

Duct (including mounting flange) respectively on-wall humidity and temperatures sensors, calibrateable, with multi-range switching and active/passive output

S+S REGELTECHNIK

Quality product for HVAC sector, accuracy 3 % r.H.

The calibrateable room humidity and temperature sensor HYGRASGARD® KFF/KFTF measures the relative humidity and/or temperature of air. It converts the measurands into standard signals of 0-10V or 4...20mA and is optional available with or without display. Terminal box enclosure made of impact-resistant plastic with enclosure cover with quick-locking screws. It has four switchable temperature ranges and is applied in non-aggressive dust-free ambiances in refrigeration, air conditioning, ventilation and clean room technology. Relative humidity (in % r.H.) is the quotient of water vapour partial pressure divided by the saturation vapour pressure at the respective gas temperature. These measuring transducers are designed for exact detection of humidity. A digital long-term stable sensor is used as measuring element for humidity measurement. Fine adjustment by the user is possible. Mounting flange is included in the scope of delivery.

TECHNICAL DATA:

Power supply: 24V AC ($\pm 20\%$) and 15...36V DC ($\pm 10\%$) for U variant
15...36V DC ($\pm 10\%$) for I variant (depending on working resistance)

Power consumption: < 1.1 VA / 24V DC; < 2.2 VA / 24V AC

Sensors: **digital humidity sensor with integrated temperature sensor**, dew-proof, small hysteresis, high long-term stability

Sensor protection: **membrane filter, plastic**, exchangeable

HUMIDITY:

Measuring range, humidity: 0...100% r.H.
(output corresponding to 0-10 V or 4...20 mA)

Operating range, humidity: 0...95% r.H. (without formation of dew)

Deviation, humidity: $\pm 3\%$ r.H. (20...80%) at +20°C, otherwise $\pm 5\%$ r.H.

Output, humidity: 0-10 V at U variant
4...20 mA at I variant, working resistance < 800 Ω , see load resistance diagram

TEMPERATURE:

Measuring range, temperature:.. **multi-range switching** (see table)
-35...+35°C; -35...+75°C; 0...+50°C; 0...+80°C
(output corresponding to 0-10 V or 4...20 mA)

Operating range, temperature:.. -35...+80°C

Deviation, temperature:..... ± 0.8 K (KFF/KFTF-U), ± 0.8 K (KFF/KFTF-I)
at 20°C, depending on place of installation and mounting position

Output, temperature:..... 0-10 V or 4...20 mA or Ohm value

Ambient temperature:..... storage -25...+50°C, operation -5...+55°C

Electrical connection:..... 2-, 3-, or 4-wire connection (see connecting diagram),
0.14 - 1.5 mm², via terminal screws on circuit board

Enclosure: plastic, material polyamide, 30% glass-globe-reinforced,
with quick-locking screws,
colour pure white (similar RAL9010)

Dimensions: KFF/KFTF: 72 x 64 x 39.4 mm
AFF/AFTF: 108 x 70 x 73.5 mm
AFF-LC/AFTF-LC: 72 x 64 x 39.4 mm

Cable gland: M16, including strain relief

Protective tube: **stainless steel**, $\varnothing$ 16 mm,
KFF/KFTF: nominal length NL = 230 mm
(optional 400 mm, 500 mm)
AFF/AFTF: nominal length NL = 45 mm

Process connection: KFF/KFTF: by mounting flange, plastic
(included in the scope of delivery)
(galvanised steel optional)
AFF/AFTF: by screws

Long-term stability: $\pm 1\%$ per year

Protection class: III (according to EN 60730)

Protection type: IP 65 (according to EN 60529)

Standards: CE conformity,
according to EMC directive 2004/108/EC,
according to EN 61326-1:2006,
according to EN 61326-2-3:2006

Optional: **two-line display with illumination**, 36x15 mm (WxH),
for displaying ACTUAL temperature and/or ACTUAL humidity

ACCESSORIES: see last chapter

KFF
KFTF



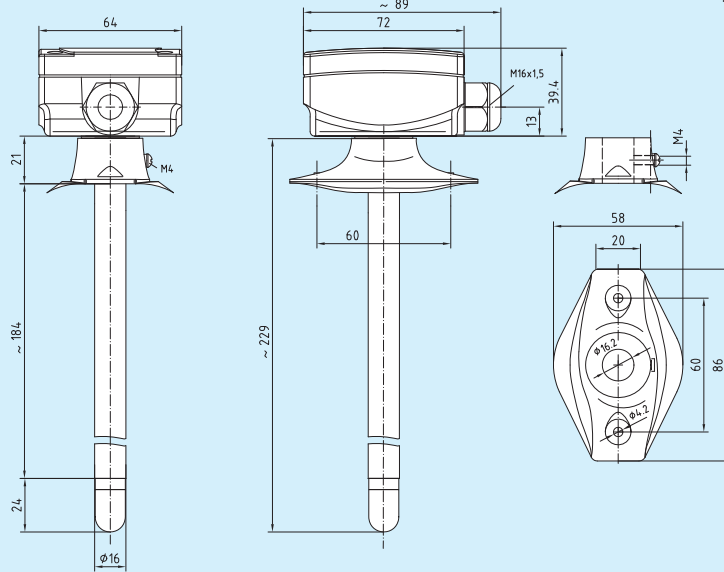
AFF
AFTF



AFF-LC
AFTF-LC
(compact form)



Dimensional drawing

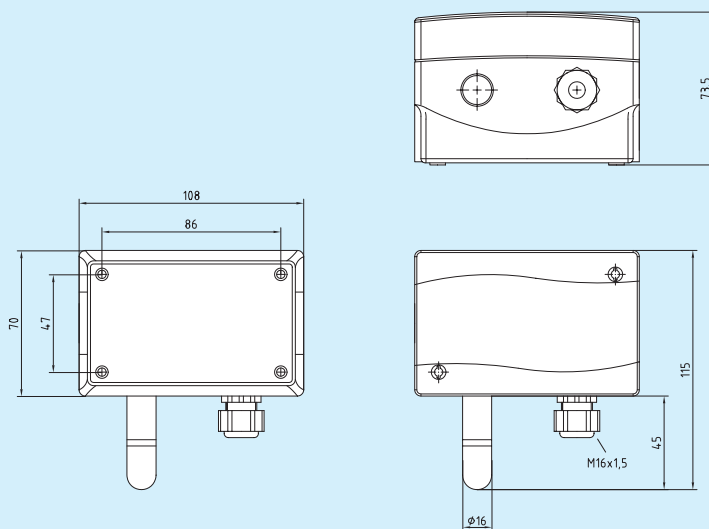


KFF
KFTF

KFF
KFTF
with display



Dimensional drawing

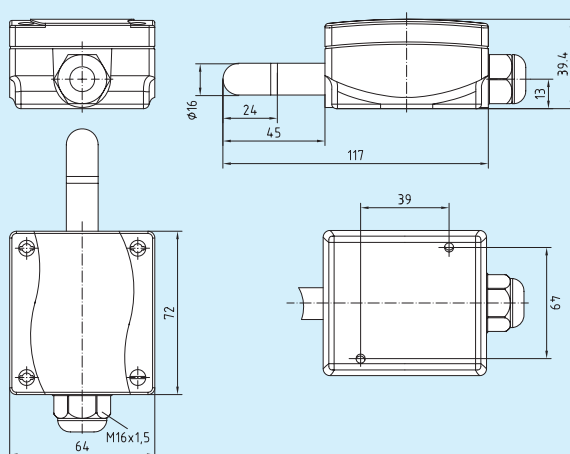


AFF
AFTF



AFF
AFTF
with display

Dimensional drawing



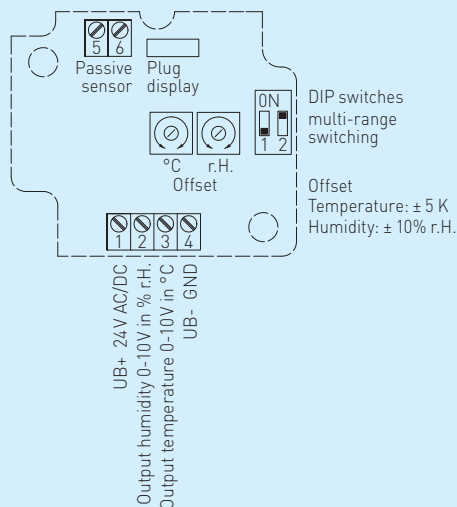
AFF-LC
AFTF-LC



AFF-LC
AFTF-LC
with display
[compact form]

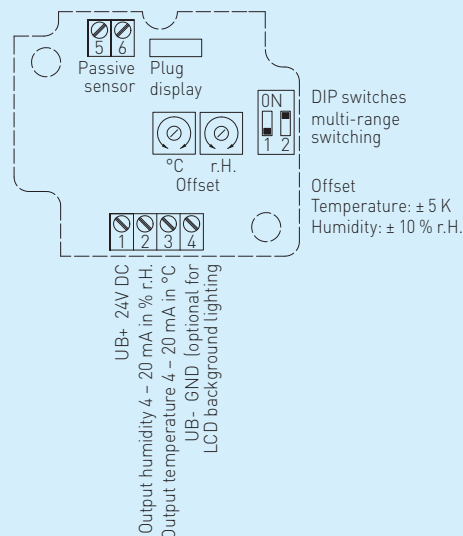
Schematic diagram

KFTF-U
with display



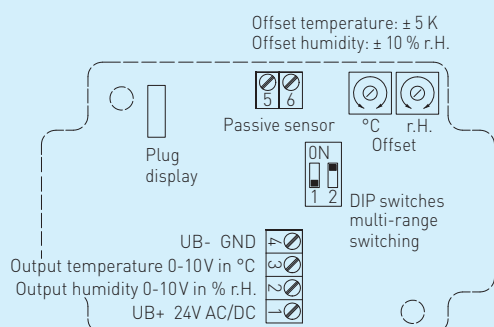
Schematic diagram**

KFTF-I
with display



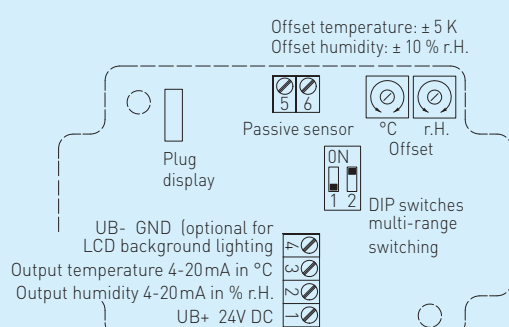
Schematic diagram

AFTF-U
with display



Schematic diagram**

AFTF-I
with display



3-wire connection

KFF-U / AFF-U

- 1 +UB 24V AC/DC
- 2 Output humidity in % r.H. 0-10V
- 3 Free
- 4 -UB-GND

2- or 3-wire connection*

KFF-I / AFF-I
(Transmitter)

- 1 +UB 24V DC
- 2 Output humidity in % r.H. 4-20mA
- 3 Free
- 4 -UB-GND (optional for backlighting)

4- or 6-wire connection

KFTF-U / AFTF-U
(passive temperature sensor)

- 1 +UB 24V AC/DC
- 2 Output humidity in % r.H. 0-10V
- 3 Output temperature in °C 0-10V
- 4 -UB-GND
- 5 Passive element
e.g. Pt1000, Ni1000, LMZ235Z
- 6

4-wire connection

KFTF-U / AFTF-U

- 1 +UB 24V AC/DC
- 2 Output humidity in % r.H. 0-10V
- 3 Output temperature in °C 0-10V
- 4 -UB-GND

3- or 4-wire connection**

KFTF-I / AFTF-I
(Transmitter)

- 1 +UB 24V DC
- 2 Output humidity in % r.H. 4-20mA
- 3 Output temperature in °C 4-20mA
- 4 -UB-GND (optional for backlighting)

4- or 6-wire connection

KFTF-I / AFTF-I
(passive temperature sensor)

- 1 +UB 24V DC
- 2 Output humidity in % r.H. 4-20mA
- 3 Output temperature in °C 4-20mA
- 4 -UB-GND (optional for backlighting)
- 5 Passive element
e.g. Pt1000, Ni1000, LMZ235Z
- 6



Temperature table Range: -35...+75 °C

°C	U _A in V	I _A in 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 Range: 0...+50 °C

°C	U _A in V	I _A in mA
0	0	4.0
5	1	5.6
10	2	7.2
15	3	8.8
20	4	10.4
25	5	12.0
30	6	13.6
35	7	15.2
40	8	16.8
45	9	18.4
50	10	20.0

Temperature table Range: -35...+35 °C

°C	U _A in V	I _A in 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 Range: 0...+80 °C

°C	U _A in V	I _A in mA
0	0.0	4.0
5	0.6	5.0
10	1.3	6.0
15	1.9	7.0
20	2.5	8.0
25	3.1	9.0
30	3.8	10.0
35	4.4	11.0
40	5.0	12.0
45	5.6	13.0
50	6.3	14.0
55	6.9	15.0
60	7.5	16.0
65	8.1	17.0
70	8.8	18.0
75	9.4	19.0
80	10.0	20.0

Humidity table Range: 0...100% r.H.

% r.H.	U _A in V	I _A in mA
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

Connection*:

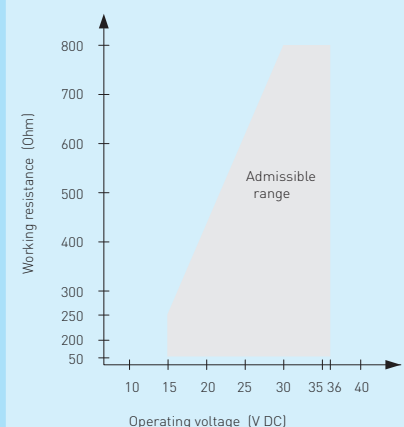
2-wire connection for devices
with/without display (not illuminated)3-wire connection for devices
with illuminated display

Connection**:

3-wire connection for devices
with/without display (not illuminated)4-wire connection for devices
with illuminated display

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

Load resistance diagram

KFF/KFTF
AFF/AFTF
AFF-LC/AFTF-LC
4...20 mA

HYGRASGARD® KFF and KFTF, including mounting flange
Output: Humidity (relative) and temperature active

Type / WG1	Measuring Range Humidity (relative)	Temperature (switchable)	Output Humidity (relative)	Temperature
KFF-I	0 ... 100 % r.H.	—	4 ... 20 mA	—
KFF-U	0 ... 100 % r.H.	—	0-10 V	—
KFTF-I	0 ... 100 % r.H.	-35 ... +75 °C -35 ... +35 °C 0 ... +50 °C 0 ... +80 °C	4 ... 20 mA	4 ... 20 mA
KFTF-U	0 ... 100 % r.H.	-35 ... +75 °C -35 ... +35 °C 0 ... +50 °C 0 ... +80 °C	0-10 V	0-10 V
KFF - / KFTF -xx -Display	Two-line display with illumination			

HYGRASGARD® AFF and AFTF

Output: Humidity (relative) and temperature active

Type / WG1	Measuring Range Humidity (relative)	Temperature (switchable)	Output Humidity (relative)	Temperature
AFF-I	0 ... 100 % r.H.	—	4 ... 20 mA	—
AFF-U	0 ... 100 % r.H.	—	0-10 V	—
AFTF-I	0 ... 100 % r.H.	-35 ... +75 °C -35 ... +35 °C 0 ... +50 °C 0 ... +80 °C	4 ... 20 mA	4 ... 20 mA
AFTF-U	0 ... 100 % r.H.	-35 ... +75 °C -35 ... +35 °C 0 ... +50 °C 0 ... +80 °C	0-10 V	0-10 V
AFF / AFTF -xx -Display	Two-line display with illumination			
Accessories:	WS-01 Sunshade and weather protection			

HYGRASGARD® AFF-LC and AFTF-LC

Output: Humidity (relative) and temperature active

Type / WG1	Measuring Range Humidity (relative)	Temperature (switchable)	Output Humidity (relative)	Temperature
AFF-LC-I	0 ... 100 % r.H.	—	4 ... 20 mA	—
AFF-LC-U	0 ... 100 % r.H.	—	0-10 V	—
AFTF-LC-I	0 ... 100 % r.H.	-35 ... +75 °C -35 ... +35 °C 0 ... +50 °C 0 ... +80 °C	4 ... 20 mA	4 ... 20 mA
AFTF-LC-U	0 ... 100 % r.H.	-35 ... +75 °C -35 ... +35 °C 0 ... +50 °C 0 ... +80 °C	0-10 V	0-10 V
AFF-LC / AFTF-LC -xx -Display	Two-line display with illumination			
Accessories:	WS-01 Sunshade and weather protection			

Duct (including mounting flange) respectively on-wall humidity and temperatures sensors, calibrateable, with passive output

HYGRASGARD® KFTF-U, x, including mounting flange
Output: Humidity (relative) active, temperature passive

Type/WG1	Measuring Range Humidity (relative)	Temperature (switchable)	Output Humidity (relative)	Temperature
KFTF-U, Pt100	0...100% r.H.	-35...+75 °C -35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10V + Pt100
KFTF-U, Pt1000	0...100% r.H.	(4x as above)	0-10 V	0-10V + Pt1000
KFTF-U, Ni1000	0...100% r.H.	(4x as above)	0-10 V	0-10V + Ni1000
KFTF-U, Ni1000TK5000	0...100% r.H.	(4x as above)	0-10 V	0-10V + Ni1000 TK5000, LG-Ni1000
KFTF-U, NTC 1.8 k	0...100% r.H.	(4x as above)	0-10 V	0-10V + NTC 1.8 kOhm
KFTF-U, NTC 10 k	0...100% r.H.	(4x as above)	0-10 V	0-10V + NTC 10 kOhm
KFTF-U, NTC 20 k	0...100% r.H.	(4x as above)	0-10 V	0-10V + NTC 20 kOhm
KFTF-U, LM235Z	0...100% r.H.	(4x as above)	0-10 V	0-10V + LM235Z, 10mV/K, KP10

HYGRASGARD® AFTF-U, x
Output: Humidity (relative) active, temperature passive

Type/WG1	Measuring Range Humidity (relative)	Temperature (switchable)	Output Humidity (relative)	Temperature
AFTF-U, Pt100	0...100% r.H.	-35...+75 °C -35...+35 °C 0...+50 °C 0...+80 °C	0-10 V	0-10V + Pt100
AFTF-U, Pt1000	0...100% r.H.	(4x as above)	0-10 V	0-10V + Pt1000
AFTF-U, Ni1000	0...100% r.H.	(4x as above)	0-10 V	0-10V + Ni1000
AFTF-U, Ni1000TK5000	0...100% r.H.	(4x as above)	0-10 V	0-10V + Ni1000 TK5000, LG-Ni1000
AFTF-U, NTC 1.8 k	0...100% r.H.	(4x as above)	0-10 V	0-10V + NTC 1.8 kOhm
AFTF-U, NTC 10 k	0...100% r.H.	(4x as above)	0-10 V	0-10V + NTC 10 kOhm
AFTF-U, NTC 20 k	0...100% r.H.	(4x as above)	0-10 V	0-10V + NTC 20 kOhm
AFTF-U, LM235Z	0...100% r.H.	(4x as above)	0-10 V	0-10V + LM235Z, 10mV/K, KP10
Accessories:	WS-01 Sunshade and weather protection			