

Room humidity and temperature sensors, on-wall, calibrateable,
with active/passive output, series Frija II

RFF/ RFTF
(Frija II)

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

The calibrateable room humidity and temperature sensor HYGRASGARD® RFF/ RFTF measures the relative humidity and /or temperature of air. It converts the measurands humidity and temperature into standard signals of 0 -10V or 4...20mA and is optional available with or without display (for displaying actual humidity and actual temperature) in an elegant enclosure made of plastic, with snap-on lid, base with 4-hole attachment for installation on vertically or horizontally installed in-wall flush boxes, with predetermined breaking point for on-wall cable entry, or in enclosures made of stainless steel (top and bottom part are of stainless steel, the lid is screwed on), vandalism-secure version e.g. for schools, military barracks, and public buildings. Relative humidity (in % r.H.) is the quotient of water vapour partial pressure divided by the saturation vapour pressure at the respective gas temperature. HYGRASGARD® RFF/ RFTF are applied in non-aggressive dust-free ambiances in refrigeration, air conditioning, ventilation and clean room technology, in interior rooms such as residential rooms, offices, hotels, technical rooms, meeting rooms and convention centres. These measuring transducers are designed for exact detection of air temperature and humidity. A digital long-term stable sensor is used as measuring element for humidity and temperature measurement. Fine adjustment by the user is possible.



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

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:.. 0...+50°C
(output corresponding to 0 -10V or 4...20mA or Ohm value)
others upon request!

Operating range, temperature:.. 0...+50°C

Deviation, temperature:..... ± 0.8 K at 20°C, under standard conditions

Output, temperature:..... 0 -10V or 4...20mA 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 ABS,
colour pure white (similar RAL 9010),
stainless steel enclosure optional

Dimensions: 98 x 106 x 32 mm (Frija II)
100 x 100 x 25 mm (stainless steel)

Installation: wall mounting or on in-wall flush box, $\varnothing 55$ mm,
base with 4-hole for mounting on vertically or horizontally
installed in-wall flush boxes for cable entry from the back,
with predetermined breaking point for on-wall cable entry
from top /bottom in case of plain on-wall installation

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

Protection class: III (according to EN 60730)

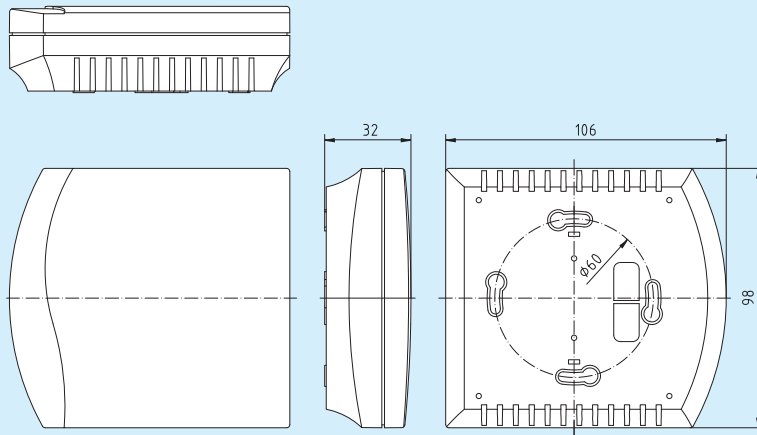
Protection type:..... IP30 (according to EN 60529)

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

Dimensional drawing

Enclosure Frija II

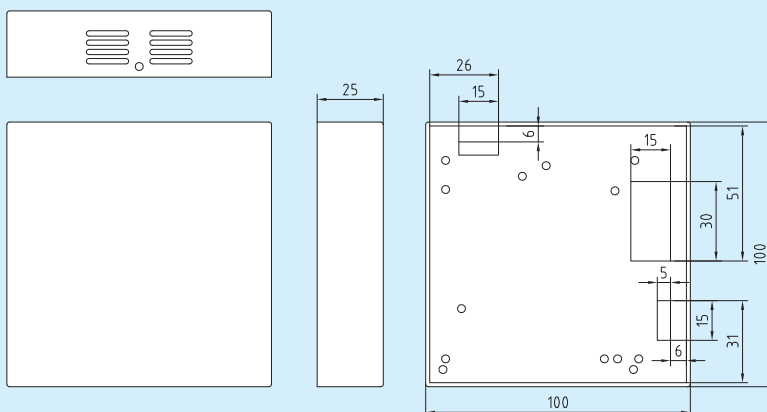


RFTF
with display
(Frija II)

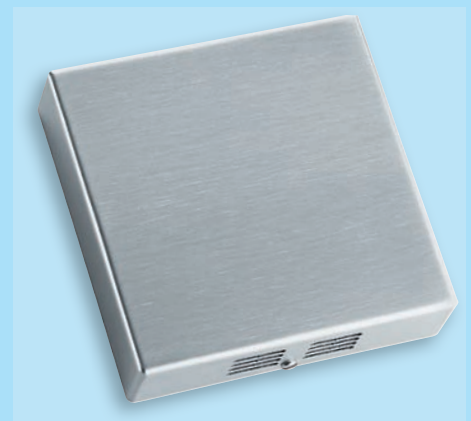


Dimensional drawing

Enclosure stainless steel

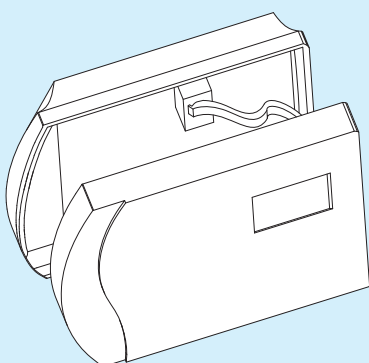


RFTF
in stainless steel enclosure



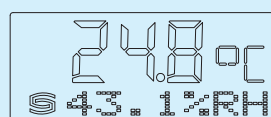
Connection
Display

RFF/ RFTF
with illuminated display



Display
Readout

RFF/ RFTF
with illuminated display



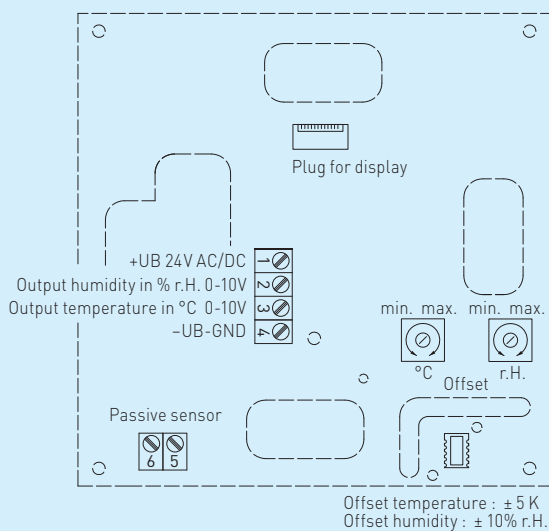
The two-line display readout switches between the ACTUAL humidity reading in % r.H. and the ACTUAL temperature reading in °C.

Backlighting is installed for better instrument readability.

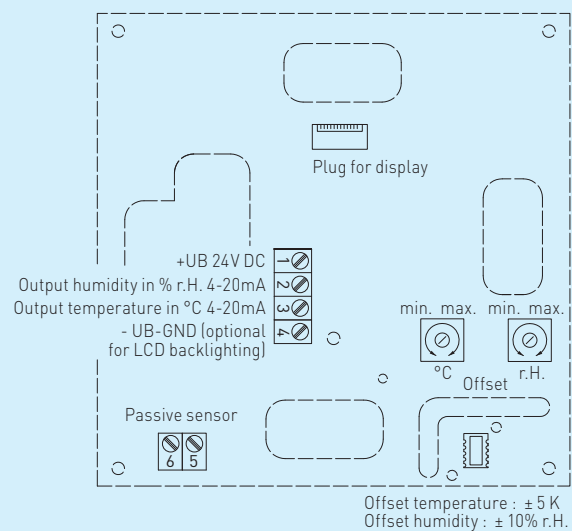
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S+S REGELTECHNIK

Schematic diagram

RFTF-U-x
RFTF-U-x with display

Schematic diagram

RFTF-I-x
RFTF-I-x with display3-wire
connection**RFF-U**

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

2- or 3-wire
connection***RFF-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**RFTF-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**RFTF-U**
RFTF-U with display

- 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****RFTF-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**RFTF-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

HYGRASGARD® RFTF-U, x

Output: Humidity [relative] active, temperature passive

Type/WG1 Designation	Item No.	Measuring Range/Readout		Output	
		Humidity	Temperature	Humidity	Temperature
RFTF-U, Pt100	HYGRASGARD-4131-1001-000	0...100% r.H.	0...50 °C	0-10V	0-10V + Pt100
RFTF-U, Pt1000	HYGRASGARD-4131-1005-000	0...100% r.H.	0...50 °C	0-10V	0-10V + Pt1000
RFTF-U, Ni1000	HYGRASGARD-4131-1009-000	0...100% r.H.	0...50 °C	0-10V	0-10V + Ni1000
RFTF-U, Ni1000 TK5000	HYGRASGARD-4131-1010-000	0...100% r.H.	0...50 °C	0-10V	0-10V + Ni1000TK5000
RFTF-U, NTC 1.8 k	HYGRASGARD-4131-1012-000	0...100% r.H.	0...50 °C	0-10V	0-10V + NTC 1.8 k Ohm
RFTF-U, NTC 10 k	HYGRASGARD-4131-1015-000	0...100% r.H.	0...50 °C	0-10V	0-10V + NTC 10 k Ohm
RFTF-U, NTC 20 k	HYGRASGARD-4131-1016-000	0...100% r.H.	0...50 °C	0-10V	0-10V + NTC 20 k Ohm
RFTF-U, LM235 Z	HYGRASGARD-4131-1021-000	0...100% r.H.	0...50 °C	0-10V	0-10V + LM235Z, 10mV/K
RFTF-U, xx - Display	Two-line display with illumination				
RFTF-U, xx - Stainless steel enclosure					

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
Continued at the right...		

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

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

Connection*:

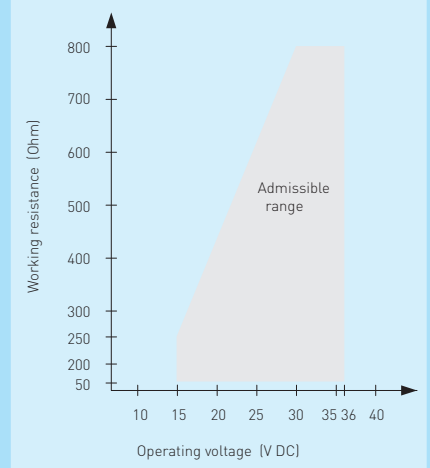
2-wire connection for devices
with / without display (not illuminated)

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

Load resistance diagram **RFF/ RFTF**
4 ... 20 mA

HYGRASGARD® RFF and RFTF

Output: Humidity (relative) and temperature active

Type / WG1 Designation	Item No.	Measuring Range / Readout		Output	
		Humidity	Temperature	Humidity	Temperature
RFF-I	HYGRASGARD-4132-0000-000	0...100% r.H.	-	4...20 mA	-
RFF-U	HYGRASGARD-4131-0000-000	0...100% r.H.	-	0-10 V	-
RFTF-I	HYGRASGARD-4132-1000-000	0...100% r.H.	0...50°C	4...20 mA	4...20 mA
RFTF-U	HYGRASGARD-4131-1000-000	0...100% r.H.	0...50°C	0-10 V	0-10 V
RFTF-xx-Stainless steel enclosure					
RFF-I-Display	HYGRASGARD-4132-0200-000	0...100% r.H.	-	4...20 mA	-
RFF-U-Display	HYGRASGARD-4131-0200-000	0...100% r.H.	-	0-10 V	-
RFTF-I-Display	HYGRASGARD-4132-1200-000	0...100% r.H.	0...50°C	4...20 mA	4...20 mA
RFTF-U-Display	HYGRASGARD-4131-1200-000	0...100% r.H.	0...50°C	0-10 V	0-10 V