



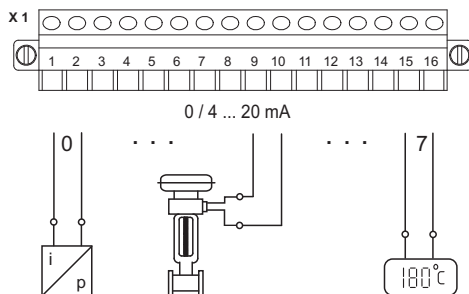
05834E00

The Analog Output Module is used for the connection of up to 8 I/P converters, 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 interface of the Analog Output Module with the internal data bus of the BusRail is designed with redundancy.

For operation of HART field devices see Series 9466.



06305E00

Analog Output Module Ex i / I.S. Outputs, 8 Channels Series 9465

- 8 channels for controlling I/P converters and control valves with 0/4 ... 20 mA
- 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 ^{*)} | 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

Selection Table

| Version | Description | Order number | Weight kg / lbs |
|----------------------|------------------------------------------------------------------------------------|------------------------|--------------------|
| Analog Output Module | 8 channels for controlling I/P converters and control valves with 0/4 mA ... 20 mA | 9465 / 12-08-11 | 0.267 / 0.589 |

Explosion Protection

| | | |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Certificates | | |
| IECEX | PTB 06.0001X | |
| Europe (ATEX) | PTB 99 ATEX 2207 | |
| 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} | 80 mA |
| | max. power P_o | 525 mW |
| Cable parameters (ATEX) | max. capacitance C_o / C_a for IIC | 97 nF |
| | max. capacitance C_o / C_a for IIB | 0.75 µF |
| | max. inductance L_o / L_a for IIC | 3.2 mH |
| | max. inductance L_o / L_a for IIB | 18.6 mH |
| | effective internal capacitance C_i | 0 |
| | effective internal inductance L_i | 0 |
| Further information | see respective certificate | |

Technical Data

| | | |
|--------------------------------------------|-------------------------------------------------------------------|--|
| Ex i / I.S. outputs | | |
| Number of channels | 8 | |
| Signal | | |
| Signal range | 0 ... 20 mA, 4 ... 20 mA (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

| | |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Galvanic isolation | |
| between power supply and system components | 1500 V AC |
| between two input / output modules | 500 V AC |
| between outputs 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 | 32.9 years (at 40 °C / 104 °F) |
| Settings | |
| Open-circuit and short-circuit monitoring | ON, OFF (for each channel) |
| 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 > 16 V |
| Short circuit | Output load < 50 Ω |
| Operator interface | |
| Operation | LED green "RUN" |
| Fault | LED red "ERR" |
| Power supply | |
| Maximum power consumption | 5.9 W (8 channels at 20 mA) |
| Maximum power dissipation | 4.3 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 |
| Electrical connection | |
| Ex i / I.S. 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 |

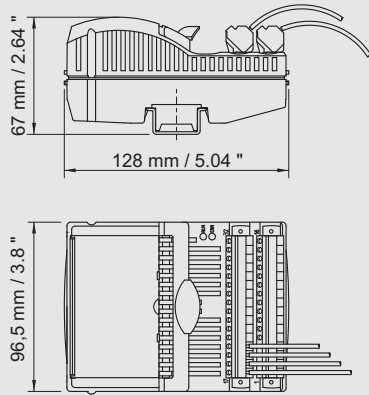
Technical Data

| | |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 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 |  | 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 |
| |  | 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 |  | „FB No ... Mod No ...“ for plug-in terminals, sheet with 26 labels | 162788 |
| Partition |  | 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 |  | For BusRail, for 1 BusRail with 16 I/O modules | 162793 |
| Warning sign |  | „Only clean modules with damp cloths“ | 162796 |



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

09879E00

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

