

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 ^{*)} | X ^{*)} |

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

^{*)} suitable enclosure necessary



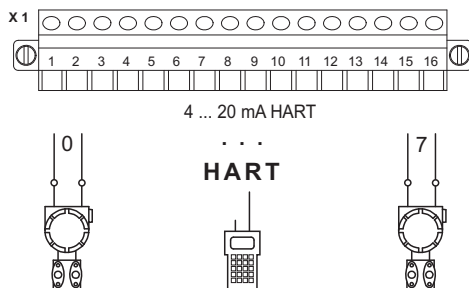
The Analog Input Module HART is used for the connection and supply of up to 8 x 2-wire HART transmitters with 0 ... 20 mA or 4 ... 20 mA signals. Each input is individually monitored for open and short circuits.

Inputs and power supplies are short-circuit proof and 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 | 9461/12-08-11 | 0.400 / 0.882 |

Explosion Protection

| | | |
|-------------------------|--|--------------|
| Certificates | | |
| 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) | |
| Marking | | |
| 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) | |
| Safety data | | |
| 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 μ 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 μ H |
| Further information | see respective certificate | |



Technical Data

| | | | | |
|---|--|-----------|--------------|--|
| Ex i / I.S. inputs | | | | |
| Number of channels | 8 (for 2-wire transmitters 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 | |
| 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 | | | |
| 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 | 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 | | | |

Technical Data

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 6.6 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 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

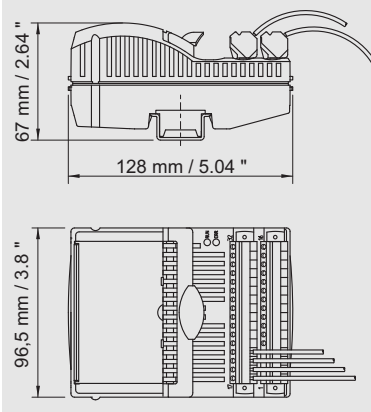


Accessories and Spare Parts

| Designation | Illustration | Description | Order number |
|--------------------|---|--|--------------|
| Plug-in terminal |  02079E00 | 2.5 mm ² / 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 ² / 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.

Representante oficial de:



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



Calle 49 N° 5764 - Villa Ballester (B1653AOX) - Prov. de Buenos Aires - ARGENTINA
Tel: (+54 11) 4768-4242 / Fax: (+54 11) 4849-1212
Mail: ventas@nakase.com.ar / Web: www.nakase.com.ar

