

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

The universal humidity sensors **HYGRASGARD® 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 ($\pm 20\%$); 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:	$< 1 \text{ W}$ at 24 V DC; $< 2 \text{ VA}$ at 24 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:	multi-range switching with 8 switchable measuring ranges (see table) 0...100% RH (default)
Operating range, humidity:	10...95% RH, without formation of dew
Accuracy, humidity:	typically $\pm 2.0\%$ (20...80% RH) at +25 °C, otherwise $\pm 3.0\%$ 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
Accuracy, temperature:	typically $\pm 0.2 \text{ K}$ 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 $\varnothing 20 \text{ mm}$, $NL = 235 \text{ mm}$ (optionally 100 mm), $v_{\text{max}} = 30 \text{ m/s}$ (air) (on request, optional stainless steel V2A (1.4301), $\varnothing 16 \text{ mm}$)
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 according to 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)

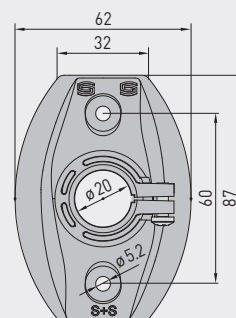
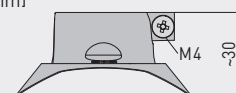


MFT-20-K
Mounting flange,
plastic



Dimensional
drawing
[mm]

MFT-20-K





S+S REGELTECHNIK

HYGRASGARD® KAVTF

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

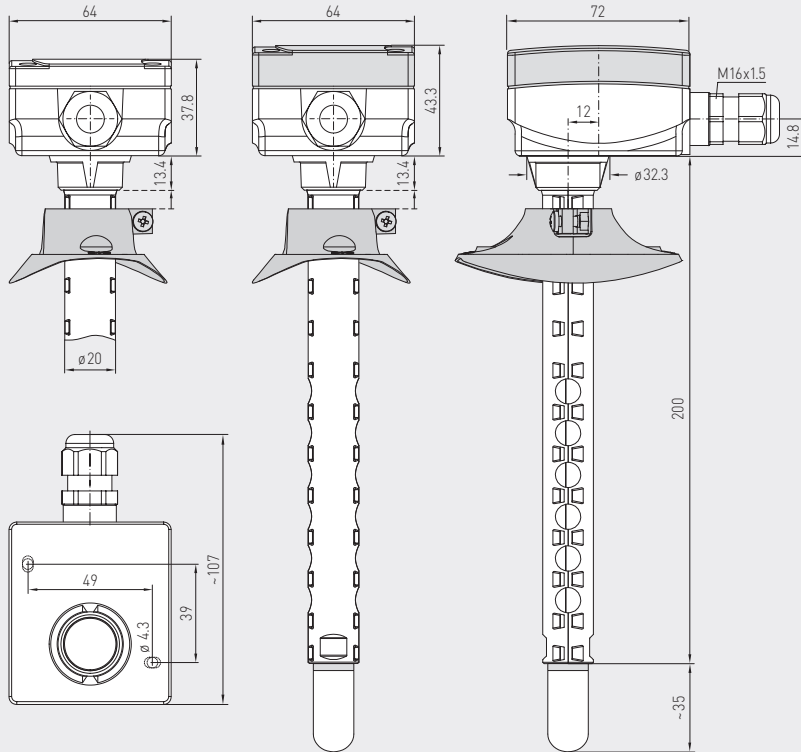


Dimensional drawing
[mm]

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

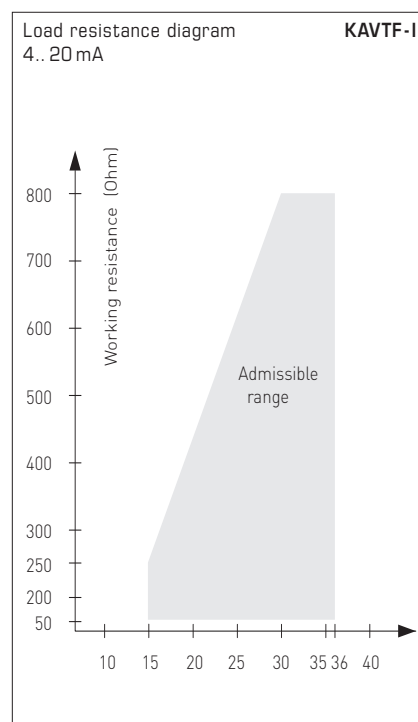
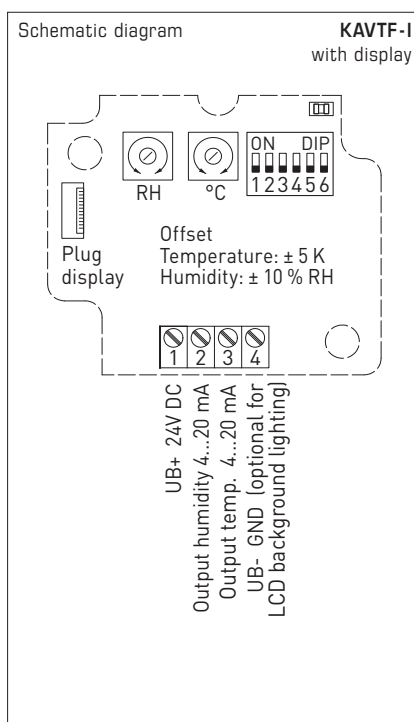
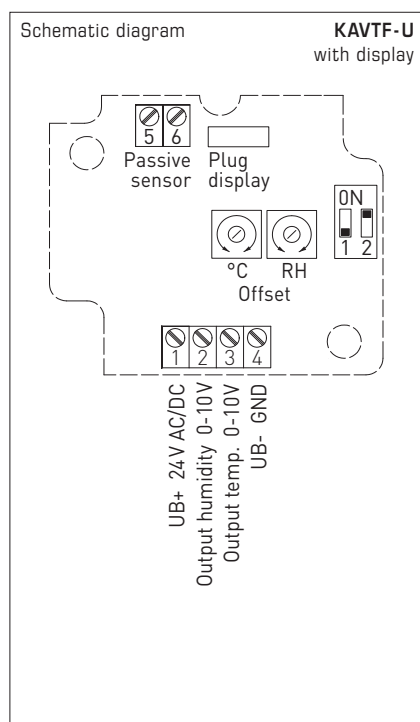
Temperature table
MR: -20...+80 °C

°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

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



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)

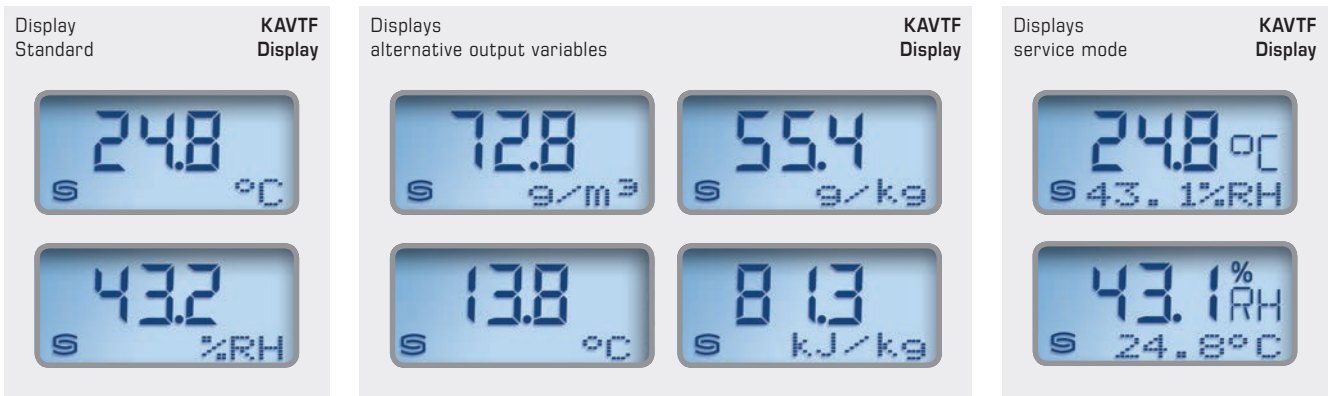




S+S REGELTECHNIK

HYGRASGARD® KAVTF

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



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 ($\pm 2.0\%$)

Type / WG01	Measuring Range	Temperature	Output	Display	Item No.
	Humidity		Humidity	Temperature	
KAVTF-I	(switchable)	(switchable)			I-variant
KAVTF-I	0...100% RH (default) 0...50 g/kg (MR) 0...80 g/kg (MR) 0...50 g/m ³ (A.H.) 0...80 g/m ³ (A.H.) 0...+50 °C (DP) -20...+80 °C (DP) 0...85 kJ/kg (ENT.)	0...+50 °C (default) -20...+80 °C -35...+75 °C -35...+35 °C	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)	0-10V	0-10V	1201-3161-6000-029
KAVTF-U LCD	(8x as above)	(4x as above)	0-10V	0-10V	■ 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
-------------	--	--------------------