Remote I/O

07362E00

Analog Input Module HART
Ex n / NI Inputs, 8 Channels
Series 9461/15

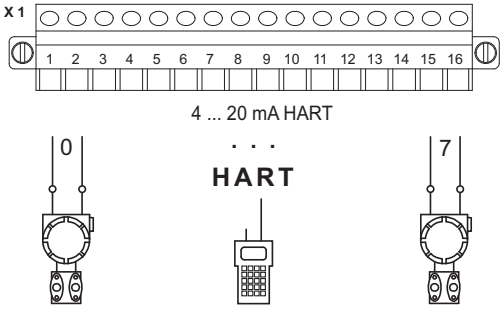
- 8 channels for 2-wire HART transmitters
- Inputs for Ex nL, Ex nA and Nonincendive
- Galvanic isolation between inputs and system
- Open-circuit and short-circuit monitoring for each field circuit
- Module can be replaced in operation (hot swap)

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

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

*) 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 energy limited.
The interface of the Analog Input Module with the internal data bus of the BusRail has integrated redundancy.
The integrated HART multiplexer allows bidirectional HART communication between HART field devices and the automation and engineering system.
Analog transmitters (non-HART) can also be operated.



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Selection Table

Version	Description	Order number	Weight kg / lbs
Analog Input Module HART	8 channels for 2-wire HART transmitters	**9461/15-08-12**	0.241 / 0.531

Explosion Protection

Certificates		
Europe (ATEX)	KEMA 06 ATEX 0261 X	
USA (NEC)	3007532 (FM)	
Marking		
Europe (ATEX)	Ex II3 (2) GD Ex nA [nL] [ib] IIC T4	
USA (NEC)	NI/I/2/ABCD/T4 Ta = 65 °C, I/2/IIC/T4 Ta = 65°C	
Other certificates	Marine (DNV)	
Safety data		
Maximum values	max. voltage U_o / V_{oc}	23.8 V
	max. voltage U_i / V_{max}	32 V
	max. current I_o / I_{sc}	36 mA
	max. current I_i / I_{max}	any
	max. power P_o	567 mW
	max. power P_i	any
Cable parameters (ATEX)	max. capacitance C_o / C_a for IIC	94 nF
	max. capacitance C_o / C_a for IIB	0.88 µF
	max. inductance L_o / L_a for IIC	2 mH
	max. inductance L_o / L_a for IIB	20 mH
	effective internal capacitance C_i	2.5 nF
	effective internal inductance L_i	0
Further information	see respective certificate	

Technical Data

Ex n / NI inputs				
Number of channels	8 (for 2-wire transmitter with / without HART)			
Signal				
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
	Maximum delay from input to internal bus, 0 ... 90 % of 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			

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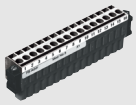
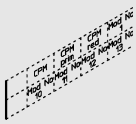
Technical Data

Galvanic isolation				
between power supply and system components	1500 V AC			
between two input / output modules	1500 V AC			
between inputs and system components	1500 V AC			
	The inputs and outputs 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		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)			
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 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 W			
Maximum power dissipation	3.6 W			
Mechanical data				
Module enclosure	Polyamide 6GF			
Fire protection class (UL 94)	V2			
Degree of protection (IEC 60529)				
Modules	IP30			
Connections	IP20			

Technical Data

Electrical connection	
Ex n / NI field signals	Plug-in terminals 16-pole with catch, 2.5 mm² / up to 14 AWG, screw or spring type
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
Engineering notes	• Versions 946./.5 only for installation in Zone 2 or in safe area. • Mixing of Zone 1 modules (946./.2) and Zone 2 modules (946./.5) on same BusRail is allowed. • For separation between intrinsically safe and non-intrinsically safe circuits (≥ 50 mm / 2 in), a partition (162740) is required.

Accessories and Spare Parts

Designation	Illustration	Description	Order number
Plug-in terminal	 09898E00	Screw connection, 2.5 mm² with catch, 16-pole, black, for connecting Ex nL/Ex nA field signals Labelling: 1 ... 16	**162708**
	 09899E00	Spring connection, 2.5 mm² with catch and test jacks, 16-pole, black, for connecting Ex nL/Ex nA field signals Labelling: 1 ... 16	**162710**
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**

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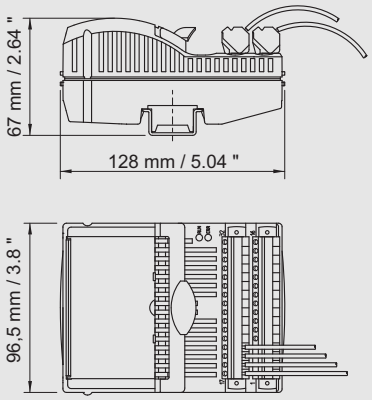
Dimensional Drawings (All Dimensions in mm / inches) - Subject to Alterations



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.

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