Specifications







Eaton 178795

Eaton XN-322 Counter module, 4 digital inputs +24 V , 4 digital outputs, +24 V/ 2A, 1 incremental encoder input (RS422 or TTL) up to 500 kHz, 16 bits

General specifications	
PRODUCT NAME	Eaton XN-322 Counter module
CATALOG NUMBER	178795
MODEL CODE	XN-322-1CNT-8DIO
EAN	7640130098299
PRODUCT LENGTH/DEPTH	104.2 mm
PRODUCT HEIGHT	16.8 mm
PRODUCT WIDTH	80.3 mm
PRODUCT WEIGHT	0.061 kg
CERTIFICATIONS	UL File No.: E135462 CE cULus EN 61131-2 EN 61000-6-2 EN 61000-6-4 UL508 CSA-C22.2 No. 142-M

Powering Business Worldwide

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 - MAX	60 °C
AMBIENT STORAGE TEMPERATURE - MAX	85 °C
AMBIENT OPERATING TEMPERATURE - MIN	0 °C
AMBIENT STORAGE TEMPERATURE - MIN	-20 °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)

Communication

CONNECTION	Push-in spring-cage terminal (plug-in connection) in TOP direction
PROTOCOL	Other bus systems

Design verification

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.

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 W
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	3.516 W

Electrical rating

RATED CONTROL SUPPLY VOLTAGE	5 V (Sensor/transmitter supply)
RATED OPERATIONAL CURRENT (IE)	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 DC - MAX	30 VDC
SUPPLY VOLTAGE AT DC - MIN	18 VDC

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

Features & functions

FEATURES	Fieldbus connection over separate bus coupler possible Flux controller possible Fieldbus connection over separate bus coupler 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

Input/Output

DELAY TIME	< 200 µ s, Digital outputs, Delay on signal change and resistive load, from High to Low signal < 200 µ s, 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 µ s (falling edge) 10 µ s (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)

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

	24 V DC (digital outputs)

Terminal capacities

GAUGE PIN	A1 (according to IEC/EN 60947-1)
INSULATING MATERIAL GROUP	I
STRIPPING LENGTH (MAIN CABLE)	10 mm
TERMINAL CAPACITY	0.25 - 1.5 mm², with ferrules without plastic collar according to DIN 46228-1 (ferrules crimped gas-tight) 24 - 16 AWG 0.2 - 1.5 mm², flexible without ferrule, H07V-K 0.2 - 1.5 mm², solid, H07V-U 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 Slice card modular I/O system for the machine building industry XN300 - brochure
DECLARATIONS OF CONFORMITY	eaton-interface-module-declaration-of-conformity-eu250718en.pdf eaton-interface-module-declaration-of-conformity-uk251201en.pdf
DRAWINGS	eaton-modular-plc-xn-input-module-dimensions.eps eaton-modular-plc-xn-input-module-3d-drawing-006.eps eaton-modular-plc-xn-counter-module-3d-drawing.eps eaton-general-xv-touch-panel-symbol.eps
ECAD MODEL	DA-CE-ETN.XN-322-1CNT-8DIO
INSTALLATION INSTRUCTIONS	IL050017ZU IL050025ZU
MANUALS AND USER GUIDES	eaton-xn-312-gw-can-canopen-gateway-mn050003-en-us.pdf eaton-xn300-slice-modules-mn050002-en-us.pdf
MCAD MODEL	eaton-plc-function-and-technology-modules-mcad-3d-models-xn-322-1cnt-8dio.stp eaton-plc-function-and-technology-modules-mcad-drawings-xn-322-1cnt-8dio.dwg
MULTIMEDIA	XC100, XC200, XC300 – Eaton's modular PLC ranges

	System solutions based on EtherCAT
PRODUCT NOTIFICATIONS	eaton-xn-322-i-o-series-product-cybersecurity-guideline-mz050024-en-us.pdf eaton-xn-322-i-o-series-end-user-license-agreement-mz050026-en-us.pdf

PROJECT NAME:	
PROJECT NUMBER:	
PREPARED BY:	
DATE:	

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