

### Analog Input Module HART Ex i / I.S. Inputs, 8 Channels Type 9461/12-08-11

- 8 channels for 2-wire HART transmitters
- 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 <sup>*)</sup>	X <sup>*)</sup>

Class	I		II / III	
Division	1	2	1	2
Ex interface	X	X	X	X
Installation in	X	X	X <sup>*)</sup>	X <sup>*)</sup>

<sup>\*)</sup> suitable enclosure necessary



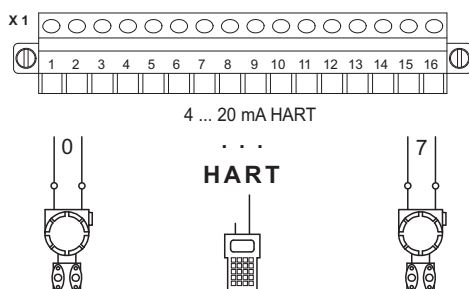
The Analog Input Module HART is used for the connection and supply of up to 8 x 2-wire HART transmitters with 0 ... 20 mA or 4 ... 20 mA signals. Each input is individually monitored for open and short circuits.

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

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

The integrated HART multiplexer permits bidirectional HART communication between HART field devices and the automation and engineering system.

Analog transmitters (non-HART) can also be operated.



05689E00

## Selection Table

Version	Description	Order number	Weight kg / lbs
Analog Input Module HART	8 channels for 2-wire HART transmitters	<b>9461/12-08-11</b>	0.400 / 0.882

## Explosion Protection

<b>Certificates</b>		
IECEX	PTB 06.0001X	
Europe (ATEX)	PTB 99 ATEX 2175	
USA (NEC)	3007532 (FM)	
Russia (GOST-R)	04.B00806 (CTB)	
Other countries	Canada (CSA), Brazil (INMETRO), Belarus (Promatomnadzor)	
<b>Marking</b>		
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)	
<b>Safety data</b>		
Maximum values	max. voltage $U_o / V_{oc}$	26.2 V
	max. current $I_o / I_{sc}$	91 mA
	max. power $P_o$	591 mW
Cable parameters (ATEX)	max. capacitance $C_o / C_a$ for IIC	97 nF
	max. capacitance $C_o / C_a$ for IIB	0.75 $\mu$ F
	max. inductance $L_o / L_a$ for IIC	2.38 mH
	max. inductance $L_o / L_a$ for IIB	14 mH
	effective internal capacitance $C_i$	0
	effective internal inductance $L_i$	37 $\mu$ H
Further information	see respective certificate	



### Technical Data

<b>Ex i / I.S. inputs</b>				
Number of channels	8 (for 2-wire transmitters with / without HART)			
<b>Signal</b>				
Signal range	0 ... 20 mA, 4 ... 20 mA + HART (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 transmitters			
Signal transmission	Filter time constant (adjustable parameters)			
	small	medium	50 Hz, 60 Hz	
Resolution in the range 4 ... 20 mA	12.75 bit	12.75 bit	12.75 bit	
Max. delay from the input to the internal bus, 0 ... 90 % of the signal span	32 ms	120 ms	840 ms	
	Note: For HART operation, the time setting medium or 50 Hz, 60 Hz is recommended			
Maximum short-circuit current	35 mA			
<b>Galvanic isolation</b>				
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			
<b>Measuring accuracy</b>				
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 effect	0.1 % / 10 K			
MTBF acc. to MIL	36.2 years (at 40 °C / 104 °F)			
<b>Settings</b>				
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			

## Technical Data

### Diagnostics

Retrievable parameters	Manufacturer, type, version, serial number
Module faults	<ul style="list-style-type: none"> <li>• Internal primary bus faults</li> <li>• Internal redundant bus faults</li> <li>• No response</li> <li>• Module does not correspond to configuration</li> <li>• Hardware fault</li> </ul>
Signal faults per 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

### Operator interface

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

### Power supply

Maximum power consumption	6.6 W
Maximum power dissipation	3.7 W

### Mechanical data

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

### Electrical connection

Ex i / I.S. field signals	Plug-in terminals 16-pole with catch, 2.5 mm <sup>2</sup> / up to 14 AWG, screw or spring type
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### 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 61 326-1 (1998) IEC 1000-4-1...6, NAMUR NE 21
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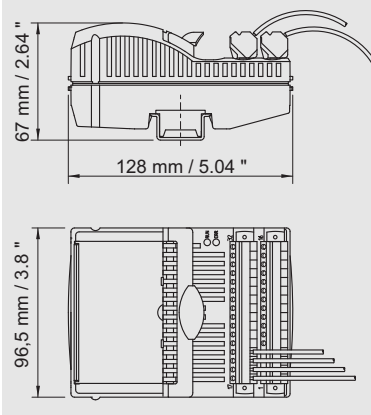


### Accessories and Spare Parts

Designation	Illustration	Description	Order number
Plug-in terminal	 02079E00	2.5 mm <sup>2</sup> / 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 <sup>2</sup> / 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 No ... Mod No ...“ for plug-in terminals, sheet with 26 labels	162788
Designation strips	 05871E00	For BusRail, for 1 BusRail with 16 I/O modules	162793
Warning sign	 05872E00	„Only clean modules with damp cloths“	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



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



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