

05693E00

### Analog Output Module HART Ex i / I.S. Outputs, 8 Channels Series 9466/12

- 8 channels for controlling HART control valves and positioners
- Intrinsically safe outputs Ex ia IIC
- Galvanic isolation between outputs 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

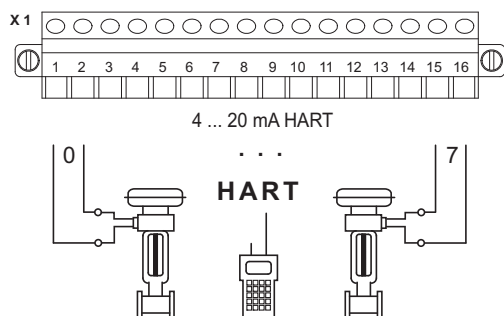


The Analog Output Module HART is used for the connection of up to 8 HART capable positioners or control valves with 0 ... 20 mA or 4 ... 20 mA signals. All outputs are intrinsically safe and short-circuit proof. Each output is individually monitored for open and short circuits.

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

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

Analog (non-HART) control valves and positioners can also be operated.



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## Selection Table

Version		Order number	Weight kg / lbs
Analog Output Module HART	8 channels for controlling HART control valves and positioners	<b>9466 / 12-08-11</b>	0.304 / 0.670

## 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/I/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		
<b>Other certificates</b>	Marine (DNV, ABS, GL)		
<b>Safety data</b>			
Maximum values	max. voltage $U_o / V_{oc}$	26.2 V	
	max. current $I_o / I_{sc}$	86 mA	
	max. power $P_o$	561 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	2.71 mH	
	max. inductance $L_o / L_a$ for IIB	15.8 mH	
	effective internal capacitance $C_i$	0	
	effective internal inductance $L_i$	0	
<b>Further information</b>	see respective certificate		

## Technical Data

<b>Ex i / I.S. outputs</b>			
Number of channels	8		
<b>Signal</b>			
Signal range	0 ... 20 mA, 4 ... 20 mA + HART (adjustable parameters for each channel)		
Minimum signal	0 mA		
Maximum signal	21.8 mA		
Maximum load resistance	750 / 700 $\Omega$ (at 20 mA / 21.8 mA)		
Resolution in the range	14 Bit at 0 ... 21.8 mA		
Maximum delay from internal bus to outputs	5 ms		



#### Technical Data

<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	0.06 %
Ambient temperature effect	0.06 % / 10 K
MTBF acc. to MIL	31.1 years (at 40 °C / 104 °F)
<b>Settings</b>	
Open-circuit and short-circuit monitoring	ON, OFF (for each channel)
Safety position	
Output when communication error	-10 %, 0 %, 100 %, 110 % of the signal, hold last value (adjustable parameters)
Stop time to safety position	0, 1, 2, ... 254, 255 (x 100 ms) (adjustable parameters)
<b>Diagnostics</b>	
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>
<b>Signal faults per channel</b>	
Open circuit	Output voltage > 16 V
Short circuit	Output load < 50 Ω
<b>Operator interface</b>	
Operation	LED green "RUN"
Fault	LED red "ERR"
<b>Power supply</b>	
Maximum power consumption	6.1 W (8 channels at 20 mA)
Maximum power dissipation	4.5 W (8 channels at 20 mA and 500 Ω)
<b>Mechanical data</b>	
Module enclosure	Polyamide 6GF
Fire protection class (UL 94)	V2
Degree of protection (IEC 60529)	
Modules	IP30
Connections	IP20

## Technical Data

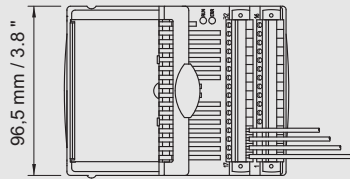
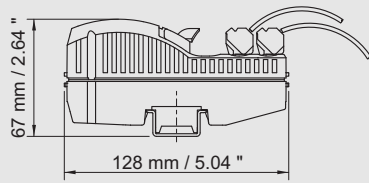
Electrical connection	
Ex i / I.S. field signals	Plug-in terminals 16-pole with catch, 2.5 mm <sup>2</sup> / up to 14 AWG, screw or spring type
Installation conditions	
Mounting type	on 35 mm DIN rail NS 35/15
Installation position	horizontal and vertical
Ambient conditions	
Ambient temperature	- 20 ... + 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

## 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	 05969E00	„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



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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.

Representante oficial de:



[Argentina – Uruguay – Paraguay – Bolivia – Ecuador.]



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