HYGRASGARD® KAVTF

Duct outdoor humidity sensors (± 2.0 %), including mounting flange, 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® **KAVTF** with 6 output sizes 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 are to 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 appropriate for duct installation.

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 ± 0.2 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 (on request)
Protective tube:	**PLEUROFORM**™, material polyamide (PA6), with torsion protection Ø 20 mm, NL = 235 mm (optionally 100 mm), v_{max} = 30 m/s (air) (on request, optional **stainless steel V2A** (1.4301), Ø 16 mm)
Process connection:	by mounting flange, plastic (included in the scope of delivery)
Protection class:	III (according to EN 60 730)
Protection type:	**IP 65** (according to EN 60 529) in the built-in state, 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

SF-K
Plastic sinter filter (standard)



SF-M
Metal sinter filter (optional)



Protective tube stainless steel
(optional on request)

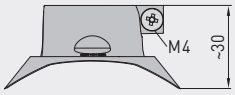


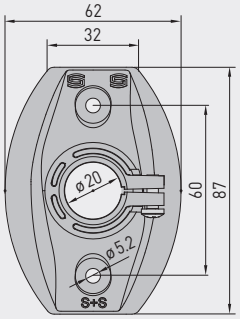
M12 connector
(optional on request)

MFT-20-K
Mounting flange, plastic



Dimensional drawing [mm] **MFT-20-K**



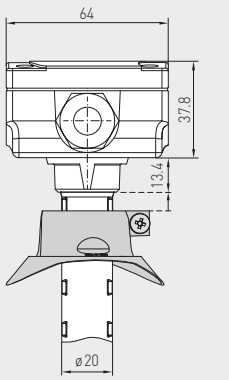


Duct outdoor humidity sensors (± 2.0 %), including mounting flange, for mixture ratio, relative / absolute humidity, dew point, enthalpy (switchable) and temperature, with multi-range switching, with active output

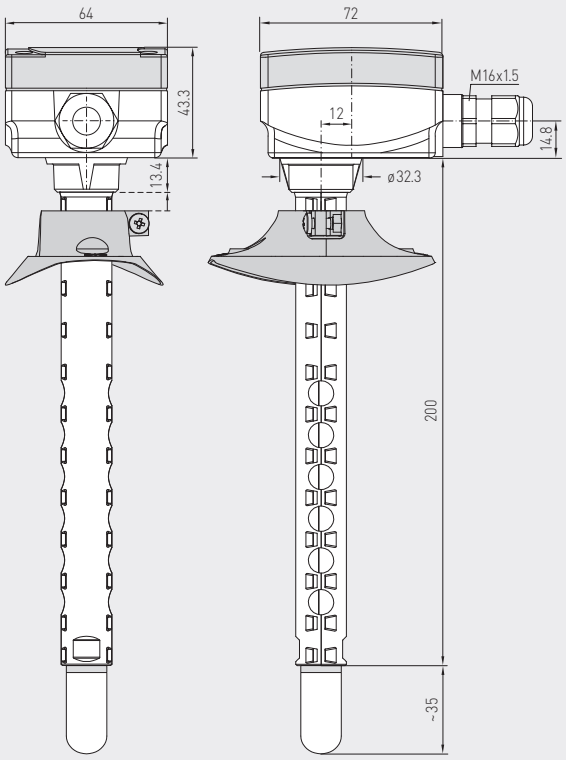
Dimensional drawing
[mm]

KAVTF

without display



with display



KAVTF
with plastic sinter filter
(standard)



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

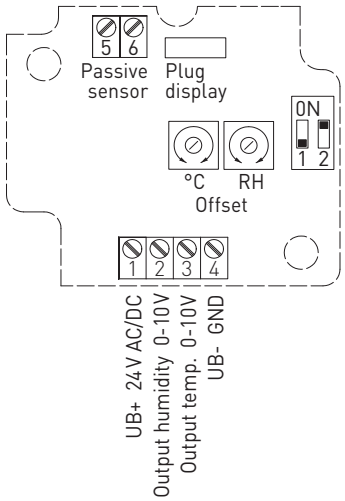
% RH	U_A [V]	I_A [mA]
0	0.0	4.0
5	0.5	4.8
10	1.0	5.6
15	1.5	6.4
20	2.0	7.2
25	2.5	8.0
30	3.0	8.8
35	3.5	9.6
40	4.0	10.4
45	4.5	11.2
50	5.0	12.0
55	5.5	12.8
60	6.0	13.6
65	6.5	14.4
70	7.0	15.2
75	7.5	16.0
80	8.0	16.8
85	8.5	17.6
90	9.0	18.4
95	9.5	19.2
100	10.0	20.0

HYGRASGARD® KAVTF

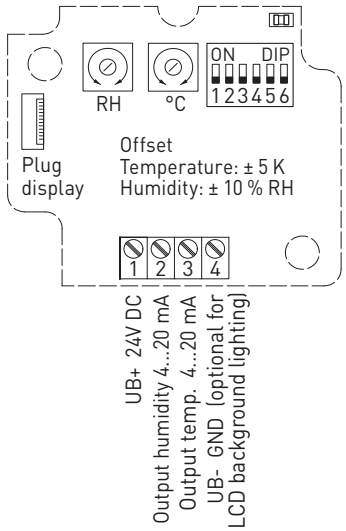
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S+S REGELTECHNIK

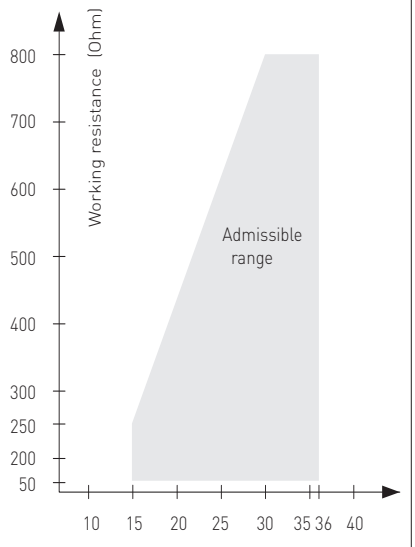
Schematic diagram **KAVTF-U** with display



Schematic diagram **KAVTF-I** with display



Load resistance diagram **KAVTF-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

KAVTF
with plastic sinter filter
SF-K (standard)



KAVTF
with metal sinter filter
SF-M (optional)

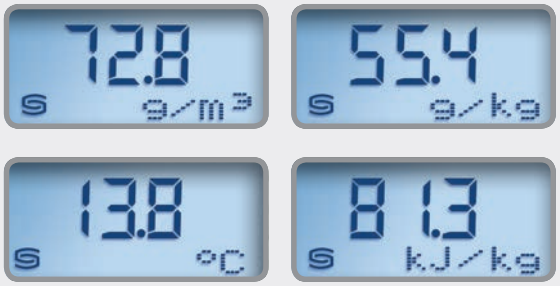


Duct outdoor humidity sensors (± 2.0 %), including mounting flange, for mixture ratio, relative / absolute humidity, dew point, enthalpy (switchable) and temperature, with multi-range switching, with active output

Display Standard — **KAVTF Display**



Displays alternative output variables — **KAVTF Display**



Displays service mode — **KAVTF 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).







KAVTF
with display

HYGRASGARD® KAVTF Duct outdoor humidity sensors (± 2.0 %)

Type / WG01	Measuring Range Humidity		Temperature		Output Humidity	Display Temperature		Item No.
KAVTF-I	(switchable)		(switchable)					**I-variant**
KAVTF-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		1201-3162-6000-029
KAVTF-I **LCD**	(8x as above)		(4x as above)		4...20 mA	4...20 mA	■	1201-3162-6200-029
KAVTF-U								**U-variant**
KAVTF-U	(8x as above)		(4x as above)		0-10 V	0-10 V		1201-3161-6000-029
KAVTF-U **LCD**	(8x as above)		(4x as above)		0-10 V	0-10 V	■	1201-3161-6200-029
Extra charge:	Other non-standard ranges optional							
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101 shortened protective tube **PLEUROFORM**™, NL = 100 mm							on request on request

ACCESSORIES		
SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeable stainless steel **V4A** (1.4404)	7000-0050-2200-100