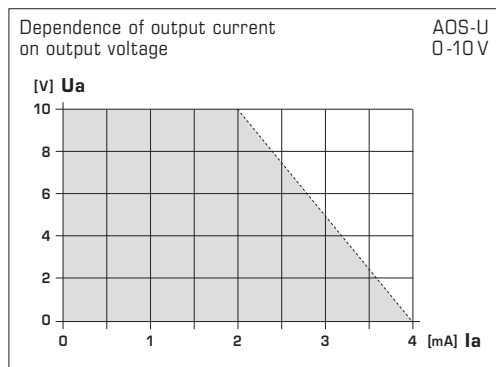
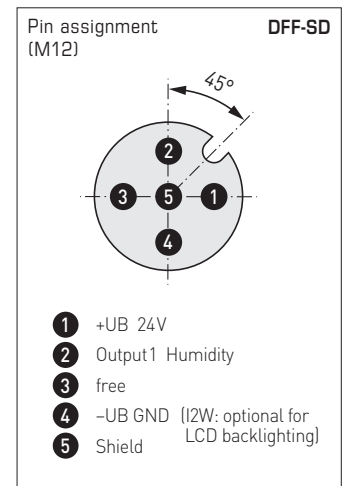
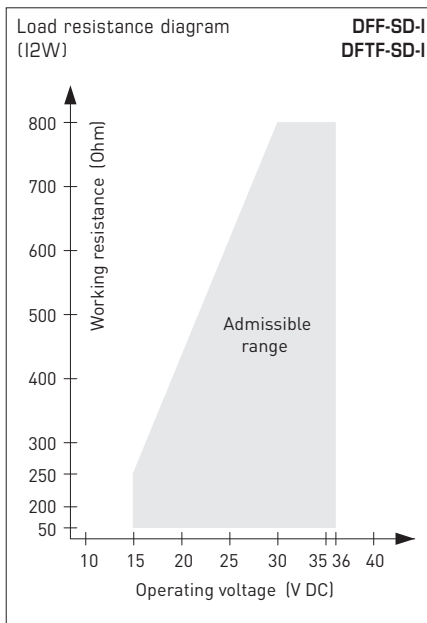
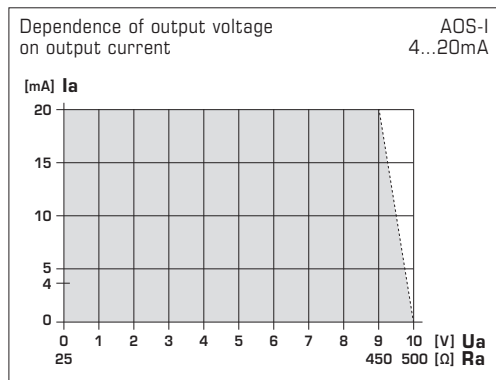
3-wire connection for devices with illuminated display



Connection\*\*:

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

4-wire connection for devices with illuminated display





**NEW**

S+S REGELTECHNIK

**HYGRASGARD® DFF**  
**HYGRASGARD® DFTF**

In-ceiling humidity and temperature sensors ( $\pm 2.0\%$ ),  
calibratable, with multi-range switching,  
with active output (Automatic Output Switching)



**DFF**  
**DFTF**  
Connecting head,  
pluggable



HYGRASGARD® DFF		In-ceiling humidity sensors ( $\pm 2.0\%$ ), <i>Standard</i>			
HYGRASGARD® DFTF		In-ceiling humidity and temperature sensors ( $\pm 2.0\%$ ), <i>Standard</i>			
Type / WG01	Measuring range / readout Humidity      Temperature	Output	Display	Item No.	Price
<b>DFF-I</b>		(fixed)		I2W	
DFF-I	0...100% RH    -	4...20 mA		1201-6132-0000-100	<b>378,05 €</b>
<b>DFF-I LCD</b>	0...100% RH    -	4...20 mA	■	1201-6132-0200-100	<b>442,14 €</b>
<b>DFF-A</b>		(automatically)		AOS	
DFF-A	0...100% RH    -	0-10 V / 4...20 mA		1201-613E-0000-100	<b>378,05 €</b>
<b>DFF-A LCD</b>	0...100% RH    -	0-10 V / 4...20 mA	■	1201-613E-0200-100	<b>442,14 €</b>
<b>DFTF-I</b>		(switchable)		I2W	
DFTF-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		1201-6132-1000-100	<b>387,21 €</b>
<b>DFTF-I LCD</b>	0...100% RH    (4x see above)	4...20 mA	■	1201-6132-1200-100	<b>451,30 €</b>
<b>DFTF-A</b>		(switchable)		AOS	
DFTF-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		1201-613E-1000-100	<b>387,21 €</b>
<b>DFTF-A LCD</b>	0...100% RH    (4x see above)	0-10 V / 4...20 mA	■	1201-613E-1200-100	<b>451,30 €</b>
Outputs:	4...20 mA (fixed setting) for <b>I variant</b> (I2W) or 0-10 V / 4...20 mA (automatically via <b>AOS</b> ) Number of active outputs depends on unit type: relative humidity ( <b>OUT1</b> ) and temperature ( <b>OUT2</b> ).				
System of units:	display can be changed from SI to imperial units.				
Optional:	Cable connection with <b>M12 connector</b> according to DIN EN 61076-2-101				on request

