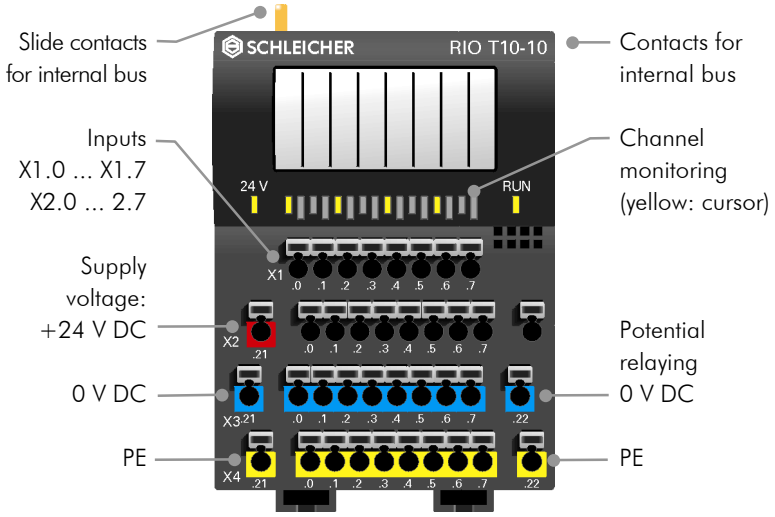
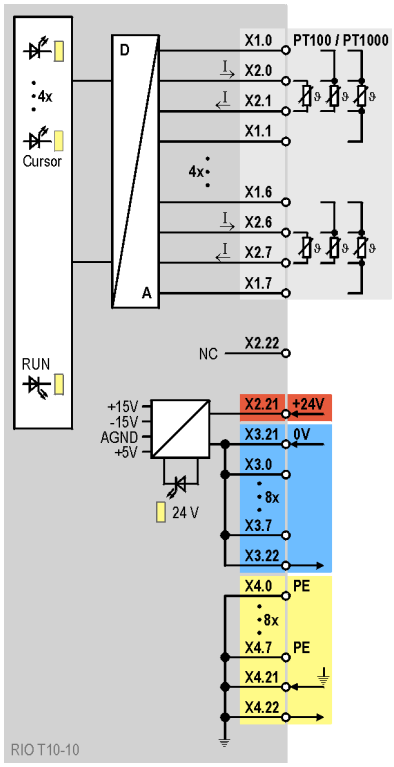
Temperature Module PT100/PT1000 — RIO T10-10



Block diagram



The RIO T10-10 expert module allows temperature measuring in the important industrial range of -100 °C to +450 °C. It provides four inputs for standard PT100 and PT1000 platinum shunts. Using the sensor resistance the module automatically recognizes the type of sensor, so external configuring is unnecessary. The choice of 2-wire, 3-wire or 4-wire connection systems allows precision to be matched to requirements.

Each measuring channel has its own current terminals for supplying the shunt. The measuring current is generated from a central source in the module and distributed to the individual channels by a multiplexer. So current only flows through the shunt when the channel is being measured. This reduces self-heating of the shunt and associated measuring error.

Digitalization via a 16-bit converter achieves a resolution of < 0.1 °C. Linearization of the resistance/temperature curve guarantees typical absolute precision of ±1 °C.

Technical Data	RIO T10-10
Article number	364 156 53
Number of inputs/outputs	4 inputs, self-tuning for Pt100 / Pt1000
Data width	10 bytes per module
External supply voltage	DC 24 V (±20%, max. 5% residual ripple)
Power consumption	3.8 W (including load current 4 x Pt100) from external 24 V supply 0.325 W from internal 5 V supply
Connection system	Two, three or four-wire
Inputs	
Temperature sensor	Pt100 / Pt1000
Measuring range	–100 ... +450 °C
Measuring accuracy	Typ. < ±1 °C, max. ±0.3 °C ±0.25% from measured value
Linearization	8-bit
A/D converter	16-bit
Resolution	< 0.1°C
Measuring time	<100ms
Isolation	Each channel isolated from internal bus by optocouplers
For general technical data see next page	

Technical Data RIO IP20

Electrical data	
Supply voltage	24 V DC ± 20% max. 5% residual ripple

Connection system		
Sensors / actuators	Spring terminal	
Field bus	Profibus-DP:	Subminiature, 9-pin
Supply voltage	Interbus:	Screw terminals
	CAN DeviceNet / CANopen:	Open style connector
	Spring terminal	
Cable cross-section	Finely stranded 0.14 – 1.5 mm^2, single-core 0.5 – 2.5 mm^2	

Housing and installation		
Type of protection	IP 20 to EN 60529	
Dimensions (W x H x D)	RIO microLine PLC:	74.5 x 93 x 51 mm
	RIO BC Bus Couplers:	74.5 x 93 x 51 mm
	RIO EC Bus Couplers:	63 x 93 x 51 mm
	RIO Expansion Modules:	69 x 93 x 51 mm
	RIO Compact I/Os:	69 x 93 x 51 mm
	RIO Terminal Extensions:	69 x 36 x 45 mm
Rail	DIN rail EN 50022-35	
Installation position	Vertical, free air circulation	

Climatic Conditions	
Ambient operating temperature	0 ... +55°C (category KV to DIN 40040)
Storage temperature	–25 ... +70°C (category HS to DIN 40040)
Relative humidity	30 ... 95% (category F to DIN 40040), no condensation
Air pressure in operation	860 ... 1060 hPa

Mechanical strength	
Vibration	10 ... 57 Hz constant amplitude 0.075 mm 57 ... 150 Hz constant acceleration 1 g (to DIN IEC 68-2-6)

Electromagnetic compatibility	
Electrostatic discharge	EN 61000-4-2: 4 kV contact discharge
Electromagnetic fields	EN 61000-4-3: field intensity 10 V/m, 80 ... 1000 MHz
Burst	EN 61000-4-4: 2 kV on DC supply lines, 1 kV on I/O signal and serial interface lines
Interference emissions	EN 55011: Limit Category A, Group 1