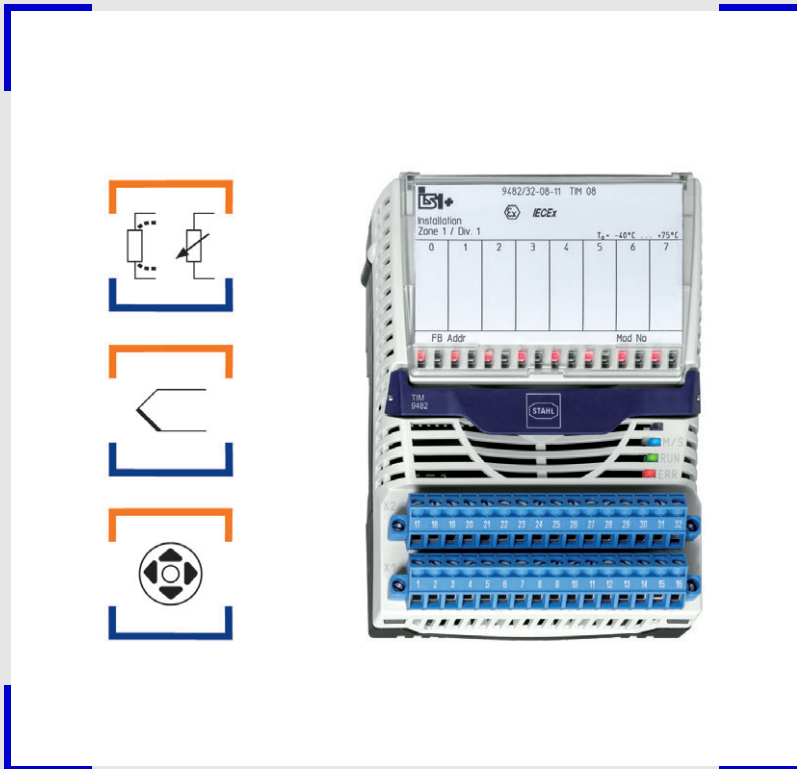


# Temperature Input Module for Zone 1 Series 9482/32



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15234E00

- > 8 channels for temperature sensors
- > Intrinsically safe inputs Ex ia
- > For Pt-, Ni- and Cu-resistance temperature detectors according to DIN, IEC and GOST in 2-, 3- and 4-wire circuits
- > For thermocouples according to IEC, DIN and GOST with internal or external reference junction
- > For resistance transmitter, mV sensors and joystick application
- > Line fault monitoring and LED indication per channel
- > Diagnostics based on NE107
- > Module can be replaced in hazardous area under voltage (hot swap)



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The temperature input module is used for connecting of up to 8 intrinsically safe temperature sensors to the remote I/O system IS1+.

Each channel can be used as input for resistance temperature detectors and resistance transmitters in 2, 3 or 4 wire technology or as earthed/insulated thermocouples and mV sensors.

In the operating mode "4 channel fast", very short signal delays are achieved, which allow special applications, such as joystick applications.

Compensation of the reference junction temperature is performed internally for thermocouples or via an external reference junction.

Compatible spare for IS1 remote I/O modules:  
Series 9480/12 and 9481/12

	ATEX / IECEx					
Zone	0	1	2	20	21	22
Ex interface	x	x	x	x	x	x
Installation in		x	x		x	x

WebCode 9482A

# Temperature Input Module for Zone 1

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### Explosion Protection

#### Global (IECEX)

Gas and dust	IECEX DEK 13.0046X Ex ia [ia Ga] IIC T4 Gb [Ex ia Da] IIIC
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#### Europe (ATEX)

Gas and dust	DEKRA 13 ATEX 0140 X ⊕ II 2 (1) G Ex ia [ia Ga] IIC T4 Gb ⊕ II (1) D [Ex ia Da] IIIC
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#### Certifications and certificates

Certificates	IECEX, ATEX, Canada (cFM), USA (FM), Belarus (operating license)
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#### Further parameters

Installation	in Zone 1, Zone 2, Zone 21, Zone 22 and in the safe area
Further information	see respective certificate and operating instructions

#### Safety data

For proof of intrinsic safety, the safety data listed below must be used in accordance with the combination of connections and the corresponding sensor. For further information and combination, see operating instructions.

Combination of connections 1								
Sensors	up to 8 resistance temperature detectors or resistance transmitters							
Note	no thermocouple / mV sensor connected							
Installation type	insulated							
Max. output voltage $U_o$ ext	6.24 V							
Max. current $I_o$	2-wire	3-wire	4-wire					
	6.5 mA	7.8 mA	9.8 mA					
Max. power $P_o$	2-wire	3-wire	4-wire					
	10.5 mW	12.5 mW	15.7 mW					
Max. connectable inductance $L_o$ / Capacitance $C_o$								
IIC	$L_o$ [mH]	100	50	20	2	0.2	0.02	0.002
	$C_o$ [ $\mu$ F]	1.1	1.2	1.4	2.0	3.2	7.0	25
IIB / IIIC	$L_o$ [mH]	100	50	20	2	0.2	0.02	0.002
	$C_o$ [ $\mu$ F]	5.8	6.3	7.1	10	19	51	570
combination of connections 2								
Sensors	up to 8 thermocouples or mV sensors							
Note	can be connected simultaneously to resistance temperature detector and resistance transmitter and/or external reference junction.							
Installation type	earthed							
Reference junction	internal/external							
Thermocouple / mV sensor								
Max. output voltage $U_o$ ext	12.92 V							
Max. current $I_o$	25.0 mA							
Max. power $P_o$	81.0 mW							
Max. connectable inductance $L_o$ / Capacitance $C_o$								
IIC	$L_o$ [mH]	72	50	10	2	1	0.5	0.2
	$C_o$ [ $\mu$ F]	0.17	0.22	0.34	0.46	0.53	0.62	0.78
IIB / IIIC	$L_o$ [mH]	100	20	5	1	0.5	0.2	0.1
	$C_o$ [ $\mu$ F]	1.2	1.6	2.1	3.0	3.5	4.5	5.7
Resistance sensor	see value combination of connections 3							
ext. reference junction	see values combination of connections 4							

# Temperature Input Module for Zone 1

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### Explosion Protection

combination of connections 3								
Sensors	up to 8 resistance temperature detectors / resistance transmitters and/or thermocouples / mV sensors							
Note	simultaneously connected in any combination of sensor types possible							
Installation type	Resistance temperature detector and resistance transmitter insulated / thermocouple and mV sensor earthed							
Reference junction	internal/external							
Resistance sensor								
Max. output voltage $U_o$ ext	12.92 V							
Max. current $I_o$	2-wire	3-wire	4-wire					
	13.1 mA	15.7 mA	19.6 mA					
Max. power $P_o$	2-wire	3-wire	4-wire					
	42.2 mW	50.6 mW	63.3 mW					
Max. connectable inductance $L_o$ / Capacitance $C_o$								
IIC	$L_o$ [mH]	100	50	20	5	1	0.5	0.2
	$C_o$ [ $\mu$ F]	0.19	0.25	0.31	0.40	0.54	0.63	0.78
IIB / IIIC	$L_o$ [mH]	100	20	10	2	1	0.5	0.1
	$C_o$ [ $\mu$ F]	1.3	1.7	1.9	2.5	3.0	3.5	5.7
Thermocouple / mV sensor	see values combination of connections 2							
ext. reference junction	see values combination of connections 4							
combination of connections 4								
Sensors	External reference junction							
Note	when connected to thermocouples / mV sensors, also simultaneously connectable to resistance temperature detectors / resistance transmitters							
Installation type	insulated							
Reference junction	external (3-wire)							
external reference junction								
Max. output voltage $U_o$ ext	12.92 V							
Max. current $I_o$	17.4 mA							
Max. power $P_o$	56.2 mW							
Max. connectable inductance $L_o$ / Capacitance $C_o$								
IIC	$L_o$ [mH]	66	50	20	5	1	0.5	0.2
	$C_o$ [ $\mu$ F]	0.17	0.21	0.29	0.39	0.53	0.62	0.78
IIB / IIIC	$L_o$ [mH]	100	20	5	1	0.5	0.2	0.1
	$C_o$ [ $\mu$ F]	1.2	1.6	2.1	2.9	3.5	4.5	5.7
Resistance sensor	see value combination of connections 3							
Thermocouple / mV sensor	see values combination of connections 2							
Max. internal capacity $C_i$	negligible							
Max. internal inductance $L_i$	negligible							

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### Selection Table

Version	Description	Installation	Order number	Weight kg
Temperature Input Module for Zone 1	8 channels with adjustable parameters for resistance temperature detectors, thermocouples; potentiometers with channel status LEDs	in Zone 1, Zone 2, Zone 21, Zone 22 and in the safe area	9482/32-08-11	0.275
Note	Please order 2 terminals separately - see Accessories			

# Temperature Input Module for Zone 1

## Series 9482/32



### Technical Data

#### Electrical data

##### Ex i inputs

Resistance temperature detector / resistance transmitter

Number of channels

8

Operating modes

8 channel precise/ 4 channel fast (joystick)

Connection type

2-, 3- and 4-wire circuits

Resistance range

0 ... 10 k $\Omega$

Measuring current

< 200  $\mu$ A multiplexed

Max. line resistance per cable

100  $\Omega$

Measurement accuracy

0.025 % (8 channel precise) /  $\pm$  1 % (4 channel fast joystick)

Note

All values in % of measuring range at 23  $^{\circ}$ C

Ambient temperature influence

0.025 % / 10 K

Linearity

Temperature linear / resistance linear

(adjustable parameters)

connectable resistance temperature detectors / resistance transmitters

Type	Reference	Measuring range (ITS-90)	Medium resolution
Pt100	IEC 60751	-200 ... +850 $^{\circ}$ C	0.1 K
Pt500	IEC 60751	-200 ... +850 $^{\circ}$ C	0.1 K
Pt1000	IEC 60751	-200 ... +850 $^{\circ}$ C	0.1 K
Ni100	DIN 43760	-60 ... +180 $^{\circ}$ C	0.1 K
Ni500	DIN 43760	-60 ... +180 $^{\circ}$ C	0.1 K
Ni1000	DIN 43760	-60 ... +180 $^{\circ}$ C	0.1 K
Pt46 <sup>2)</sup>	GOST 6651-94	-200 ... +1100 $^{\circ}$ C	0.15 K
Pt50 <sup>2)</sup>	GOST 6651-94	-200 ... +1100 $^{\circ}$ C	0.15 K
Pt100 <sup>1)</sup>	GOST 6651-94	-200 ... +1100 $^{\circ}$ C	0.1 K
Cu53 <sup>2)</sup>	GOST 6651-94	-50 ... +180 $^{\circ}$ C	0.1 K
M50 <sup>1)</sup>	GOST 6651-94	-200 ... +200 $^{\circ}$ C	0.15 K
M100 <sup>1)</sup>	GOST 6651-94	-200 ... +200 $^{\circ}$ C	0.1 K
3-wire potentiometer	--	0 ... 500 $\Omega$	0.02 $\Omega$
3-wire potentiometer	--	0 ... 2,5 k $\Omega$	0.10 $\Omega$
3-wire potentiometer	--	0 ... 5 k $\Omega$	0.20 $\Omega$
3-wire potentiometer	--	0 ... 10 k $\Omega$	0.4 $\Omega$
Joystick (4-wire)	--	500 ... 10 k $\Omega$	

##### Reaction time

Type	Type of connection	Operating mode 4 channel fast Error control		Operating mode 8 channel fast Error control	
		Activated	Deactivated	Activated	Deactivated
RTD	2-wire	400 ms	400 ms	750 ms	720 ms
RTD	3-wire	400 ms	400 ms	750 ms	720 ms
RTD	4-wire	400 ms	400 ms	750 ms	720 ms
R	2-wire in R	400 ms	400 ms	750 ms	720 ms
R	3-wire in %	90 ms	70 ms	750 ms	720 ms
R	4-wire in R	400 ms	400 ms	750 ms	720 ms
R	4-wire in %	90 ms	70 ms	750 ms	720 ms

To achieve the times of "error control deactivated", the error control on all channels must be "OFF"! As soon as the error control is "ON" at one channel only, the times for "error control activated" are valid.

# Temperature Input Module for Zone 1

## Series 9482/32



### Technical Data

#### Electrical data

Ex i inputs						
Thermocouples / mV sensors						
Number of channels	8					
Operating modes	8 channel precise/4 channel fast					
Connection type	2-wire circuits					
Signal range	-10 ... +100 mV					
Linearity (adjustable parameters)	Temperature linear / voltage linear					
Note	All values in % of the measuring range at 23 °C					
connectable thermocouples / mV sensors	Type	Reference	Measuring range (ITS-90)	Medium resolution	Medium measurement deviation with regard to measuring range	
	B	IEC 60584-1	+400 ... +1800 °C	0.25 K	0.1 %	
	E	IEC 60584-1	-200 ... +1000 °C	0.1 K	0.013 %	
	J	IEC 60584-1	-200 ... +1200 °C	0.1 K	0.014 %	
	K	IEC 60584-1	-200 ... +1370 °C	0.1 K	0.02 %	
	N	IEC 60584-1	-200 ... +1300 °C	0.1 K	0.02 %	
	R	IEC 60584-1	-50 ... +1767 °C	0.2 K	0.05 %	
	S	IEC 60584-1	-50 ... +1767 °C	0.2 K	0.053 %	
	T	IEC 60584-1	-200 ... +400 °C	0.1 K	0.042 %	
	L	DIN 43710	-200 ... +900 °C	0.1 K	0.027 %	
	U	DIN 43710	-200 ... +600 °C	0.1 K	0.038 %	
	XK	GOST 8.585	-50 ... +800 °C	0.1 K	0.02 %	
	mV	--	0 ... +100 mV	3.6 µV	0.01 %	
Reaction time	Type	Type of connection	Operating mode 4 channel fast Error control		Operating mode 8 channel fast Error control	
			Activated	Deactivated	Activated	Deactivated
	Thermocouple	2-wire	500 ms	450 ms	800 ms	750 ms
	0 ... 100 mV	2-wire	500 ms	450 ms	800 ms	750 ms
	To achieve the times of "error control deactivated", the error control on all channels must be "OFF"! As soon as the error control is "ON" at one channel only, the times for "error control activated" are valid.					
Input resistance	10 MΩ					
Ambient temperature influence	0.025 % / 10 K					
Reference junction compensation	1 (clamping unit see operating instructions)					
Number of channels	internal (adjustable parameters) / external 3-wire circuit					
Operating modes	3-wire circuit (external)					
Connection type	-40 ... +80 °C					
Measuring range	internal: 0.025% / external: depending on sensor type, see "Connectable resistance temperature detectors"					
Measurement accuracy	0.1 K					
resolution	± 2 K					
Temperature deviation for thermocouples with internal compensation						
Galvanic separation						
Test voltage	EN 60079-11					
acc. to standard	≥ 1500 V AC					
Between auxiliary power/ system components	≥ 500					
Between two I/O modules	≥ 500 V AC					
Between I/O channels/ system components	≥ 500 V AC					
Between I/O channels/ ground (PA)	≥ 500 V AC					

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# Temperature Input Module for Zone 1

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### Technical Data

#### Electrical data

Electromagnetic compatibility	Tested to the following standards and regulations: EN 61326-1 (2006) IEC 61000-4-1 ... 6, NAMUR NE 21 0.1 % (8 channel precise)
Measurement accuracy	
Electrical connection	BusRail Types 9494
Power supply	Pluggable, blue terminals, 16-pole, 2.5 mm <sup>2</sup> , screw- or spring-type versions with lock
Ex i field signals	
Auxiliary power	
Maximum power consumption	1 W
Maximum power dissipation	1 W

#### Device-specific data

Settings	
Module	
Diagnostics message	ON / OFF
Operating mode	8 channel precise / 4 channel fast
Selection reference junction	internal / external 3-wire
Type external reference junction	PT100, PT1000, PT100 GOST
Signal	
Behaviour in case of error	hold last value
Error control	ON / OFF
Sensor type	see table (connectable sensors)
Type of connection	2-, 3-, 4-wire

#### Ambient conditions

Ambient temperature	-40 ... +75 °C (observe operating instructions)
Storage temperature	-40 ... +80 °C
Maximum relative humidity	95 % (without condensation)
Maximum operating altitude	< 2000 m
Semi-sinusoidal shock (IEC EN 60068-2-27)	15 g (3 shocks per axis and direction)
Sinusoidal vibration (IEC EN 60068-2-6)	1 g in the frequency range 10 ... 500 Hz 2 g in the frequency range 45 ... 100 Hz

#### Mechanical data

Degree of protection (IEC 60529)	IP20
Module enclosure	polyamide 6GF
Fire resistance (UL 94)	V2
Pollutant class	corresponds to G3
Dimensions	L = 128 mm, B = 96.5 mm, H = 67 mm

#### Indication

LED indication	
Module requires maintenance	LED "M/S", blue
Operating state	LED "RUN", green
Group error	LED "ERR", red
Channel error	LED red for each channel
Function indication	
Retrievable parameters	Manufacturer, Type, hardware revision, software revision, serial number
Error indication	
Module status and alarms	<ul style="list-style-type: none"> <li>• Internal bus error primer / redundant</li> <li>• No response from IOM</li> <li>• Configuration does not correspond to the module</li> <li>• Hardware error</li> <li>• Excess temperature</li> <li>• Slot error</li> <li>• Module requires maintenance</li> </ul>
Signal errors for each channel	
Signal status bit	"0" = signal disturbed; "1" = signal valid
Wire breakage input	Resistance temperature detector / resistance transmitter: > 100 Ω; thermocouples / mV-sensors: > 1000 Ω
Short circuit input	Resistance temperature detector / resistance transmitter: < 15 Ω
Measuring range	Exceeding / shortfall

# Temperature Input Module for Zone 1

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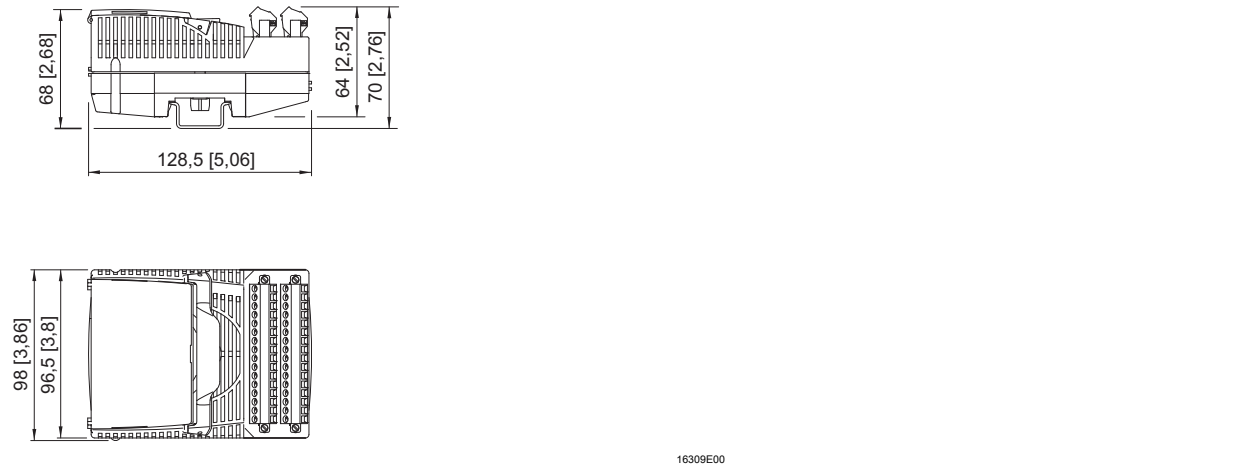


### Technical Data

#### Mounting / Installation

Mounting orientation	horizontal or vertical (observe operating instructions)
Mounting type	on 35 mm DIN rail NS 35/15 (DIN EN 60715)

#### Dimensional drawings (all dimensions in mm / inches) - subject to modifications



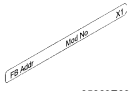
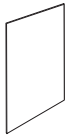




# Temperature Input Module for Zone 1

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### Accessories and Spare Parts

Designation	Figure	Description	Art. no.
Pluggable terminal	 02079E00	2.5 mm <sup>2</sup> with lock, 16-pole, screw connector, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits Labelling: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162702
		2.5 mm <sup>2</sup> with lock, 16-pole, screw connector, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits Labelling: 17 ... 32	162718
	 02077E00	2.5 mm <sup>2</sup> with lock, 16-pole, spring clamp connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits, incl. test jacks Labelling: 1 ... 16 Attention: An additional terminal is necessary for I/O module Series 9470 and 9480. Designation: 17 ... 32	162695
		2.5 mm <sup>2</sup> with lock, 16-pole, spring clamp connection, blue, for connecting the field signals to I/O modules, for intrinsically safe field circuits, incl. test jacks Labelling: 17 ... 32	162716
Reference junction		Serves for measurement of the junction temperature with Pt 100 in 3-wire circuit. ext. reference junction in terminal block	160673
Labelling strips	 05869E00	"FB Addr ... Mod No ..." for pluggable terminal, sheet with 26 strips	162788
DIN A4 sheet	 09900E00	For label plate on I/O modules; 6 labels on each sheet; print-out using IS Wizard; packaging unit = 20 sheets	162832
Partition	 15196E00	For mounting between intrinsically safe and non-intrinsically safe connections of the I/O modules, in order to adhere to the required 50 mm distance	220101
Warning sign	 05872E00	"Clean modules only with a damp cloth."	162796

We reserve the right to make alterations to the technical data, dimensions, weights, designs and products available without notice. The illustrations cannot be considered binding.