
User manual M1

Pt100 2-wire: -199.9°C ... 850.0°C



Technical features:

- red display
- 4-digit
- minimal installation depth: 27 mm without plug-in terminal
- protection class IP65 at the front
- plug-in terminal
- accessories: PC-based configuration software PM-TOOL for devices without keypad and for a simple adjustment of standard devices

Identifizierung

STANDARD TYPE	ORDER NUMBER
Pt100 2-wire Housing dimensions: 48x24 mm	M1-7TR4A.020C.770DD

Options – breakdown of order code:

	M	1	7	T	R	4	A	0	2	0	C	7	7	0	D	D	
Standard type M-Line																	Dimension
																	D physcial unit
Installation depth																	Version
54 mm																	D
incl. plug-in terminal																	
Housing dimensions																	Switching points
48x24x27 mm																	0 no switchting point
(without plug-in terminal)																	
Indicator type																	Protection class
Temperature																	1 without keypad, operation on the back
																	7 IP65/pluggable terminal
Display colour																	Voltage supply
Red																	7 24 VDC galv. isolated
Number of digits																	Measuring input
4-digit																	C Pt100
Digit height																	Analog output
10 mm																	0 without
Interface																	Pt100 type
without																	2 Pt100 2-wire

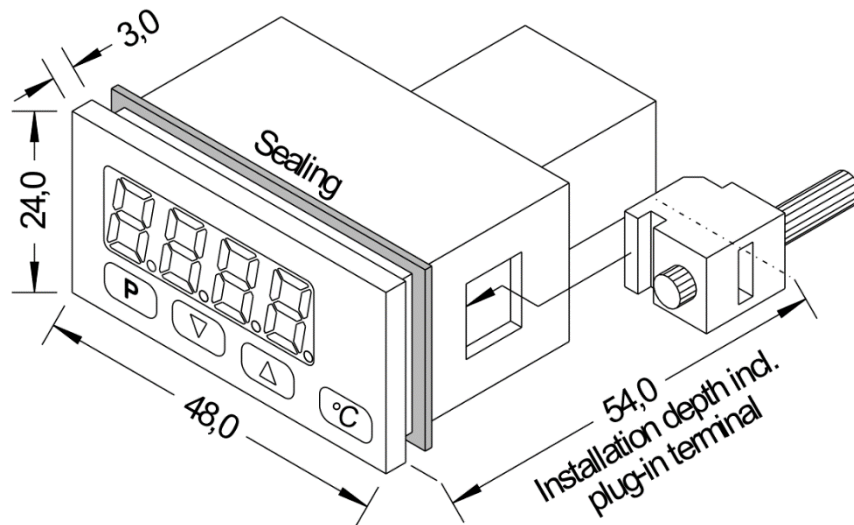
Please state physical unit by order, e.g. °C

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1. Assembly

Please read the *Safety advices* on *page 7* before installation and keep this user manual for future reference.

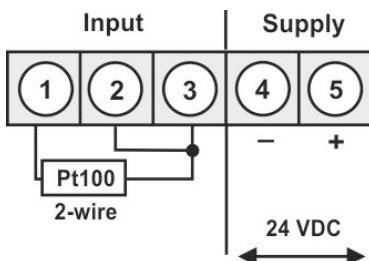


1. After removing the fixing elements, insert the device.
2. Check the seal to make sure it fits securely.
3. Click the fixing elements back into place and tighten the clamping screws by hand. Then use a screwdriver to tighten them another half a turn.

CAUTION! The torque should not exceed 0.1 Nm!

2. Electrical connection

Type M1-7TR4A.020C.770DD
supply of 24 VDC



Advice:

The galvanic isolation in devices with temperature sensors, that **do not** have a galvanic connection to an extrinsic potential, can be cancelled by an bridge from terminal 2 to 4 and thus stabilise the device against external failures.

3. Switching-on

Once the installation is complete, start the device by applying the current loop. Check beforehand once again that all the electrical connections are correct.

Starting sequence

For 1 second during the switching-on process, the segment test (**B B B B**) is displayed, followed by an indication of the software type and, after that, also for 1 second, the software version. After the start-up sequence, the device switches to operation/display mode.

3.1. Programming via configuration software PM-TOOL-MUSB12:

You receive the software on CD including an USB-cable with a device adapter. The connection is done via a 12-pole micromatch connector plug on the back and the PC is connected via an USB connector plug.

System requirements: PC with USB interface
Software: Windows XP, Windows Vista

With this tool the device configuration can be created, skipped and saved on the PC. Via the easy to handle program surface the parameter can be changed, whereat the mode of operation and the possible selection options can be preset via the program.

CAUTION!

During parameterisation with connected measuring signal, make sure that the measuring signal has no mass supply to the programming plug. The programming adapter is galvanic not isolated and directly connected with the PC. Via polarity of the input signal, a current can discharge via the adapter and destroy the device as well as other connected components!

4. Technical data

Housing			
Dimensions	48x24x27 mm (BxHxD)		
	48x24x54 mm (BxHxD) including plug-in terminal		
Panel cut-out	45.0 ^{+0.6} x 22.2 ^{+0.3} mm		
Wall thickness	up to 3 mm		
Fixing	screw elements		
Material	PC polycarbonate, black, UL94V-0		
Sealing material	EPDM, 65 Shore, black		
Protection class	standard IP65 (front), IP00 (back)		
Weight	approx. 100 g		
Connection	plug-in terminal; wire cross-section up to 2.5 mm ²		
Display			
Digit height	10 mm		
Segment colour	red		
Display range	-199.9 ... 850.0°C		
Overflow	horizontal bars at the top		
Underflow	horizontal bars at the bottom		
Display time	1 second		
Input	Measuring range	Measuring error	Digit
Pt100 2-wire	-199.9 ... 850.0 °C	0.1 % of measuring range	±1
Temperature drift	100 ppm / K		
Measuring time	1 second		
Measuring principle	U/F-conversion		
Resolution	0.1°C or 0.1°F		
Power pack	24 VDC ± 10 % max. 1 VA		
Memory	EEPROM		
Data preservation	≥ 100 years		
Ambient conditions			
Working temperature	0...60°C		
Storing temperature	-20...80°C		
Wheathering resistance	relative humidity 0-85% on years average without dew		
EMV	EN 61326		
CE-sign	conformity according to directive 2004/108/EG		
Safety regulations	according to low voltage directive 2006/95/EG EN 61010; EN 60664-1		

5. Safety advices

Please read the following safety advices and the assembly *chapter 2* before installation and keep it for future reference.

Proper use

The **M1-7C2-device** is designed for the evaluation and display of Pt100 signals.



Danger! Careless use or improper operation can result in personal injury and/or damage to the equipment.

Control of the device

The panel meters are checked before dispatch and sent out in perfect condition. Should there be any visible damage, we recommend close examination of the packaging. Please inform the supplier immediately of any damage.

Installation

The **M1-7C2-device** must be installed by a suitably **qualified specialist** (e.g. with a qualification in industrial electronics).

Notes on installation

- There must be no magnetic or electric fields in the vicinity of the device, e.g. due to transformers, mobile phones or electrostatic discharge.
- **The fuse rating of the supply voltage should not exceed a value of 0.5A N.B. fuse!**
- Do not install **inductive consumers** (relays, solenoid valves etc.) near the device and **suppress** any interference with the aid of RC spark extinguishing combinations or free-wheeling diodes.
- Keep input, output and supply lines separate from each other and do not lay them parallel with each other. Position “go” and “return lines” next to one another. Where possible use twisted pair. So, the best measuring results can be received.
- Screen off and twist sensor lines. Do not lay current-carrying lines in the vicinity. Connect the **screening on one side** on a suitable potential equaliser (normally signal ground).
- The device is not suitable for installation in areas where there is a risk of explosion.
- Any electrical connection deviating from the connection diagram can endanger human life and/or can destroy the equipment.
- The terminal area of the devices is part of the service. Here electrostatic discharge needs to be avoided. Attention! High voltages can cause dangerous body currents.
- Galvanic isolated potentials within one complex need to be placed on an appropriate point (normally earth or machines ground). So, a lower disturbance sensibility against impacted energy can be reached and dangerous potentials, that can occur on long lines or due to faulty wiring, can be avoided.

6. Error elimination

	Error description	Measures
1.	The unit permanently indicates overflow. 	• The input has a very high measurement, check the measuring circuit. • The input is open.
2.	The unit permanently shows underflow. 	• The input has a very low measurement, check the measuring circuit . • The input is open.
3.	„Err1“ or „HELP“ lights up in the 7-segment display.	• Please contact the manufacturer if errors of this kind occur.
4.	The temperature value is unstable.	• Please check the possibility to set aside the galvanic insulation for a discharging of failures as described under <i>chapter 2</i> „Electrical connection“. Before make sure that the possible metal sensor is separated from the sensor element.