

# Analog Output Module HART Ex n / NI Outputs, 8 Channels for Zone 2

## Series 9466/15



- > 8 channels for controlling HART control valves and positioners
- > Outputs for Ex nL and Ex nA
- > Galvanic separation between outputs and system
- > Open-circuit and short-circuit monitoring for each field circuit
- > Module can be replaced in operation (hot swap)

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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 short-circuit proof and energy limited (Ex nL). 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.



	ATEX						NEC 505						NEC 506						NEC 500								
	0	1	2	20	21	22	Class I						Class II						Class III								
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	Ex interface			x			x	Ex interface		x		x		x	Ex interface		x		x		x
Installation in			x			x <sup>*)</sup>	Installation in			x			x <sup>*)</sup>	Installation in		x		x <sup>*)</sup>		x <sup>*)</sup>	Installation in		x		x <sup>*)</sup>		x <sup>*)</sup>

<sup>\*)</sup> Restrictions see table explosion protection

**WebCode 9466B**

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### Selection Table

Version	Description	Order number	Weight kg / lbs
Analog Output Module HART	8 channels for controlling HART control valves and positioners	<b>9466 / 15-08-12</b>	0.321 / 0.708
Note	Please order terminal separately - see Accessories		

### Explosion Protection

#### Europe (ATEX)

Gas and dust	KEMA 06 ATEX 0291 X Ⓔ II 3 (2) GD Ex nA [nL] [ib] IIC T4
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#### Certifications and certificates

Certificates	ATEX, India (PESO), Kazakhstan (GOST K), Serbia (SRPS), USA (FM)
Ship approval	ABS, BV, ClassNK, DNV, GL, LR, RS

#### Safety data

Maximum values for	
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 $P_o$	553 mW
Max. power $P_i$	any
Cable parameters (ATEX) (for inductive or capacitive circuits)	
Max. connectable capacitance $C_o / C_a$	
IIC	94 nF
IIB	0.88 $\mu$ F
Max. connectable inductance $L_o / L_a$	
IIC	2 mH
IIB	20 mH
Max. internal capacity $C_i$	1.2 nF
Max. internal inductance $L_i$	0
Further information	see respective certificate

### Technical Data

#### Electrical data

Ex n / NI outputs	
Number of channels	8
Signal	
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
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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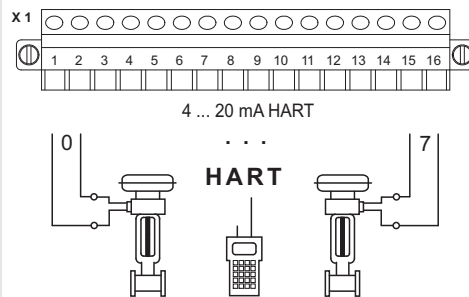
## Series 9466/15



### Technical Data

#### Electrical data

Accuracy of measurement	
Note	All values in % of the signal span, at 23 °C / 73.4 °F
Measurement deviation	0.06 %
Ambient temperature influence	0.06 % / 10 K
Settings	
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)
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 errors for each channel	
Open circuit	Output voltage > 15.2 V
Short circuit	Output load < 50 Ω
Operator interface	
Operation	LED green "RUN"
Fault	LED red "ERR"
Auxiliary power	
Maximum power consumption	6 W (8 channels at 20 mA)
Maximum power dissipation	4.4 W (8 channels at 20 mA and 500 Ω)
Electrical connection	
Ex n / NI field signals	Plug-in terminals 16-pole with catch, 2.5 mm <sup>2</sup> / up to 14 AWG, screw or spring type
Connection diagram	



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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)	
Modules	IP30
Connections	IP20

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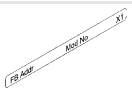
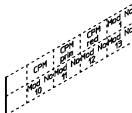




### Technical Data

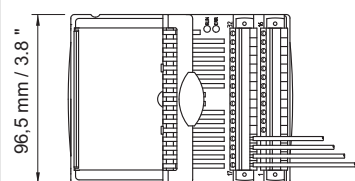
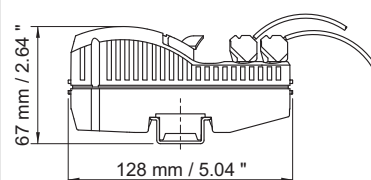
#### Mounting / installation

Installation conditions	on 35 mm DIN rail NS 35/15
Mounting type	horizontal and vertical
Mounting orientation	
Engineering notes	<ul style="list-style-type: none"> <li>• Versions 946./5 only for installation in Zone 2 or in safe area.</li> <li>• Mixing of Zone 1 modules (946./2) and Zone 2 modules (946./5) on same BusRail is allowed.</li> <li>• For separation between intrinsically safe and non-intrinsically safe circuits (<math>\geq 50</math> mm / 2 in), a partition (162740) is required.</li> </ul>

#### Accessories and Spare Parts

Designation	Figure	Description	Art. no.
Plug-in terminal	 09898E00	Screw connection, 2.5 mm <sup>2</sup> / 14 AWG with catch, 16-pole, black, for connecting Ex nL/Ex nA field signals Labelling: 1 ... 16	<b>162708</b>
	 09899E00	Spring connection, 2.5 mm <sup>2</sup> / 14 AWG with catch and test jacks, 16-pole, black, for connecting Ex nL/Ex nA field signals Labelling: 1 ... 16	<b>162710</b>
Labelling strips	 05869E00	"FB Addr ... Mod No ..." for pluggable terminal, sheet with 26 strips	<b>162788</b>
Designation strips	 05871E00	For BusRail, for 1 BusRail with 16 I/O modules	<b>162793</b>
Warning sign	 05872E00	"Clean modules only with a damp cloth."	<b>162796</b>
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	<b>162740</b>

#### 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.