# Specifications







## Eaton 178772

Eaton XN-322 Analog input module, 4 analog inputs, Pt/Ni/KTY/R with 2-wire or 3-wire connection

| General specifications | |
|---|---|
| **PRODUCT NAME** | Eaton XN-322 Input module |
| **CATALOG NUMBER** | 178772 |
| **MODEL CODE** | XN-322-4AI-PTNI |
| **EAN** | 7640130098367 |
| **PRODUCT LENGTH/DEPTH** | 104.2 mm |
| **PRODUCT HEIGHT** | 16.8 mm |
| **PRODUCT WIDTH** | 80.3 mm |
| **PRODUCT WEIGHT** | 0.056 kg |
| **CERTIFICATIONS** | CE<br>UL File No.: E135462<br>cULus<br>EN 61131-2<br>EN 61000-6-2<br>EN 61000-6-4<br>UL508<br>CSA-C22.2 No. 142-M |

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## Ambient conditions, mechanical

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|---|---|
| **HEIGHT OF FALL (IEC/EN 60068-2-32) - MAX** | 1 m |
| **MOUNTING POSITION** | Horizontal |
| **SHOCK RESISTANCE** | 15 g, Mechanical, Half-sinusoidal shock 11 ms, 18 Impacts |
| **VIBRATION RESISTANCE** | 5 - 8.4 / 8.4 -150 Hz, 3,5 mm / 1 g |

## Climatic environmental conditions

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| **AIR PRESSURE** | 795 - 1080 hPa (operation) |
| **AMBIENT OPERATING TEMPERATURE - MAX** | 60 °C |
| **AMBIENT STORAGE TEMPERATURE - MAX** | 85 °C |
| **AMBIENT OPERATING TEMPERATURE - MIN** | 0 °C |
| **AMBIENT STORAGE TEMPERATURE - MIN** | -20 °C |
| **CLIMATIC PROOFING** | Dry heat to IEC 60068-2-2 Damp heat, constant, to IEC 60068-2-3 |
| **ENVIRONMENTAL CONDITIONS** | Condensation: prevent with appropriate measures |
| **RELATIVE HUMIDITY** | 0 - 95 % (non-condensing) |

## Communication

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|---|---|
| **CONNECTION TYPE** | 2-conductor/3-conductor, Temperature and resistance measurement Push-in spring-cage terminal (plug-in connection), Connection design in TOP direction |
| **PROTOCOL** | Other bus systems |

## Design verification

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|---|---|
| **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. |
| **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 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS** | Meets the product standard's requirements. |
| **10.2.4 RESISTANCE TO ULTRA-VIOLET (UV)** | Meets the product standard's requirements. |

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| **RADIATION** | |
| **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. |
| **10.9.2 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. |
| **EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID** | 0 W |
| **HEAT DISSIPATION CAPACITY PDISS** | 0 W |
| **HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID** | 0.768 W |
| **RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)** | 0 A |
| **STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS** | 1.08 W |

## Electrical rating

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|---|---|
| **RATED OPERATIONAL VOLTAGE** | 160 V (terminations) |
| **SUPPLY VOLTAGE AT DC - MAX** | 30 VDC |
| **SUPPLY VOLTAGE AT DC - MIN** | 18 VDC |

## Electro magnetic compatibility

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|---|---|
| **AIR DISCHARGE** | 8 kV |
| **BURST IMPULSE** | 1 kV, Signal cable<br>2 kV, Supply cable |
| **CONTACT DISCHARGE** | 4 kV |
| **ELECTROMAGNETIC FIELDS** | 1 V/m at 2 - 2.7 GHz (according to IEC EN 61000-4-3)<br>10 V/m at 0.08 - 1.0 GHz (according to IEC EN 61000-4-3)<br>3 V/m at 1.4 - 2 GHz (according to IEC EN 61000-4-3) |
| **EMITTED INTERFERENCE** | 47 dB (at 230 - 1000 MHz, Class A, radiated, high frequency)<br>40 dB (at 30 - 230 MHz, Class A, radiated, high frequency) |
| **RADIATED RFI** | 10 V |
| **SURGE RATING** | 0.5/0.5 kV, Supply cable, balanced/unbalanced), EMC<br>1 kV, Signal cable, unbalanced, EMC |
| **VOLTAGE DIPS** | Voltage dips: 10 ms/Voltage fluctuations: Yes |

## Features & functions

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|---|---|
| **ELECTRIC CONNECTION TYPE** | Plug-in connection |
| **FEATURES** | Input, resistance thermometer<br>Fieldbus connection over separate bus coupler possible<br>Analog outputs configurable<br>Input, resistor<br>Analog inputs configurable<br><br>Input signal, configurable<br>Fieldbus connection over separate bus coupler possible |
| **FITTED WITH:** | 10 kHz, second-order low-pass input filter<br>Parameterizable Software input filter |
| **MEASUREMENT RANGES** | 0 - 1000 (Resistance measurement)<br>0 - 2500 (Resistance measurement)<br>-40 - 300 °C (Temperature measurement, KTY84)<br>0 - 500 (Resistance measurement)<br>-50 - 150 °C (Temperature measurement, KTY11)<br>-200 - 850 °C (Temperature measurement, PT100/200/500/1000)<br>-60 - 250 °C (Temperature measurement, NI100/1000)<br>-60 - 150 °C (Temperature measurement, NI100/1000)<br>0 - 250 (Resistance measurement)<br>0 - 5000 (Resistance measurement)<br>-200 - 150 °C (Temperature measurement, PT100/200/500/1000)<br>-55 - 150 °C (Temperature measurement, KTY81) |
| **VALUE REPRESENTATION** | SIGNED16 (0.1 °C), UNSIGNED16 (0.1 Ω), Temperature and resistance measurement |

## General information

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|---|---|
| **CURRENT CONSUMPTION** | 37 mA (typ.), for +24 V, Power supply - Input<br><br>0 mA (typ.), for +5 V power supply (internal), Power supply - Input |
| **DEGREE OF PROTECTION** | IP20<br>NEMA 1 |
| **MOUNTING METHOD** | Rail mounting possible |
| **NUMBER OF CHANNELS** | 4, Analog Inputs |
| **OVERVOLTAGE CATEGORY** | III |
| **POLLUTION DEGREE** | 3 |
| **PRODUCT CATEGORY** | XN-322 analog input module |
| **RESOLUTION** | 16 Bit (Analog inputs) |
| **TYPE** | • Analog input module for four PT100/PT1000/NI100/NI1000KTYxx/R resistance inputs with 2-wire and 3-wire configurations.<br>• XN300 I/O slice module |
| **USED WITH** | XN-312-...<br>XN300 |
| **VOLTAGE TYPE** | DC |

## Input/Output

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|---|---|
| **ACCURACY** | ± 0.3 % of full scale, Temperature and resistance measurement |
| **INPUT** | 4 Analog resistance inputs (Pt/Ni/KTY/R with 2-wire or 3-wire connection) |
| **LOAD CURRENT** | Not specified by plug manufacturer |
| **MEASURED VARIABLES** | Temperature<br>Resistance |
| **NUMBER OF INPUTS (ANALOG)** | 4 |
| **NUMBER OF OUTPUTS (ANALOG)** | 0 |
| **VALUE REFRESH TIME/CYCLE TIME** | Min. 4 / 4 ms (per channel / all channels), Analog Inputs |

## Safety

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|---|---|
| **EXPLOSION SAFETY CATEGORY FOR DUST** | None |
| **EXPLOSION SAFETY CATEGORY FOR GAS** | None |
| **POTENTIAL ISOLATION** | Analog inputs: no |

## Terminal capacities

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|---|---|
| **GAUGE PIN** | A1 (according to IEC/EN 60947-1) |
| **INSULATING MATERIAL GROUP** | I |
| **STRIPPING LENGTH (MAIN CABLE)** | 10 mm |
| **TERMINAL CAPACITY** | 0.2 - 1.5 mm², flexible without ferrule, H07V-K<br>0.2 - 1.5 mm², solid, H07V-U<br>24 - 16 AWG<br>0.25 - 1.5 mm², with ferrules without plastic collar according to DIN 46228-1 (ferrules crimped gas-tight)<br>0.25 - 0.75 mm², with ferrules with plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) |

## Resources

| | |
|---|---|
| BROCHURES | eaton-xc300-modular-plc-brochure-br050008en-en-us.pdf<br>Slice card modular I/O system for the machine building industry XN300 - brochure |
| DECLARATIONS OF CONFORMITY | eaton-input-module-declaration-of-conformity-eu250715en.pdf<br>eaton-input-module-declaration-of-conformity-uk251198en.pdf |
| DRAWINGS | eaton-modular-plc-xn-input-module-dimensions.eps<br>eaton-general-xv-touch-panel-symbol.eps<br>eaton-modular-plc-xn-input-module-3d-drawing-006.eps<br>eaton-modular-plc-xn-input-module-3d-drawing.eps |
| ECAD MODEL | DA-CE-ETN.XN-322-4AI-PTNI |
| INSTALLATION INSTRUCTIONS | IL050017ZU IL050025ZU |
| MANUALS AND USER GUIDES | eaton-xn300-slice-modules-mn050002-en-us.pdf<br>eaton-xn-312-gw-can-canopen-gateway-mn050003-en-us.pdf |
| MCAD MODEL | eaton-modular-system-analog-mcad-3d-models-xn-322-4ai-ptni.stp<br>eaton-modular-system-analog-mcad-drawings-xn-322-4ai-ptni.dwg |
| MULTIMEDIA | XC100, XC200, XC300 – Eaton's modular PLC ranges<br>System solutions based on EtherCAT |
| PRODUCT NOTIFICATIONS | eaton-xn-322-i-o-series-end-user-license-agreement-mz050026-en-us.pdf |

eaton-xn-322-i-o-series-product-cybersecurity-guideline-mz050024-en-us.pdf

| | |
|---|---|
| **PROJECT NAME:** | |
| **PROJECT NUMBER:** | |
| **PREPARED BY:** | |
| **DATE:** | |

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