

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 switches **HYGRASGARD® TW-Modbus** incl. strap / with detached sensor head, with Modbus connection. It reliably detects formation of dew by means of its humidity and temperature sensor (no conductivity measurement) and, thanks to its patented measuring method, **pro-dynamic cross convection**, yields an exact measurement result, **with/without optional display**.

The universal surface-contact sensor is used to detect various parameters in humidity measurement. The relative humidity and temperature of the ambient air are measured. These measurands are used to calculate various parameters internally. The Modbus can be used to retrieve the following parameters: relative humidity [% r. H.], absolute humidity [g/m³], mixture ratio [g/kg], dew point temperature [°C], enthalpy [kJ/kg] (ignoring atmospheric air pressure) and ambient temperature [°C].

It is used in non-aggressive, dust-free environments, in the refrigeration, air conditioning and clean room technology, hotels, engineering rooms, meeting and conference facilities. The sensor is suitable for ceiling and duct installation or for integration in equipment. Fine adjustment by the user is possible.

TECHNICAL DATA

Voltage supply:	24 V AC ($\pm 20\%$) and 15...36 V DC
Power consumption:	< 1 VA / 24 V DC, < 2.2 VA / 24 V AC
Sensor:	Digital humidity sensor with integrated temperature sensor , low hysteresis, high long-term stability
Sensor protection:	membrane filter
Measuring range:	0...100 % r.H. (humidity) -35...+80 °C (temperature)
Deviation, humidity:	typically $\pm 2.0\%$ (20...80 % r.H.) at +25 °C, otherwise $\pm 3.0\%$
Deviation, temperature:	± 0.2 K at +25 °C
Zero point offset:	± 10 % r.H. (humidity) ± 10 °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
Signal filtering:	4 s / 32 s
Enclosure:	plastic, UV-stabilised, material polyamide, 30 % glass-globe reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016), enclosure cover for display is transparent!
Enclosure dimensions:	72 x 64 x 37.8 mm (Tyr 1 without display) 72 x 64 x 43.3 mm (Tyr 1 with display)
Cable gland:	2x M12x1.5 (Y adapter); with strain relief, exchangeable, max. inner diameter 6 mm
Process connection:	endless metal strap with metal tightener, 300 mm, for pipes up to 3" (included in scope of delivery)
Installation:	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
Permissible air humidity:	<95 % r.H., non-precipitating air
Protection class:	III (according to EN 60 730)
Protection type:	IP 65 (according to EN 60 529)
Standards:	CE conformity according to EMC Directive 2014 / 30 / EU, according to EN 61326
Optional:	two-line display with illumination , programmable, cutout approx. 36 x 15 mm (W x H), for displaying the actual humidity and actual temperature or a selectable parameter or an individually programmable display value (The Modbus interface allows the display to be individually configured in the 7-segment area and in the dot-matrix area.)
ACCESSORIES	see table
MODBUS - Y	Y-adapter for cable gland M16x1.5 (on 2x M12x1.5), plastic (included in the scope of delivery)

TW-Modbus
with strap



TW-Modbus-external
with detached
sensor head



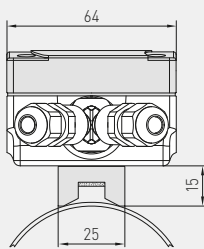
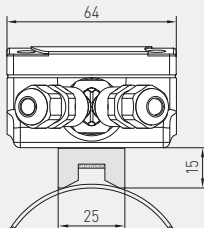
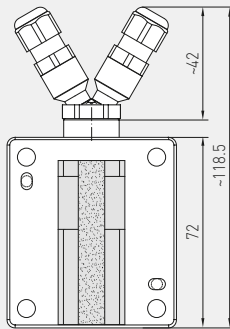


S+S REGELTECHNIK

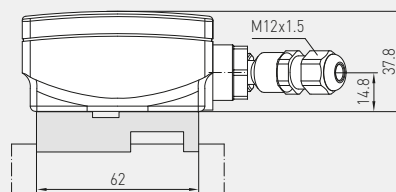
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Dimensional drawing

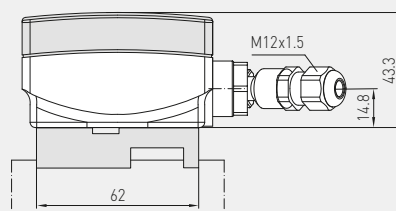
TW - Modbus



without display



with display

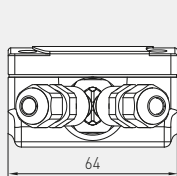


TW - Modbus
with strap
and display

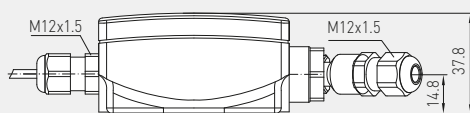


Dimensional drawing

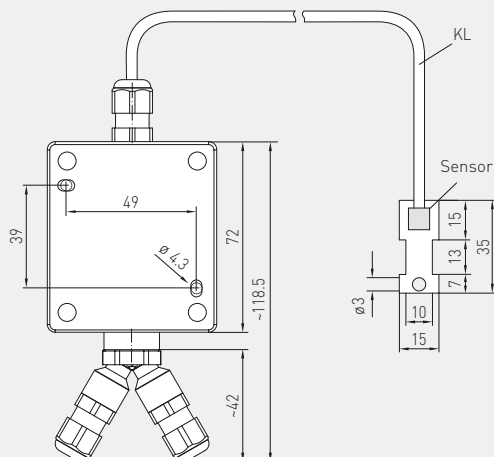
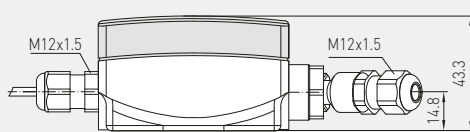
TW - Modbus - external



without display



with display



TW - Modbus - external
with detached sensor head
and display



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Display
Standard



By default, the display alternates between the **actual temperature** and the **actual humidity** (relative humidity). For improved legibility, backlighting is provided.

Displays
alternative output variables



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 = dew point in °C
Index 2 = absolute humidity in g/m³
Index 3 = mixture ratio in g/kg
Index 4 = enthalpy in kJ/kg
Index 5 = temperature in °C
Index 6 = relative humidity in % r.H.

Display individually
programmable

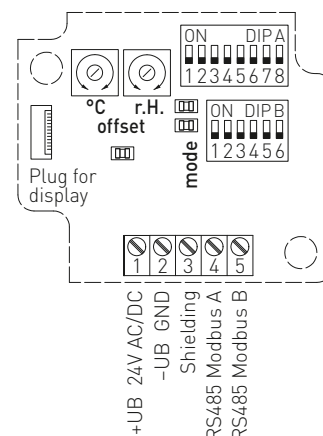


The Modbus interface allows the display to be **individually** configured both in the 7-segment area and in the dot-matrix area.

TW - Modbus
pro-dynamic cross convection



Schematic diagram **HYGRASGARD® MODBUS**



DIP A: Bus address
DIP B: Bus parameters
(Baud rate, parity ...)

Telegram indicator
Reception (LED green)
Error (LED red)

LED (internal status)

Offset correction
temperature: $\pm 10^\circ\text{C}$

Offset correction
humidity: $\pm 10\%$ r.H.

Plug for display
contact is
on the right side



S+S REGELTECHNIK

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TW - Modbus
with display



SUS

TEMP

REL. HUM.

DEW POINT

ENTHALPY

TEMP

REL. HUM.

DEW POINT

ENTHALPY

TEMP

S+S

HYGRASGARD® TW - Modbus – Dew point control switches, incl. strap ($\pm 2.0\%$)

HYGRASGARD® TW - Modbus-external – Dew point control switches, with detached sensor head ($\pm 2.0\%$)

Type / WG01 Designation	Measuring Range / Readout Humidity (switchable)	Temperature	Output	Display	Item No.	Price
TW - Modbus					IP65	
TW-MODBUS	0 ... 100% r. H. (standard) 0 ... 80 g / kg (MR) 0 ... 80 g / m ³ (A.H.) 0 ... 85 kJ / kg (ENT.) -20 ... +80 °C (DP)	-35 ... +80 °C	Modbus		1201-1211-3001-020	
TW-MODBUS DISPLAY	(5 x as above)	-35 ... +80 °C	Modbus	■	1201-1211-3201-020	
TW - Modbus-external					IP65	
TW-MODBUS EXTERN	0 ... 100% r. H. (standard) 0 ... 80 g / kg (MR) 0 ... 80 g / m ³ (A.H.) 0 ... 85 kJ / kg (ENT.) -20 ... +80 °C (DP)	-35 ... +80 °C	Modbus		1201-1211-3001-030	
TW-MODBUS EXTERN DISPLAY	(5 x as above)	-35 ... +80 °C	Modbus	■	1201-1211-3201-030	
Accessories						
KA-2	Modbus communication adapter with USB/RS485 interface for system connection or/and as an active bus termination resistance					on request