

Analog Input Module Ex i / I.S. Inputs, 8 Channels for Zone 1 / Div. 1 Series 9460



- > 8 channels for 2-wire transmitters and 4 channels for 3- and 4-wire transmitters and current sources
- > Intrinsically safe inputs Ex ia IIC
- > Galvanic separation between the inputs and the system
- > Open-circuit and short-circuit monitoring for each field circuit
- > Module can be replaced in operation (hot swap)
- > New version: Type 9468/32

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02084E00

The Analog Input Module is used for the connection and supply of up to 8 x 2-wire or 3-wire transmitters with 0 ... 20 mA or 4 ... 20 mA signals. Each input is individually monitored for open and short circuits.

Inputs and power supplies are short-circuit proof and intrinsically safe.

The power supply for 4-wire transmitters is provided by an external voltage source.

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

For operation of HART field devices see Series 9461.

ATEX / IECEx							NEC 505							NEC 506							NEC 500						
							Class I														Class I						
Zone	0	1	2	20	21	22	Zone	0	1	2	20	21	22	Division	1	2	1	2	1	2	Division	1	2	1	2	1	2
Ex interface	x	x	x	x	x	x	Ex interface	x	x	x	x	x	x	Ex interface	x	x	x	x	x	x	Ex interface	x	x	x	x	x	x
Installation in		x	x		x ^{*)}	x ^{*)}	Installation in		x	x		x ^{*)}	x ^{*)}	Installation in	x	x	x ^{*)}	x ^{*)}	x ^{*)}	x ^{*)}	Installation in	x	x	x ^{*)}	x ^{*)}	x ^{*)}	x ^{*)}

^{*)} Restrictions see table explosion protection

WebCode 9460A

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Series 9460



Selection Table

Version	Description	Order number	Weight kg / lbs
Analog Input Module	8 channels for 2-wire transmitters and 4 channels for 3- and 4-wire transmitters and current sources	9460/12-08-11	0.321 / 0.708
Note		Please order terminal separately - see Accessories	

Explosion Protection

Global (IECEX)	
Gas	PTB 06.0001X Ex ib [ia] IIC/IIB T4
Europe (ATEX)	
Gas and dust	PTB 99 ATEX 2175 II 2 (1) G Ex ib [ia] IIC T4 II (1) D [Ex ia] IIC
Certificates	
Certificates	IECEX, ATEX, Brazil (Inmetro), Canada (CSA), Kazakhstan (GOST K), Russia (GOST R), Serbia (SRPS), USA (FM), Belarus (operating authorisation)
Ship approval	ABS, BV, ClassNK, DNV, GL, LR

Safety data

Maximum values		2-wire transmitter	3-wire transmitter	4-wire transmitter
	max. voltage U_o / V_{oc}	26.2 V	26.2 V	0 V
	max. voltage U_i / V_{max}	--	--	28 V
	max. current I_o / I_{sc}	86 mA	86 mA	0 mA
	max. current I_i / I_{max}	--	--	150 mA
	max. power P_o	561 mW	561 mW	0 mW
Cable parameters (ATEX) (for inductive or capacitive circuits)		2-wire transmitter	3-wire transmitter	4-wire transmitter
	max. capacitance C_o / C_a for IIC	97 nF	97 nF	--
	max. capacitance C_o / C_a for IIB	0.75 μ F	0.75 μ F	--
	max. inductance L_o / L_a for IIC	2.71 mH	2.71 mH	--
	max. inductance L_o / L_a for IIB	15.8 mH	15.8 mH	--
	effective internal capacitance C_i	0	0	0
	effective internal inductance L_i	37 μ H	73 μ H	73 μ H

Further parameters

Installation in	Zones 1 & 2, Div. 1 & 2, Zones 21 & 22
Further information	see respective certificate and operating instructions

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Series 9460



Technical Data

Electrical data

Auxiliary power	Maximum power consumption	2-wire transmitter 6.6 W	3-wire transmitter 6.6 W	4-wire transmitter 1.6 W
	Maximum power dissipation	3.7 W	3.7 W	1.6 W
Ex i / I.S. inputs				
Number of channels	8 (3-wire, 4-wire transmitters, or active mA sources occupy 2 channels)			
Grounding	The field circuits must not be grounded			
Signal				
Signal range	0 ... 20 mA, 4 ... 20 mA (adjustable parameters for each channel)			
Minimum signal	0 mA			
Maximum signal	23.5 mA			
Supply voltage	16.0 V at 20 mA for 2-wire and 3-wire transmitters			
Maximum input resistance	14 Ω (for 4-wire transmitter / active mA source)			
Signal transmission		Filter time constant (adjustable parameters)		
		small	medium	50 Hz, 60 Hz
	Resolution in the range	12.75 bit	14.75 bit	14.75 bit
	4 ... 20 mA			
	Maximum delay from the input to the internal bus, 0 ... 90 % of the signal span	32 ms	120 ms	840 ms
Max. short-circuit current	35 mA for 2-wire and 3-wire transmitters			
Accuracy of measurement				
Note	All values in % of the signal span, at 23 °C / 73.4 °F			
Measurement deviation		Filter time constant (adjustable parameters)		
		small	medium	50 Hz, 60 Hz
	Maximum measurement deviation	0.075 %	0.05 %	0.05 %
Ambient temperature influence	0.1 % / 10 K			
Operator interface				
Operation	LED green "RUN"			
Fault	LED red "ERR"			
Settings				
Open-circuit and short-circuit monitoring	ON, OFF (for each channel)			
Value to fieldbus during open circuit, short circuit	-10 %, 0 %, 100 % of the signal, alarm code, hold last value			
Diagnostics				
Retrievable parameters	Manufacturer, type, version, serial number			
Module faults	• Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault			
Signal errors for each channel				
Open circuit	< < 2.4 / < 3.6 mA (adjustable parameters, 4 ... 20 mA)			
Short circuit	> > 23.5 / > 22.8 / > 21 mA (adjustable parameters, 0/4 ... 20 mA)			
Measuring range	Over range / under range			
Galvanic separation				
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 and outputs of an I/O module have a common negative conductor.				

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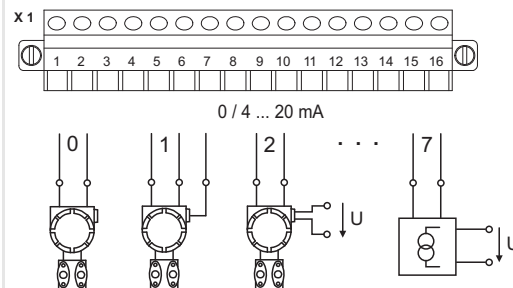


Technical Data

Electrical data

Electrical connection
Ex i field signals
Connection diagram

Plug-in terminals 16-pole with catch, 2.5 mm² / up to 14 AWG, screw or spring type



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Ambient conditions

Ambient temperature -20 ... +65 °C / -4 ... +149 °F
Storage temperature -40 ... +70 °C / -40 ... +158 °F
Maximum relative humidity 95 % (no condensation)
Sinusoidal vibration (IEC EN 60068-2-6) 1 g in frequency range between 10 ... 500 Hz
2 g in frequency range 45 ... 100 Hz
Semi-sinusoidal shock (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

Mechanical data

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

Mounting / installation

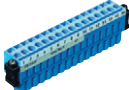
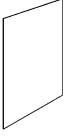
Installation conditions on 35 mm DIN rail NS 35/15
Mounting type horizontal and vertical
Mounting orientation

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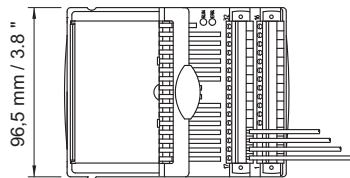
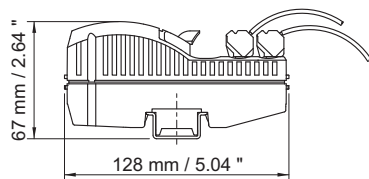


Accessories and Spare Parts

Designation	Figure	Description	Art. no.
Plug-in terminal	 02079E00	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
	 02077E00	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
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
Warning sign	 05872E00	"Clean modules only with a damp cloth."	162796
Partition	 02078E00	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

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



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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.