# Analog input card XI/ON, 24 V DC, 1AI (meter, 32Bit)

| | |
|---|---|
| **Part no.** | **XN-1CNT-24VDC** |
| **Article no.** | **140069** |

## Delivery program

| | | |
|---|---|---|
| Function | | XI/ON technology modules |
| Function | | XN Slice module |
| Short Description | | 1 Digital input/24 V DC<br>1 Digital outputs/24 V DC<br>Counting modes: infinite, once only or periodic count<br>Frequency, rotational speed or period count<br>Acquisition of signals from rotary encoders (track A/B) |
| For use with | | XN-S4T-SBBS<br>XN-S4S-SBBS |

## Technical data

### General

| | | | |
|---|---|---|---|
| Standards | | | EN 61000-6-2<br>EN 61000-6-4<br>EN 61131-2 |
| Potential isolation | | | Yes, through optocoupler |
| Ambient temperature | | | |
|     Ambient temperature, operation | | °C | 0 - +55 |
|     Storage, transport | ϑ | °C | -25 - +85 |
| Relative humidity | | | |
|     Relative humidity | | | 5 - 95 % (indoor), Level RH-2, no condensation (for storage at 45°C) |
| Ambient conditions, mechanical | | | |
|     Degree of Protection | | | IP20 |
|     Harmful gases | | ppm | $SO_2$: 10 (rel. humidity < 75%, no condensation)<br>$H_2S$: 1.0 (rel. humidity < 75 %,no condensation) |
| Vibration resistance, operating conditions | | | according to IEC/EN 60068-2-6 |
| Mechanical shock resistance | | g | according to IEC 60068-2-27 |
| Continuous shock resistance (IEC/EN 60068-2-29) | | | According to IEC 60068-2-29 |
| Drop and topple | | | According to IEC 60068-2-31, free fall according to IEC 60068-2-32 |
| Electromagnetic compatibility (EMC) | | | |
|     ESD | Air/contact discharge | kV | EN 61100-4-2 |
|     Electromagnetic fields | (0.08…1) / (1,4…2) / (2…2,7) GHz | V/m | EN 61100-4-2 |
|     Burst | | | EN 61100-4-4 |
|     Surge | | | EN 61100-4-5 |
|     Radiated RFI | | V | EN 61100-4-6 |
|     Emitted interference (radiated, high frequency) | (30…230 MHz) / (230…1000 MHz) | dB | EN 55016-2-3 |
|     Voltage fluctuations/voltage dips | | | EN 61131-2 |
|     Type test | | | to EN 61131-2 |
| Approvals | | | CE, cULus |
| Other technical data (sheet catalogue) | | | Technical Data |

### Analog input modules

| | | | |
|---|---|---|---|
| Channels | | Number | 1 |

| | | | |
|---|---|---|---|
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from supply terminal | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | $\leqq$ 40 |
| Heat dissipation | | W | 1 |
| Temperature coefficient | | | $\leqq$ 100 ppm of full-scale value per °C |
| Diagnostics | | | 1-bit |
| Base modules | | | |
| without C connection, for sensor feeding | | | 4-wire XN-S4x-SBBS |

## Analog output modules

| | | | |
|---|---|---|---|
| Channels | | Number | 1 |
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from supply terminal | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | $\leqq$ 40 |
| Heat dissipation | | W | 1 |
| Temperature coefficient | | | $\leqq$ 100 ppm of full-scale value per °C |

## Digital outputs

| | | | |
|---|---|---|---|
| Channels | | Number | 1 |
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from the supply terminal (at load current = 0 mA) | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | $\leqq$ 40 |
| Output current | | A | |
| High level (rated value) | $I_H$ | | $\leqq$ 0.5 A (55° C) |
| High level (permissible range) | $I_H$ | A | 5 - 2 A |
| Lamp load | $R_{LL}$ | W | $\leqq$ 10 |
| Switching frequency | | | |
| Switching frequency with lamp load | f | Hz | 10 |
| Number of diagnostic bytes | | | 1-bit |
| "e" solid H07V-U | | | Yes |

## Digital inputs

| | | | |
|---|---|---|---|
| Channels | | Number | 1 |
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from supply terminal | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | $\leqq$ 40 |
| Heat dissipation | | W | 1 |
| Input voltage | | | |
| Nominal input voltage | $U_e$ | V DC | 24 |
| Low level | $U_eL$ | V | -30 V DC to 5 V DC |
| High level | $U_eH$ | V | 11 V DC to 30 V DC |
| Input current | | | |
| Low level/active level | $I_eL$ | mA | -8 mA to 1.5 mA |
| High level/active level | $I_eH$ | mA | 2 mA to 10 mA |

## Relay modules

| | | | |
|---|---|---|---|
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from supply terminal | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | $\leqq$ 40 |

## Power supply module

| | | | |
|---|---|---|---|
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from supply terminal | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | $\leqq$ 40 |
| Diagnostics | | | 1-bit |

## Counter module

| | | | |
|---|---|---|---|
| Channels | | Number | 1 |
| Resolution | | Bit | 32 |
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from supply terminal | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | $\leqq$ 40 |
| Heat dissipation | | W | 1 |
| Transducer power supply | | | Output voltage $U_L$+ (-0.8 V) |
| | | | Output current $\leqq$ 0.5 A, short-circuit proof |

## Digital inputs

| | | | |
|---|---|---|---|
| Input voltage | | | |
| Nominal input voltage | $U_e$ | V DC | 24 |
| Low level | $U_eL$ | V | -30 V DC to 5 V DC |
| High level | $U_eH$ | V | 11 V DC to 30 V DC |
| Input current | | | |
| Low level | $I_eL$ | mA | -8 mA to 1.5 mA |
| High level | $I_eH$ | mA | 2 mA to 10 mA |
| Minimum pulse width | | µs | Filter on: > 25 ms (20 kHz) Filter off: < 2.5 ms (200 kHz) |

## Digital outputs

| | | | |
|---|---|---|---|
| Output voltage | | | |
| Output voltage, nominal value | | V DC | 24 |
| Low level | $U_L$ | | 3 V DC |
| High level | | | $\leqq U_L$ (- 1 V) |
| Output current | | A | |
| High level (permissible range) | $I_H$ | A | 5 - 2 A |
| High level (rated value) | $I_H$ | | $\leqq$ 0.5 A (55° C) |
| Switching frequency | | | |
| with resistive load | | Hz | 100 |
| Inductive load | | Hz | 2 |
| Switching frequency with lamp load | f | Hz | 10 |
| Lamp load | $R_{LL}$ | W | $\leqq$ 10 |
| Output delay | | | 100 µs (resistive load) |
| Short-circuit rating | | | Yes |
| Response threshold | | V | 2.6…4 A |
| Inductive discharge | | | L+ (-50 - -60 V) |

## Measurement ranges

| | | | |
|---|---|---|---|
| Frequency | | | 0.1 Hz - 200 kHz |
| Speed | | | 1 rpm - 25000 rpm |
| Duration of period | | | 5 - 120 s |

## Counting modes

| | | | |
|---|---|---|---|
| Signal evaluation A, B | | | Pulse and direction; single/double/quadruple rotary transducer |
| Control mode | | | infinite counter, once only count, periodic count |
| Hysteresis | | mm | 8 Bit |
| Pulse duration | | | 8 Bit / max. 0.51 s |
| Synchronization | | | once only/periodic |
| Counter limits | | | Upper count limit: 0 - 7FFF FFFF Lower count limit: 8000 0000 - FFFF FFFF |

## Measuring modes

| | | | |
|---|---|---|---|
| Signal evaluation A, B | | | Measuring modes: pulse and direction; single rotary transducer |
| Temperature coefficient | | | $\leqq$ 100 ppm of full-scale value per °C |
| Diagnostics | | | 1-bit |
| parameters | | | 15bits |

## Base modules

| | | | |
|---|---|---|---|
| without C connection, for sensor feeding | | | 4-wire |

## Interfaces

| | | | XN-S4x-SBBS |
|---|---|---|---|
| Rated voltage through supply terminal | $U_L$ | | 24 V DC |
| Rated current consumption from supply terminal | $I_L$ | mA | 50 |
| Rated current consumption from module bus | $I_{MB}$ | mA | ⎓ 40 |
| Number of diagnostic bytes | | | 1-bit |
| Number of parameter bytes | | | 15bits |
| Base modules | | | |
| without C connection, for sensor feeding | | | 4-wire XN-S4x-SBBS |
| Note for table header | | | The rated current from supply terminal data apply at zero load current. |

# 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 |
| 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 6.0

| | | | |
|---|---|---|---|
| PLC's (EG000024) / Fieldbus, decentr. periphery - function-/technology module (EC001601) | | | |
| Electric engineering, automation, process control engineering / Control / Field bus, decentralized peripheral / Field bus, decentralized periphery - function-/technology module (ecl@ss8.1-27-24-26-05 [BAA066011]) | | | |
| Supply voltage AC 50 Hz | | V | 0 - 0 |
| Supply voltage AC 60 Hz | | V | 0 - 0 |
| Supply voltage DC | | V | 11 - 30 |

| | | |
|---|---|---|
| Voltage type of supply voltage | | DC |
| Number of functions | | 0 |
| Number of HW-interfaces industrial Ethernet | | 0 |
| Number of HW-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 other | | 1 |
| With optical interface | | No |
| Supporting protocol for TCP/IP | | No |
| Supporting protocol for PROFIBUS | | Yes |
| Supporting protocol for CAN | | Yes |
| 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 | | Yes |
| 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 |
| Suitable for counting | | Yes |
| Suitable for weighting | | No |
| Suitable for temperature control | | No |
| Suitable for welding control | | No |
| Suitable for pressure control | | No |
| Suitable for NC | | No |
| Function electronic positioning available | | Yes |
| Suitable for CNC | | No |
| Suitable for SSI | | No |
| Suitable for incremental data detection | | Yes |
| Suitable for detection absolute value | | Yes |
| Flux controller possible | | No |
| Suitable for flux measurement | | No |
| Suitable for path controller | | No |

| | | |
|---|---|---|
| Suitable for cam controller | | No |
| Suitable for flying saw | | No |
| Suitable for multi-axis control | | No |
| Single-axis controller possible | | Yes |
| Suitable for multi-axis positioning | | No |
| Single-axis positioning possible | | Yes |
| Function block restart blockage | | No |
| Function block automatic reset | | No |
| Contactor control function block | | No |
| Function block emergency stop | | No |
| Function block contactless working protection installation | | No |
| Function block affirm pushbutton | | No |
| Function block 2-hand switching | | No |
| Function block operating mode selection | | Yes |
| Function block acces control | | No |
| Degree of protection (IP) | | IP20 |
| Fieldbus connection over separate bus coupler possible | | Yes |
| Frequency measurement | | Yes |
| Rail mounting possible | | No |
| 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. to 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 | 50.6 |
| Height | mm | 114.8 |
| Depth | mm | 74.4 |

## Approvals

| | | |
|---|---|---|
| Product Standards | | UL 508; CSA-C22.2 No. 142; IEC/EN 6113-2; CE marking |
| UL File No. | | E205091 |
| UL Category Control No. | | NRAQ, NRAQ7 |
| CSA File No. | | UL report applies to both US and Canada |
| CSA Class No. | | 2252-01, 2252-81 |
| North America Certification | | UL recognized, certified by UL for use in Canada |
| Specially designed for North America | | No |
| Current Limiting Circuit-Breaker | | No |
| Degree of Protection | | IEC: IP20, UL/CSA Type: - |

# Dimensions
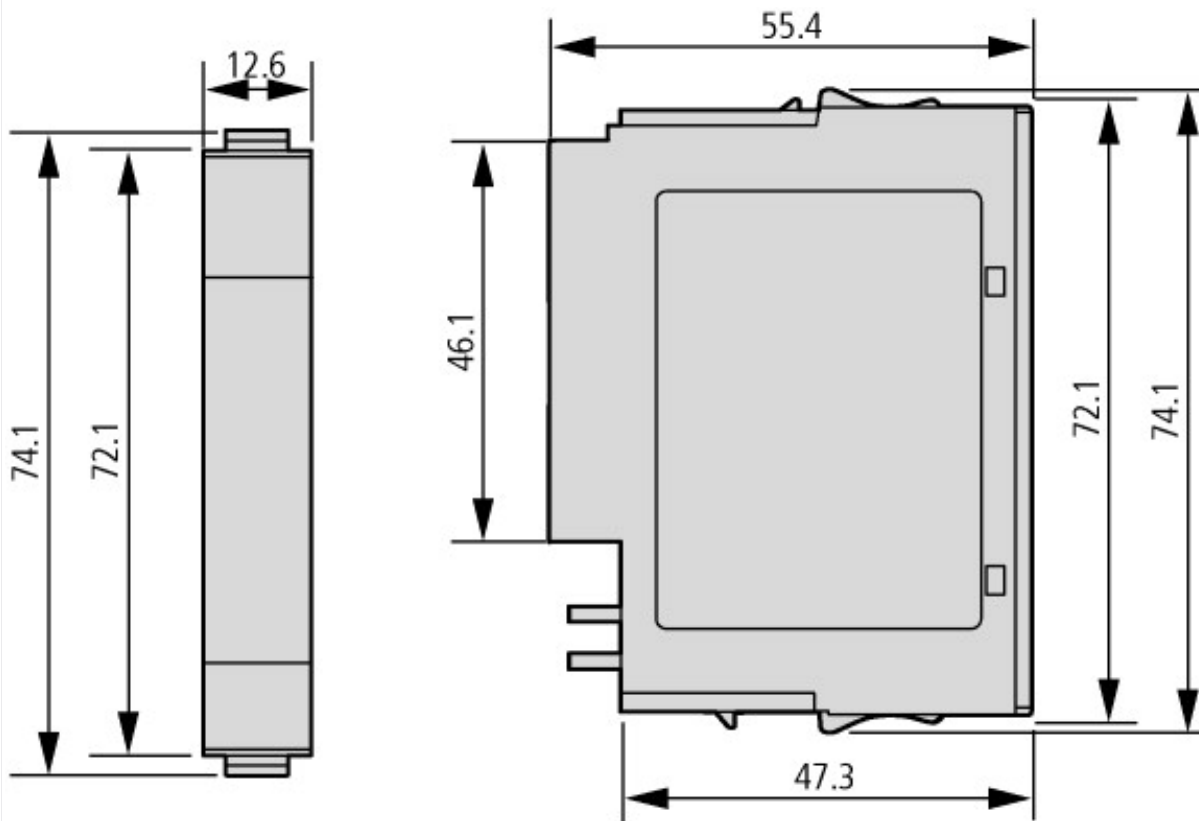


Dimensions

# Additional product information (links)

**MN05002013Z User manual XI/ON XN-1CNT-24VDC technology module**

| | |
|---|---|
| MN05002013Z Benutzerhandbuch XI/ON Technologiemodul XN-1CNT-24VDC - Deutsch | ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN05002013Z_DE.pdf |
| MN05002013Z User manual XI/ON XN-1CNT-24VDC technology module - English | ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN05002013Z_EN.pdf |
| Technical Data | http://ecat.moeller.net/flip-cat/?edition=HPLEN&amp;startpage=14.111 |