DATASHEET - EC4E-221-6D4R1

I/O expansion, integrated, 24 V DC, 6DI, 4DO(R)

Part no.	**EC4E-221-6D4R1**
Catalog No.	**114296**
EL-Nummer (Norway)	**4560853**

Powering Business Worldwide

Delivery program

Product range			Remote I/O systems Compact PLCs
Subrange			I/O expansions digital/analog
Basic function			Expansions
Description			usable via CANopen®
Function			CANopen® expansion EC4E
Inputs			
Inputs expansion (number)			Digital: 6
Additional features			
Real time clock			#
Supply voltage			24 V DC
For use with			XC100 XC200 EC4P
For use with			XC100/200, EC4P, MFD4 (via CANopen®)

Technical data

General

Dimensions (W x H x D)		mm	71.5 x 90 x 58 (4 PE)
Weight		kg	0.2
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)

Terminal capacities

Solid		mm^2	0.2/4 (AWG 22 - 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 22 - 12)
Standard screwdriver		mm	0.8 x 3.5
Max. tightening torque		Nm	0.6

Climatic environmental conditions

Operating ambient temperature		°C	-25 to 55, cold as per IEC 60068-2-1, heat as per IEC 60068-2-2
Condensation			Take appropriate measures to prevent condensation
Storage	ϑ	°C	-40 - +70

Ambient conditions, mechanical

Mounting position			Vertical or horizontal

Electromagnetic compatibility (EMC)

Overvoltage category/pollution degree			II/2
Electrostatic discharge (ESD)			
applied standard			IEC/EN 61000-4-2, Level 3
Air discharge		kV	8
Electromagnetic fields (RFI) to IEC EN 61000-4-3		V/m	10
Burst		kV	according to IEC/EN 61000-4-4
power pulses (Surge)			2 kV (supply cables, symmetrical, EASY...AC) 0.5 kV (supply cables, symmetrical, easy-DC) according to IEC/EN 61000-4-5
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10

Insulation resistance

Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142
Insulation resistance			EN 50178

Power supply

Rated operational voltage	U_e	V	24 DC (-15/+20%)

Permissible range	U_e		20.4 - 28.8 V DC
Residual ripple		%	≦ 5
Input current			150 mA at U_e at no load
Voltage dips		ms	≤ 20 (IEC/EN 61131-2)
Heat dissipation	P		Normally 3.5 W

Interfaces

CANopen®			
Data transfer rate			500 kBit/s, 25 m250 kBit/s, 40m125 kBit/s, 125 m50 kBit/s, 300 m20 kBit/s, 700 m10 kBit/s, 1000 m
Bus termination (first and last station)			Via integrated Dip switch
Connection types			2 x terminals (see terminal capacity)
Mode slave			
Stations		Number	max. 62
PDO type			Asynchronous, cyclic, acyclic
Control contact rated current			to DS301V4

Digital inputs 24 V DC

Number			6
Potential isolation			from the outputs: yes
Rated operational voltage	U_e	V DC	24
Input voltage		V DC	< 5 (R1 - R6) at signal "0" > 15 (R1 - R6) at signal "1"
Input current on 1 signal			
Input current at signal 1		mA	3.3 (R1 to R6 (R12))
Deceleration time		ms	20 (from “0” to “1”, debounce ON) Normally 0.25 (R1 - R12) (from “0” to “1”, debounce OFF) 20 (from „1“ to „0“)
Cable length		m	100 (unshielded)

Relay outputs

Outputs in groups of			1
Parallel switching of outputs for increased output			Not permissible
Protection of an output relay			Miniature circuit-breaker B16 or fuse 8 A (slow)
Potential isolation			from power supply: yes From the inputs: yes to PC interface, memory card, network NET, easyLink Safe isolation according to EN 50178: 300 V AC Basic isolation: 600 V AC
Lifespan, mechanical	Operations	x 10^6	10
Contacts			
Conventional thermal current (10 A UL)		A	6
Recommended for load: 12 V AC/DC		mA	> 500
Short-circuit-proof cos φ = 1, characteristic B16 at 600 A		A	16
Short-circuit-proof cos φ = 0.5 to 0.7, characteristic B16 at 900 A		A	16
Rated impulse withstand voltage U_{imp} of contact coil		kV	6
Rated operational voltage	U_e	V AC	250
Rated insulation voltage	U_i	V AC	250
Safe isolation according to EN 50178		V AC	300 between coil and contact 300 between two contacts
Breaking capacity			
AC-15, 250 V AC, 3 A (600 Ops./h)	Operations		300000
DC-13, L/R ≦ 150 ms, 24 V DC, 1 A (500 S/h)	Operations		200000
Filament bulb load			
1000 W at 230/240 V AC	Operations		25000
500 W at 115/120 V AC	Operations		25000
Fluorescent lamp load			
Fluorescent lamp load 10 x 58 W at 230/240 V AC			
With upstream electrical device	Operations		25000
Uncompensated	Operations		25000
Fluorescent lamp load 1 x 58 W at 230/240 V AC, conventional, compensated	Operations		25000

Switching frequency			
Mechanical operations		x 10^6	10
Switching frequency		Hz	10
Resistive load/lamp load		Hz	2
Inductive load		Hz	0.5
UL/CSA			
Uninterrupted current at 240 V AC		A	10
Uninterrupted current at 24 V DC		A	8
AC			
Control Circuit Rating Codes (utilization category)			B 300 Light Pilot Duty
Max. rated operational voltage		V AC	300
max. thermal continuous current cos φ = 1 at B 300		A	5
max. make/break cos φ ≠ capacity 1 at B 300		VA	3600/360
DC			
Control Circuit Rating Codes (utilization category)			R 300 Light Pilot Duty
Max. rated operational voltage		V DC	300
Max. thermal uninterrupted current at R 300		A	1
Max. make/break capacity at R 300		VA	28/28

Network easyNet

Bus termination (first and last station)			Via integrated Dip switch

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	3.4
Heat dissipation capacity	P_{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	55
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) / PLC digital I/O-module (EC001419)

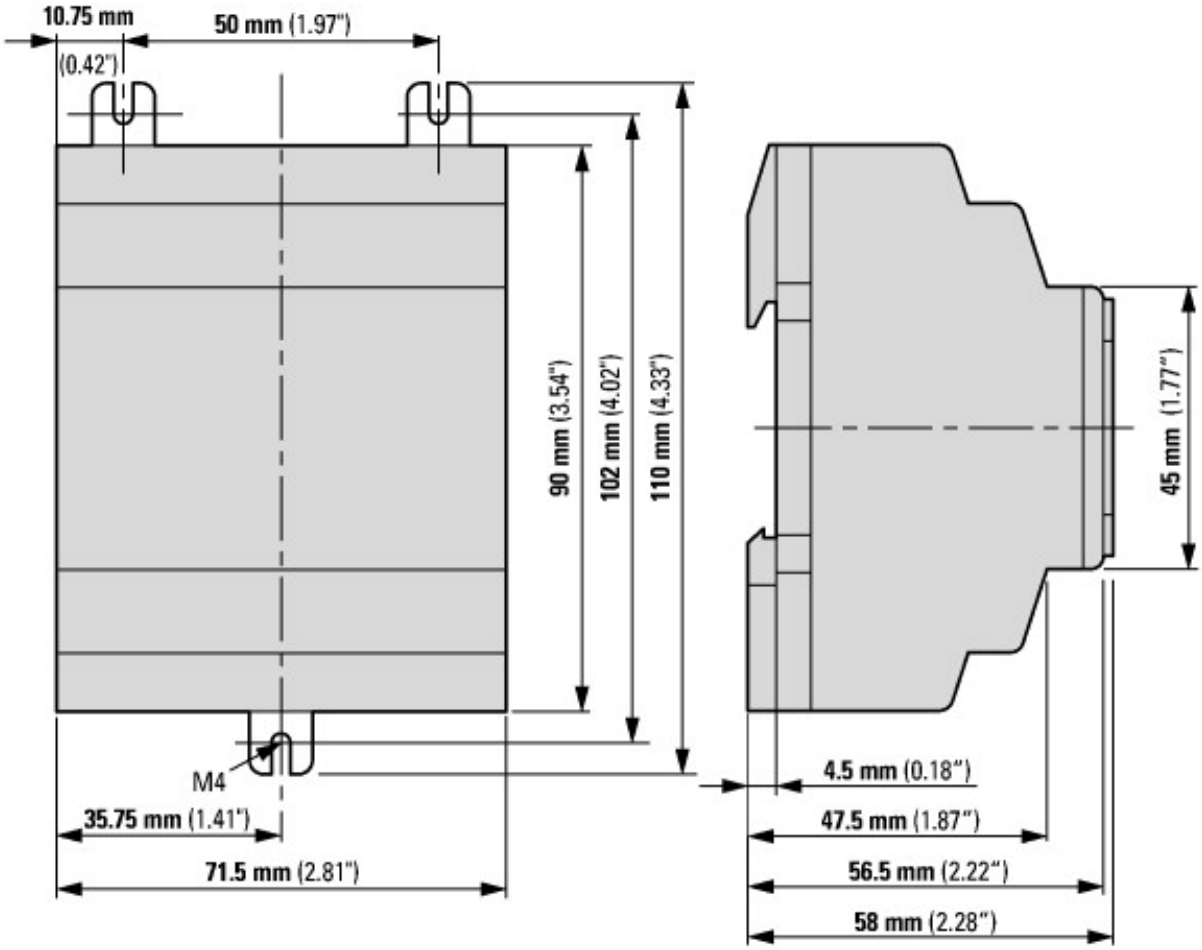
Electric engineering, automation, process control engineering / Control / Programmable logic control (SPS) / SPS digital input/output module (ecl@ss10.0.1-27-24-22-04 [AKE527014])

Supply voltage AC 50 Hz		V	0 - 0
Supply voltage AC 60 Hz		V	0 - 0
Supply voltage DC		V	20.4 - 28.8
Voltage type of supply voltage			DC
Number of digital inputs			6
Number of digital outputs			4
Digital inputs configurable			No
Digital outputs configurable			No
Input current at signal 1		mA	3.3
Permitted voltage at input		V	0 - 0
Type of voltage (input voltage)			DC
Type of digital output			Relay
Output current		A	8
Permitted voltage at output		V	0 - 0
Type of output voltage			AC/DC
Short-circuit protection, outputs available			No
Redundancy			No
Type of electric connection			Screw connection
Time delay at signal exchange		ms	20 - 20
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	71.5
Height		mm	90
Depth		mm	58

Approvals

North America Certification			Request filed for UL and CSA
Specially designed for North America			No
Current Limiting Circuit-Breaker			No
Degree of Protection			IEC: IP20, UL/CSA Type: -

Dimensions



Additional product information (links)

Manual CAN digital module EC4E MN05002003Z (AWB2724-1614)	
Handbuch digitales CAN-Modul EC4E MN05002003Z (AWB2724-1614) - Deutsch	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN05002003Z_DE.pdf
Manual CAN digital module EC4E MN05002003Z (AWB2724-1614) - English	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN05002003Z_EN.pdf
Technical Data	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=14.75
Product overview (WEB)	http://www.eaton.eu/ec4p