

Dew point control switches, incl. strap / with detached sensor head ($\pm 2.0\%$),
for mixture ratio, relative / absolute humidity, dew point, enthalpy
and temperature, calibratable, with Modbus connection

Patented quality product

(pro-dynamic cross convection patent no. DE 10 2012 015 726.6)

Calibratable dew point control switch HYGRASGARD® TW-Modbus-T3 (compact variant incl. strap) or TW-Modbus-external (detached variant), with Modbus connection, in an impact-resistant plastic housing with quick-locking screws, optionally with /without display, to exactly detect the relative humidity (0...100% RH) and the temperature (-35...+80 °C) and to detect various parameters in humidity measurement.

The dew formation in particular is reliably determined thanks to its patented measuring method, the pro-dynamic cross-convection (no conductivity measurement).

International system of units SI (default) can be switched to Imperial (via Modbus).

The surface-contact sensor is applied in a non-aggressive, dust-free environment and is suitable for installation in ceilings, ducts and devices. It is used in the refrigeration, air conditioning and clean room technology, engineering rooms, hotels and conference facilities.

A long-term stable, digital humidity and temperature sensor guarantee exact measurement results. These measurands are used to internally calculate the following parameters that can be retrieved via Modbus: relative humidity, absolute humidity, mixture ratio, dew point, enthalpy (ignoring atmospheric air pressure) and ambient temperature.

Innovative Modbus sensor with galvanically separated RS485-Modbus-interface, selectable bus termination resistance, DIP switch for setting the bus parameters and bus address in current-free state, internal LEDs for telegram status display, two separate push-in terminals and large three-line display (illuminated; with customised programming in the 7-segment and dot-matrix range). The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

TECHNICAL DATA

Voltage supply:	24 V AC ($\pm 20\%$); 15...36 V DC
Power consumption:	< 1.2 W / 24 V DC; < 1.8 VA / 24 V AC
System of units:	SI (default) or Imperial (switchable via Modbus)
Data points:	temperature [°C] [°F], relative humidity [% RH], dew point [°C] [°F], absolute humidity [g/m³] [gr/ft³], mixing ratio [g/kg] [gr/lb], enthalpy [kJ/kg] [Btu/lb]
Sensor:	digital humidity sensor with integrated temperature sensor, low hysteresis, high long-term stability
Measuring range:	0...100% RH (humidity); -35...+80 °C (temperature)
Deviation, humidity:	$\pm 2.0\%$ (20...80% RH) at +25 °C, otherwise $\pm 3.0\%$
Deviation, temperature:	typically $\pm 0.2\text{ K}$ at +25 °C
Zero point offset:	$\pm 10\%$ RH (humidity); $\pm 5\text{ °C}$ (temperature)
Ambient temperature:	-30...+70 °C
Medium:	clean air and non-aggressive, non-combustible gases
Bus protocol:	Modbus (RTU mode), address range 0...247 selectable
Baud rate:	9600, 19200, 38400 Baud
Signal filtering:	4 s / 32 s
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:	108 x 78.5 x 43.3 mm (Tyr 3 without display) 108 x 78.5 x 45.8 mm (Tyr 3 with display)
Cable connection:	cable gland, plastic (2x M20 x 1.5; with strain relief, exchangeable, inner diameter 8-13 mm) or M12 connector according to DIN EN 61076-2-101 (optional on request)
Prozessanschluss:	endless strap with metal tightener, 300 mm, for pipes up to 3"
Sensor protection:	membrane filter
Mounting:	TW-Modbus with strap for direct mounting on pipes or for direct mounting on flat surfaces (e.g. walls, ceilings) TW-Modbus-external with detached sensor head (cable length KL = 1.5 m) for mounting on pipes
Electrical connection:	0.2 - 1.5 mm², using push-in terminals
Permissible air humidity:	< 95% RH, non-precipitating air
Protection class:	III (according to EN 60 730)
Protection type:	IP 65 (according to EN 60 529)
Standards:	CE conformity, electromagnetic compatibility according to EN 61326, according to EMC Directive 2014 / 30 / EU
Features:	Display with illumination, three-line, programmable, cutout approx. 51 x 29 mm (W x H), for displaying the actual humidity and actual temperature (cyclic) or a selectable parameter (static) or an individually programmable display value

TW-Modbus-T3
(compact variant)



Device version
with M12 connector
(optional on request)



TW-extern-Modbus-T3
(detached variant)





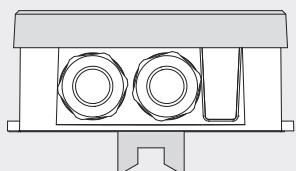
S+S REGELTECHNIK

HYGRASGARD® TW-Modbus-T3

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Dimensional drawing
[mm]

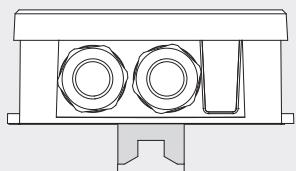
with display



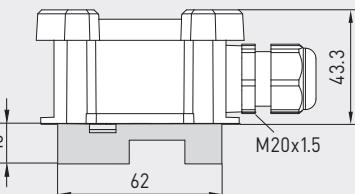
TW-Modbus-T3

TW-Modbus-T3
(compact variant)
with display

without display



7.5
7.5
4
78.5
106
94
108

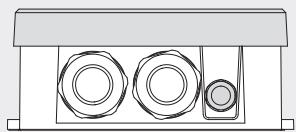


PATENTED



Dimensional drawing
[mm]

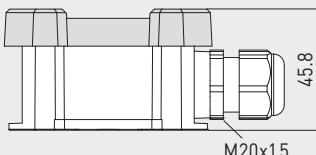
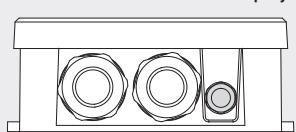
with display



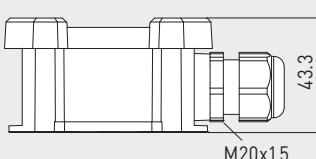
TW-extern-Modbus-T3

TW-extern-Modbus-T3
(detached variant)
with display

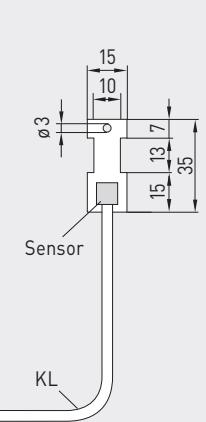
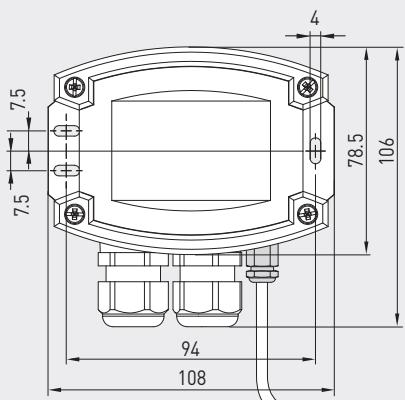
without display



45.8
M20x1.5



43.3
M20x1.5





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Display screen (cyclic)
standard



Display screen (static)
alternative output variables



HYGRASGARD® Modbus-T3



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 can be used to program an **alternative output variable** instead of the standard display. In this case, the first line indicates the value while the second line indicates the corresponding unit **statically**. The index in the third line indicates the display type:

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

Programmable
display screen

Modbus
Tyr 3



The Modbus interface allows the display to be **individually** configured both in the 7-segment area and in the dot-matrix area.

Switchable system of units

Measured values / data points		SI (default) → Imperial
Temperature		[°C] → [°F]
Humidity		[% RH] → [% RH]
Dew point		[°C] → [°F]
Absolute humidity		[g/m³] → [gr/ft³]
Mixing ratio		[g/kg] → [gr/lb]
Enthalpy		[kJ/kg] → [Btu/lb]

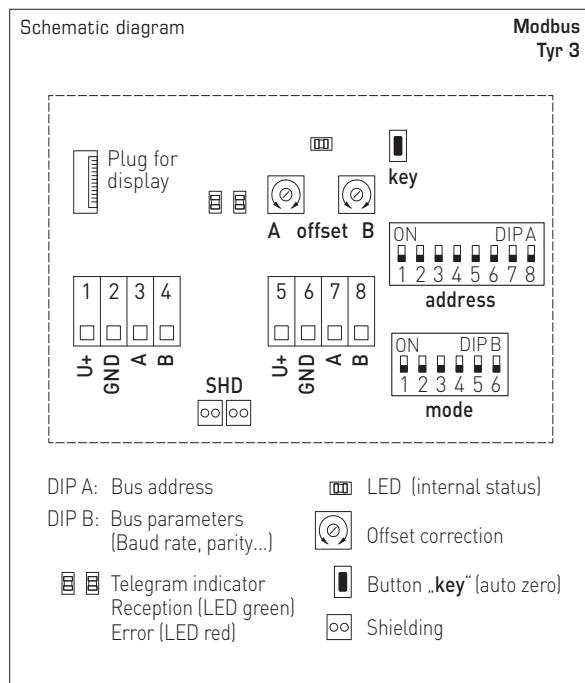
Measuring ranges		SI (default) → Imperial
		-35...+80 °C -3...+176 °F
		0...100 % RH 0...100 % RH
		Alternative parameters are calculated.



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TW-Modbus-T3
with displayHYGRASGARD® TW-Modbus-T3 Dew point control switches, incl. strap ($\pm 2.0\%$)HYGRASGARD® TW-external-Modbus-T3 Dew point control switches, with detached sensor head ($\pm 2.0\%$)

Type / WG01	Measuring Range / Readout Humidity (switchable)	Temperature	Output	Item No.	Price
Display					
TW-Modbus-T3					
TW-Modbus-T3	0 ... 100 % RH (default) 0 ... 80 g/kg (MR) 0 ... 80 g/m³ (A.H.) 0 ... 85 kJ/kg (ENT.) -20 ... +80 °C (DP)	-35 ... +80 °C	Modbus	1201-1281-3001-020	190,46 €
TW-Modbus-T3 LCD	(5x as above)	(1x as above)	Modbus	■ 1201-1281-3401-020	245,25 €
TW-external-Modbus-T3					
TW-extern-Modbus-T3	0 ... 100 % RH (default) 0 ... 80 g/kg (MR) 0 ... 80 g/m³ (A.H.) 0 ... 85 kJ/kg (ENT.) -20 ... +80 °C (DP)	-35 ... +80 °C	Modbus	1201-1281-3001-030	208,38 €
TW-extern-Modbus-T3 LCD	(5x as above)	(1x as above)	Modbus	■ 1201-1281-3401-030	249,03 €
Optional:	Cable connection with M12 connector according to DIN EN 61076-2-101				on request
Note:	System of units SI (default) or imperial (can be changed via Modbus).				
ACCESSORIES					
KA2-Modbus	Communication adapter (with USB and RS485 interface) for system connection (incl. quick-start software)				1906-1200-0000-100 213,99 €
LA-Modbus	Line termination device (with terminating resistor) as an active bus termination of RS485 networks				1906-1300-0000-100 79,81 €