

# THERMASGARD® MWTM-Modbus-T3

## THERMASGARD® MWTM-wModbus

Mean value temperature measuring transducers,  
incl. mounting flange, calibratable,  
with Modbus connection or W-Modbus (wireless)



S+S REGELTECHNIK

Calibratable mean value temperature measuring transducer **THERMASGARD® MWTM-Modbus-T3**, with Modbus connection, in an impact-resistant plastic housing with quick-locking screws, with flexible sensor rod (0.4...20m, fully active) in a robust protective plastic-coated copper tube, incl. mounting flange, optionally with /without display, measures temperature (-50...+150 °C). 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.

The rod sensor is used to detect the mean temperature (mean value) in gaseous media. It is used in ventilation and air conditioning ducts over the entire cross-section or on a defined length (laid along a meandering route, it uniformly detects the surrounding temperature). For proper mounting of the rod, mounting clamps **MK-05-M** (accessories) are available.

**Innovative Modbus sensor** with galvanically isolated RS485 Modbus interface, switchable bus terminating resistor, DIP switch for setting in current-free state, internal LEDs for telegram status display, push-in terminals and large three-line display (illuminated, individually programmable). Uses **internal diagnostics** to detect sensor breakage or sensor short circuit as errors. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

### TECHNICAL DATA

|                           |                                                                                                                                                                                                                                                                                                                                |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply:             | 24 V AC (±20%); 15...36 V DC                                                                                                                                                                                                                                                                                                   |
| Power consumption:        | < 1.2 W / 24 V DC; < 1.8 VA / 24 V AC                                                                                                                                                                                                                                                                                          |
| System of units:          | <b>SI</b> (default) or <b>Imperial</b> (switchable via Modbus)                                                                                                                                                                                                                                                                 |
| Data points:              | temperature [°C] [°F]                                                                                                                                                                                                                                                                                                          |
| Sensor:                   | Pt1000, DIN EN 60751, class B                                                                                                                                                                                                                                                                                                  |
| Measuring range:          | -50...+150 °C; <b>T<sub>min</sub> -50 °C, T<sub>max</sub> +80 °C</b>                                                                                                                                                                                                                                                           |
| Accuracy, temperature:    | typically ±0.2 K at +25 °C                                                                                                                                                                                                                                                                                                     |
| Zero point offset:        | ± 10 °C                                                                                                                                                                                                                                                                                                                        |
| Ambient temperature:      | measuring transducer -30...+70 °C                                                                                                                                                                                                                                                                                              |
| Medium:                   | clean air and non-aggressive, 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><br><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> adjustable                                                                                                                                                                                                                                                                    |
| Signal filtering:         | 0.3 s / 1 s / 10 s                                                                                                                                                                                                                                                                                                             |
| <b>Sensor:</b>            | active across the entire length (averaging)                                                                                                                                                                                                                                                                                    |
| Rod material:             | <b>protective tube made from copper, plastic-coated</b> , with anti-kink spring and sleeve, stainless steel V4A (1.4571)                                                                                                                                                                                                       |
| Rod dimensions:           | Ø=5.0 mm, nominal length (NL)=0.4 m / 3 m / 6 m (nominal length optional up to max. 20 m)                                                                                                                                                                                                                                      |
| Rod laying:               | Bending radius: <b>&gt;35 mm</b><br>Vibration load: <b>≤0.5 g</b><br>Tensile load: <b>&lt;480 N</b>                                                                                                                                                                                                                            |
| <b>Housing:</b>           | 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)<br>108 x 78.5 x 45.8 mm (Tyr 3 with display)                                                                                                                                                                                                                                      |
| Cable connection:         | <b>cable gland</b> , plastic (M20 x 1.5; with strain relief, exchangeable, inner diameter 8 - 13 mm) <b>or</b> <b>M12 connector</b> according to DIN EN 61076-2-101 (optional on request)                                                                                                                                      |
| Electrical connection:    | 0.2 - 1.5 mm², using push-in terminals                                                                                                                                                                                                                                                                                         |
| Process connection:       | by mounting flange, plastic (galvanised steel optional, see accessories) and mounting clamps <b>MK-05-M</b>                                                                                                                                                                                                                    |
| Permissible air humidity: | <95 % RH, non-precipitating air                                                                                                                                                                                                                                                                                                |
| Protection class:         | III (according to EN 60 730)                                                                                                                                                                                                                                                                                                   |
| Protection type:          | <b>IP 65</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> , three-line, programmable, cutout approx. 51 x 29 mm (W x H), for displaying the actual temperature, error message or an individually programmable display value                                                                                                                             |
| Internal diagnostics:     | <b>Error 1</b> at sensor breakage<br><b>Error 2</b> at sensor short circuit                                                                                                                                                                                                                                                    |

**MWTM-Modbus-T3**  
without display  
(RTU cable)



**MWTM-wModbus**  
without display  
(wireless)



Programmable  
display screen

**Tyr 3**



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# THERMASGARD® MWTM-Modbus-T3

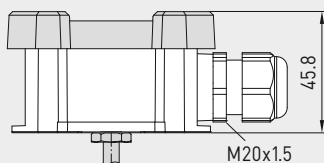
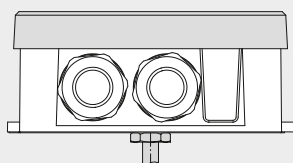
## THERMASGARD® MWTM-wModbus

Mean value temperature measuring transducers,  
incl. mounting flange, calibratable,  
with Modbus connection or W-Modbus (wireless)

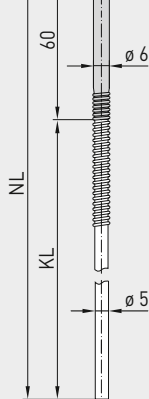
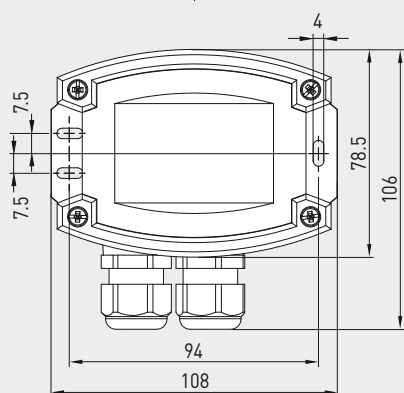
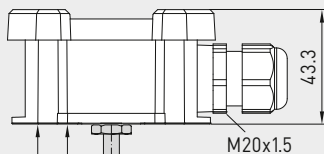
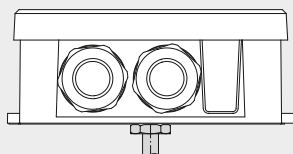
Dimensional drawing  
[mm]

MWTM-xx

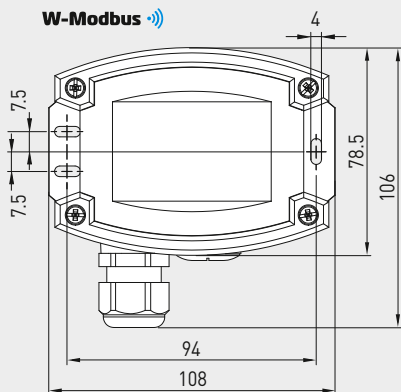
with display



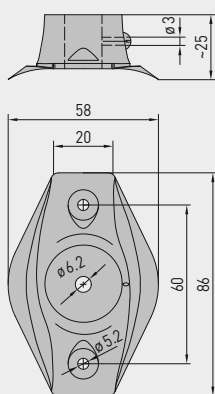
without display



W-Modbus



MF-06-K

MWTM-Modbus-T3  
with display  
(RTU cable)MWTM-wModbus  
with display  
(wireless)

MF-06-M

Mounting flange,  
metal  
(optional)



KRD-04

Capillary tube  
gland bracket, plastic  
(optional)



MF-06-K

Mounting flange,  
plastic  
(included in the  
scope of delivery)



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



# THERMASGARD® MWTM-Modbus-T3

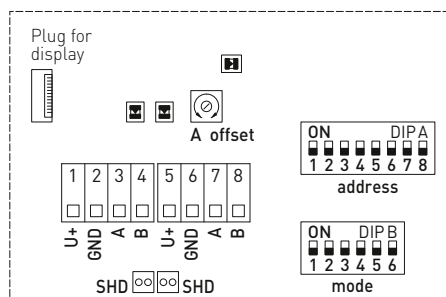
## THERMASGARD® MWTM-wModbus

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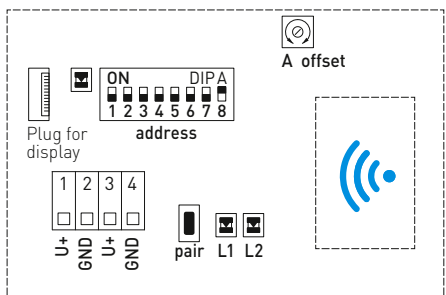
Schematic diagram (Tyr3) **Modbus** (RTU cable)



DIP A: Bus address  
DIP B: Bus parameters (Baud rate, parity...)  
Telegram indicator Reception (LED green) Error (LED red)  
LED (internal status)  
Offset correction  
Shielding



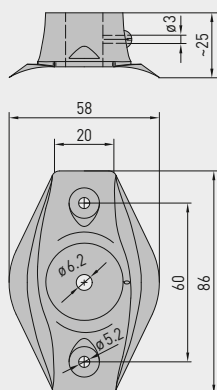
Schematic diagram (Tyr3) **W-Modbus** (wireless)



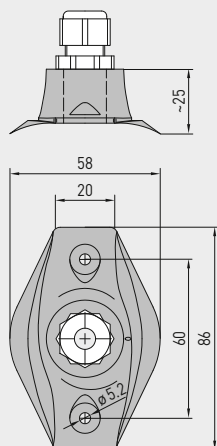
LED: Telegram Status  
DIP A: Bus address  
Button: Teach-in (pair)  
LED 1: Network Status  
LED 2: Connection quality



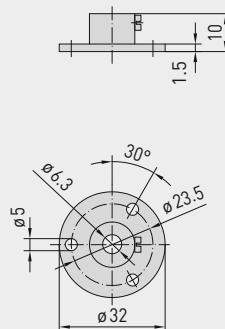
Dimensional drawing **MF-06-K**



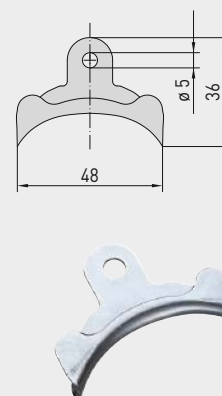
Dimensional drawing **KRD-04**



Dimensional drawing **MF-06-M**



Dimensional drawing **MK-05-M**



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## THERMASGARD® MWTM-wModbus

Mean value temperature measuring transducers,  
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**MWTM-wModbus**  
with / without display  
(wireless)



**MWTM-Modbus-T3**  
with / without display  
(RTU cable)



|                                                        |                                                                                                                                                                                                                            |                                                                                                                           |         |                                                                                      |                    |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------|--------------------|
| THERMASGARD®<br>MWTM - Modbus - T3<br>MWTM - wModbus   |                                                                                                                                                                                                                            | Mean value temperature measuring transducers,<br>with Modbus connection (RTU cable) <u>or</u><br>with W-Modbus (wireless) |         |  |                    |
| Type / WG01                                            | Output                                                                                                                                                                                                                     | Rod length (NL)                                                                                                           | Display | Item No.                                                                             |                    |
| MWTM - Modbus - T3                                     |                                                                                                                                                                                                                            |                                                                                                                           |         |                                                                                      |                    |
| MWTM-Modbus_T3 0,4m                                    | Modbus (RTU cable)                                                                                                                                                                                                         | 0.4 m                                                                                                                     |         | 1101-3266-0080-000                                                                   |                    |
| MWTM-Modbus-T3 0,4m LCD                                | Modbus (RTU cable)                                                                                                                                                                                                         | 0.4 m                                                                                                                     | ■       | 1101-3266-4080-000                                                                   |                    |
| MWTM-Modbus-T3 3m                                      | Modbus (RTU cable)                                                                                                                                                                                                         | 3.0 m                                                                                                                     |         | 1101-3266-0230-000                                                                   |                    |
| MWTM-Modbus-T3 3m LCD                                  | Modbus (RTU cable)                                                                                                                                                                                                         | 3.0 m                                                                                                                     | ■       | 1101-3266-4230-000                                                                   |                    |
| MWTM-Modbus-T3 6m                                      | Modbus (RTU cable)                                                                                                                                                                                                         | 6.0 m                                                                                                                     |         | 1101-3266-0260-000                                                                   |                    |
| MWTM-Modbus-T3 6m LCD                                  | Modbus (RTU cable)                                                                                                                                                                                                         | 6.0 m                                                                                                                     | ■       | 1101-3266-4260-000                                                                   |                    |
| MWTM - wModbus                                         |                                                                                                                                                                                                                            |                                                                                                                           |         |                                                                                      |                    |
| MWTM-wModbus 0,4M                                      | W-Modbus (wireless)                                                                                                                                                                                                        | 0.4 m                                                                                                                     |         | 1101-326F-0080-000                                                                   |                    |
| MWTM-wModbus 0,4M LCD                                  | W-Modbus (wireless)                                                                                                                                                                                                        | 0.4 m                                                                                                                     | ■       | 1101-326F-4080-000                                                                   |                    |
| MWTM-wModbus 3M                                        | W-Modbus (wireless)                                                                                                                                                                                                        | 3.0 m                                                                                                                     |         | 1101-326F-0230-000                                                                   |                    |
| MWTM-wModbus 3M LCD                                    | W-Modbus (wireless)                                                                                                                                                                                                        | 3.0 m                                                                                                                     | ■       | 1101-326F-4230-000                                                                   |                    |
| MWTM-wModbus 6M                                        | W-Modbus (wireless)                                                                                                                                                                                                        | 6.0 m                                                                                                                     |         | 1101-326F-0260-000                                                                   |                    |
| MWTM-wModbus 6M LCD                                    | W-Modbus (wireless)                                                                                                                                                                                                        | 6.0 m                                                                                                                     | ■       | 1101-326F-4260-000                                                                   |                    |
| Extra charge:                                          | per meter sensor cable (from 6 m to max. 20 m)<br>cable connection with <b>M12 connector</b> according to DIN EN 61076-2-101                                                                                               |                                                                                                                           |         | on request<br>on request                                                             |                    |
| Note:                                                  | System of units <b>SI</b> (default) or <b>imperial</b> (can be changed via Modbus).                                                                                                                                        |                                                                                                                           |         |                                                                                      |                    |
| MODBUS ACCESSORIES                                     |                                                                                                                                                                                                                            |                                                                                                                           |         |                                                                                      |                    |
|                                                        | Gateway with W-Modbus (Wireless) for radio-based connection to Modbus networks,<br>operating modes ' <b>Gateway</b> ' (basic function as a base station)<br>and ' <b>Node</b> ' (adapter function for max. 1 wired sensor) |                                                                                                                           |         |                                                                                      | 1801-1211-1101-000 |
| GW-wModbus                                             | and ' <b>Node Pro</b> ' (adapter function for max. 16 wired sensors)                                                                                                                                                       |                                                                                                                           |         |                                                                                      | 1801-1211-1101-100 |
| KA2-Modbus                                             | Communication adapter (USB/RS485) for system connection                                                                                                                                                                    |                                                                                                                           |         |                                                                                      | 1906-1200-0000-100 |
| LA-Modbus                                              | Line termination device (with terminating resistor) as an active bus termination                                                                                                                                           |                                                                                                                           |         |                                                                                      | 1906-1300-0000-100 |
| For further information see the end of the chapter!    |                                                                                                                                                                                                                            |                                                                                                                           |         |                                                                                      |                    |
| ACCESSORIES                                            |                                                                                                                                                                                                                            |                                                                                                                           |         |                                                                                      |                    |
| MF-06-K                                                | Mounting flange, plastic (included in the scope of delivery)                                                                                                                                                               |                                                                                                                           |         |                                                                                      | 7100-0030-1000-000 |
| MF-06-M                                                | Mounting flange, metal, galvanised steel, Ø = 32 mm                                                                                                                                                                        |                                                                                                                           |         |                                                                                      | 7100-0030-5000-100 |
| KRD-04                                                 | Capillary tube gland bracket, plastic                                                                                                                                                                                      |                                                                                                                           |         |                                                                                      | 7100-0030-7000-000 |
| MK-05-M                                                | Galvanised steel mounting clamps (6 pieces)                                                                                                                                                                                |                                                                                                                           |         |                                                                                      | 7100-0034-0000-000 |
| For further information, see last chapter Accessories! |                                                                                                                                                                                                                            |                                                                                                                           |         |                                                                                      |                    |