

Room humidity and temperature sensor ( $\pm 2.0\%$ ), on-wall,  
for temperature, relative / absolute humidity, dew point, mixture ratio, enthalpy,  
calibratable, with Modbus connection or W-Modbus (Wireless)

The calibratable room sensor **HYGRASGARD® RFTF-Modbus** with Modbus connection, in an elegant plastic housing (Balduur 2) with snap-on lid, base with 4-hole attachment, optionally with/without display, measures air humidity (0...100% RH) and temperature (0...+50 °C), with **wModbus** (-35...+80 °C). These measured values are used to internally calculate the following parameters that can be retrieved via Modbus: absolute humidity, mixture ratio, dew point temperature, enthalpy (ignoring atmospheric air pressure). International system of units **SI** (default) can be changed to **imperial** (via Modbus). With **wModbus** device version, the W-Modbus (Wireless) replaces the RTU cable; the BMS connection is radio-based using a W-Modbus gateway.

A long-term stable, **digital humidity and temperature sensor** guarantees exact measurement results. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible. **Modbus sensor** with galvanically separated RS485 Modbus interface, selectable bus termination resistance, DIP switches for setting the bus parameters and bus address in a currentless state, internal LEDs for telegram status display and two-line display (illuminated, in the 7-segment and dot-matrix range, individually programmable).

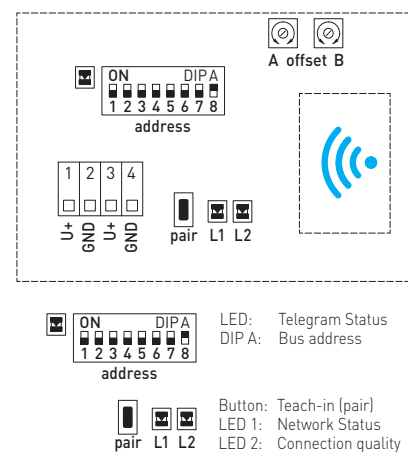
RFTF-Modbus (RTU cable)  
RFTF-wModbus (Wireless)



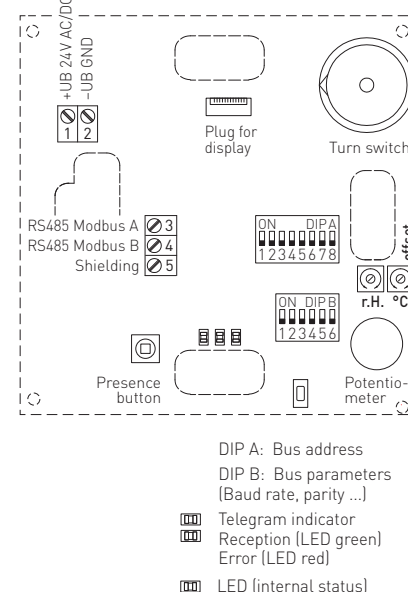
### TECHNICAL DATA

Power supply:	24 V AC ( $\pm 20\%$ ) and 15...36 V DC
Power consumption:	< 1.2 W / 24 V DC; < 2.2 VA / 24 V AC
Sensor:	<b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability
System of units:	<b>SI</b> (default) or <b>Imperial</b> (switchable via Modbus)
Data points:	temperature [ $^{\circ}$ C] [ $^{\circ}$ F], relative humidity [% RH], absolute humidity [g/m <sup>3</sup> ] [gr/ft <sup>3</sup> ], dew point [ $^{\circ}$ C] [ $^{\circ}$ F], mixture ratio [g/kg] [gr/lb], enthalpy [kJ/kg] [Btu/lb]
Measuring range:	0...100% RH (humidity); <b>RFTF-Modbus:</b> 0...+50 °C (temperature) <b>RFTF-wModbus:</b> -35...+80 °C (temperature)
Accuracy, humidity:	typically $\pm 2.0\%$ (20...80% RH) at +25 °C, otherwise $\pm 3.0\%$
Accuracy, temperature:	<b>RFTF-Modbus:</b> typically $\pm 0.2$ K at +25 °C <b>RFTF-wModbus:</b> typically $\pm 0.4$ K at +25 °C
Zero point offset:	<b>RFTF-Modbus:</b> $\pm 10\%$ RH (humidity); $\pm 10$ °C (temperature) <b>RFTF-wModbus:</b> $\pm 10\%$ RH (humidity); $\pm 5$ °C (temperature) adjustable using potentiometer
Ambient temperature:	storage -35...+85 °C; operation 0...+50 °C
Medium:	clean air and <b>non-aggressive</b> , non-combustible gases
Communication:	<b>Modbus</b> (RTU cable), Bus interface RS 485, <b>galvanically isolated</b> , Baud rate 9600, 19200, 38400 baud <b>or</b> <b>W-Modbus</b> (Wireless Modbus, AES-128 encrypted) Frequency <b>2.4 GHz</b> ISM, Transmission power <b>100 mW</b> , Range <b>max. 500 m</b> (open field) / approx. 50-70 m (inside buildings)
Bus protocol:	Modbus (RTU mode), address range 0... <b>247</b> selectable
Signal filtering:	4 s / 32 s
Electrical connection:	0.2 - 1.5 mm <sup>2</sup> , via terminal screws (RTU cable) or via push-in terminals (W-Modbus)
Housing:	plastic, <b>flame retardant</b> (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016)
Housing dimension:	98 x 98 x 33 mm (Balduur 2)
Installation:	wall mounting or on in-wall flush box, $\varnothing$ 55 mm, base with 4 holes, for attachment to vertically or horizontally installed in-wall flush boxes for rear cable entry, with predetermined breaking point for cable entry from top/bottom in case of plain on-wall installation
Long-term stability:	$\pm 1\%$ per year
Permissible air humidity:	< 95% RH, non-precipitating air
Protection class:	III (according to EN 60 730)
Protection type:	<b>IP 30</b> (according to EN 60 529)
Standards (Modbus):	CE conformity according to EMC Directive 2014/30/EU
Standards (W-Modbus):	CE conformity according to Radio Directive 2014/53/EU
Features:	<b>display with illumination</b> , two-line, programmable, cutout approx. 36 x 15 mm (W x H), to display actual humidity and temperature or a selectable parameter or an individually programmable display value
<b>ACCESSORIES</b>	see table

Schematic diagram RFTF-wModbus (Wireless)



Schematic diagram RFTF-Modbus (RTU cable)





**NEW**

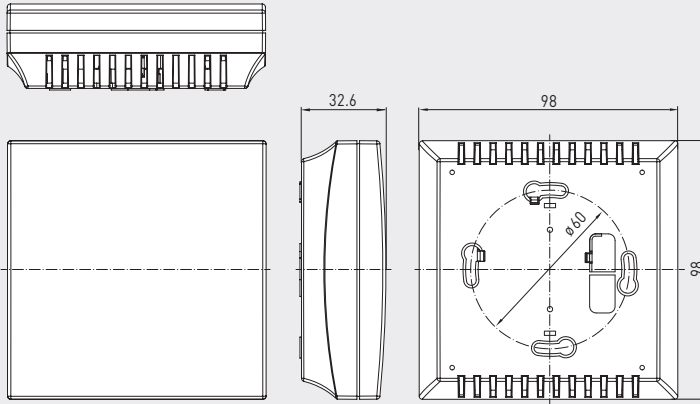
S+S REGELTECHNIK

**HYGRASGARD® RFTF-Modbus**  
**HYGRASGARD® RFTF-wModbus**

Room humidity and temperature sensor ( $\pm 2.0\%$ ), on-wall,  
for temperature, relative / absolute humidity, dew point, mixture ratio, enthalpy,  
calibratable, with Modbus connection or W-Modbus (Wireless)

Dimensional drawing  
[mm]

Housing Baldur 2



RFTF-Modbus (RTU cable)  
with display



Display  
alternative output variables

RFTF-Modbus  
Display



The display value depends on the set unit system.  
By default, the display alternates between the **actual temperature** and the **actual humidity** (relative humidity).  
The Modbus interface allows the display to be **individually** configured both in the 7-segment area and in the dot-matrix area.

The **Modbus configuration** can be used to program an alternative output variable instead of the standard display.  
In this case, the first line displays the value and index while the second line displays the corresponding unit.  
The index identifies the display type:

- Index 1** = temperature
- Index 2** = setpoint potentiometer
- Index 3** = dew point
- Index 4** = relative humidity
- Index 5** = absolute humidity
- Index 6** = mixture ratio
- Index 7** = enthalpy

**HYGRASGARD® RFTF-Modbus RFTF-wModbus** Room humidity and temperature sensor with Modbus connection (RTU cable) or with W-Modbus (Wireless) **Modbus W-Modbus**

Type / WG01 / WG02 Wireless	Measuring Range / Readout Humidity (switchable)	Temperature	Output	Display	Item No.	Price
<b>RFTF-xx</b>						
RFTF-Modbus	0...100% RH (default) 0...80 g/kg (MV) 0...80 g/m³ (AH) 0...85 kJ/kg (ENT.) 0...+50°C (DP)	0...+50°C	Modbus (RTU cable)		1201-42B6-6000-000	<b>181,19 €</b>
RFTF-Modbus LCD	(5x as above)	0...+50°C	Modbus (RTU cable)	■	1201-42B6-7000-000	<b>223,32 €</b>
RFTF-wModbus	(5x as above)	-35...+80°C	W-Modbus (Wireless)		1201-41BF-1000-000	<b>241,02 €</b>

**Note:** System of units **SI** (default) or **imperial** (can be changed via Modbus).

**ACCESSORIES**

<b>GW-wModbus</b>	Gateway with W-Modbus (Wireless) for radio-based connection to Modbus networks, operating modes <b>'Gateway'</b> (basic function as a base station) and <b>'Node'</b> (adapter function for max. 1 wired sensor)	1801-1211-1101-000	<b>245,30 €</b>
<b>GW-wModbus Pro</b>	and <b>'Node Pro'</b> (adapter function for max. 16 wired sensors)	1801-1211-1101-100	<b>332,07 €</b>

For further information, see last chapter Accessories!

**Roomoperating humidity and temperature sensor (± 2.0 %), on-wall, for temperature, relative / absolute humidity, dew point, mixture ratio, enthalpy, calibratable, with Modbus connection**

The calibratable room sensor **HYGRASGARD® RFTF-Modbus** with Modbus connection, in an elegant plastic housing (Baldur 2) with snap-on lid, base with 4-hole attachment, optionally with/without display, measures air humidity (0...100%RH) and temperature (0...+50 °C). These measured values are used to internally calculate the following parameters that can be retrieved via Modbus: absolute humidity, mixture ratio, dew point temperature, enthalpy (ignoring atmospheric air pressure). International system of units **SI** (default) can be changed to **imperial** (via Modbus). Available as a room control unit in various type versions with **control elements** such as setpoint potentiometer (%), rotary switch (5-step), presence button or five-colour **LEDs** (colours and modes configurable) for displaying the operating states.

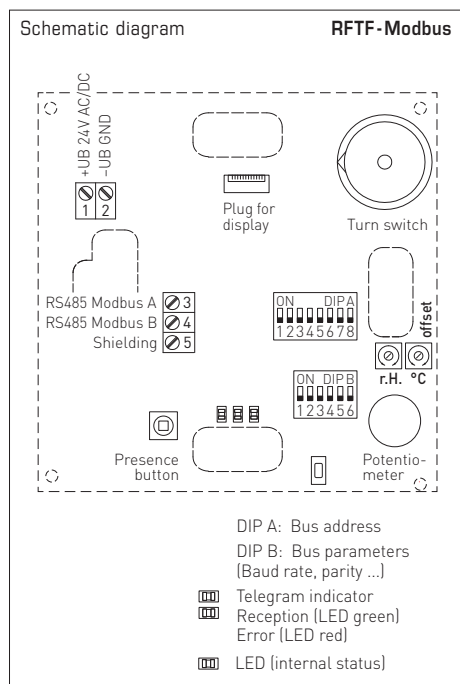
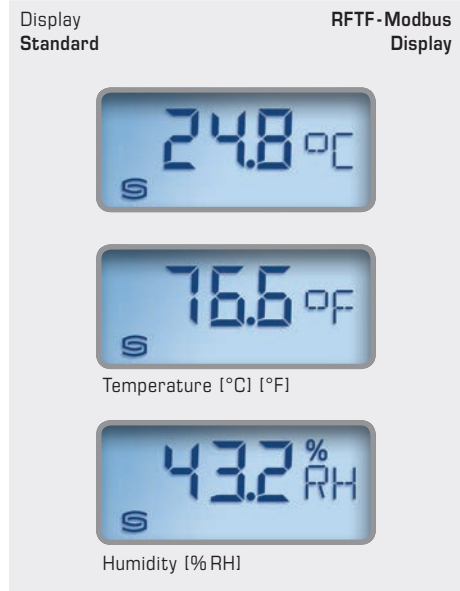
A long-term stable, **digital humidity and temperature sensor** guarantees exact measurement results. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible. **Modbus sensor** with galvanically separated RS485 Modbus interface, selectable bus termination resistance, DIP switches for setting the bus parameters and bus address in a currentless state, internal LEDs for telegram status display and two-line display (illuminated, in the 7-segment and dot-matrix range, individually programmable).

**RFTF-Modbus-PTD5 5L**  
with potentiometer, push-buttons, rotary switches and LED display



**TECHNICAL DATA**

Power supply:	24 V AC (± 20 %) and 15...36 V DC
Power consumption:	< 1.2 W / 24 V DC; < 2.2 VA / 24 V AC
Sensor:	<b>digital humidity sensor with integrated temperature sensor</b> , low hysteresis, high long-term stability
System of units:	<b>SI</b> (default) or <b>Imperial</b> (switchable via Modbus)
Data points:	temperature [°C] [°F], relative humidity [% RH], absolute humidity [g/m <sup>3</sup> ] [gr/ft <sup>3</sup> ], dew point [°C] [°F], mixture ratio [g/kg] [gr/lb], enthalpy [kJ/kg] [Btu/lb], setpoint potentiometer, rotary switch and presence button
Measuring range:	0...100 % RH (humidity) 0...+50 °C (temperature)
Accuracy, humidity:	typically <b>± 2.0 %</b> (20...80 % RH) at +25 °C, otherwise ± 3.0 %
Accuracy, temperature:	typically ± 0.2 K at +25 °C
Zero point offset:	± 10 % RH (humidity) ± 10 °C (temperature) adjustable using potentiometer
Ambient temperature:	storage -35...+85 °C; operation 0...+50 °C
Medium:	clean air and <b>non-aggressive</b> , non-combustible gases
Communication:	<b>Modbus</b> (RTU cable)
Bus interface:	RS 485, <b>galvanically isolated</b>
Baud rate:	9600, 19200, 38400 Baud
Bus protocol:	Modbus (RTU mode), address range 0... <b>247</b> selectable
Signal filtering:	4 s / 32 s
Electrical connection:	0.2 - 1.5 mm <sup>2</sup> , via terminal screws
Housing:	plastic, material ABS, colour pure white (similar to RAL 9010)
Dimensions:	98 x 98 x 33 mm (Baldur 2)
Installation:	wall mounting or on in-wall flush box, Ø 55 mm, base with 4 holes, for attachment to vertically or horizontally installed in-wall flush boxes for rear cable entry, with predetermined breaking point for cable entry from top / bottom in case of plain on-wall installation
Long-term stability:	± 1 % per year
Permissible air humidity:	< 95 % RH, non-precipitating air
Protection class:	III (according to EN 60 730)
Protection type:	<b>IP30</b> (according to EN 60 529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU
Features:	<b>display with illumination</b> , two-line, programmable, cutout approx. 36 x 15 mm (W x H), to display actual humidity and temperature or a selectable parameter or an individually programmable display value <b>LEDs</b> ( colour-programmable)
<b>ACCESSORIES</b>	see table



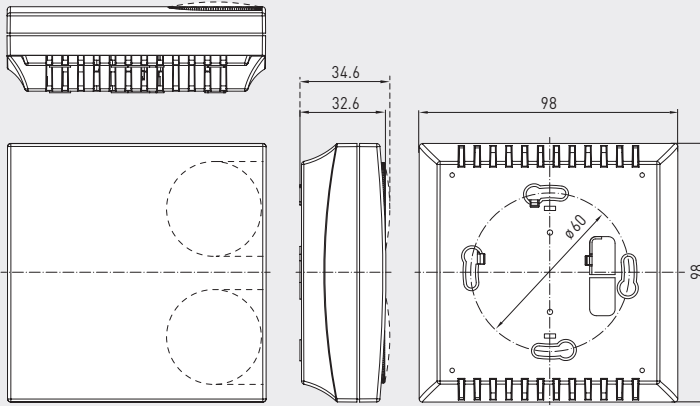


S+S REGELTECHNIK

Roomoperating humidity and temperature sensor ( $\pm 2.0\%$ ), on-wall, for temperature, relative / absolute humidity, dew point, mixture ratio, enthalpy, calibratable, with Modbus connection

Dimensional drawing [mm]

Housing Baldur 2



RFTF-Modbus-PT 5L with display, potentiometer, push-buttons and LED display



Display alternative output variables

RFTF-Modbus Display



The display value depends on the set unit system. By default, the display alternates between the **actual temperature** and the **actual humidity** (relative humidity). The Modbus interface allows the display to be **individually** configured both in the 7-segment area and in the dot-matrix area.

The **Modbus configuration** can be used to program an alternative output variable instead of the standard display. In this case, the first line displays the value and index while the second line displays the corresponding unit. The index identifies the display type:

- Index 1 = temperature
- Index 2 = setpoint potentiometer
- Index 3 = dew point
- Index 4 = relative humidity
- Index 5 = absolute humidity
- Index 6 = mixture ratio
- Index 7 = enthalpy

HYGRASGARD® RFTF-Modbus Roomoperating humidity and temperature sensor						
Type / WG01	Measuring Range / Readout	Temperature	Output	Display	Item No.	Price
<b>RFTF-Modbus-xx</b>						
RFTF-Modbus P	0...100% RH (default) 0...80 g/kg (MV) 0...80 g/m³ (AH) 0...85 kJ/kg (ENT.) 0...+50 °C (DP)	0...+50 °C	Modbus		1201-42B6-6001-005	221,22 €
RFTF-Modbus P LCD	(5x as above)	(1x as above)	Modbus	■	1201-42B6-7001-005	263,35 €
RFTF-Modbus P 5L	(5x as above)	(1x as above)	Modbus		1201-42B6-6119-005	285,26 €
RFTF-Modbus P 5L LCD	(5x as above)	(1x as above)	Modbus	■	1201-42B6-7119-005	327,40 €
RFTF-Modbus P D5	(5x as above)	(1x as above)	Modbus		1201-42B6-6012-841	254,59 €
RFTF-Modbus P D5 5L	(5x as above)	(1x as above)	Modbus		1201-42B6-6120-841	321,30 €
RFTF-Modbus P T D5 5L	(5x as above)	(1x as above)	Modbus		1201-42B6-6121-841	337,31 €
RFTF-Modbus P T	(5x as above)	(1x as above)	Modbus		1201-42B6-6047-005	234,56 €
RFTF-Modbus P T LCD	(5x as above)	(1x as above)	Modbus	■	1201-42B6-7047-005	276,69 €
RFTF-Modbus P T 5L	(5x as above)	(1x as above)	Modbus		1201-42B6-6051-005	301,26 €
RFTF-Modbus P T 5L LCD	(5x as above)	(1x as above)	Modbus	■	1201-42B6-7051-005	343,40 €
<b>Equipment:</b>	P = Potentiometer (setpoint setter) T = Presence push-buttons		D5 = Rotary switch, 5-step 5L = LED display, multi-colour (5x)			
<b>ACCESSORIES</b>						
KA2-Modbus	Communication adapter (USB/RS485)				1906-1200-0000-100	236,11 €