

TEHR-M Room Temperature Transmitters with Modbus

TEHR-M Modbus room temperature transmitter is designed automatic HVAC systems to measure room temperatures. The temperature is measured by a Pt1000 element. The sensor element resistance information is converted to a 0...10 V signal and this voltage signal is available also via Modbus. The transmitter temperature range can be changed during the commissioning.

TEHR-M settings can be changed by using the ML-SER tool. One point field calibration of the transmitter can be executed, the temperature output can be changed to the controller function and communication settings of the Modbus can be configured.

TEHR-M-N transmitter is equipped with a 3.5-digit liquid crystal display. The display resolution is 0.1 °C. TEHR-M-PU model has two separate outputs. Output 1 can be used as a temperature output or a control function. Output 2 is used for active potentiometer.

Features

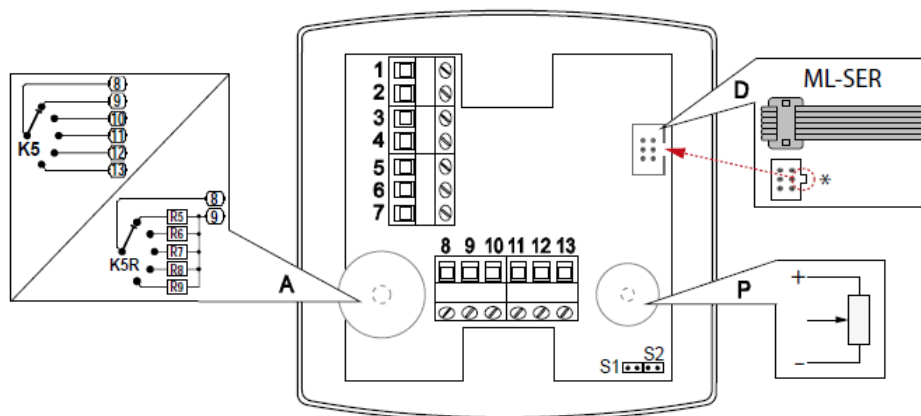
- Modbus RTU Room Temperature Sensor
- Available with or without Display



- Passive and Active Setpoint Option
- 5-Position Switch Option
- Additional 0..10Vdc Channel available over Modbus for Control
- 24Vac/dc Power Supply

Model Type	Model	Description
	TEHR-M	Room Temperature Transmitter with Built-In Modbus
	TEHR-M-N	Room Temperature Transmitter with Built-In Modbus, Display
	TEHR-M-PU	Modbus Room Temperature Transmitter with Setpoint Potentiometer
	TEHR-M-K5	Modbus Room Temperature Transmitter with 5-Position Switch
	TEHR-M-K5R	Modbus Room Temperature Transmitter with 5-Position Switch with Resistance Output
Technical Data	Power supply	24Vac/dc (22...26V)
	Display (-N Models)	LCD Display for Showing Temperature
	Outputs	1 x 0..10V < 2mA SETPOINT: 1 x 0..10V < 2mA (TEHR-M-PU)
	Options	P: Passive Potentiometer K5: 5-Position Switch (5VA/0.1A) K5R: 5-Position Switch with Resistance Output
	Measurement Range	0..50°C, 0..100°C, -50..50°C, -50..150°C (selectable by jumpers)
	Accuracy - Temperature	±0.5°C @ 25°C
	Communications	RS485 Modbus RTU, Parity None, 9k6, 19k2, 38k4 or 56k Baud Rate Note: Modbus settings available using ML-SER tool
	Operating temperature	0°C...+50°C
	Ambient humidity	0...95%rh (non-cond.)
	Housing	ABS-plastic, IP 20
	Dimensions	W86 x H85 x D32mm

WIRING TERMINALS



1	24 Vac/dc	A	K5 / K5R 5-stage switch (optional)
2	0 V	P	passive potentiometer (optional only in TEHR-LU model)
3	temperature / controller output	D	connector for cover display / ML-SER tool
4	active potentiometer (PU)	S1	temperature measurement range selection
5	potentiometer + / Modbus B-	S2	selection
6	potentiometer slide / Modbus COM	*	from below of the connector
7	potentiometer - / Modbus A+		
8	K5 / K5R selector switch		
9	K5 switch position A / K5R out		
10	K5 switch position 0		
11	K5 switch position 1		
12	K5 switch position 2		
13	K5 switch position 3		

Measurement Range Selection

Range selection:

0...+50 °C	*0...+100 °C	-50...+50 °C	-50...+150 °C
S1 S2	S1 S2	S1 S2	S1 S2
■ ●	■ ■	● ● ■	● ● ●

* = Factory setting

Output signal:

0...+50	0...+100	-50...+50	-50...+150	Signal
0 °C	0 °C	-50 °C	-50 °C	0 V
25 °C	50 °C	0 °C	50 °C	5 V
50 °C	100 °C	50 °C	150 °C	10 V

DEVICE CONFIGURATION (MENU)

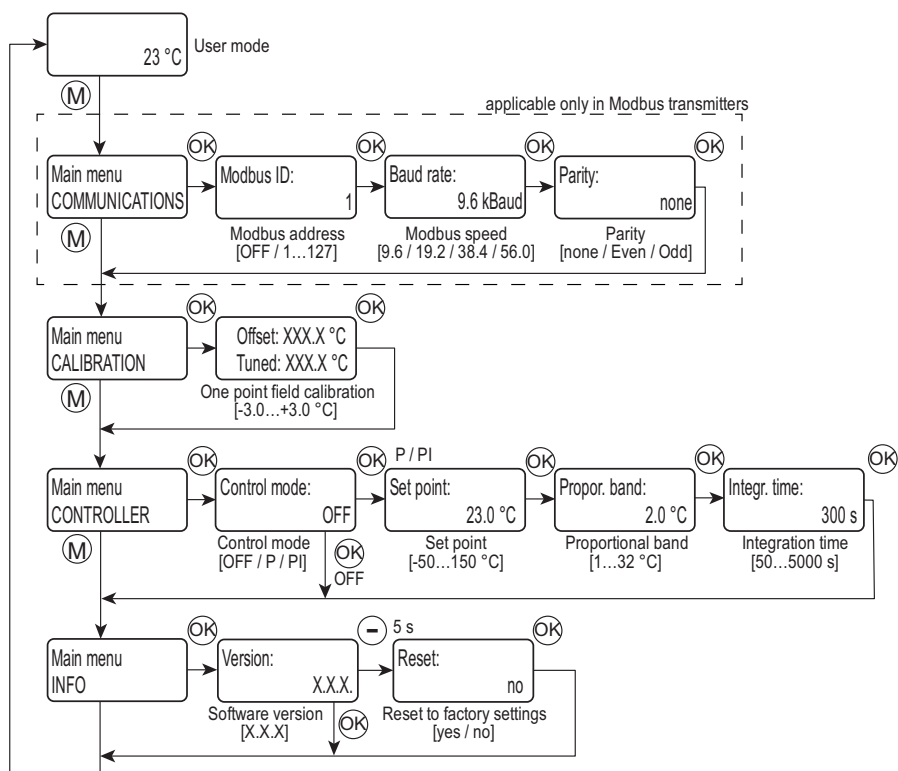
The transmitter settings can be changed by using the ML-SER tool. You can proceed in the menu by pressing the M and OK buttons. The values can be changed with the "+" and "-" buttons. The value is accepted with the OK button. The following menu structure contains the factory settings.

Through the COMMUNICATION menu settings the address, speed and parity of the Modbus transmission can be changed. None parity mode adds two and Even / Odd mode one stop bit to the Modbus message.

CALIBRATION menu is for one point field calibration. The measurement outcome can be tuned ±3.0 °C by pressing "+" and "-" buttons.

In CONTROLLER menu the voltage output can be changed to controller to control other device in the system.

In INFO menu the software version can be checked and the factory settings can be reset. Reset of the transmitter is available by pressing the "-" button for 5 seconds.



MODBUS REGISTERS - TEHR-M

The TEHR-M transmitter supports the following Modbus registers and function codes. The default communication speed is 9600 bps, 8 data bits, Parity None and 1 Stop Bit. The default Modbus Slave address is 1.

Please note that Modbus register space is specified from the Modbus master perspective as in the Modbus Application Protocol specification. The Modbus registers for Function Codes 02, 03, 06 and 16 have presentation for both Modbus "address blocks" and for actual Modbus register offsets. For example, the Temperature is read from Modbus register 11 using Function Code 04. Some Modbus masters will require Function Code 04, register 1 to be entered, whereas the others will require register 30011 and Function Code 04. T

Register	Parameter Description	Data Type	Raw Data	Range
FUNCTION CODE 04 - READ INPUT REGISTERS				
30001	Temperature Measurement	Signed 16	-500...1500	-50.0...150.0°C
30002	Analogue Output Voltage	Unsigned 16	0..100	0.0..10.0V
30003	Potentiometer Position	Signed 16	-30..30	-3.0..+3.0°C
30011	Temperature Measurement (Legacy Register)	Signed 16	-500...1500	-50.0...150.0°C
30013	Analogue Output Voltage (Legacy Register)	Unsigned 16	0..100	0.0..10.0V
FUNCTION CODE 03 - READ HOLDING REGISTERS				
FUNCTION CODE 06 - WRITE SINGLE HOLDING REGISTER				
FUNCTION CODE 16 - WRITE MULTIPLE HOLDING REGISTERS				
40001	One Point Calibration Field	Signed 16	-30..+30	-3.0..+3.0°C
40002	Control Mode	Signed 16	0..2	0=Off,1=P,2=PI
40003	Setpoint	Signed 16	-500..+1500	-50.0..+150.0°C
40004	Proportional Band	Signed 16	10..320	1.0..32.0°C
40005	Integration Time	Signed 16	50..5000	50..5000s

Dimensions

