



Counter module, 4 digital inputs +24 V , 4 digital outputs, +24 V/ 2A, 1 incremental encoder input (RS422 or TTL) up to 125 kHz, 16 bits



**Part no. XN-322-1CNT-8DIO
178795**

| General specifications | |
|------------------------|--|
| Product name | Eaton XN-322 Counter module |
| Part no. | XN-322-1CNT-8DIO |
| EAN | 7640130098299 |
| Product Length/Depth | 104.2 millimetre |
| Product height | 16.8 millimetre |
| Product width | 80.3 millimetre |
| Product weight | 0.061 kilogram |
| Certifications | IEC/EN 61131-2 CULus CE IEC/EN 61000-6-2 IEC/EN 61000-6-4 UL File No.: E135462 |
| Product Tradename | XN-322 |
| Product Type | Counter module |
| Product Sub Type | None |
| Catalog Notes | 75% (# IAmx = 6A) Counter module 4 digital inputs and 4 digital outputs, 1 CNT, 16 bit, RS422/TTL inputs to 125 kHz, outputs 2 A Counter module with RS422/TTL inputs for frequencies of up to 125 kHz and 4 digital inputs and 4 digital outputs with 2 A. These modules are particularly useful for reading counter values used in positioning applications. RS422 or TTL operating mode, configurable The max. heat dissipation is specified as the maximum power produced inside the device's housing. |
| Features & Functions | |
| Features | Fieldbus connection over separate bus coupler possible Flux controller possible |
| Functions | Single-axis positioning possible X4 signal analysis X1 signal analysis Electronic positioning available TTL Operating mode X2 signal analysis RS422 Operating mode Frequency measurement Single-axis controller possible |
| General information | |
| Counter frequency | 500 kHz max. (X4 encoding), Operating Mode TTL 500 kHz max. (X4 encoding), Operating Mode RS422 |
| Current consumption | None mA (typ.), for +24 V, Power supply - Input 40 mA (typ.), for +5 V power supply (internal), Power supply - Input |
| Degree of protection | IP20 NEMA 1 |
| Input frequency | 125 kHz |
| Mounting method | Rail mounting possible |
| Number of channels | 4 |
| Overvoltage category | III |
| Pollution degree | 3 |
| Product category | XN-322 counter module |
| Resolution | 16 Bit (Functions) |
| Suitable for | Incremental data detection Counting flux measurement |
| Type | XN300 technology module |
| Used with | XN300 XN-312-... |
| Voltage type | DC |

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| Ambient conditions, mechanical | | |
| 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 | | |
| Air pressure | | 795 - 1080 hPa (operation) |
| Ambient operating temperature - min | | 0 °C |
| Ambient operating temperature - max | | 60 °C |
| Ambient storage temperature - min | | -20 °C |
| Ambient storage temperature - max | | 85 °C |
| Climatic proofing | | Damp heat, constant, to IEC 60068-2-3 Dry heat to IEC 60068-2-2 |
| Environmental conditions | | Condensation: prevent with appropriate measures |
| Relative humidity | | 0 - 95 % (non-condensing) |
| Electro magnetic compatibility | | |
| Air discharge | | 8 kV/4 kV, Air/contact discharge, ESD |
| Burst impulse | | 1 kV, Signal cable 2 kV, Supply cable |
| Electromagnetic fields | | 10 V/m at 0.08 - 1.0 GHz (according to IEC EN 61000-4-3) 1 V/m at 2 - 2.7 GHz (according to IEC EN 61000-4-3) 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) 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 1 kV, Signal cable, unbalanced, EMC |
| Voltage dips | | Voltage dips: 10 ms/Voltage fluctuations: Yes |
| Terminal capacities | | |
| Terminal capacity | | 0.25 - 1.5 mm ² , with ferrules without plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) 0.25 - 1.5 mm ² , with ferrules with plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) 24 - 16 AWG 0.2 - 1.5 mm ² , flexible without ferrule, H07V-K 0.2 - 1.5 mm ² , solid, H07V-U |
| Gauge pin | | A1 (according to IEC/EN 60947-1) |
| Stripping length (main cable) | | 10 mm |
| Insulating material group | | I |
| Electrical rating | | |
| Rated control supply voltage | | 5 V (Sensor/transmitter supply) |
| Rated operational current (I _e) | | 6 A (supply input) 0.25 A (supply input) Max. 0.2 A (supply output) |
| Rated operational voltage | | 160 V (terminations) 24 V (for incremental encoder) 24 V (for digital outputs) |
| Short-circuit protection | | Yes, Short-circuit rating, Digital outputs |
| Supply voltage at AC, 50 Hz - min | | 0 V AC |
| Supply voltage at AC, 50 Hz - max | | 0 V AC |
| Supply voltage at DC - min | | 18 V DC |
| Supply voltage at DC - max | | 30 V DC |
| Communication | | |
| Connection | | Push-in spring-cage terminal (plug-in connection) in TOP direction |
| Protocol | | Other bus systems |
| Input/Output | | |
| Delay time | | < 200 µs, Digital outputs, Delay on signal change and resistive load, from High to Low signal < 200 µs, Digital outputs, Delay on signal change and resistive load, from Low to High signal |
| Incremental encoder | | Heat dissipation (per active channel): 1.105 W |

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| | | Must be wired using a screened cable. For RS422 encoders use a screened twisted-pair cable. Shielding must be terminated as close as possible to the module (upstream). Channels: 1 Signals RS422: A, /A, B, /B, R, /R Signals Bus termination resistor: 120 Ω (internal) Signals TTL: A, B, R Signals Bus termination resistor: 1200 Ω (internal pull-up resistor) |
| Input current | | ≥ 2.3 mA (Digital inputs, high level) 3.7 mA (Digital inputs) ≤ 1.1 mA (Digital inputs, low level) |
| Input delay | | 10 μs (falling edge) 10 μs (rising edge) |
| Input voltage | | 0 - 8 V (Digital inputs, low level) 24 V DC (Digital inputs) 14 - 30 V (Digital inputs, high level) |
| Load current | | Not specified by plug manufacturer |
| Load resistance | | > 12 Ω |
| Output | | Protective devices must be installed directly at the inductive load in order to prevent interference. |
| Output current | | < 0.5 mA (low level) 2 A ≤ 2000 mA (high level, Digital outputs) |
| Output voltage | | < 1 V DC (Low level, digital outputs) < 24 V DC (High level, digital outputs) 24 V DC (digital outputs) |
| Safety | | |
| Explosion safety category for dust | | None |
| Explosion safety category for gas | | None |
| Potential isolation | | Between Digital inputs: no Digital inputs, Input delay: no Power supply, Input: no Between Digital outputs: no Sensor/transmitter supply: no |
| Design verification | | |
| Equipment heat dissipation, current-dependent P _{vid} | | 0 W |
| Heat dissipation capacity P _{diss} | | 0 W |
| Heat dissipation per pole, current-dependent P _{vid} | | 0 W |
| Rated operational current for specified heat dissipation (I _n) | | 0 A |
| Static heat dissipation, non-current-dependent P _{vs} | | 3.516 W |
| 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) 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. |
| 10.9.2 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 9.0

Programmable logic controllers PLC (EG000024) / Fieldbus, decentr. periphery - function-/technology module (EC001601)

Electric engineering, automation, process control engineering / Control, Process Control System (PCS) / Field bus, decentralized peripheral / Field bus, decentralized peripheral - function-/technology module (ecl@ss13-27-24-26-05 [BAA066019])

| | | |
|---|---|---------|
| Supply voltage AC 50 Hz | V | 0 - 0 |
| Supply voltage AC 60 Hz | V | 0 - 0 |
| Supply voltage DC | V | 18 - 30 |
| Voltage type (supply voltage) | | DC |
| Number of functions | | 0 |
| 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 |
| With optical interface | | No |
| Supporting protocol for EtherCAT | | No |
| 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 | | Yes |
| 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 weighing | | No |
| Suitable for temperature control | | No |
| Suitable for welding control | | No |
| Suitable for pressure control | | No |
| Suitable for NC | | No |
| Suitable for electronic positioning | | Yes |

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| Suitable for CNC | | No |
| Suitable for SSI | | No |
| Suitable for incremental data detection | | Yes |
| Suitable for detection absolute value | | No |
| Suitable for flux controller | | Yes |
| Suitable for flux measurement | | Yes |
| Suitable for path controller | | No |
| Suitable for cam controller | | No |
| Suitable for flying saw | | No |
| Suitable for multi-axis control | | No |
| Suitable for single-axis controller | | Yes |
| Suitable for multi-axis positioning | | No |
| Suitable for single-axis positioning | | Yes |
| Function block restart blockage | | No |
| Function block automatic reset | | No |
| Contact 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 | | No |
| Function block access control | | No |
| Degree of protection (IP) | | IP20 |
| Degree of protection (NEMA) | | 1 |
| Fieldbus connection over separate bus coupler possible | | Yes |
| Frequency measurement | | Yes |
| Rail mounting possible | | Yes |
| Wall mounting/direct mounting | | No |
| Front built-in possible | | No |
| Rack-assembly possible | | No |
| Suitable for safety functions | | No |
| SIL according to IEC 61508 | | None |
| Performance level according 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 |
| Certified for UL hazardous location class I | | No |
| Certified for UL hazardous location class II | | No |
| Certified for UL hazardous location class III | | No |
| Certified for UL hazardous location division 1 | | No |
| Certified for UL hazardous location division 2 | | No |
| Certified for UL hazardous location group A (acetylene) | | No |
| Certified for UL hazardous location group B (hydrogen) | | No |
| Certified for UL hazardous location group C (ethylene) | | No |
| Certified for UL hazardous location group D (propane) | | No |
| Certified for UL hazardous location group E (metal dusts) | | No |
| Certified for UL hazardous location group F (carbonaceous dusts) | | No |
| Certified for UL hazardous location group G (non-conductive dusts) | | No |
| Width | mm | 80.3 |
| Height | mm | 16.8 |
| Depth | mm | 104.2 |