DATASHEET - EASY-E4-UC-12RC1

Control relays easyE4 with display (expandable, Ethernet), 12/24 V DC, 24 V AC, Inputs Digital: 8, of which can be used as analog: 4, screw terminal

Part no.	**EASY-E4-UC-12RC1**
	197211
EL Number (Norway)	**4500546**

General specifications

Product name		Eaton Moeller® series EASY Control relay
Part no.		EASY-E4-UC-12RC1
EAN		4015081939480
Product Length/Depth		58 millimetre
Product height		90 millimetre
Product width		72 millimetre
Product weight		0.25 kilogram
Compliances		Contact Manufacturer
Certifications		IEC 60068-2-6 EN 50178 CULus per UL 61010 IEC/EN 61000-4-2 IEC 60068-2-30 IEC 60068-2-27 EN 61010 IEC/EN 61000-6-3 CSA-C22.2 No. 61010 IEC/EN 61131-2 IEC/EN 61000-6-2 CE UL Category Control No.: NRAQ, NRAQ7 UL Listed UL File No.: E205091 DNV GL UL hazardous location group A (acetylene) UL hazardous location group D (propane) UL hazardous location group C (ethylene) UL hazardous location class I UL hazardous location division 2 UL hazardous location group B (hydrogen)
Product Tradename		EASY
Product Type		Control relay
Product Sub Type		None
Catalog Notes		Accuracy of the real-time clock depending on ambient air temperature - fluctuations of up to ± 5 s/day (± 0.5 h/year) are possible

Features & Functions

Features		Expandable Display indication of 6 lines x 16 characters Networkable (Ethernet)
Fitted with:		Display Real time clock Relay output Keypad Timer
Indication		LCD-display used as status indication of Digital inputs 24 V DC LCD-display used as status indication of Digital inputs 12 V DC

General information

Degree of protection		IP20
Display temperature - min		0 °C
Display temperature - max		55 °C
Display type		Monochrome
Frequency counter		Pulse shape: Square (digital inputs 24 V DC) Cable length: ≤ 20 m (screened, Digital inputs 24 V DC) Number: 4 (I1, I2, I3, I4 - Digital inputs 24 V DC) Pulse pause ratio: 1:1 (Digital inputs 24 V DC) Counter frequency: 5 kHz (Digital inputs 24 V DC)
Input frequency		50/60 Hz (Digital inputs, at 24 V DC)
Insulation resistance		According to EN 50178, EN 61010-2-201, UL61010-2-201, CSA-C22.2 NO. 61010-2-201
Lifespan, electrical		25,000 Operations (Filament bulb load at 1000 W, 230/240 V AC)

		25,000 Operations (Fluorescent lamp load 10 x 58 W at 230/240 V AC, uncompensated) 25,000 Operations (Fluorescent lamp load 10 x 58 W at 230/240 V AC, with upstream electrical device) 25,000 Operations (Filament bulb load at 500 W, 115/120 V AC) 25,000 Operations (Fluorescent lamp load 1 x 58 W at 230/240 V AC, conventional, compensated)
Lifespan, mechanical		10,000,000 Operations
Mounting method		Screw fixing using fixing brackets ZB4-101-GF1 (accessories) Front build in possible Rail mounting possible Top-hat rail fixing (according to IEC/EN 60715, 35 mm) Wall mounting/direct mounting
Overvoltage category		III
Pollution degree		2
Product category		Control relays easyE4
Protocol		TCP/IP MODBUS
Protection		Miniature circuit-breaker B16 or slow-blow 8 A fuse, Protection of an output relay
Rated impulse withstand voltage (Uimp)		6 kV (contact-coil)
Residual ripple		≤ 5 %
Resolution		1 min (Range H:M) 1 s (Range M:S) 12 Bit (value 0 - 4095, Analog inputs) 5 ms (Range S)
Software		EASYSOFT-SWLIC/easySoft7
Switching frequency		10 Hz, Relay outputs 2 Hz, Resistive load/lamp load, Relay outputs 0.5 Hz, Inductive load, Relay outputs
Type		easyE4 base device
Used with		easyE4
Utilization category		B 300 Light Pilot Duty, UL/CSA Control Circuit Rating Codes AC R 300 Light Pilot Duty, UL/CSA Control Circuit Rating Codes DC
Voltage type		AC/DC

Ambient conditions, mechanical

Drop and topple		50 mm Drop height, Drop to IEC/EN 60068-2-31
Height of fall (IEC/EN 60068-2-32) - max		0.3 m
Mounting position		Vertical Horizontal
Shock resistance		15 g, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 11 ms, 18 Impacts
Vibration resistance		10 - 57 Hz, 0.15 mm constant amplitude According to IEC/EN 60068-2-6 57 - 150 Hz, 2 g constant acceleration

Climatic environmental conditions

Air pressure		795 - 1080 hPa (operation)
Ambient operating temperature - min		-25 °C
Ambient operating temperature - max		55 °C
Ambient storage temperature - min		-40 °C
Ambient storage temperature - max		70 °C
Environmental conditions		Clearance in air and creepage distances according to EN 50178, EN 61010-2-201, UL61010-2-201, CSA-C22.2 NO. 61010-2-201 Condensation: prevent with appropriate measures
Relative humidity		5 - 95 % (IEC 60068-2-30, IEC 60068-2-78)

Electro magnetic compatibility

Air discharge		8 kV
Burst impulse		2 kV, Supply cable 2 kV, Signal cable According to IEC/EN 61000-4-4
Contact discharge		6 kV
Electromagnetic fields		10 V/m at 0.8 - 1.0 GHz (according to IEC EN 61000-4-3) 1 V/m at 2.0 - 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)
Immunity to line-conducted interference		10 V (according to IEC/EN 61000-4-6)
Radio interference class		Class B (EN 61000-6-3)
Surge rating		1 kV, Supply cables, symmetrical, power pulses (Surge), EMC According to IEC/EN 61000-4-5, power pulses (Surge), EMC

		2 kV, Supply cables, asymmetrical, power pulses (Surge), EMC
Voltage dips		≤ 1 ms from rated voltage (12 V DC) 10 ms

Terminal capacities

Terminal capacity		0.2 - 4 mm² (AWG 22 - 12), solid 0.2 - 2.5 mm² (22 - 12 AWG), flexible with ferrule
Screwdriver size		3.5 x 0.8 mm, Terminal screw
Tightening torque		0.6 Nm, Screw terminals

Electrical rating

Conventional thermal current ith of auxiliary contacts (1-pole, open)		8 A
Power consumption		3 W
Rated breaking capacity		300000 Operations at AC-15, 250 V AC, 3 A (600 Ops./h) 200000 Operations at DC-13, 24 V DC, 1 A (500 Ops./h)
Rated insulation voltage (Ui)		240 V
Rated operational voltage		Max. 300 V DC 12 V DC (digital inputs) Max. 300 V AC 240 V AC 24 V AC (-15 %/+10 % - power supply) 24 V DC (digital inputs) 12/24 V DC (-15 %/+ 20 % - power supply) 10.2 - 28.8 V DC 24 V AC (digital inputs) 20.4 - 26.4 V AC
Supply frequency		50/60 Hz (± 5%)
Supply voltage at AC, 50 Hz - min		20.4 V AC
Supply voltage at AC, 50 Hz - max		26.4 V AC
Supply voltage at DC - min		10.2 V DC
Supply voltage at DC - max		28.8 V DC
Uninterrupted current		1 A DC, at R 300 (UL/CSA) 8 A DC, at 24 V DC (UL/CSA) 5 A AC, max. thermal continuous current cos φ = 1 at B 300 (UL/CSA) 10 A AC, at 240 V AC (UL/CSA)

Short-circuit rating

Short-circuit protection		≥ 1A (T), Fuse, Power supply

Communication

Connection type		Screw terminal Ethernet: RJ45 plug, 8-pole
Data transfer rate		10/100 MBit/s

Cable

Cable length		100 m, unscreened, Digital inputs 24 V DC 100 m, unscreened, Digital inputs 24 V AC ≤ 30 m, screened, Analog inputs 100 m, unscreened, Digital inputs 12 V DC 40 m (max. per input), Digital inputs 24 V DC
Cable type		CAT5

Input/Output

Accuracy		± 2 s/day, Real-time clock to inputs (± 0.2 h/Year) ± 2 %, (I7, I8) ± 0.12 V, of actual value, within a single device (Analog Inputs) ± 1 %, Repetition accuracy of timing relays (of values) ± 3 %, of actual value, two easy devices (Analog Inputs)
Conversions		Each CPU cycle, Analog inputs
Delay time		0.015 ms typ., Digital inputs 12 V DC (I1 - I8), Delay time from 1 to 0, Debounce OFF 0.015 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 1 to 0, Debounce OFF 0.015 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 0 to 1, Debounce OFF 20 ms typ., Digital inputs 12 V DC (I1 - I8), Delay time from 1 to 0, Debounce ON 20 ms typ., Digital inputs 12 V DC (I1 - I8), Delay time from 0 to 1, Debounce ON 20 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 0 to 1, Debounce ON 20 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 1 to 0, Debounce ON 0.015 ms typ., Digital inputs 12 V DC (I1 - I8), Delay time from 0 to 1, Debounce OFF
Incremental counter		Number of counter inputs: 2 (I1 + I2, I3 + I4) Value range: -2147483648 to +2147483647 Pulse shape: Square Pulse pause ratio: 1:1 Signal offset: 90° Counter frequency: ≤ 5 kHz
Incremental encoder		Cable length: ≤ 20 m (screened)
Input		Voltage (DC)
Input current		3.3 mA (I1 - I4, at 24 V DC, at signal 1) 2.2 mA (I5 - I8, at 24 V DC, at signal 1)

		1 mA (Analog inputs) 200 mA
Input impedance		13.3 kΩ
Input voltage		At signal 1: ≥ 15 V (I1 - I8, sinusoidal, Digital inputs, 24 V DC) Status 0: ≤ 8 V DC (I5 - I8, Digital inputs, 24 V DC) Status 1: ≥ 8 V DC (I5 - I8, Digital inputs, 24 V DC) Signal 0: ≤ 5 V DC (I1 - I4, Digital inputs, 12 V DC) Status 0: ≤ 15 V DC (I1 - I4, Digital inputs, 24 V DC) At signal 0: ≤ 5 V (I1 - I8, sinusoidal, Digital inputs, 24 V DC) Status 1: ≥ 15 V DC (I1 - I4, Digital inputs, 24 V DC)
Making/breaking capacity		28/28 VA (DC, at R 300) 3600/360 VA (AC, at B 300)
Number of inputs (analog)		0 4
Number of inputs (digital)		4 8
Number of outputs (analog)		0
Number of outputs (digital)		4
Output		4 Relay Outputs > 500 mA (Relay outputs, Recommended for load: 12 V AC/DC) Relay outputs in groups of 1 Voltage Current
Parallel switching		Not permitted
Rapid counter inputs		10 kHz, Counter frequency -2147483648 - 2147483647 (value range) ≤ 20 m (cable length, screened) 1:1 (Pulse pause ratio) Square (pulse shape) Number: 4 (I1, I2, I3, I4 - Digital inputs 24 V DC)
Signal range		0 - 10 V DC, Analog inputs

Safety

Explosion safety category for gas		None
Potential isolation		Between Digital inputs 12 V DC and Outputs: yes Between Analog inputs and Outputs: yes Between Digital inputs 12 V DC and expansion devices: yes Between Digital inputs 24 V DC and Outputs: yes Between Relay outputs and expansion devices: yes Between Digital inputs 24 V AC and Outputs: yes Between Relay outputs and Power supply: yes Between Digital inputs 24 V DC and expansion devices: yes Between Digital inputs 24 V DC and Ethernet: yes Basic isolation: 600 V AC (Relay outputs) Between Analog inputs and expansion devices: yes Between Relay outputs: yes Between Relay outputs and Inputs: yes Between Digital inputs 12 V DC and Ethernet: yes Between Relay outputs and Ethernet: yes Safe isolation according to EN 50178: 300 V AC (Relay outputs) Between Digital inputs 24 V AC and expansion devices: yes Between Digital inputs 24 V AC and Ethernet: yes
Protection against polarity reversal		Yes, for supply voltage (Siemens MPI optional)
Explosion safety category for dust		None
Safe isolation		300 V AC, Between coil and contact, According to EN 50178 300 V AC, Between two contacts, According to EN 50178

Design verification

Equipment heat dissipation, current-dependent Pvid		4 W
Heat dissipation capacity Pdiss		0 W
Heat dissipation per pole, current-dependent Pvid		0 W
Rated operational current for specified heat dissipation (In)		0 A
Static heat dissipation, non-current-dependent Pvs		3 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) / Logic module (EC001417)		
Electric engineering, automation, process control engineering / Control, Process Control System (PCS) / Programmable logic control (SPS) / Logic module (ecl@ss13-27-24-22-16 [AKE539019])		
Supply voltage AC 50 Hz	V	20.4 - 26.4
Supply voltage AC 60 Hz	V	20.4 - 26.4
Supply voltage DC	V	10.2 - 28.8
Voltage type (supply voltage)		AC/DC
Switching current	A	8
Power consumption	W	3
Number of analogue inputs		0
Number of analogue outputs		0
Number of digital inputs		4
Number of digital outputs		4
With relay output		Yes
Number of HW-interfaces industrial Ethernet		1
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 USB		0
Number of HW-interfaces parallel		0
Number of HW-interfaces wireless		0
Number of HW-interfaces other		0
With optical interface		No
Supporting protocol for EtherCAT		No
Supporting protocol for TCP/IP		Yes
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		Yes
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
Redundancy			No
With display			Yes
Degree of protection (IP)			IP20
Basic device			Yes
Expandable			Yes
Expansion device			No
With time switch clock			Yes
Rail mounting possible			Yes
Wall mounting/direct mounting			Yes
Front built-in possible			Yes
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			Yes
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			Yes
Certified for UL hazardous location group A (acetylene)			Yes
Certified for UL hazardous location group B (hydrogen)			No
Certified for UL hazardous location group C (ethylene)			Yes
Certified for UL hazardous location group D (propane)			Yes
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	72
Height		mm	90
Depth		mm	58