

# Specifications

## Eaton 197213

Eaton Moeller® series EASY Control relays easyE4 with display (expandable, Ethernet), 24 V DC, Inputs Digital: 8, of which can be used as analog: 4, screw terminal

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller® series EASY Control relay
<b>CATALOG NUMBER</b>	197213
<b>MODEL CODE</b>	EASY-E4-DC-12TC1
<b>EAN</b>	4015081939466
<b>PRODUCT LENGTH/DEPTH</b>	58 mm
<b>PRODUCT HEIGHT</b>	90 mm
<b>PRODUCT WIDTH</b>	72 mm
<b>PRODUCT WEIGHT</b>	0.2 kg
<b>COMPLIANCES</b>	Eaton supports the product until its end of life
<b>CERTIFICATIONS</b>	CSA-C22.2 No. 61010 EN 61010 IEC/EN 61000-6-2 IEC 60068-2-27 IEC 60068-2-30 IEC/EN 61000-4-2 CULus per UL 61010 IEC 60068-2-6 IEC/EN 61000-6-3 IEC/EN 61131-2 EN 50178 UL Listed UL Category Control No.: NRAQ, NRAQ7 UL File No.: E205091 DNV GL CE UL hazardous location class I UL hazardous location group A (acetylene) UL hazardous location group D (propane) UL hazardous location group C (ethylene) UL hazardous location division 2



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## Features & Functions

<b>FEATURES</b>	Parallel connection of transistor outputs with resistive load, inductive load with external suppressor circuit, combination within a group - Group 1: Q1 to Q4 Networkable (Ethernet) Expandable Display indication of 6 lines x 16 characters
<b>FITTED WITH:</b>	Keypad Display Real time clock Timer
<b>FUNCTIONS</b>	Thermal cutout
<b>INDICATION</b>	LCD-display used as Output status indication of Transistor outputs LCD-display used as status indication of Digital inputs 24 V DC

	UL hazardous location group B (hydrogen)
<b>CATALOG NOTES</b>	Accuracy of the real-time clock depending on ambient air temperature - fluctuations of up to $\pm 5$ s/day ( $\pm 0.5$ h/year) are possible

## General information

<b>DEGREE OF PROTECTION</b>	IP20
<b>DISPLAY TEMPERATURE - MIN</b>	0 °C
<b>DISPLAY TEMPERATURE - MAX</b>	55 °C
<b>DISPLAY TYPE</b>	Monochrome
<b>DUTY FACTOR</b>	100 % (Inductive load to EN 60947-5-1, With external suppressor circuit) 100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, $T_{0.95} = 15$ ms, $R = 48 \Omega$ , $L = 0.24$ H) 100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13, $T_{0.95} = 72$ ms, $R = 48 \Omega$ , $L = 1.15$ H)
<b>FREQUENCY COUNTER</b>	Cable length: $\leq 20$ 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) Pulse shape: Square (digital inputs 24 V DC) Counter frequency: 5 kHz (Digital inputs 24 V DC)
<b>INSULATION RESISTANCE</b>	According to EN 50178, EN 61010-2-201, UL61010-2-201, CSA-C22.2 NO. 61010-2-201
<b>MOUNTING METHOD</b>	Screw fixing using fixing brackets ZB4-101-GF1 (accessories) Top-hat rail fixing (according to IEC/EN 60715, 35 mm) Front build in possible Wall mounting/direct mounting Rail mounting possible

<b>MOUNTING METHOD</b>	<p>Screw fixing using fixing brackets ZB4-101-GF1 (accessories)</p> <p>Top-hat rail fixing (according to IEC/EN 60715, 35 mm)</p> <p>Front build in possible</p> <p>Wall mounting/direct mounting</p> <p>Rail mounting possible</p>
<b>OPERATING FREQUENCY</b>	<p>Dependent on the cycle time of the basic device</p> <p>Dependent on the cycle- and transmission-time of the expansion devices</p> <p>Depending on the suppressor circuit (Inductive load to EN 60947-5-1, With external suppressor circuit, Max. switching frequency, max. duty factor)</p>
<b>OVERVOLTAGE CATEGORY</b>	III
<b>POLLUTION DEGREE</b>	2
<b>PRODUCT CATEGORY</b>	Control relays easyE4
<b>PROTOCOL</b>	TCP/IP MODBUS
<b>RESIDUAL CURRENT</b>	0.1 mA (on signal "1" per channel)
<b>RESIDUAL RIPPLE</b>	5 % (transistor outputs) ≤ 5 %
<b>RESOLUTION</b>	<ul style="list-style-type: none"> <li>• 1 min (Range H:M)</li> <li>• 1 s (Range M:S)</li> <li>• 12 Bit (value 0 - 4095, Analog inputs)</li> <li>• 5 ms (Range S)</li> </ul>
<b>SOFTWARE</b>	EASYSOFT-SWLIC/easySoft
<b>TYPE</b>	easyE4 base device
<b>USED WITH</b>	easyE4
<b>VOLTAGE TYPE</b>	DC

## Ambient conditions, mechanical

<b>DROP AND TOPPLE</b>	50 mm Drop height, Drop to IEC/EN 60068-2-31
<b>HEIGHT OF FALL (IEC/EN 60068-2-32) - MAX</b>	0.3 m
<b>MOUNTING POSITION</b>	Vertical Horizontal
<b>SHOCK RESISTANCE</b>	15 g, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 11 ms, 18 Impacts
<b>VIBRATION RESISTANCE</b>	10 - 57 Hz, 0.15 mm constant amplitude 57 - 150 Hz, 2 g constant acceleration According to IEC/EN 60068-2-6

## Climatic environmental conditions

<b>AIR PRESSURE</b>	795 - 1080 hPa (operation)
<b>AMBIENT OPERATING TEMPERATURE - MIN</b>	-25 °C
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	55 °C
<b>AMBIENT STORAGE TEMPERATURE - MIN</b>	-40 °C
<b>AMBIENT STORAGE TEMPERATURE - MAX</b>	70 °C
<b>ENVIRONMENTAL CONDITIONS</b>	Condensation: prevent with appropriate measures Clearance in air and creepage distances according to EN 50178, EN 61010-2-201, UL61010-2-201, CSA-C22.2 NO. 61010-2-201
<b>RELATIVE HUMIDITY</b>	5 - 95 % (IEC 60068-2-30, IEC 60068-2-78)

## Electro magnetic compatibility

<b>AIR DISCHARGE</b>	8 kV
<b>BURST IMPULSE</b>	According to IEC/EN 61000-4-4 2 kV, Supply cable 2 kV, Signal cable
<b>CONTACT DISCHARGE</b>	6 kV
<b>ELECTROMAGNETIC FIELDS</b>	3 V/m at 1.4 - 2 GHz (according to IEC EN 61000-4-3) 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)
<b>IMMUNITY TO LINE-CONDUCTED INTERFERENCE</b>	10 V (according to IEC/EN 61000-4-6)
<b>RADIO INTERFERENCE CLASS</b>	Class B (EN 61000-6-3)
<b>SURGE RATING</b>	0.5 kV, Supply cables, symmetrical, power pulses (Surge), EMC According to IEC/EN 61000-4-5, power pulses (Surge), EMC 1 kV, Supply cables, asymmetrical, power pulses (Surge), EMC
<b>VOLTAGE DIPS</b>	20 ms ≤ 10 ms, Bridging voltage dips

## Terminal capacities

<b>TERMINAL CAPACITY</b>	0.2 - 4 mm <sup>2</sup> (AWG 22 - 12), solid 0.2 - 2.5 mm <sup>2</sup> (22 - 12 AWG), flexible with ferrule
<b>SCREWDRIVER SIZE</b>	3.5 x 0.8 mm, Terminal screw
<b>TIGHTENING TORQUE</b>	0.6 Nm, Screw terminals

## Electrical rating

<b>CONVENTIONAL THERMAL CURRENT ITH OF AUXILIARY CONTACTS (1-POLE, OPEN)</b>	0.5 A
<b>HEAT DISSIPATION</b>	3.4 W (at 24 V DC)
<b>INRUSH CURRENT</b>	12.5 A (for 6 ms)
<b>POWER CONSUMPTION</b>	2 W
<b>POWER LOSS</b>	2 W
<b>RATED OPERATIONAL CURRENT (IE)</b>	Max. 0.5 A at signal „1“ DC per channel
<b>RATED OPERATIONAL VOLTAGE</b>	24 V DC (-15 %/+ 20 % - power supply) 24 V DC (transistor outputs) 20.4 - 28.8 V DC (Transistor outputs) 24 V DC (digital inputs) 20.4 - 28.8 V DC
<b>SUPPLY CURRENT</b>	24/44 mA, Normally/max., On 1 signal, Transistor outputs 18/32 mA, Normally/max., On 0 signal, Transistor outputs
<b>SUPPLY VOLTAGE AT AC, 50 HZ - MIN</b>	0 VAC
<b>SUPPLY VOLTAGE AT AC, 50 HZ - MAX</b>	0 VAC
<b>SUPPLY VOLTAGE AT DC - MIN</b>	20.4 VDC
<b>SUPPLY VOLTAGE AT DC - MAX</b>	28.8 VDC

## Communication

<b>CONNECTION TYPE</b>	Screw terminal Ethernet: RJ45 plug, 8-pole
<b>DATA TRANSFER RATE</b>	10/100 MBit/s

## Short-circuit rating

<b>SHORT-CIRCUIT CURRENT</b>	6.8 A, Transistor outputs
<b>SHORT-CIRCUIT PROTECTION</b>	≥ 1A (T), Fuse, Power supply Yes, electronic (Q1 - Q4), Transistor outputs
<b>SHORT-CIRCUIT TRIPPING CURRENT</b>	$0.7 \leq I_e \leq 1.7$ per output, For $R_a \leq 10 \text{ m}\Omega$ , Depending on number of active channels and their load, Transistor outputs

## Cable

<b>CABLE LENGTH</b>	≤ 30 m, screened, Analog inputs 100 m, unscreened, Digital inputs 24 V DC
<b>CABLE TYPE</b>	CAT5

## Input/Output

<b>ACCURACY</b>	<p><math>\pm 2\%</math>, (I7, I8) <math>\pm 0.12\text{ V}</math>, of actual value, within a single device (Analog Inputs)</p> <p><math>\pm 3\%</math>, of actual value, two easy devices (Analog Inputs)</p> <p><math>\pm 2\text{ s/day}</math>, Real-time clock to inputs (<math>\pm 0.2\text{ hYear}</math>)</p> <p><math>\pm 1\%</math>, Repetition accuracy of timing relays (of values)</p>
<b>CONVERSIONS</b>	Each CPU cycle, Analog inputs
<b>DELAY TIME</b>	<p>0.015 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 1 to 0, Debounce OFF</p> <p>20 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 1 to 0, Debounce ON</p> <p>0.015 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 0 to 1, Debounce OFF</p> <p>20 ms typ., Digital inputs 24 V DC (I1 - I8), Delay time from 0 to 1, Debounce ON</p>
<b>INCREMENTAL COUNTER</b>	<p>Pulse pause ratio: 1:1</p> <p>Pulse shape: Square</p> <p>Value range: -2147483648 to +2147483647</p> <p>Number of counter inputs: 2 (I1 + I2, I3 + I4)</p> <p>Signal offset: <math>90^\circ</math></p> <p>Counter frequency: <math>\leq 5\text{ kHz}</math></p>
<b>INCREMENTAL ENCODER</b>	Cable length: $\leq 20\text{ m}$ (screened)
<b>INPUT</b>	Voltage (DC)
<b>INPUT CURRENT</b>	<p>1 mA (Analog inputs)</p> <p>3.3 mA (I1 - I4, at 24 V DC, at signal 1)</p> <p>2.2 mA (I5 - I8, at 24 V DC, at signal 1)</p> <p>80 mA</p>
<b>INPUT IMPEDANCE</b>	13.3 k $\Omega$
<b>INPUT VOLTAGE</b>	<p>Status 0: <math>\leq 15\text{ V DC}</math> (I1 - I4, Digital inputs, 24 V DC)</p> <p>Status 0: <math>\leq 8\text{ V DC}</math> (I5 - I8, Digital inputs, 24 V DC)</p> <p>Status 1: <math>\geq 15\text{ V DC}</math> (I1 - I4, Digital inputs, 24 V DC)</p> <p>Signal 0: <math>\leq 5\text{ V DC}</math> (I1 - I8, Digital inputs, 24 V DC)</p>

## Safety

<b>EXPLOSION SAFETY CATEGORY FOR GAS</b>	None
<b>POTENTIAL ISOLATION</b>	<p>Between Transistor outputs and Ethernet: yes</p> <p>Between Digital inputs 24 V DC and Ethernet: yes</p> <p>Between Transistor outputs and control buttons: yes</p> <p>Between Transistor outputs and Power supply: yes</p> <p>Between Analog inputs and Outputs: yes</p> <p>Between Transistor outputs and expansion devices: yes</p> <p>Between Digital inputs 24 V DC and expansion devices: yes</p> <p>Between Analog inputs and expansion devices: yes</p> <p>Between Digital inputs 24 V DC: no</p> <p>Between Transistor outputs and Inputs: yes</p> <p>Between Transistor outputs: no</p> <p>Between Digital inputs 24 V DC and Power supply: no</p> <p>Between Analog inputs: no</p> <p>Between Analog inputs and Memory card: no</p> <p>Between Transistor outputs and Memory card: yes</p> <p>Between Digital inputs 24 V DC and Outputs: yes</p> <p>Between Analog inputs and Ethernet: yes</p> <p>Between Digital inputs 24 V DC and Memory card: no</p> <p>Between Analog inputs and Power supply: no</p>
<b>PROTECTION AGAINST POLARITY REVERSAL</b>	<p>For transistor outputs (Caution: A short circuit will result if 0 V/earth is applied to the outputs in the event that the supply voltage is connected to the wrong poles)</p> <p>Yes, for supply voltage</p>

<b>LAMP LOAD</b>	Max. 3 W (without Rv per channel)
<b>NUMBER OF INPUTS (ANALOG)</b>	0 4
<b>NUMBER OF INPUTS (DIGITAL)</b>	8
<b>NUMBER OF OUTPUTS (ANALOG)</b>	0
<b>NUMBER OF OUTPUTS (DIGITAL)</b>	4
<b>OUTPUT</b>	Parallel connection of max. 4 Transistor outputs 2 A, Max. total current, Outputs 4 Transistor Outputs Voltage Current
<b>OUTPUT VOLTAGE</b>	$U = U_e - 1 \text{ V}$ (signal 1 at $I_e = 0.5 \text{ A}$ , transistor outputs) Max. 2.5 V (at status 0 per channel, transistor outputs)
<b>RAPID COUNTER INPUTS</b>	1:1 (Pulse pause ratio) 10 kHz, Counter frequency  $\leq 20 \text{ m}$ (cable length, screened) -2147483648 - 2147483647 (value range) Square (pulse shape) Number: 4 (I1, I2, I3, I4 - Digital inputs 24 V DC)
<b>SIGNAL RANGE</b>	0 - 10 V DC, Analog inputs
<b>UTILIZATION FACTOR</b>	0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13, $T_{0.95} = 72 \text{ ms}$ , $R = 48 \Omega$ , $L = 1.15 \text{ H}$ ) 0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, $T_{0.95} = 15 \text{ ms}$ , $R = 48 \Omega$ , $L = 0.24 \text{ H}$ ) 1 (Inductive load to EN 60947-5-1, With external suppressor circuit)

	(Siemens MPI optional)
<b>EXPLOSION SAFETY CATEGORY FOR DUST</b>	None

## Design verification

<b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT PVID</b>	0 W
<b>HEAT DISSIPATION CAPACITY PDISS</b>	0 W
<b>HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID</b>	0 W
<b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>	0 A
<b>STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS</b>	2 W
<b>10.2.2 CORROSION RESISTANCE</b>	Meets the product standard's requirements.
<b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>	Meets the product standard's requirements.
<b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>	Meets the product standard's requirements.
<b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>	Meets the product standard's requirements.
<b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>	Meets the product standard's requirements.
<b>10.2.5 LIFTING</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.6 MECHANICAL IMPACT</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.
<b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>	Meets the product standard's requirements.
<b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>	Meets the product standard's requirements.
<b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>	Does not apply, since the entire switchgear needs to be evaluated.
<b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>	Does not apply, since the entire switchgear needs to be evaluated.

## Resources

APPLICATION NOTES	<a href="#">eaton-easye4-aws-ap050027-en-us.pdf</a>
CATALOGUES	<a href="#">eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf</a>
CHARACTERISTIC CURVE	<a href="#">eaton-electrical-timers-easy-control-relays-characteristic-curve-002.eps</a>
DECLARATIONS OF CONFORMITY	<a href="#">eaton-i-o-expansion-declaration-of-conformity-uk251130en.pdf</a> <a href="#">eaton-i-o-expansion-declaration-of-conformity-eu250647en.pdf</a>
DRAWINGS	<a href="#">eaton-modular-plc-starter-kit-dimensions.eps</a> <a href="#">eaton-modular-plc-easy-control-relays-3d-drawing.eps</a> <a href="#">eaton-general-easy-control-relays-symbol-002.tif</a>
ECAD MODEL	<a href="#">DA-CE-ETN.EASY-E4-DC-12TC1</a>
INSTALLATION INSTRUCTIONS	<a href="#">IL050020ZU</a>
INSTALLATION VIDEOS	<a href="#">Control relay easyE4: The new generation</a> <a href="#">Video easy E4 control relay</a>
MANUALS AND USER GUIDES	<a href="#">MN050009_EN</a>
MCAD MODEL	<a href="#">DA-CS-uc_12rc1</a> <a href="#">DA-CD-uc_12rc1</a> <a href="#">How to process SmartWire-DT modules using the EASY-COM-SWD-C1 module connected to an easyE4?</a>
MULTIMEDIA	<a href="#">How to process ModbusRTU devices with the EASY-COM-RTU-M1 module on an easyE4?</a> <a href="#">Handling of the data logger as a ring buffer with the easyE4 using the ST programming language.</a>

<b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>	Is the panel builder's responsibility.
<b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>	Is the panel builder's responsibility.
<b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>	Is the panel builder's responsibility.
<b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>	Is the panel builder's responsibility.
<b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b>	Is the panel builder's responsibility.
<b>10.10 TEMPERATURE RISE</b>	The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
<b>10.11 SHORT-CIRCUIT RATING</b>	Is the panel builder's responsibility.
<b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>	Is the panel builder's responsibility.
<b>10.13 MECHANICAL FUNCTION</b>	The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

[How to connect the Remote Touch Display EASY-RTD to the easyE4?](#)

[How to connect the easyE4 to the touch panel XV-102 for easy? - 5 Steps](#)

[easyE4 SmartWire-DT module with Remote Touch Display and RMQ multi color indicator](#)

PRODUCT NOTIFICATIONS	<a href="#">MZ049014EN</a>
	<a href="#">eaton-control-relay-easye4-flyer-fl050007en-en-us.pdf</a>
SALES NOTES	<a href="#">eaton-easy-remote-touch-display-flyer-fl048004en-en-us.pdf</a>
	<a href="#">TT-197213 EASY-E4-DC-12TC1 -de DE</a>

**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**



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