DATASHEET - XN-322-1CNT-8DIO

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**
Catalog No.	**178795**
Alternate Catalog No.	**XN-322-1CNT-8DIO**

EAT•N
Powering Business Worldwide™

Delivery program

Function		XN300 technology modules
Connection technique		Push-in spring-cage terminal
Function		XN-322 counter module for XN300
Short Description		Counter module 4 digital inputs and 4 digital outputs, 1 CNT, 16 bit, RS422/TTL inputs to 125 kHz, outputs 2 A
For use with		XN-312-…

Technical data

General

Standards			IEC/EN 61131-2 IEC/EN 61000-6-2 IEC/EN 61000-6-4
Approvals			
Approvals			CE, cULus 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 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 Impacts 15 g/11 ms		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 / mm²	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		mm²	0.2 - 1.5
"f" flexible H 07V-K		mm²	0.2 - 1.5
"f" with ferrules without plastic collar according to DIN 46228-1 (ferrules crimped gas-tight)		mm²	0.25 - 1.5
"f" with ferrules with plastic collar according to DIN 46228-1 (ferrules crimped gas-tight)		mm²	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.) 40
Current consumption for +24 V power supply	I	mA	(typ.) none
Potential isolation	PE (polyethylene)		no
Rated operating voltage	Ue	V	24 V (for incremental encoder)
Rated operational current	Ie	A	0.25
Potential isolation			no
Rated operating voltage	Ue	V	24 V (for dig. outputs)
Rated operational current	Ie	A	6
Potential isolation			no
Power supply - Output			
Sensor/transmitter supply			
Rated operating voltage	Ua	V	5
Rated operational current	I_{max}	A	0.2
Potential isolation			no
Heat dissipation			
Heat dissipation (without active channels)		W	1.218
Max. heat dissipation		W	3.516
Notes on heat dissipation			The max. heat dissipation is specified as the maximum power produced inside the device's housing.

Digital inputs

Channels		Number	4
Input voltage			

Nominal input voltage	U_e	V DC	24
Low level	U_eL	V	$0 < U_eL < +8$
High level	U_eH	V	$+14 < UeH < +30$
Input current			
Input current, nominal value	I_e	mA	3.7
Low level/active level	I_eL	mA	≤1.1
High level/active level	I_eH	mA	≥2.3
Input delay			
$t_{Rising\ edge}$		μs	< 10
$t_{Falling\ edge}$		μs	< 10
Potential isolation		Input to input	no
Heat dissipation (per active channel)		W	0.088

Digital inputs

Input delay			
Potential isolation		Input to input	no
Heat dissipation (per active channel)		W	0.088
Incremental encoder			
Channels		Quantity	1
Signals			
RS422			A, /A, B, /B, R, /R
Bus termination resistor			120 Ω (internal)
TTL			A, B, R
Bus termination resistor			1200 Ω (internal pull-up resistor)
Potential isolation			no
Heat dissipation (per active channel)		W	1.105
Notes on incremental encoder			The incremental encoder must be wired using a screened cable. In the case of RS422 encoders, it is recommended to use a screened twisted-pair cable. The shielding must be terminated as close as possible to the module (upstream of it).

Digital outputs

Channels		Quantity	4
Output voltage			
Output voltage, nominal value	U_a	V DC	24
Low level	U_aL	V	$0V < Ua_L < 1V$
High level	U_aH	V	$Ue - 1V < Ua_H < Ue$
Output current		A	
Output current, nominal value	I_aL	A	2
Low signal	I_A	mA	$0 < Ia_L < 0.5$
High level	I_aH	mA	$0 ≤ Ia_H ≤ 2000$
Short-circuit rating			Yes
Potential isolation		Output against output	no
Heat dissipation (internal, per active channel)		W	0.388
Utilization factor	%	g	75% (# IAmax = 6A)
Delay on signal change and resistive load			
from Low to High level		μs	< 200
From High to Low signal		μs	< 200
Resistive load			
Resistive load		Ω	> 12
Notes on digital outputs			Protective devices must be installed directly at the inductive load in order to prevent interference.

Functions

Counting mode			
Operate Mode			RS422
Channels		Quantity	1

Resolution		Bit	16	
Input frequency	f_{max}	kHz	125	
Signal analysis			X1/X2/X4 encoding	
Counter frequency	f_{max}	kHz	Max. 500 kHz (X4 encoding)	
Operate Mode			TTL	
Channels		Quantity	1	
Resolution		Bit	16	
Input frequency	f_{max}	kHz	125	
Signal analysis			X1/X2/X4 encoding	
Counter frequency	f_{max}	kHz	Max. 500 kHz (X4 encoding)	
Notes on operating mode			RS422 or TTL operating mode, configurable	

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	0
Heat dissipation capacity	P_{diss}	W	0
Operating ambient temperature min.		°C	0
Operating ambient temperature max.		°C	60
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

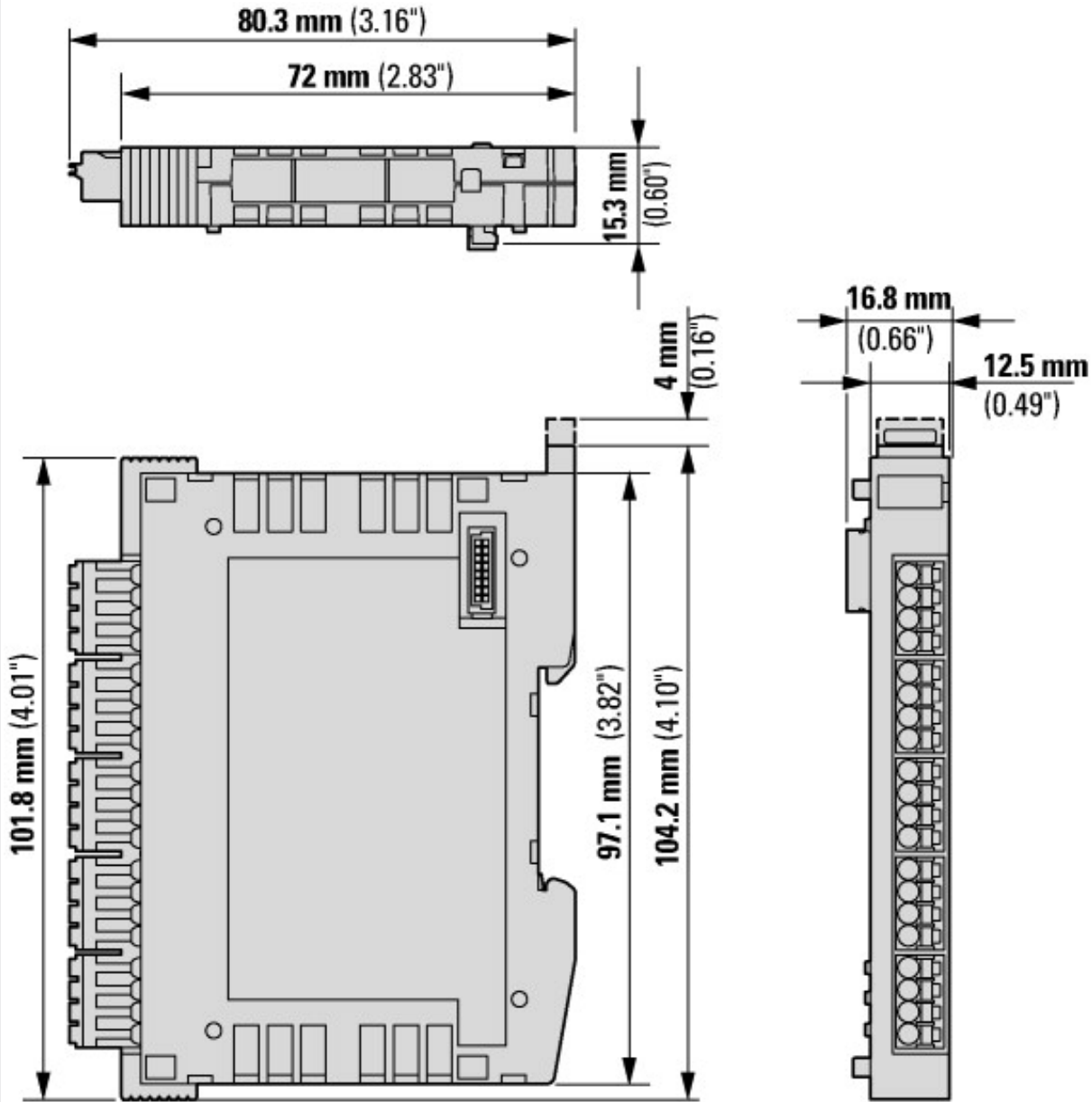|			
PLC's (EG000024) / Fieldbus, decentr. periphery - function-/technology module (EC001601)			
Electric engineering, automation, process control engineering / Control / Field bus, decentralized peripheral / Field bus, decentralized peripheral - function-/technology module (ecl@ss10.0.1-27-24-26-05 [BAA066014])			
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
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			0
With optical interface			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			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		No
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		No
Function block access control		No
Degree of protection (IP)		IP20
Degree of protection (NEMA)		
Fieldbus connection over separate bus coupler possible		Yes
Frequency measurement		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

80.3 mm (3.16")

72 mm (2.83")

15.3 mm (0.60")

4 mm (0.16")

101.8 mm (4.01")

97.1 mm (3.82")

104.2 mm (4.10")

16.8 mm (0.66")

12.5 mm (0.49")

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