

**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 (Baldu2) 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).

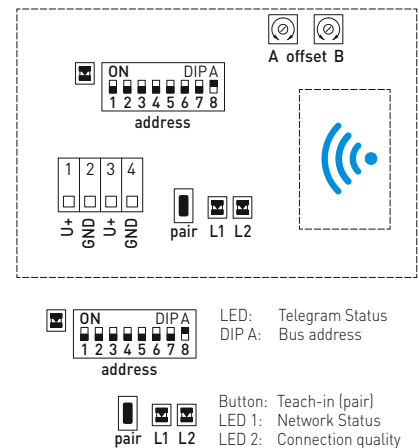
RFTF-Modbus (RTU cable)
RFTF-wModbus (Wireless)



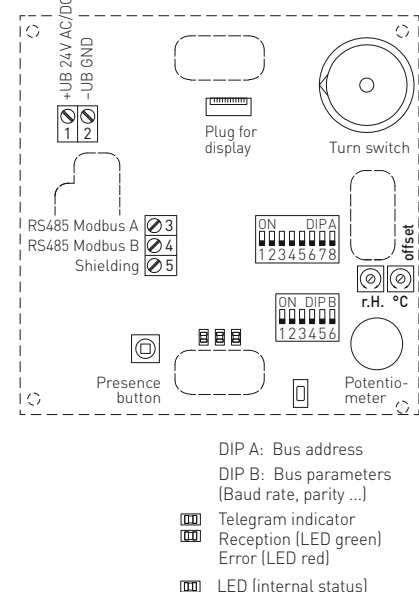
TECHNICAL DATA

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:	digital humidity sensor with integrated temperature sensor , low hysteresis, high long-term stability
System of units:	SI (default) or Imperial (switchable via Modbus)
Data points:	temperature [$^{\circ}\text{C}$] [$^{\circ}\text{F}$], relative humidity [% RH], absolute humidity [g/m^3] [gr/ft^3], dew point [$^{\circ}\text{C}$] [$^{\circ}\text{F}$], mixture ratio [g/kg] [gr/lb], enthalpy [kJ/kg] [Btu/lb]
Measuring range:	0...100 % RH (humidity); RFTF-Modbus: 0...+50 °C (temperature) RFTF-wModbus: -35...+80 °C (temperature)
Accuracy, humidity:	typically $\pm 2.0\%$ (20...80 % RH) at +25 °C, otherwise $\pm 3.0\%$
Accuracy, temperature:	RFTF-Modbus: typically $\pm 0.2\text{ K}$ at +25 °C RFTF-wModbus: typically $\pm 0.4\text{ K}$ at +25 °C
Zero point offset:	RFTF-Modbus: $\pm 10\%$ RH (humidity); $\pm 10\text{ }^{\circ}\text{C}$ (temperature) RFTF-wModbus: $\pm 10\%$ RH (humidity); $\pm 5\text{ }^{\circ}\text{C}$ (temperature) adjustable using potentiometer
Ambient temperature:	storage -35...+85 °C; operation 0...+50 °C
Medium:	clean air and non-aggressive , non-combustible gases
Communication:	Modbus (RTU cable), Bus interface RS 485, galvanically isolated , Baud rate 9600, 19200, 38400 baud or W-Modbus (Wireless Modbus, AES-128 encrypted) Frequency 2.4 GHz ISM, Transmission power 100 mW , Range max. 500 m (open field) / approx. 50-70 m (inside buildings)
Bus protocol:	Modbus (RTU mode), address range 0... 247 selectable
Signal filtering:	4 s / 32 s
Electrical connection:	0.2 - 1.5 mm ² , via terminal screws (RTU cable) or via push-in terminals (W-Modbus)
Housing:	plastic, flame retardant (UL 94 V-0), PC/ABS material, colour white (similar to RAL 9016)
Housing dimension:	98 x 98 x 33 mm (Baldu2)
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:	IP 30 (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:	display with illumination , 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
ACCESSORIES	see table

Schematic diagram **RFTF-wModbus (Wireless)**



Schematic diagram **RFTF-Modbus (RTU cable)**





NEW

S+S REGELTECHNIK

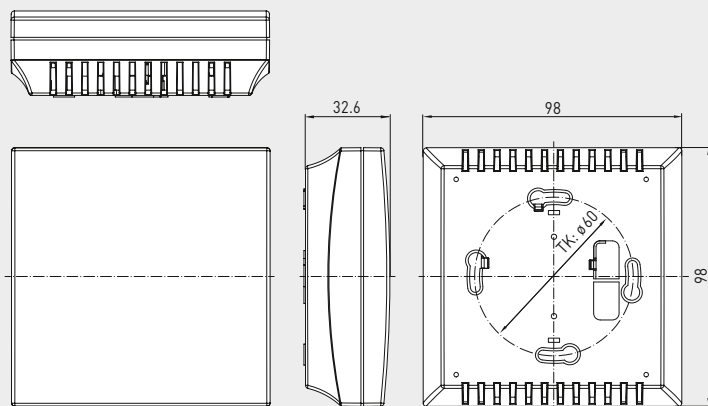
HYGRASGARD® RFTF-Modbus

HYGRASGARD® RFTF-wModbus

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Dimensional drawing
[mm]

Housing Baldur 2

RFTF-Modbus (RTU cable)
with displayDisplay
alternative output variablesRFTF-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)



Type / WG01 / WG02 Wireless	Measuring Range / Readout Humidity (switchable)	Temperature	Output	Display	Item No.
RFTF-xx					
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
RFTF-Modbus LCD	(5x as above)	0...+50 °C	Modbus (RTU cable)	■	1201-42B6-7000-000
RFTF-wModbus	(5x as above)	-35...+80 °C	W-Modbus (Wireless)		1201-41BF-1000-000

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

ACCESSORIES

	Gateway with W-Modbus (Wireless) for radio-based connection to Modbus networks, operating modes ' Gateway ' (basic function as a base station) and ' Node ' (adapter function for max. 1 wired sensor)	1801-1211-1101-000
GW-wModbus		
GW-wModbus Pro	and ' Node Pro ' (adapter function for max. 16 wired sensors)	1801-1211-1101-100
For further information, see last chapter Accessories!		