HYGRASGARD® AAVTF

**On-wall outdoor humidity sensors (± 2.0 %),
for mixture ratio, relative / absolute humidity,
dew point, enthalpy (switchable) and temperature,
with multi-range switching, with active output**

S+S REGELTECHNIK

The universal humidity sensors **HYGR**ASGARD® **AAVTF** are used to determine diverse characteristic variables in humidity measurement. The relative humidity and temperature of the ambient air are measured. From these measurands, the different characteristic variables are internally calculated.

For device version x-U, two outputs of 0 - 10 V are available, for Version x-I two outputs of 4...20 mA. Here, the output variables for these outputs can be defined using DIP switches. Selectable for output 1 are relative humidity [% RH], absolute humidity [g / m³], mixture ratio [g / kg], dew point temperature [°C], or enthalpy [kJ / kg] (while neglecting the atmospheric air pressure). At output 2, four different measuring ranges for ambient temperature [°C] are selectable. Ex-factory condition (default) for output 1 is relative humidity 0...100 % RH, for output 2 temperature measuring range 0...+50 °C. Due to the different configuration alternatives provided, numerous measurement and control tasks can be solved by just one device. These devices must be operated in pollutant-free, non-precipitating air, with neither above-atmospheric nor below-atmospheric pressure at the sensors. Application examples include medical technology, refrigeration, air conditioning, and clean room technology. These sensors are suitable for wall mounting.

AAVTF
with plastic sinter filter
(standard)



SF-M
Metal sinter filter
(optional)



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
Load resistance:	R_L > 5 kOhm for U variant
Power consumption:	< 1 W at 24 V DC; < 2 VA at 24 V AC
Sensors:	**digital humidity sensor with integrated temperature sensor**, low hysteresis, high long-term stability
Sensor protection:	**plastic** sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional **metal** sinter filter, Ø 16 mm, L = 32 mm)
HUMIDITY	
Measuring range, humidity:	**multi-range switching with** **8 switchable measuring ranges** (see table) 0...100 % RH (default)
Operating range, humidity:	10...95 % RH, without formation of dew
Deviation, humidity:	typically **± 2.0** % (20...80 % RH) at +25 °C, otherwise ± 3.0 % Deviations of other outputs result from deviations of humidity and temperature.
Output 1, humidity:	0 - 10 V for U variant (see table) 4...20 mA for I variant (see table)
TEMPERATURE	
Measuring range, temperature:	**multi-range switching with** **4 switchable measuring ranges** (see table) 0...+50 °C (default); –20...+80 °C; –35...+75 °C; –35...+35 °C
Operating range, temperature:	–35...+85 °C sensors
Deviation, temperature:	typically ± 0.6 K at +25 °C
Output 2, temperature:	0 - 10 V for U variant (see table) 4...20 mA for I variant (see table)
Ambient temperature:	storage –35...+85 °C; operation –30...+70 °C, non-precipitating
Electrical connection:	4-wire connection for U variant 3-wire connection for I variant (Transmitter) 0.14 - 1.5 mm², 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), Ø = 16 mm, NL = 55 mm
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, electromagnetic compatibility according to EN 61 326, EMC directive 2014 / 30 / EU
Optional:	two-line **display with illumination,** cutout approx. 36 x 15 mm (W x H), for displaying actual temperature and actual humidity, as well as the selectable output variables
ACCESSORIES	see last chapter

S+S REGELTECHNIK

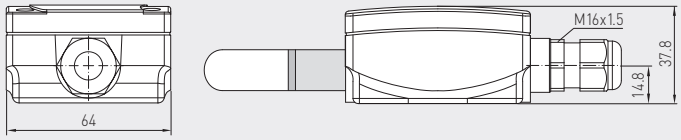
HYGRASGARD® AAVTF

On-wall outdoor humidity sensors (± 2.0 %), for mixture ratio, relative / absolute humidity, dew point, enthalpy (switchable) and temperature, with multi-range switching, with active output

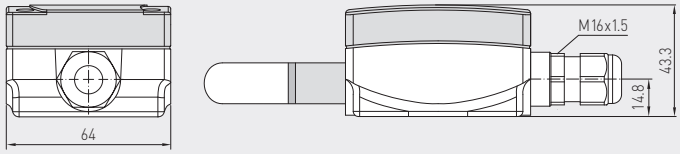
Dimensional drawing

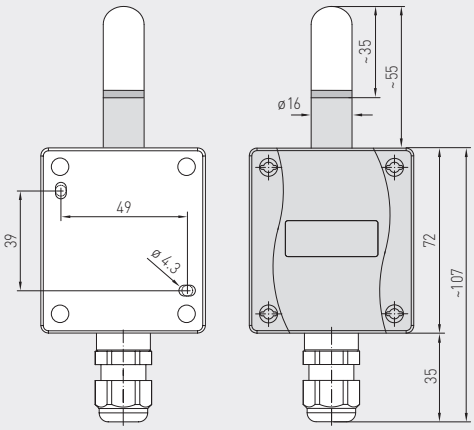
AAVTF

without display



with display





with **plastic** sinter filter (standard)



M12 connector
(optional on request)

AAVTF
with display and plastic sinter filter (standard)



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: –20...+80 °C

°C	U_A [V]	I_A [mA]
-20	0.0	4.0
-15	0.5	4.8
-10	1.0	5.6
-5	1.5	6.4
0	2.0	7.2
5	2.5	8.0
10	3.0	8.8
15	3.5	9.6
20	4.0	10.4
25	4.5	11.2
30	5.0	12.0
35	5.5	12.8
40	6.0	13.6
45	6.5	14.4
50	7.0	15.2
55	7.5	16.0
60	8.0	16.8
65	8.5	17.6
70	9.0	18.4
75	9.5	19.2
80	10.0	20.0

Humidity table
MR: 0...100 % RH

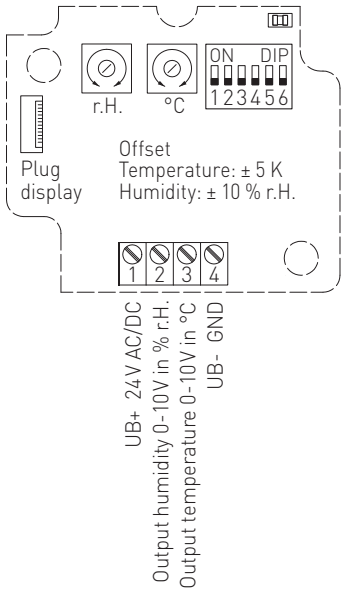
% RH	U_A [V]	I_A [mA]
0	0.0	4.0
5	0.5	4.8
10	1.0	5.6
15	1.5	6.4
20	2.0	7.2
25	2.5	8.0
30	3.0	8.8
35	3.5	9.6
40	4.0	10.4
45	4.5	11.2
50	5.0	12.0
55	5.5	12.8
60	6.0	13.6
65	6.5	14.4
70	7.0	15.2
75	7.5	16.0
80	8.0	16.8
85	8.5	17.6
90	9.0	18.4
95	9.5	19.2
100	10.0	20.0

HYGRASGARD® AAVTF

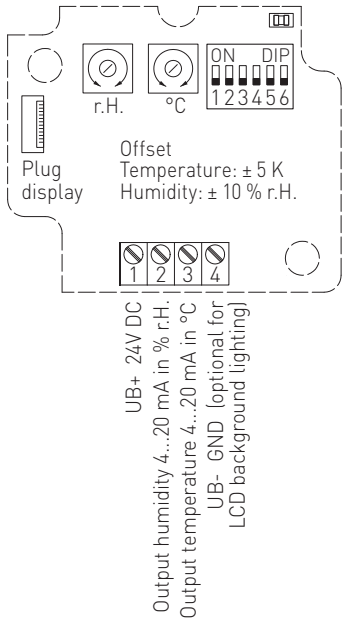
On-wall outdoor humidity sensors (± 2.0 %), for mixture ratio, relative / absolute humidity, dew point, enthalpy (switchable) and temperature, with multi-range switching, with active output

S+S REGELTECHNIK

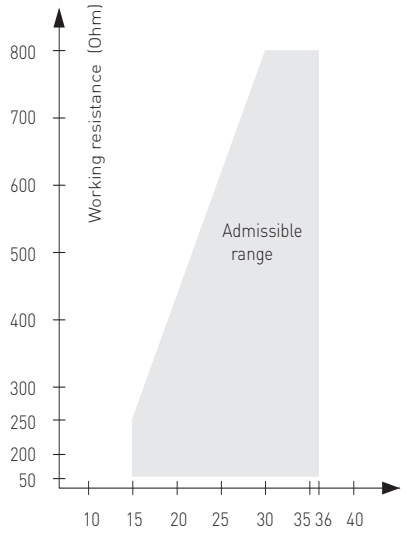
Schematic diagram **AAVTF-U** with display



Schematic diagram **AAVTF-I** with display



Load resistance diagram **AAVTF-I**
4.. 20 mA



Temperature measuring ranges (adjustable)	DIP 1	DIP 2
0...+50 °C (default)	OFF	OFF
–20...+80 °C	**ON**	OFF
–35...+75 °C	OFF	**ON**
–35...+35 °C	**ON**	**ON**

Switchable measuring ranges (adjustable)	DIP 3	DIP 4	DIP 5
RH: **0...100 %** (default)	OFF	OFF	OFF
MR: 0...50 g / kg	**ON**	OFF	OFF
MR: 0...80 g / kg	OFF	**ON**	OFF
A.H.: 0...50 g / m³	OFF	OFF	**ON**
A.H.: 0...80 g / m³	**ON**	**ON**	OFF
DP: 0...+50 °C	**ON**	OFF	**ON**
DP: –20...+80 °C	OFF	**ON**	**ON**
ENT.: 0...85 kJ / kg	**ON**	**ON**	**ON**

Possible parameters:

(RH) = relative humidity in %
(MR) = mixture ratio in g / kg
(A.H.) = absolute humidity in g / m³
(DP) = dew point in °C
(ENT.) = enthalpy in kJ / kg

Service display / output (adjustable)	DIP 6
Display °C and % RH, output of set measurements via DIP 1-5 (service mode for setting °C and % RH)	**ON**
Display and output of set measurements via DIP 1-5	OFF

AAVTF
with display



WS-04
Weather and sun protection hood (optional)



S+S REGELTECHNIK

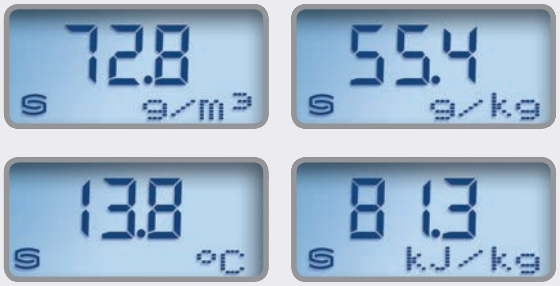
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Display Standard — **AAVTF Display**



Displays alternative output variables — **AAVTF Display**



Displays service mode — **AAVTF Display**



By default, the display alternates between the **actual temperature** and the **actual humidity** (relative humidity). In this case, the first line displays the value while the second line displays the corresponding unit:

Temperature in °C
Relative humidity in % RH

For improved legibility, backlighting is provided.

DIP switches can be used to display an **alternative output variable** instead of the standard display:

Absolute humidity in g / m³
Dew point in °C
Mixture ratio in g / kg
Enthalpy in kJ / kg

The **service mode** simultaneously displays (alternately in the first and second lines) the **actual temperature** and the **actual humidity** (relative humidity).

HYGRASGARD® AAVTF On-wall outdoor humidity sensors (± 2.0 %)

Type / WG01	Measuring Range Humidity		Measuring Range Temperature		Output Humidity	Output Temperature	Display	Item No.	Price
AAVTF-I	(switchable)		(switchable)					I-variant	
AAVTF-I	0 ...100 % RH 0...50 g / kg 0...80 g / kg 0...50 g / m³ 0...80 g / m³ 0...+50 °C –20...+80 °C 0...85 kJ / kg	(default) (MR) (MR) (A.H.) (A.H.) (DP) (DP) (ENT.)	0...+50 °C –20...+80 °C –35...+75 °C –35...+35 °C	(default)	4...20 mA	4...20 mA		1201-1162-6000-028	**211,75 €**
AAVTF-I **LCD**	(8x as above)		(4x as above)		4...20 mA	4...20 mA	■	1201-1162-6200-028	**263,08 €**
AAVTF-U								U-variant	
AAVTF-U	(8x as above)		(4x as above)		0-10 V	0-10 V		1201-1161-6000-028	**211,75 €**
AAVTF-U **LCD**	(8x as above)		(4x as above)		0-10 V	0-10 V	■	1201-1161-6200-028	**263,08 €**
Extra charge:	Other non-standard ranges optional								**153,95 €**
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	**43,60 €**
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-04	**Weather and sun protection hood**, 130 x 180 x 135 mm, stainless steel **V2A** (1.4301)	7100-0040-7000-000	**38,61 €**
	For further information, see last chapter Accessories!		