# DATASHEET - XN-322-8AIO-I

**Analog input and output module; 4 analog inputs and 4 analog outputs; 0/4 to 20 mA**

| | |
|---|---|
| **Part no.** | **XN-322-8AIO-I** |
| **Catalog No.** | **178771** |
| **Alternate Catalog No.** | **XN-322-8AIO-I** |

## Delivery program

| | | | |
|---|---|---|---|
| Function | | | XN300 I/O slice modules |
| Connection technique | | | Push-in spring-cage terminal |
| Function | | | XN-322 analog input and output module for XN300 |
| Short Description | | | 4 analog inputs and 4 analog outputs, 0/4 to 20 mA |
| For use with | | | XN-312-… |

## Technical data

### General

| | | | |
|---|---|---|---|
| Standards | | | IEC/EN 61131-2<br>IEC/EN 61000-6-2<br>IEC/EN 61000-6-4 |
| Approvals | | | |
| Approvals | | | CE, cULus<br>EAC |
| shipping classification | | | DNV GL |
| | | | TYPE APPROVED PRODUCT DNV·GL MARITIME |
| Electromagnetic compatibility (EMC) | | | |
| ESD | Air/contact discharge | kV | 8 / 4 |
| Electromagnetic fields | (0.08…1) / (1,4…2) / (2…2,7) GHz | V/m | 10 / 3 / 1 |
| Burst | | | |
| Supply cable | | kV | 2 |
| Signal cable | | kV | 1 |
| Surge | | | |
| Supply cable (balanced / unbalanced) | | kV | 0,5 / 0,5 |
| Signal cable (unbalanced) | | kV | 1 |
| Radiated RFI | | V | 10 |
| Emitted interference (radiated, high frequency) | (30...230 MHz) / (230...1000 MHz) | dB | 40 / 47 class A |
| Voltage fluctuations/voltage dips | | | Yes / 10 ms |
| Ambient conditions | | | |
| Climatic conditions | | | |

| | | | |
|---|---|---|---|
| Climatic proofing | | | Dry heat to IEC 60068-2-2<br>Damp heat as per EN 60068-2-3 |
| Air pressure (operation) | | hPa | 795 - 1080 |
| Relative humidity | | | 0 - 95%, non condensing |
| Condensation | | | prevent with suitable measures |
| Temperature | | | |
| Operation | | °C | 0 - +60 |
| Storage, transport | ϑ | °C | -20 - +85 |
| Degree of Protection | | | IP20 |
| Mounting position | | | Horizontal |
| Free fall, packaged (IEC/EN 60068-2-32) | | m | 1 |
| Vibrations | 3,5 mm / 1 g | Hz | 5 - 8.4 / 8.4 -150 |
| Mechanical shock resistance | Semisinusoida 15 g/11 ms | Impacts | 18 |

## Terminations

| | | | |
|---|---|---|---|
| Rated operational data | | | |
| Insulating material group | | | I |
| Overvoltage category / pollution degree | | | III / 3 |
| Rated operating voltage | | V | 160 |
| Maximum load current/cross-sectional area | | A / $mm^2$ | X (not specified by plug manufacturer) |
| Connection design in TOP direction | | | Push-in spring-cage terminal (plug-in connection) |
| Stripping length | | mm | 10 |
| Gauge pin IEC/EN 60947-1 | | | A1 |
| Connection specifications | | | |
| "e" solid H07V-U | | $mm^2$ | 0.2 - 1.5 |
| "f" flexible H 07V-K | | $mm^2$ | 0.2 - 1.5 |
| "f" with ferrules without plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) | | $mm^2$ | 0.25 - 1.5 |
| "f" with ferrules with plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) | | $mm^2$ | 0.25-1,5 |
| Cable size | | AWG | 24 - 16 |

## Supply

| | | | |
|---|---|---|---|
| Power supply - Input | | | |
| Power supply | | | |
| Current consumption for +5 V power supply (internal) | I | mA | (typ.) 55 |
| Current consumption for +24 V power supply | I | mA | (typ.) none |
| Potential isolation | PE (polyethylene) | | no |
| Rated operating voltage | Ue | V | 24 (X5) |
| Rated operational current | Ie | A | 0.078 |
| Potential isolation | | | no |
| Heat dissipation | | | |
| Heat dissipation (without active channels) | | W | 0.851 |
| Max. heat dissipation | | W | 2.58 |
| Notes on heat dissipation | | | The max. heat dissipation is specified as the maximum power produced inside the device's housing. |

## Analog inputs

| | | | |
|---|---|---|---|
| Channels | | Quantity | 4 |
| Measured variables | | | Current |
| Resolution | | Bit | 16 |
| Min. value refresh time/cycle time | per channel / all channels | ms | 1 / 1 |
| Hardware input filter | | | Typically: 1 kHz, third-order low-pass filter |
| Software input filter | | | parameterizable |
| Potential isolation | | | no |

## Analog output modules

| | | | |
|---|---|---|---|
| Analog outputs | | | |
| Channels | | Quantity | 4 |
| Output current | | | |

| | | | |
|---|---|---|---|
| Output current, nominal value | | mA | 0-20 |
| Resolution | | Bit | 12 |
| Refresh time | All channels | ms | 1 |
| For connection of: | | | 2 conductors |
| Load resistor | | | |
| Resistive load | | Ω | ≤ 500 |
| Transmission frequency | | Hz | not |
| Short-circuit strength | | | yes |
| accuracy | | % of full scale | ±0.5 |

## Functions

| | | | |
|---|---|---|---|
| Current measurement | | | |
| Channels | | Quantity | 4 |
| Measurement ranges | | mA | 0 - 20 |
| Value representation | | | SIGNED16 |
| For connection of: | | | 2 conductors |
| Maximum input current | | mA | 100 |
| Input resistance | | Ω | Normally 50 |
| Limiting frequency | | | Typically: 1 kHz (third-order low-pass filter) |
| Accuracy | | % of full scale | ±0.5 |

# Design verification as per IEC/EN 61439

| | | | |
|---|---|---|---|
| Technical data for design verification | | | |
| Rated operational current for specified heat dissipation | $I_n$ | A | 0 |
| Heat dissipation per pole, current-dependent | $P_{vid}$ | W | 0 |
| Equipment heat dissipation, current-dependent | $P_{vid}$ | W | 0 |
| Static heat dissipation, non-current-dependent | $P_{vs}$ | W | 2.58 |
| Heat dissipation capacity | $P_{diss}$ | W | 0 |
| Operating ambient temperature min. | | °C | 0 |
| Operating ambient temperature max. | | °C | 55 |
| Degree of Protection | | | IP20 |
| IEC/EN 61439 design verification | | | |
| 10.2 Strength of materials and parts | | | |
| 10.2.2 Corrosion resistance | | | Meets the product standard's requirements. |
| 10.2.3.1 Verification of thermal stability of enclosures | | | Meets the product standard's requirements. |
| 10.2.3.2 Verification of resistance of insulating materials to normal heat | | | Meets the product standard's requirements. |
| 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects | | | Meets the product standard's requirements. |
| 10.2.4 Resistance to ultra-violet (UV) radiation | | | Meets the product standard's requirements. |
| 10.2.5 Lifting | | | Does not apply, since the entire switchgear needs to be evaluated. |
| 10.2.6 Mechanical impact | | | Does not apply, since the entire switchgear needs to be evaluated. |
| 10.2.7 Inscriptions | | | Meets the product standard's requirements. |
| 10.3 Degree of protection of ASSEMBLIES | | | Meets the product standard's requirements. |
| 10.4 Clearances and creepage distances | | | Meets the product standard's requirements. |
| 10.5 Protection against electric shock | | | Does not apply, since the entire switchgear needs to be evaluated. |
| 10.6 Incorporation of switching devices and components | | | Does not apply, since the entire switchgear needs to be evaluated. |
| 10.7 Internal electrical circuits and connections | | | Is the panel builder's responsibility. |
| 10.8 Connections for external conductors | | | Is the panel builder's responsibility. |
| 10.9 Insulation properties | | | |
| 10.9.2 Power-frequency electric strength | | | Is the panel builder's responsibility. |
| 10.9.3 Impulse withstand voltage | | | Is the panel builder's responsibility. |
| 10.9.4 Testing of enclosures made of insulating material | | | Is the panel builder's responsibility. |
| 10.10 Temperature rise | | | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| 10.11 Short-circuit rating | | | Is the panel builder's responsibility. |
| 10.12 Electromagnetic compatibility | | | Is the panel builder's responsibility. |

| | | | |
|---|---|---|---|
| 10.13 Mechanical function | | | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed. |

## Technical data ETIM 7.0

PLC's (EG000024) / Fieldbus, decentr. periphery - analogue I/O module (EC001596)

Electric engineering, automation, process control engineering / Control / Field bus, decentralized peripheral / Field bus, decentralized peripheral - analogue I/O module (ecl@ss10.0.1-27-24-26-01 [BAA061014])

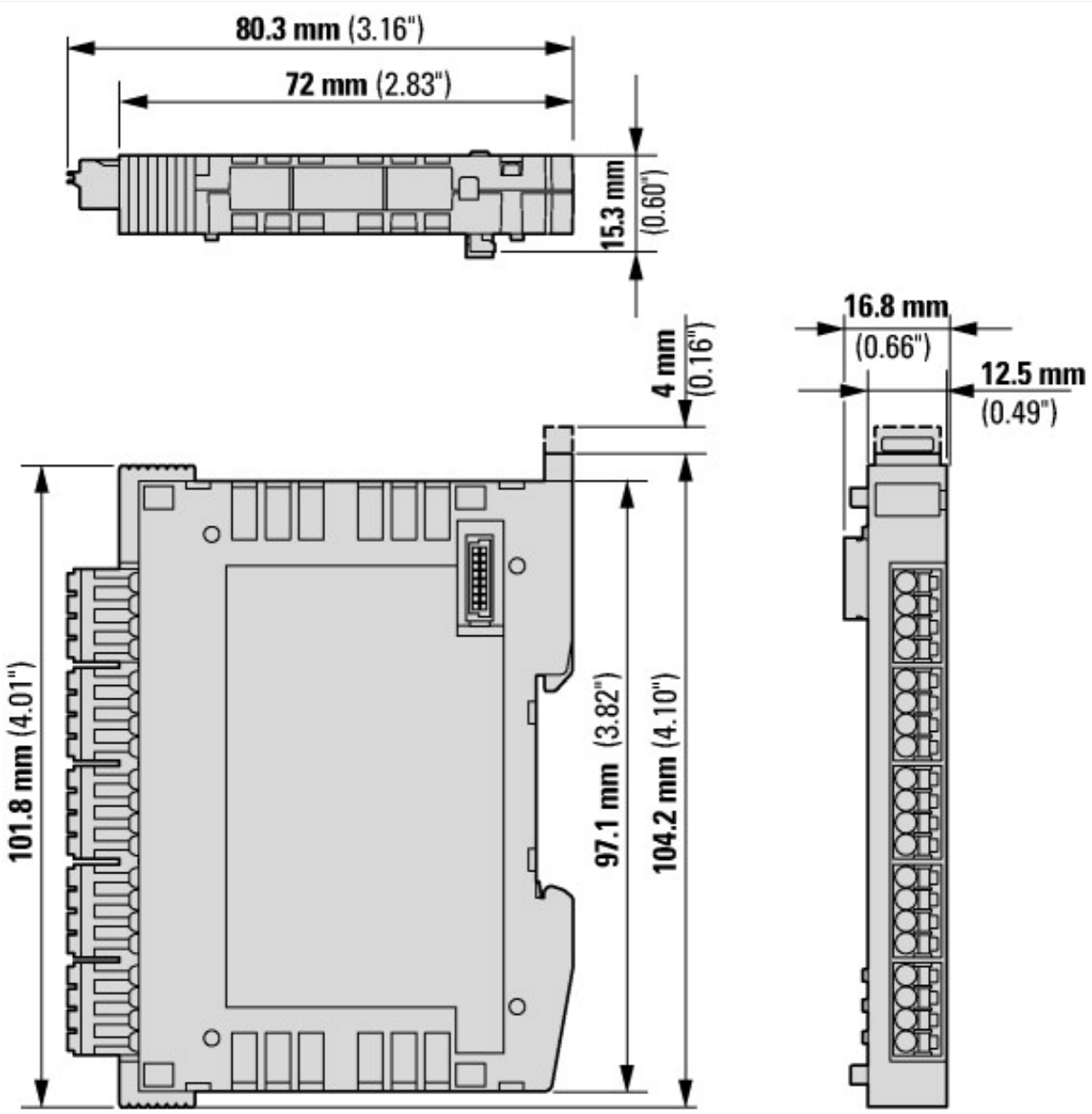
| | | | |
|---|---|---|---|
| Supply voltage AC 50 Hz | | V | 0 - 0 |
| Supply voltage AC 60 Hz | | V | 0 - 0 |
| Supply voltage DC | | V | 18 - 30 |
| Voltage type of supply voltage | | | DC |
| Input, current | | | Yes |
| Input, voltage | | | No |
| Input, resistor | | | No |
| Input, resistance thermometer | | | No |
| Input, thermocouple | | | No |
| Input signal, configurable | | | No |
| Resolution of the analogue inputs | | Bit | 16 |
| Output, current | | | Yes |
| Output, voltage | | | No |
| Output signal configurable | | | No |
| Resolution of the analogue outputs | | Bit | 16 |
| Number of analogue inputs | | | 4 |
| Number of analogue outputs | | | 4 |
| Analogue inputs configurable | | | Yes |
| Analogue outputs configurable | | | Yes |
| Number of HW-interfaces industrial Ethernet | | | 0 |
| Number of interfaces PROFINET | | | 0 |
| Number of HW-interfaces RS-232 | | | 0 |
| Number of HW-interfaces RS-422 | | | 0 |
| Number of HW-interfaces RS-485 | | | 0 |
| Number of HW-interfaces serial TTY | | | 0 |
| Number of HW-interfaces parallel | | | 0 |
| Number of HW-interfaces Wireless | | | 0 |
| Number of HW-interfaces USB | | | 0 |
| Number of HW-interfaces other | | | 1 |
| Supporting protocol for TCP/IP | | | No |
| Supporting protocol for PROFIBUS | | | No |
| Supporting protocol for CAN | | | No |
| Supporting protocol for INTERBUS | | | No |
| Supporting protocol for ASI | | | No |
| Supporting protocol for KNX | | | No |
| Supporting protocol for MODBUS | | | No |
| Supporting protocol for Data-Highway | | | No |
| Supporting protocol for DeviceNet | | | No |
| Supporting protocol for SUCONET | | | No |
| Supporting protocol for LON | | | No |
| Supporting protocol for PROFINET IO | | | No |
| Supporting protocol for PROFINET CBA | | | No |
| Supporting protocol for SERCOS | | | No |
| Supporting protocol for Foundation Fieldbus | | | No |
| Supporting protocol for EtherNet/IP | | | No |
| Supporting protocol for AS-Interface Safety at Work | | | No |
| Supporting protocol for DeviceNet Safety | | | No |
| Supporting protocol for INTERBUS-Safety | | | No |
| Supporting protocol for PROFIsafe | | | No |

| | | |
|---|---|---|
| Supporting protocol for SafetyBUS p | | No |
| Supporting protocol for other bus systems | | No |
| Radio standard Bluetooth | | No |
| Radio standard WLAN 802.11 | | No |
| Radio standard GPRS | | No |
| Radio standard GSM | | No |
| Radio standard UMTS | | No |
| IO link master | | No |
| System accessory | | Yes |
| Degree of protection (IP) | | IP20 |
| Degree of protection (NEMA) | | |
| Type of electric connection | | Screw-/spring clamp connection |
| Fieldbus connection over separate bus coupler possible | | No |
| Rail mounting possible | | Yes |
| Wall mounting/direct mounting | | No |
| Front build in possible | | No |
| Rack-assembly possible | | No |
| Suitable for safety functions | | No |
| Category according to EN 954-1 | | |
| SIL according to IEC 61508 | | None |
| Performance level acc. EN ISO 13849-1 | | None |
| Appendant operation agent (Ex ia) | | No |
| Appendant operation agent (Ex ib) | | No |
| Explosion safety category for gas | | None |
| Explosion safety category for dust | | None |
| Width | mm | 16.8 |
| Height | mm | 104.2 |
| Depth | mm | 80.3 |

## Approvals

| | | |
|---|---|---|
| Product Standards | | CE, cULus |
| UL File No. | | E135462 |

## Dimensions




Notes: The plugs/connectors used depend on the version.

## Additional product information (links)

| **Manual XN300 digital I/O modules, analog I/O modules, power supply modules, technology modules MN050002** | |
|---|---|
| Handbuch XN300 digitale E/A-Module, analoge E/A-Module, Stromversorgungsmodule, Technologiemodule MN050002 - Deutsch | https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN050002_DE.pdf |
| Manual XN300 digital I/O modules, analog I/O modules, power supply modules, technology modules MN050002 - English | https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN050002_EN.pdf |
| f1=1457&f2=1282&f3=1836;Download Wizard XN300-Assist | http://applications.eaton.eu/sdlc?LX=11&amp |