

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

<b>Ambient conditions, mechanical</b>		
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
<b>Climatic environmental conditions</b>		
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)
<b>Electro magnetic compatibility</b>		
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
<b>Terminal capacities</b>		
Terminal capacity		0.25 - 1.5 mm <sup>2</sup> , with ferrules without plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) 0.25 - 1.5 mm <sup>2</sup> , with ferrules with plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) 24 - 16 AWG 0.2 - 1.5 mm <sup>2</sup> , flexible without ferrule, H07V-K 0.2 - 1.5 mm <sup>2</sup> , solid, H07V-U
Gauge pin		A1 (according to IEC/EN 60947-1)
Stripping length (main cable)		10 mm
Insulating material group		I
<b>Electrical rating</b>		
Rated control supply voltage		5 V (Sensor/transmitter supply)
Rated operational current (I <sub>e</sub> )		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
<b>Communication</b>		
Connection		Push-in spring-cage terminal (plug-in connection) in TOP direction
Protocol		Other bus systems
<b>Input/Output</b>		
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

		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)
<b>Safety</b>		
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
<b>Design verification</b>		
Equipment heat dissipation, current-dependent P <sub>vid</sub>		0 W
Heat dissipation capacity P <sub>diss</sub>		0 W
Heat dissipation per pole, current-dependent P <sub>vid</sub>		0 W
Rated operational current for specified heat dissipation (I <sub>n</sub> )		0 A
Static heat dissipation, non-current-dependent P <sub>vs</sub>		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

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