



02615E02

Temperature Input Module R Ex i / I.S. Inputs, 16 Channels Series 9480

- 8 channels for all standard RTD's (such as PT 100, Ni 100) and 3-wire potentiometers up to 10 kΩ
- 2-wire, 3-wire or 4-wire connection
- Intrinsically safe inputs Ex ia IIC
- Galvanic isolation between inputs and system
- Open-circuit and short-circuit monitoring for each field circuit
- Module can be replaced in operation (hot swap)

Zone	0	1	2	20	21	22
Class	I			II / III		
Zone	0	1	2	20	21	22
Ex interface	X	X	X	X	X	X
Installation in		X	X		X ^{*)}	X ^{*)}

Class	I		II / III	
Division	1	2	1	2
Ex interface	X	X	X	X
Installation in	X	X	X ^{*)}	X ^{*)}

^{*)} suitable enclosure necessary

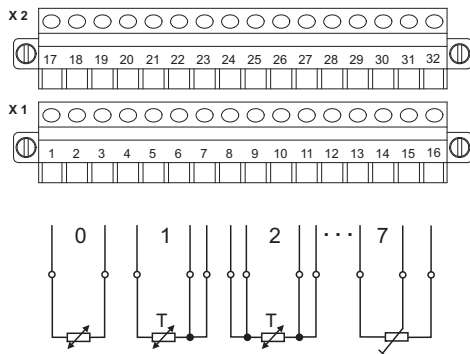


The Temperature Input Module R is used for the intrinsically safe connection of up to 8 RTD's or 3-wire potentiometers. Each input is individually monitored for open and short circuits.

Line balancing for a 2-wire circuit can be implemented by means of the keyboard and the display of the corresponding CPU & Power Module (CPM).

In a 2-channel operating mode, short signal delays can be achieved for special applications (e.g. joystick).

The interface of the Temperature Input Module with the internal data bus of the BusRail is designed with redundancy.



06311E00



Selection Table

Version	Description	Order number	Weight kg / lbs
Temperature Input Module R	8 channels for all standard RTD's (such as PT 100, Ni 100) and 3-wire potentiometers up to 10 kΩ	9480 / 12-08-11	0.321 / 0.708

Explosion Protection

Certificates		
IECEX	PTB 06.0001X	
Europe (ATEX)	PTB 99 ATEX 2123	
USA (NEC)	3007532 (FM)	
Russia (GOST-R)	04.B00806 (CTB)	
Other countries	Canada (CSA), Brazil (INMETRO), Belarus (Promatomnadzor)	
Marking		
IECEX	Ex ib [ia] IIC/IIB T4	
Europe (ATEX)	Ⓢ II 2 (1) G EEx ib [ia] IIC / IIB T4 Ⓢ II (1) D [Ex iaD]	
USA (NEC)	IS/II/1/ABCD/T4 Ta = 65 °C, IS/II/1/IIC/T4 Ta = 65 °C, AIS/I,II,III/1/ABCDEFG, [AEx ia] IIC, NI/II/2/ABCD/T4 Ta = 65 °C, NI/II/2/IIC/T4 Ta = 65 °C, AIS/I,II,III/1/ABCDEFG, [AEx ia] IIC	
Russia (GOST-R)	1Exib[ia]IIC/IIBT4	
Other certificates	Marine (DNV, ABS, GL)	
Safety data		
Maximum values	max. voltage U_o / V_{oc}	6.51 V
	max. current I_o / I_{sc}	26.3 mA
	max. power P_o	42.8 mW
Cable parameters (ATEX)	max. capacitance C_o / C_a for IIC	25 μF
	max. capacitance C_o / C_a for IIB	570 μF
	max. inductance L_o / L_a for IIC	52.3 mH
	max. inductance L_o / L_a for IIB	191 mH
	The effective internal capacitances and inductances are negligible.	
Further information	see respective certificate	

Technical Data

Ex i / I.S. inputs		
Number of channels	8	
Signal	0 kΩ ... 10 kΩ	
Measuring current	0.2 mA multiplexed	
Maximum line resistance per conductor	100 Ω	
Linearity (adjustable parameters)	linear to temperature / linear to resistance	

Technical Data

Ex i / I.S. inputs	Type	Reference	Measuring range (ITS-90)		Medium resolution
Connectable sensors/ 3-wire potentiometers (adjustable parameters for every 2 channels)	Pt100	IEC 60751	- 200 ... + 850 °C / - 328 ... + 1562 °F		0,1 K
	Pt500	IEC 60751	- 200 ... + 850 °C / - 328 ... + 1562 °F		0,1 K
	Pt1000	IEC 60751	- 200 ... + 850 °C / - 328 ... + 1562 °F		0,1 K
	Ni100	DIN 43760	- 60 ... + 180 °C / -76 ... + 356 °F		0,1 K
	Ni500	DIN 43760	- 60 ... + 180 °C / -76 ... + 356 °F		0,1 K
	Ni1000	DIN 43760	- 60 ... + 180 °C / -76 ... + 356 °F		0,1 K
	Pt46 ²⁾	GOST 6651-94	- 200 ... + 1100 °C / - 328 ... + 2012 °F		0,15 K
	Pt50 ²⁾	GOST 6651-94	- 200 ... + 1100 °C / - 328 ... + 2012 °F		0,15 K
	Pt100 ¹⁾	GOST 6651-94	- 200 ... + 1100 °C / - 328 ... + 2012 °F		0,1 K
	Cu53 ²⁾	GOST 6651-94	- 50 ... + 180 °C / - 58 ... + 356 °F		0,1 K
	M50 ¹⁾	GOST 6651-94	- 200 ... + 200 °C / - 328 ... + 392 °F		0,15 K
	M100 ¹⁾	GOST 6651-94	- 200 ... + 200 °C / - 328 ... + 392 °F		0,1 K
	3-wire potentiometer	--	0 ... 500 Ω		0,02 Ω
	3-wire potentiometer	--	0 ... 2,5 kΩ		0,10 Ω
	3-wire potentiometer	--	0 ... 5 kΩ		0,20 Ω
	3-wire potentiometer	--	0 ... 10 kΩ		0,4 Ω
1) from firmware V02-04, 2) from firmware V02-05					
Galvanic isolation					
between power supply and system components	1500 V AC				
between two input / output modules	500 V AC				
between inputs and system components	500 V AC				
The inputs of an I/O module have a common negative conductor					
Measuring accuracy					
Note	All values in % of the signal span, at 23 °C / 73.4 °F				
Measurement deviation	0.025 % (with filter time constant 50 Hz or 60 Hz)				
Ambient temperature effect	0.025 % / 10 K				
MTBF acc. to MIL	39.36 years (at 40 °C / 104 °F)				
Settings					
Fault monitoring	ON, OFF (for each channel)				
Value to fieldbus during open circuit	Alarmcode, hold last value				
Signal processing time	Filter time constant (adjustable parameters)	Fault monitoring	Delay from input to internal bus		
			Operating mode - 8 channels -	Operating mode - 2 channels -	
	small	OFF	95 ms	35 ms	
	small	ON	190 ms	70 ms	
	60 Hz	ON	650 ms	250 ms	
50 Hz	ON	780 ms	300 ms		
Filter time constants of 50 Hz or 60 Hz are recommended for temperature measurements.					

Technical Data

Diagnostics

Retrievable parameters	Manufacturer, type, version, serial number
Module faults	<ul style="list-style-type: none"> • Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault
Signal faults per channel	
Open circuit	< 10 kΩ
Measuring range	Over range / under range

Power supply

Maximum power consumption	1.6 W
Maximum power dissipation	1.6 W

Mechanical data

Module enclosure	Polyamide 6GF
Fire protection class (UL 94)	V2
Degree of protection (IEC 60529)	
Module	IP30
Connections	IP20

Electrical connection

Ex i / I.S. field signals	Plug-in terminals 16-pole with catch, 2.5 mm ² / up to 14 AWG, screw or spring type
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Operator interface

Operation	LED green "RUN"
Fault	LED red "ERR"



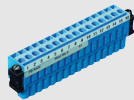
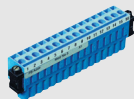

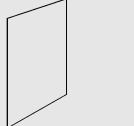

Installation conditions

Mounting type	on 35 mm DIN rail NS 35/15
Installation position	horizontal and vertical

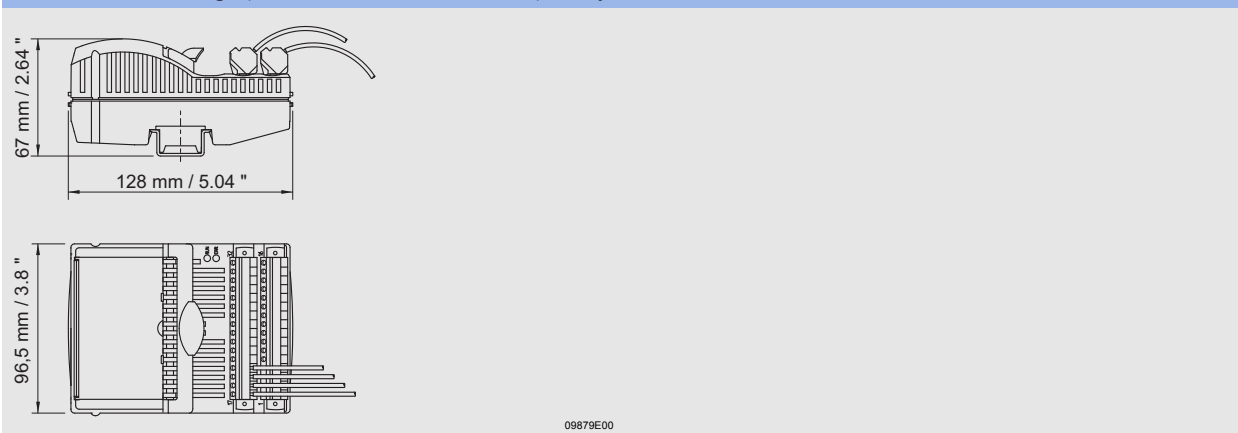
Ambient conditions

Ambient temperature	- 20 ... + 65 °C / - 4 ... + 149 °F
Storage temperature	- 40 ... + 70 °C / - 40 ... + 158 °F
Maximum relative humidity	95 % (no condensation)
Vibration, sinusoidal (IEC EN 60068-2-6)	1 g in frequency range between 10 ... 500 Hz 2 g in frequency range 45 ... 100 Hz
Shock, semi-sinusoidal (IEC EN 60068-2-27)	15 g (3 shocks per axis and direction)
Electromagnetic compatibility	Tested according to the following standards and regulations: EN 61326-1 (1998) IEC 1000-4-1...6, NAMUR NE 21

Accessories and Spare Parts

Designation	Illustration	Description	Order number
Plug-in terminal		2.5 mm ² / 14 AWG with catch, 16-pole, screw connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits Designation: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162702
		2.5 mm ² / 14 AWG with catch, 16-pole, screw connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits Labelling: 17 ... 32	162718
		2.5 mm ² / 14 AWG with catch, 16-pole, spring connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits including test jacks Designation: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162695
		2.5 mm ² / 14 AWG with catch, 16-pole, spring connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits including test jacks Labelling: 17 ... 32	162716
Labelling strips		„FB No ... Mod No ...“ for plug-in terminals, sheet with 26 labels	162788
DIN A4 sheet		For I/O module labels; 6 labels each sheet; print out with IS Wizard software; packaging unit = 20 sheets	162832
Partition		For assembly between intrinsically safe and non-intrinsically safe connectors of the I/O modules, in order to adhere to the required 50 mm / 2 in distance	162740

Dimensional Drawings (All Dimensions in mm / inches) - Subject to Alterations



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