



07372E00

Analog Output Module HART Ex n / NI Outputs, 8 Channels Series 9466/15

- 8 channels for controlling HART control valves and positioners
- Outputs for Ex nL, Ex nA and Nonincendive
- 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 |
| Installation in | | | X | | | X ^{*)} |

| | | | | |
|-----------------|---|---|----------|-----------------|
| Class | I | | II / III | |
| Division | 1 | 2 | 1 | 2 |
| Ex interface | | X | | X |
| Installation in | | X | | X ^{*)} |

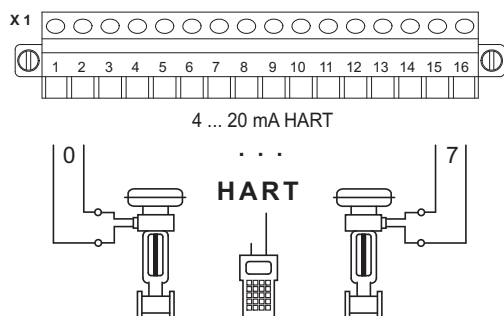
^{*)} suitable enclosure necessary



The Analog 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.



05688E00

Selection Table

| Version | | Order number | Weight kg / lbs |
|---------------------------|--|-----------------|--------------------|
| Analog Output Module HART | 8 channels for controlling HART control valves and positioners | 9466 / 15-08-12 | 0.321 / 0.708 |

Explosion Protection

| | | |
|--------------------------------------|---|--------------------------------------|
| Certificates | | |
| Europe (ATEX) | KEMA 06 ATEX 0291 X | |
| USA (NEC) | 3007532 (FM) | |
| Marking | | |
| Europe (ATEX) | Ⓔ 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 | 553 mW |
| | max. power P_i | any |
| | Cable parameters (ATEX) | max. capacitance C_o / C_a for IIC |
| max. capacitance C_o / C_a for IIB | | 0.88 μ F |
| 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 | | 1.2 nF |
| effective internal inductance L_i | | 0 |
| Further information | | |
| see respective certificate | | |

Technical 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 Ω (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

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|--|--|
| Galvanic isolation | |
| 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 |
| Measuring accuracy | |
| 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) |
| 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"> • Internal primary bus faults • Internal redundant bus faults • No response • Module does not correspond to configuration • Hardware fault |
| Signal faults per channel | |
| Open circuit | Output voltage > 15.2 V |
| Short circuit | Output load < 50 Ω |
| Operator interface | |
| Operation | LED green "RUN" |
| Fault | LED red "ERR" |
| Power supply | |
| Maximum power consumption | 6 W (8 channels at 20 mA) |
| Maximum power dissipation | 4.4 W (8 channels at 20 mA and 500 Ω) |
| 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 mm ² / 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 | <ul style="list-style-type: none"> • 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 mm ² with catch, 16-pole, black, for connecting Ex nL/Ex nA field signals Labelling: 1 ... 16 | 162708 |
| |  09899E00 | Spring connection, 2.5 mm ² 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 |
| 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 |
| Designation strips |  05871E00 | For BusRail, for 1 BusRail with 16 I/O modules | 162793 |
| Warning sign |  05872E00 | „Only clean modules with damp cloths“ | 162796 |



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