

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. It reliably detects the formation of dew due to its patented measuring method, the **pro-dynamic cross-convection** (no conductivity measurement).

The sensor is used to detect various parameters in humidity measurement. It measures the relative humidity (0...100% r.H.) and the temperature ($-35\ldots+80\text{ }^{\circ}\text{C}$) of the ambient air. These measurands are used to internally calculate the following parameters that can be retrieved via Modbus: relative humidity [% r.H.], absolute humidity [g/m^3], mixture ratio [g/kg], dew point temperature [$^{\circ}\text{C}$], enthalpy [kJ/kg] (ignoring atmospheric air pressure) and ambient temperature [$^{\circ}\text{C}$]. A long-term stable, digital sensor guarantees exact measurement results.

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.

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, 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
Data points:	Temperature [$^{\circ}\text{C}$], relative humidity [% r.H.], dew point [$^{\circ}\text{C}$], absolute humidity [g/m^3], mixture ratio [g/kg], enthalpy [kJ/kg]
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) $-35\ldots+80\text{ }^{\circ}\text{C}$ (temperature)
Deviation, humidity:	typically $\pm 2.0\%$ (20...80% r.H.) at $+25\text{ }^{\circ}\text{C}$, otherwise $\pm 3.0\%$
Deviation, temperature:	typically $\pm 0.2\text{ K}$ at $+25\text{ }^{\circ}\text{C}$
Zero point offset:	$\pm 10\%$ r.H. (humidity); $\pm 5\text{ }^{\circ}\text{C}$ (temperature)
Ambient temperature:	$-30\ldots+70\text{ }^{\circ}\text{C}$
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
Housing:	plastic, UV-stabilised, 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)
Process connection:	endless metal strap with metal tightener, 300 mm, for pipes up to 3"
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
Electrical connection:	0.2 - 1.5 mm ² , using push-in terminals
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, electromagnetic compatibility according to EN 61326, according to EMC Directive 2014 / 30 / EU
Optional:	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
ACCESSORIES	see table

TW-Modbus-T3
(compact variant)



Device version
with **M12 connector**
(optional on request)



TW-extern-Modbus-T3
(detached variant)

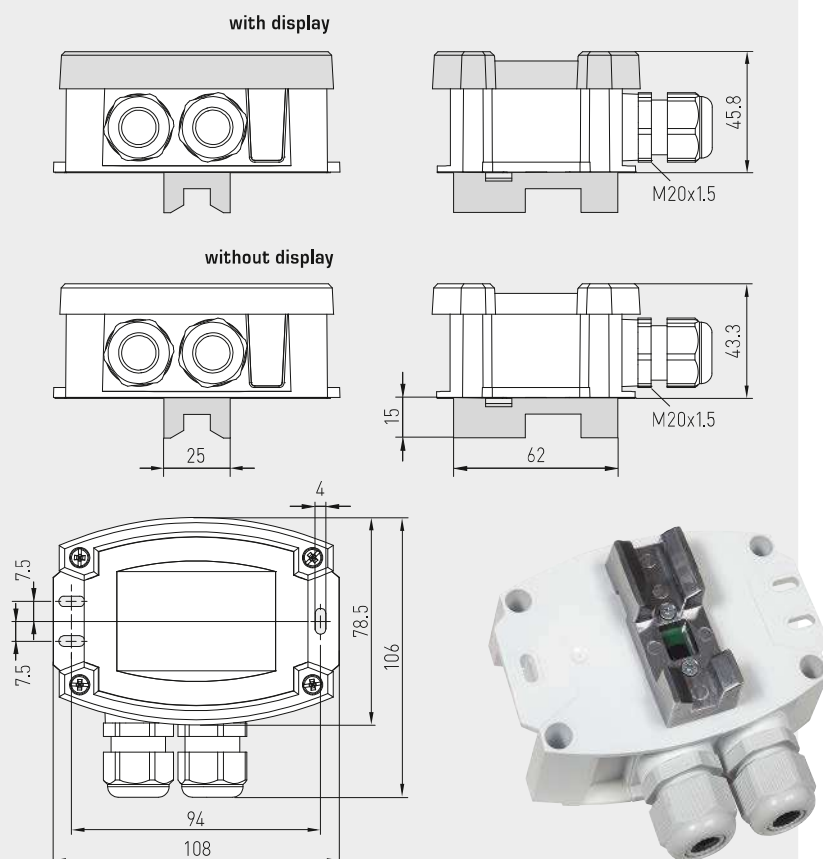


**NEW**

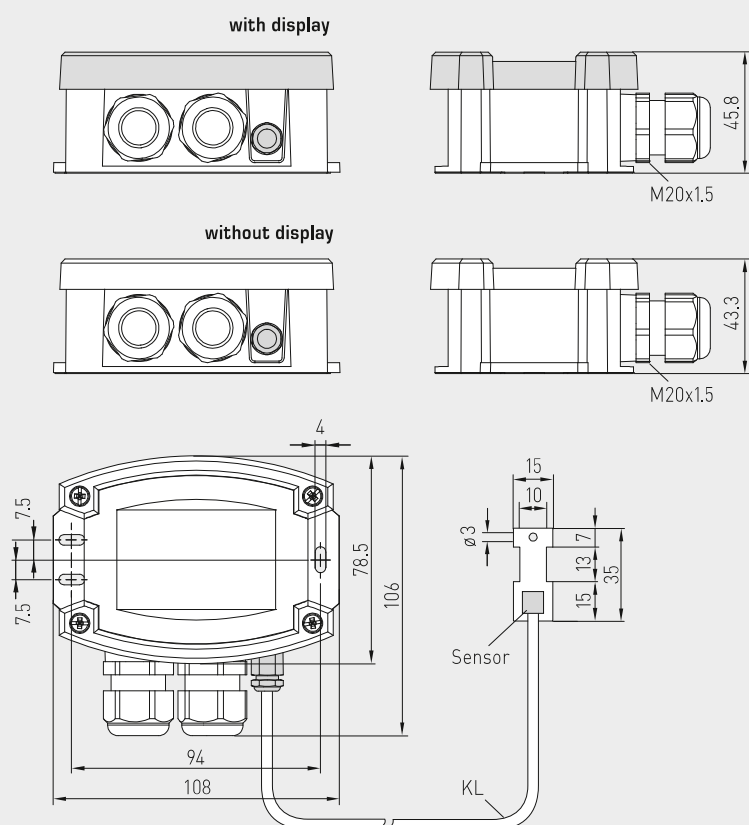
S+S REGELTECHNIK

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for mixture ratio, relative / absolute humidity, dew point, enthalpy
and temperature, calibratable, with Modbus connection

Dimensional drawing

TW-Modbus-T3
TW-Modbus-T3
(compact variant)
with display


Dimensional drawing

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


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Display screen (cyclic) standard



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

Display screen (static) alternative output variables



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 [°C]
- Index 2** = absolute humidity [g/m³]
- Index 3** = mixture ratio [g/kg]
- Index 4** = enthalpy [kJ/kg]
- Index 5** = temperature [°C]
- Index 6** = relative humidity [% r.H.]

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.

TW-Modbus-T3 pro-dynamic cross convection

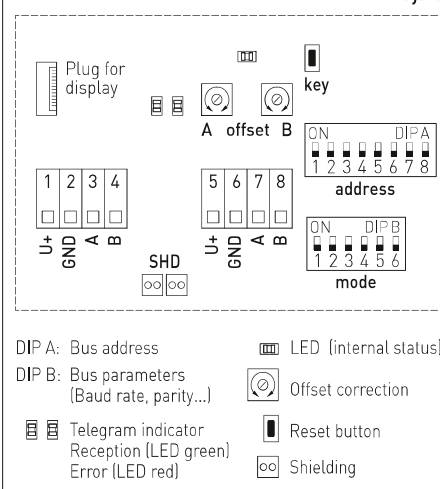


PATENTED



Schematic diagram

Modbus Tyr 3



**NEW**

S+S REGELTECHNIK

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TW - Modbus - T3
with display



S+S

BUS

A V

A V

A V

A V

A V

A V

A V

A V

HYGRASGARD® 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	Display	Item No.
TW - Modbus - T3					
TW-MODBUS-T3	0 ... 100 % r. H. (default) 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		1201-1281-3001-020
TW-MODBUS-T3 LCD	(5 x as above)	(1 x as above)	Modbus	■	1201-1281-3401-020
TW -external- Modbus - T3					
TW-EXTERN-MODBUS-T3	0 ... 100 % r. H. (default) 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		1201-1281-3001-030
TW-EXTERN-MODBUS-T3 LCD	(5 x as above)	(1 x as above)	Modbus	■	1201-1281-3401-030
Optional:	Cable connection with M12 connector according to DIN EN 61076-2-101				on request

ACCESSORIES

KA2-Modbus	Communication adapter (with USB and RS485 interface) for system connection (incl. quick-start software)	1906-1200-0000-100
LA-Modbus	Line termination device (with terminating resistor) as an active bus termination of RS485 networks	1906-1300-0000-100