DATASHEET - XN-1AI-U(-10/0...+10VDC)



Analog input card XI/ON, 24 V DC, 1AI (0-10V, +-10V)

Part no. XN-1AI-U(-10/0...+10VDC)

Catalog No. 140064

EL-Nummer (Norway) 4520617



Delivery program

Function	XI/ON I/O modules
Function	XN Slice module
Short Description	1 Analog input -10/0 to +10 V DC
For use with	XN-S3T-SBB XN-S3S-SBB XN-S4T-SBBS XN-S4S-SBBS

Technical data

Genera

Potential isolation Ambient temperature Ambient temperature, operation Storage, transport Relative humidity Relative humidity Ambient conditions, mechanical Degree of Protection Harmful gases Whetain sistance, operating conditions Mechanical shock resistance (EC/EN 80088-2-29) Toro and topigle Electromagnetic compatibility (EMC) Electromagnetic fields Burst Surage Burst Radiated RFI Approvals Woltage fluctuations/voltage dips Type test Approvals	General			
Ambient temperature Ambient temperature, operation Ambient temperature, operation Storage, transport Relative humidity Relative humidity Ambient conditions, mechanical Degree of Protection Harmful gases Webhanical shock resistance, operating conditions Mechanical shock resistance (IEC/EN 60068-2-28) Drop and topple Electromagnetic compatibility (EMC) ESD Alizional shock resistance (IEC/EN 60068-2-28) Possible fields Burst	Standards			EN 61000-6-4
Ambient temperature, operation Comparison Compariso	Potential isolation			Yes, through optocoupler
Storage, transport Relative humidity Relative humidity Relative humidity Relative humidity Ambient conditions, mechanical Degree of Protection Harmful gases Vibration resistance, operating conditions Mechanical shock resistance (IEC/EN 60068-2-29) Drop and topple Electromagnetic compatibility (EMC) ESD Air/contact discharge Lectromagnetic fields Quas1/ (1.42)/(2 2.7) GHz Surge Radiated RFI Emitted interference (radiated, high frequency) Vibrage fluctuations/voltage dips Type test Approvals	Ambient temperature			
Relative humidity Relative humidity Ambient conditions, mechanical Degree of Protection Harmful gases Vibration resistance, operating conditions Mechanical shock resistance (IEC/EN 60068-2-29) Drop and topple Electromagnetic compatibility (EMC) ESD Burst Surge Relative humidity Ambient conditions, mechanical Oos1)/ (1,42) / (2 Vim (1,42)) / (2	Ambient temperature, operation		°C	0 - +55
Relative humidity Ambient conditions, mechanical Dagree of Protection Harmful gases Vibration resistance, operating conditions Mechanical shock resistance Continuous shock resistance (IEC/EN 60088-2-29) Drop and topple Electromagnetic compatibility (EMC) ESD Burst Surge Burst Raided RH Emitted interference (radiated, high frequency) Vibration resistance, operating conditions Relative humidity < 75%, no condensation (for storage at 45°C) Ppm SO ₂ : 10 (rel. humidity < 75%, no condensation) HyS: 1.0 (rel	Storage, transport	8	°C	-25 - +85
Ambient conditions, mechanical Degree of Protection Harmful gases Vibration resistance, operating conditions Mechanical shock resistance Continuous shock resistance (IEC/EN 60068-2-29) Drop and topple Electromagnetic compatibility (EMC) ESD Burst Burst Surge Raidated RFI Emitted interference (radiated, high frequency) Vibration resistance (radiated, high frequency) Vibration (30230 MHz) / (2301000 MHz	Relative humidity			
Degree of Protection Harmful gases Ppm SO2: 10 (rel. humidity < 75%, no condensation) HzS: 1.0 (rel. humidity (rel. condensation) HzS: 1.0 (rel. humidity (rel. condensation) HzS: 1.0 (rel. humidity (rel. condensation) HzS: 1.0 (rel. condensation) HzS: 1.0 (rel. cooles-2-31, free fall according to IEC 6008-2-31, free fall according to IEC 6008-2-32 HzS: 1.0 (rel. c	Relative humidity			5 - $95~\%$ (indoor), Level RH-2, no condensation (for storage at $45^{\circ}\text{C})$
Harmful gases Ppm SO ₂ : 10 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation) H ₂ S: 1.0 (rel. humidity < 75%, no condensation H ₂ S: 1.0 (rel. humidity < 75%, no condensation H ₂ S: 1.0 (rel. humidity < 75%, no condensation H ₂ S: 1.0 (rel. humidity < 7	Ambient conditions, mechanical			
Ha St 1.0 (rel. humidity < 75 %, no condensation) Web taining resistance, operating conditions Second to the properties of the conditions Second to the properties of the conditions Second to the properties of the condition of the properties of the proper	Degree of Protection			IP20
Mechanical shock resistance Continuous shock resistance (IEC/EN 60068-2-29) Drop and topple Electromagnetic compatibility (EMC) ESD Air/contact discharge (I.42) / (227) GHz Surge Radiated RFI Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test Air/contact (30230 MHz) / (2301000 MHz) Type test Approvals according to IEC 60068-2-29 According to IEC 60068-2-29, According to IEC 60068-2-31, free fall according to IEC 60068-2-32 According to IEC 60068-2-29, According to IEC 60068-2-32 According to IEC 60068-2-29, If ree fall according to IEC 60068-2-32 According to IEC 60068-2-29 According to IEC 60068-2-29 According to IEC 60068-2-29 According to IEC 60068-2-29 According to IEC 60068-2-31, free fall according to IEC 60068-2-32 According to IEC 60068-2-29 According to IEC 60068-2-31, free fall according to IEC 60068-2-32 According to IEC 60068-2-31, free fall according to IEC 60068-2-32 According to IEC 60068-2-31, free fall according to IEC 60068-2-32 According to IEC 60068-2-29 According to IEC 60068-2-31, free fall according to IEC 60068-2-31, fr	Harmful gases		ppm	
Continuous shock resistance (IEC/EN 60068-2-29) Drop and topple Electromagnetic compatibility (EMC) ESD Air/contact discharge Electromagnetic fields (0.081) / (1.42) / (2 2.7) GHz Surge Radiated RFI Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test According to IEC 60068-2-39 According to IEC 60068-2-31, free fall according to IEC 60068-2-32 EN 61000-4-2 EN 61000-4-2 EN 61100-4-2 EN 61100-4-5 EN 61100-4-6 EN 61100-4-6 EN 61100-4-6 EN 61100-4-6 EN 61101-4-6 EN 61101-2 EN 61131-2 EN 61131-2 EN 61131-2	Vibration resistance, operating conditions			according to IEC/EN 60068-2-6
Drop and topple Electromagnetic compatibility (EMC) ESD Air/contact discharge kV (1,42) / (22,7) GHz Burst Surge Radiated RFI Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test Air/contact kV (2,7) GHz V EN 61100-4-2 EN 61100-4-5 EN 61100-4-6 EN 55016-2-3 EN 55016-2-3 EN 61131-2	Mechanical shock resistance		g	according to IEC 60068-2-27
Electromagnetic compatibility (EMC) ESD Air/contact discharge kV EN 61000-4-2 [1.42) / (2 27) GHz Burst Surge Radiated RFI Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test Approvals Air/contact kV EN 61000-4-2 EN 61100-4-2 EN 61100-4-4 EN 61100-4-5 EN 61100-4-6 EN 61100-4-6 EN 61101-2-3 EN 61131-2 CE, CULus	Continuous shock resistance (IEC/EN 60068-2-29)			According to IEC 60068-2-29
ESD Air/contact discharge Clectromagnetic fields Closs1/ V/m (1,42)/(2 2,7) GHz Burst Surge Radiated RFI Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test Approvals Air/contact kV EN 61000-4-2 Closs1/ V/m EN 61100-4-2 EN 61100-4-5 EN 61100-4-6 EN 61100-4-6 EN 61100-4-6 EN 61131-2 CE, cULus	Drop and topple			According to IEC 60068-2-31, free fall according to IEC 60068-2-32
Electromagnetic fields	Electromagnetic compatibility (EMC)			
Burst EN 61100-4-4 Surge EN 61100-4-5 Radiated RFI V EN 61100-4-6 Emitted interference (radiated, high frequency) MHz	ESD		kV	EN 61000-4-2
Surge Radiated RFI Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test Approvals EN 61100-4-5 EN 61100-4-6 EN 55016-2-3 MHz) / (2301000 MHz) EN 61131-2 CE, cULus	Electromagnetic fields	(1,42) / (2		EN 61100-4-2
Radiated RFI Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test Approvals V EN 61100-4-6 EN 55016-2-3 MHz) / (2301000 MHz) EN 61131-2 EN 61131-2 CE, cULus	Burst			EN 61100-4-4
Emitted interference (radiated, high frequency) Voltage fluctuations/voltage dips Type test Approvals EN 55016-2-3 AB EN 55016-2-3 EN 61131-2 to EN 61131-2 CE, cULus	Surge			EN 61100-4-5
MHz) / (2301000 MHz) EN 61131-2 Type test to EN 61131-2 Approvals CE, cULus	Radiated RFI		٧	EN 61100-4-6
Type test to EN 61131-2 Approvals CE, cULus	Emitted interference (radiated, high frequency)	MHz) / (2301000	dB	EN 55016-2-3
Approvals CE, cULus	Voltage fluctuations/voltage dips			EN 61131-2
	Type test			to EN 61131-2
Other technical data (sheet catalogue) Technical Data	Approvals			CE, cULus
	Other technical data (sheet catalogue)			Technical Data

Analog input modules

Analog input modules			
Measured variables			Voltage
Channels		Number	1
Rated voltage through supply terminal	U_{L}		24 V DC
Rated current consumption from supply terminal	IL	mA	50
Rated current consumption from module bus	I_{MB}	mA	≦ 41
Heat dissipation		W	<1
Encoder supply			Linked to L+ and L- of the supply; not short-circuit protected
Input voltage			-10/0 to +10 V DC
Maximum input voltage		V DC	35 V continuous
Input impedance			≧ 98.5 kΩ
Limit frequency (-3 db)		Hz	200
Offset error		%	0.1
Linearity		%	0.03
Basic error limit at 23 °C		%	0.2
Repetition accuracy (deviation)		%	0.05
Temperature coefficient			300 ppm/°C of full scale
Resolution of the A/D converter			14-bit (signed integer)
Measuring principle			Successive approximation
Measured value representation			16-bit signed integer 12-bit signed integer left-justified 12-bit full range left-justified
Diagnostics			Yes
Base modules			
without C connection			2-/3-wire XN-S3x-SBB
without C connection, for sensor feeding			4-wire XN-S4x-SBBS

Analog output modules

Measured variables			Voltage
Channels		Number	1
Rated voltage through supply terminal	U_L		24 V DC
Rated current consumption from supply terminal	IL	mA	50
Rated current consumption from module bus	I_{MB}	mA	≦ 41
Heat dissipation		W	<1
Offset error		%	0.1
Linearity		%	0.03
Basic error limit at 23 °C		%	0.2
Repetition accuracy (deviation)		%	0.05
Temperature coefficient			300 ppm/°C of full scale
Measured value representation			16-bit signed integer 12-bit signed integer left-justified 12-bit full range left-justified
Base modules			
without C connection			2-/3-wire XN-S3x-SBB

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)	IL	mA	50
Rated current consumption from module bus	I _{MB}	mA	≦ 41
Diagnostics			Yes
ment to the contract of the co			

Digital inputs

Digital inputs			
Channels		Number	1
Rated voltage through supply terminal	U_{L}		24 V DC
Rated current consumption from supply terminal	լլ	mA	50
Rated current consumption from module bus	I _{MB}	mA	≦ 41
Heat dissipation		W	<1

Base modules			
without C connection			2-/3-wire XN-S3x-SBB
Relay modules			
Rated voltage through supply terminal	UL		24 V DC
Rated current consumption from supply terminal	IL	mA	50
Rated current consumption from module bus	I_{MB}	mA	≦ 41
Base modules			
without C connection			2-/3-wire XN-S3x-SBB
Power supply module			
Rated voltage through supply terminal	U_L		24 V DC
Rated current consumption from supply terminal	IL	mA	50
Rated current consumption from module bus	I_{MB}	mA	≦ 41
Counter module			
Channels		Number	1
Rated voltage through supply terminal	U_L		24 V DC
Rated current consumption from supply terminal	IL	mA	50
Rated current consumption from module bus	I_{MB}	mA	≦ 41
Heat dissipation		W	<1
Measuring modes			
Temperature coefficient			300 ppm/°C of full scale
Number of parameter bits			3-bit
Base modules			
without C connection, for sensor feeding			4-wire XN-S4x-SBBS
Interfaces			
Rated voltage through supply terminal	U_L		24 V DC
Rated current consumption from supply terminal	IL	mA	50
Rated current consumption from module bus	I _{MB}	mA	≦ 41
Number of parameter bytes			3-bit
Base modules			
without C connection, for sensor feeding			4-wire

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	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	1
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.

XN-S4x-SBBS

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 - analogue I/O module (EC00

Electric engineering, automation, process control engineering / Control / Field bus, decentralized peripheral / Field bus, decentralized peripheral - analogue I/O module (ecl@ss10.0.1-27-24-26-01 [BAA061014]) ٧ Supply voltage AC 50 Hz 0 - 0 ٧ Supply voltage AC 60 Hz 0 - 0 ٧ Supply voltage DC 20.4 - 28.8 Voltage type of supply voltage DC Input, current No Input, voltage Yes No Input, resistor Input, resistance thermometer No Input, thermocouple No Input signal, configurable Yes Bit Resolution of the analogue inputs 16 Output, current No Output, voltage No Output signal configurable No Resolution of the analogue outputs Bit 0 Number of analogue inputs Number of analogue outputs 0 Yes Analogue inputs configurable Analogue outputs configurable Yes 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 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 No Supporting protocol for KNX 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
Degree of protection (IP)		IP20
Degree of protection (NEMA)		
Type of electric connection		Screw-/spring clamp connection
Fieldbus connection over separate bus coupler possible		Yes
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	12.6
Height	mm	74
		FF A
Depth	mm	55.4

Approvals

- Pp	
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: -

Additional product information (links)

Dimensions

Manual XI/ON analog I/O modules MN05002011Z	
Handbuch XI/ON analoge E/A-Module MN05002011Z - Deutsch	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN05002011Z_DE.pdf
Manual XI/ON analog I/O modules MN05002011Z - English	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN05002011Z_EN.pdf
Technical Data	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=14.111