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	
PRODUCT NAME	Eaton Moeller® series EASY Control relay
CATALOG NUMBER	197213
MODEL CODE	EASY-E4-DC-12TC1
EAN	4015081939466
PRODUCT LENGTH/DEPTH	58 mm
PRODUCT HEIGHT	90 mm
PRODUCT WIDTH	72 mm
PRODUCT WEIGHT	0.2 kg
COMPLIANCES	Eaton supports the product until its end of life
CERTIFICATIONS	UL File No.: E205091 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 UL hazardous location group B (hydrogen) cULus Ordinary Location DNV TAA00002HT cULus Hazard Location UL File No.: E523283 EN 61131-2 IEC 61131-2 EN IEC 61000-6-3 IEC 61000-6-3 EN IEC 61010-2-201 IEC 61010-2-201 UL 61010-1 UL 61010-2-201

Powering Business Worldwide

	CSA C22.2 No. 61010-1 CSA C22.2 No. 61010-2-201 UL 121201 CSA C22.2 No. 213
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

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, acc. to IEC/EN61131-2, Half-sinusoidal shock 11 ms, 18 Impacts
VIBRATION RESISTANCE	8.4 - 150 Hz, 1 g constant acceleration 5 - 8.4 Hz, 3.5 mm constant amplitude According to IEC/EN 61131-2

Cable

CABLE LENGTH	Digital inputs (DC): ≤ 100 m (unshielded) Digital outputs: ≤ 100 m (unshielded) Analog inputs: ≤ 30 m (shielded)
CABLE TYPE	Ethernet: CAT5

Climatic environmental conditions

AIR PRESSURE	795 - 1080 hPa (operation)
AMBIENT OPERATING TEMPERATURE - MAX	55 °C
AMBIENT STORAGE TEMPERATURE - MAX	70 °C
AMBIENT OPERATING TEMPERATURE - MIN	-25 °C
AMBIENT STORAGE TEMPERATURE - MIN	-40 °C
ENVIRONMENTAL CONDITIONS	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
RELATIVE HUMIDITY	5 - 95 % (IEC 60068-2-30, IEC 60068-2-78)

Communication

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

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) 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.

Electrical rating

POWER CONSUMPTION	2 W
RATED OPERATIONAL CURRENT (IE)	Max. 0.5 A at signal „1" DC per channel
RATED OPERATIONAL VOLTAGE	Power supply: 24 V DC (-15 %/+ 20 %) Power supply transistor outputs: 24 V DC (-15 %/+ 20 %) Inputs: shall be identical to the power supply voltage
SUPPLY CURRENT	24/44 mA, Normally/max., On 1 signal, Transistor outputs 18/32 mA, Normally/max., On 0 signal, Transistor outputs
SUPPLY VOLTAGE AT DC - MAX	28.8 VDC
SUPPLY VOLTAGE AT DC - MIN	20.4 VDC

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	2 W
HEAT DISSIPATION CAPACITY PDISS	0 W
HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT PVID	0 W
STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT PVS	2 W

Electro magnetic compatibility

AIR DISCHARGE	8 kV
BURST IMPULSE	2 kV, I/O port 2 kV, Power supply port 1 kV, communication port According to IEC/EN 61131-2
CONTACT DISCHARGE	6 kV
ELECTROMAGNETIC FIELDS	10 V/m at 0.08 - 1.0 GHz (according to IEC/EN 61131-2) 3 V/m at 1.0 - 6 GHz (according to IEC/EN 61131-2)
IMMUNITY TO LINE-CONDUCTED INTERFERENCE	10 V (according to IEC/EN 61131-2)
RADIO INTERFERENCE CLASS	Class B (EN 61000-6-3)
SURGE RATING	0.5 kV, Line-to-Line, Power supply port 1 kV, Line-to-Earth, Power supply port 1 kV, Line-to-Earth, I/O port 1 kV, Line-to-Earth, communication port According to IEC/EN 61131-2
VOLTAGE DIPS	10 ms

Features & functions

FEATURES	Networkable (Ethernet) Expandable Display indication of 6 lines x 16 characters
FITTED WITH:	Keypad Display Real time clock Timer Transistor output
INDICATION	LCD-display used as status indication of digital I/Os

General information

DEGREE OF PROTECTION	IP20
DISPLAY TEMPERATURE - MAX	55 °C
DISPLAY TEMPERATURE - MIN	0 °C
DISPLAY TYPE	Monochrome
DUTY FACTOR	100 %
FREQUENCY COUNTER	Cable length: ≤ 20 m (shielded) Counter frequency: ≤ 5 kHz Number: 4 (I1, I2, I3, I4) Pulse pause ratio: 1:1 Pulse shape: Square
INSULATION RESISTANCE	According to EN IEC 61010-2-201, UL61010-2-201, CSA-C22.2 NO. 61010-2-207
MOUNTING METHOD	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
OVERVOLTAGE CATEGORY	Power supply + Inputs + Extension interface: II Power supply outputs + Outputs: II
POLLUTION DEGREE	2
PRODUCT CATEGORY	Control relays easyE4
PROTOCOL	Modbus TCP
RESIDUAL CURRENT	0.1 mA (on signal "1" per channel)
RESIDUAL RIPPLE	Power supply: ≤ 5 % Power supply transistor outputs: 5 %
RESOLUTION	12 Bit (value 0 - 4095, Analog inputs)
SOFTWARE	EASYSOFT-SWLIC/easySoft
SWITCHING FREQUENCY	Depending on the suppressor circuit (Inductive load to EN 60947-5-1, With external suppressor circuit, Max. switching frequency, max. duty factor) Dependent on the cycle

Input/Output

ACCURACY	± 2 %, (I5, I6, I7, I8) ± 0.12 V, of actual value, within a single device (Analog Inputs) ± 3 %, of actual value, two easy devices (Analog Inputs) ± 2 s/day, Real-time clock to inputs (± 0.2 h/Year) ± 1 %, Repetition accuracy of timing relays (of values)
CONVERSIONS	Each CPU cycle for Analog inputs
DELAY TIME	Digital inputs (24 V DC): 20 ms, from 0 to 1, Debounce ON Digital inputs (24 V DC): 0.015 ms typ., from 0 to 1, Debounce OFF Digital inputs (24 V DC): 20 ms, from 1 to 0, Debounce ON Digital inputs (24 V DC): 0.015 ms typ., from 1 to 0, Debounce OFF
INCREMENTAL COUNTER	Pulse pause ratio: 1:1 Pulse shape: Square Value range: -2147483648 to +2147483647 Number of counter inputs: 2 (I1 + I2, I3 + I4) Signal offset: 90° Counter frequency: ≤ 5 kHz Cable length: ≤ 20 m (shielded)
INPUT	Voltage (DC)
INPUT CURRENT	1.8 mA (I5 - I8, at 24 V DC,at signal 1) 3.3 mA (I1 - I4, at 24 V DC,at signal 1) < 1 mA (Analog inputs)
INPUT IMPEDANCE	Analog: 13.3 kΩ
INPUT VOLTAGE	Condition 0: ≤ 5 V DC (Digital inputs, 24 V DC) Condition 1: ≥ 15 V DC (Digital inputs, 24 V DC)
NUMBER OF INPUTS (ANALOG)	0 4
NUMBER OF INPUTS (DIGITAL)	8 4
NUMBER OF OUTPUTS (ANALOG)	0

	time of the basic device
TYPE	easyE4 base device
USED WITH	easyE4
VOLTAGE TYPE	DC

NUMBER OF OUTPUTS (DIGITAL)	4
OUTPUT	4 Transistor Outputs max. 2 A total current Parallel connection of group 1 (Q1 to Q4)
OUTPUT VOLTAGE	$U = U_e$ - 1 V (signal 1 at I_e = 0.5 A, transistor outputs) Max. 1.0 V (at status 0 per channel, transistor outputs)
RAPID COUNTER INPUTS	Pulse pause ratio: 1:1 Counter frequency: ≤ 10 kHz Cable length: ≤ 20 m (shielded) Value range: -2147483648 to +2147483647 Pulse shape: Square Number of rapid counter inputs: 4 (I1, I2, I3, I4)
SIGNAL RANGE	0 - 10 V DC, Analog inputs
UTILIZATION FACTOR	1 / group, with ext. suppressor circuit 0.25 / group, w/o ext. suppressor circuit, T0.95 = 15ms/R = 48Ω/L = 0.24H 0.25 / group, w/o ext. suppressor circuit, DC-13/T0.95 = 72ms/R = 48Ω/L = 1.15 H Inductive load to EN 60947-5-1

Safety

EXPLOSION SAFETY CATEGORY FOR DUST	None
EXPLOSION SAFETY CATEGORY FOR GAS	None
POTENTIAL ISOLATION	POW+Inputs+Extension interface vs. POW outputs+Outputs: yes POW+Inputs+Extension interface vs. Ethernet+Functional Earth: yes Power supply outputs + Outputs against Ethernet + Functional Earth: yes
PROTECTION AGAINST POLARITY REVERSAL	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) Yes, for supply voltage

Short-circuit rating

SHORT-CIRCUIT CURRENT	6.8 A, Transistor outputs
SHORT-CIRCUIT PROTECTION	≥ 1A (T), Fuse, Power supply Yes, electronic (Q1 - Q4), Transistor outputs
SHORT-CIRCUIT TRIPPING CURRENT	0.7 ≤ Ie ≤ 1.7 per output, For Ra ≤ 10 mΩ, Depending on number of active channels and their load, Transistor outputs

Terminal capacities

SCREWDRIVER SIZE	3.5 x 0.6 mm, Terminal screw
TERMINAL CAPACITY	0.2 - 4 mm² (AWG 22 - 12), solid 0.2 - 2.5 mm², flexible with ferrule 0.2 - 2.5 mm², flexible without ferrule
TIGHTENING TORQUE	0.6 Nm, Screw terminals

Resources

APPLICATION NOTES	eaton-easye4-aws-ap050027-en-us.pdf
CATALOGUES	eaton-product-overview-for-machinery-catalogue-ca08103003zen-en-us.pdf
CHARACTERISTIC CURVE	eaton-electrical-timers-easy-control-relays-characteristic-curve-002.eps
DECLARATIONS OF CONFORMITY	eaton-i-o-expansion-declaration-of-conformity-uk251130en.pdf eaton-i-o-expansion-declaration-of-conformity-eu251486en.pdf
DRAWINGS	eaton-modular-plc-starter-kit-dimensions.eps eaton-modular-plc-easy-control-relays-3d-drawing.eps
ECAD MODEL	DA-CE-ETN.EASY-E4-DC-12TC1
INSTALLATION INSTRUCTIONS	eaton-easye4-base-programmable-control-relays-il050020zu.pdf
INSTALLATION VIDEOS	Video easy E4 control relay

	Control relay easyE4: The new generation
MANUALS AND USER GUIDES	eaton-easye-easysoft-training-gh135-mn050014en-us.pdf eaton-easye-rtd-advanced-training-gh138-mn050015en-us.pdf
MCAD MODEL	DA-CS-uc_12rc1 eaton-logic-modules-mcad-drawings-uc-12rc1.dwg
MULTIMEDIA	How to connect the easyE4 to the touch panel XV-102 for easy? - 5 Steps How to connect the Remote Touch Display EASY-RTD to the easyE4? How to process SmartWire-DT modules using the EASY-COM-SWD-C1 module connected to an easyE4? How to process ModbusRTU devices with the EASY-COM-RTU-M1 module on an easyE4? easyE4 SmartWire-DT module with Remote Touch Display and RMQ multi color indicator Handling of the data logger as a ring buffer with the easyE4 using the ST programming language.
PRODUCT NOTIFICATIONS	MZ049014EN
SALES NOTES	eaton-control-relay-easye4-flyer-fl050007en-en-us.pdf eaton-easy-remote-touch-display-flyer-fl048004en-en-us.pdf TT-197213_EASY-E4-DC-12TC1 -de_DE

PROJECT NAME:	
PROJECT NUMBER:	
PREPARED BY:	
DATE:	

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