





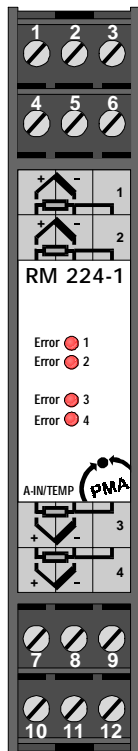


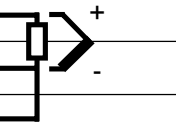
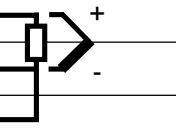
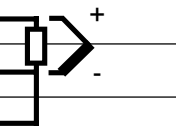
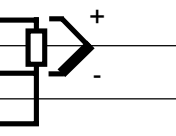
Analog Input Module RM 224-1

Safety Instructions


 <p>ESD !</p> <ul style="list-style-type: none"> contains electrostatically sensitive components Original packing protects against electrostatic discharge (ESD) Transporting only in the original packing during mounting rules for protection against ESD must be followed 	 <p>Connections</p> <ul style="list-style-type: none"> Wiring must conform to local standards (e.g. VDE 0100 in Germany) ! Input leads must be kept separate from signal and mains leads ! The protective earth must be connected to the relevant terminal (in the instrument carrier) ! The cable screening must be connected to the terminal for grounded measurement ! Usage of twisted and screened input leads prevent stray electric interference ! Connections must be made according to the connecting diagrams ! 	 <p>Maintenance / Repair</p> <p>Instrument needs no particular maintenance.</p> <p> When opening the instrument live parts or terminals can be exposed. Before carrying out the instrument must be disconnected from all voltage sources. The instrument contains electrostatically sensitive components. The following work may be carried out only by trained, authorized persons.</p> <p>Fuse tripped:</p> <ul style="list-style-type: none"> Cause must be determined and removed ! Only fuses of the same type and current rating as the original fuse must be used. Using repaired fuses or short-circuiting the fuse socket is inadmissible !
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Pin Assignment



Pin	Assignment
1	 Input 1
2	
3	
4	 Input 2
5	
6	
7	 Input 3
8	
9	
10	 Input 4
11	
12	
Art.-No.	9407-738-22411

Technical Data RM 224-1

Application:	4 analog inputs for the direct connection of RTD (Pt 100) or thermocouples (T/C) (Type J, K, L, E, T, S, R, B, N, W)																																																
Resolution:	16 bit / successive approximation																																																
Measuring range:	-9.835 ... +76.357 mV (Thermocouple) / 18.49 Ω ... 390.26 Ω (RTD, Pt100)																																																
Temperature ranges:	<table><thead><tr><th></th><th>Measuring range</th><th>Resolution</th><th>Error</th></tr></thead><tbody><tr><td>Pt100:</td><td>-200.0°C ... +850.0°C</td><td>0.02 K</td><td>≤ 1 K</td></tr><tr><td>Thermocouple type J:</td><td>-210.0°C / -120.0°C ... +1200.0°C</td><td>0.03 K</td><td>≤ 1 K</td></tr><tr><td>Thermocouple type K:</td><td>-270.0°C / -130.0°C ... +1370.0°C</td><td>0.04 K</td><td>≤ 1 K</td></tr><tr><td>Thermocouple type L:</td><td>-200.0°C / -120.0°C ... +900.0°C</td><td>0.03 K</td><td>≤ 1 K</td></tr><tr><td>Thermocouple type E:</td><td>-270.0°C / -130.0°C ... +1000.0°C</td><td>0.02 K</td><td>≤ 1 K</td></tr><tr><td>Thermocouple type T:</td><td>-270.0°C / -130.0°C ... +400.0°C</td><td>0.04 K</td><td>≤ 1 K</td></tr><tr><td>Thermocouple type S:</td><td>-50.0°C / +12.0°C ... +1760.0°C</td><td>0.13 K</td><td>≤ 2 K</td></tr><tr><td>Thermocouple type R:</td><td>-50.0°C / +13.0°C ... +1760.0 °C</td><td>0.12 K</td><td>≤ 2 K</td></tr><tr><td>Thermocouple type B: 1)</td><td>+25.0°C / +50.0°C ... +1820.0 °C</td><td>0.15 K</td><td>≤ 2 K</td></tr><tr><td>Thermocouple type N:</td><td>-196.0°C / -109.0°C ... +1299.6 °C</td><td>0.04 K</td><td>≤ 1 K</td></tr><tr><td>Thermocouple type W: 2)</td><td>0.0°C / +50.0°C ... +2299.3 °C</td><td>0.09 K</td><td>≤ 1 K</td></tr></tbody></table> <p>1) specification applies above 400C ° 2) W5Re/W26Re</p> <p>The measuring ranges are related to terminal temperature 0°C / 50°C. Unit: °C, °F, K selectable by software / number of decimal places= 1</p>		Measuring range	Resolution	Error	Pt100:	-200.0°C ... +850.0°C	0.02 K	≤ 1 K	Thermocouple type J:	-210.0°C / -120.0°C ... +1200.0°C	0.03 K	≤ 1 K	Thermocouple type K:	-270.0°C / -130.0°C ... +1370.0°C	0.04 K	≤ 1 K	Thermocouple type L:	-200.0°C / -120.0°C ... +900.0°C	0.03 K	≤ 1 K	Thermocouple type E:	-270.0°C / -130.0°C ... +1000.0°C	0.02 K	≤ 1 K	Thermocouple type T:	-270.0°C / -130.0°C ... +400.0°C	0.04 K	≤ 1 K	Thermocouple type S:	-50.0°C / +12.0°C ... +1760.0°C	0.13 K	≤ 2 K	Thermocouple type R:	-50.0°C / +13.0°C ... +1760.0 °C	0.12 K	≤ 2 K	Thermocouple type B: 1)	+25.0°C / +50.0°C ... +1820.0 °C	0.15 K	≤ 2 K	Thermocouple type N:	-196.0°C / -109.0°C ... +1299.6 °C	0.04 K	≤ 1 K	Thermocouple type W: 2)	0.0°C / +50.0°C ... +2299.3 °C	0.09 K	≤ 1 K
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Cold junction compensation:	additional error ≤0.4% of the respective measuring range (after a warming-up phase of the device of max. 20 minutes)																																																
Linearization:	Linearity error negligible																																																
Differential input:	● Pt100: no ● T/C: high resistiv at mass (ca. 1 MΩ)																																																
Input resistance:	ca. 1 MΩ (T/C)																																																
Sensor current:	● Pt100: ca. 1 mA (short-circuit protected) ● T/C: ca. 5 μA (sensor breakage detection)																																																
Overflow / underflow of measuring range:	Alarm message if value overflows 160 digits																																																
Open/Break sensor Detection:	Short-circuit and interruption with Pt100 sensors are detected as well as interruptions with thermocouples. ! With a break of the compensation line (Pt100) a temperature of ≤ -150°C is indicated. !																																																
Overload-protection:	Overload-protected by varistors (5 V/ 0.4 J)																																																
Filter:	● Analog: Low-pass, $f_{cut-off} < 10$ Hz ● Digital: Low-pass of 1st order (adjustable averaging process)																																																
Configuration:	The inputs may be configured via the fieldbus for application with a RTD (Pt100) or thermocouples.																																																
Power supply:	The module is supplied with necessary voltages via the bus board.																																																
Power consumption:	max. 1200 mW																																																
Cycle times:	Each channel is scanned with at least 100 ms. Filters for the input values can be parameterized via the fieldbus.																																																
LED-Displays:	Errors are indicated for each channel via the 4 LEDs .																																																
Galvanic isolation:	The logic-part is galvanically isolated from the inputs. Additionally, there is a galvanic isolation between the power supply and the inputs, while the inputs are not galvanically isolated from each other.																																																
Ambient temperature:	● Operation: 0... +50 °C ● Storage: -20... +70 °C ● Effect: ≤0.05% / 10 K																																																
Humidity:	≤ 75% relative humidity, no condensation																																																
Shock sensitivity:	DIN 40046 IEC68-2-69																																																
EMC:	● DIN EN 50081 part 2  ● DIN EN 50082 part 2 ● HF-effect: ≤1% RTD (Pt100); ≤5% (T/C)																																																
Electrical connections:	Screw-/plug-in terminal blocks, line cross-section max. 2.5 mm ²																																																
Class of protection:	IP 20, in the completely equipped device																																																
Dimensions:	99 x 17,5 x 114,5 mm (h x w x d)																																																
Weight:	95 g																																																
Housing:	Material: Polyamid PA 6.6, combustibility class V0 according to UL 94																																																
Assembly:	plugged-in and locked in from the front of base module																																																
Usage position:	vertical																																																
Subject to technical alterations!																																																	