



Control relays easyE4 with display (expandable, Ethernet), 24 V DC, Inputs Digital: 8, of which can be used as analog: 4, push-in terminal

Part no. **EASY-E4-DC-12TC1P**  
**197506**

| General specifications |   |
|------------------------|---|
| Product name           | Eaton Moeller® series EASY Control relay  |
| Part no.               | EASY-E4-DC-12TC1P   |
| EAN                    | 4015081940844   |
| Product Length/Depth   | 58 millimetre   |
| Product height         | 90 millimetre   |
| Product width          | 72 millimetre   |
| Product weight         | 0.2 kilogram  |
| Certifications         | IEC 60068-2-6<br>IEC/EN 61000-4<br>IEC 60068-2-27<br>IEC/EN 61000-4-2<br>EN 55022<br>EN 55011<br>CE<br>EN 50178<br>UL Category Control No.: NRAQ, NRAQ7<br>DNV GL<br>IEC/EN 61131-2<br>IEC 60068-2-30<br>EN 61010<br>IEC/EN 61000-6-2<br>UL Listed<br>UL File No.: E205091<br>IEC/EN 61000-6-3<br>UL hazardous location class I<br>UL hazardous location group B (hydrogen)<br>UL hazardous location group A (acetylene)<br>UL hazardous location division 2<br>UL hazardous location group C (ethylene)<br>UL hazardous location group D (propane) |
| 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<br>Networkable (Ethernet)<br>Parallel connection of transistor outputs with resistive load, inductive load with external suppressor circuit, combination within a group - Group 1 Q1 to Q4   |
| Fitted with:           | Display<br>Timer<br>Keypad<br>Real time clock   |
| Functions              | Thermal cutout  |
| Indication             | LCD-display used as Output status indication of Transistor outputs<br>LCD-display used as status indication of Digital inputs 24 V DC   |
| General information    |   |
| Degree of protection   | IP20  |
| Display type           | Monochrome  |
| Duty factor            | 100 % (Inductive load to EN 60947-5-1, With external suppressor circuit)<br>100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13, T0.95 = 72 ms, R = 48 Ω, L = 1.15 H)<br>100 % (Inductive load to EN 60947-5-1, Without external suppressor circuit, T0.95 = 15 ms, R = 48 Ω, L = 0.24 H)   |
| Frequency counter      | Pulse shape: Square (digital inputs 24 V DC)<br>Cable length: ≤ 20 m (screened, Digital inputs 24 V DC)<br>Counter frequency: 5 kHz (Digital inputs 24 V DC)<br>Number: 4 (I1, I2, I3, I4 - Digital inputs 24 V DC)<br>Pulse pause ratio: 1:1 (Digital inputs 24 V DC)  |
| Insulation resistance  | According to EN 50178, EN 61010-2-201, UL61010-2-201, CSA-C22.2 NO. 61010-2-201   |
| Mounting method        | Top-hat rail fixing (according to IEC/EN 60715, 35 mm)<br>Screw fixing using fixing brackets ZB4-101-GF1 (accessories)  |

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|   |  |  | Front build in possible<br>Rail mounting possible   |
| Operating frequency   |  |  | Depending on the suppressor circuit (Inductive load to EN 60947-5-1, With external suppressor circuit, Max. switching frequency, max. duty factor)<br>Dependent on the cycle time of the basic device |
| Overtoltage category  |  |  | III   |
| Pollution degree  |  |  | 2   |
| Product category  |  |  | Control relays easyE4   |
| Protocol  |  |  | MODBUS<br>TCP/IP  |
| Residual current  |  |  | 0.1 mA (on signal "1" per channel)  |
| Residual ripple   |  |  | 5 % (transistor outputs)<br>≤ 5 %   |
| Resolution  |  |  | 1 min (Range H:M)<br>1 s (Range M:S)<br>12 Bit (value 0 - 4095, Analog inputs)<br>12 Bit (value 0 - 4095, Analog outputs)<br>5 ms (Range S)   |
| Software  |  |  | EASYSOFT-SWLIC/easySoft7  |
| Type  |  |  | easyE4 base device  |
| Used with   |  |  | easyE4  |
| Voltage type  |  |  | DC  |
| <b>Ambient conditions, mechanical</b>   |  |  |   |
| 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<br>Horizontal  |
| Shock resistance  |  |  | 15 g, Mechanical, according to IEC/EN 60068-2-27, Half-sinusoidal shock 11 ms, 18 Impacts   |
| Vibration resistance  |  |  | According to IEC/EN 60068-2-6<br>10 - 57 Hz, 0.15 mm constant amplitude<br>57 - 150 Hz, 2 g constant acceleration   |
| <b>Climatic environmental conditions</b>  |  |  |   |
| 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  |  |  | Condensation: prevent with appropriate measures<br>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)   |
| <b>Electro magnetic compatibility</b>   |  |  |   |
| Air discharge   |  |  | 8 kV  |
| Burst impulse   |  |  | 2 kV, Signal cable<br>2 kV, Supply cable<br>According to IEC/EN 61000-4-4   |
| Contact discharge   |  |  | 6 kV  |
| Electromagnetic fields  |  |  | 1 V/m at 2 - 2.7 GHz (according to IEC EN 61000-4-3)<br>10 V/m at 0.08 - 1.0 GHz (according to IEC EN 61000-4-3)<br>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  |  |  | 0.5 kV, Supply cables, symmetrical, EASY...DC, power pulses (Surge), EMC<br>1 kV, Supply cables, asymmetrical, power pulses (Surge), EMC<br>According to IEC/EN 61000-4-5 Level 4                     |
| Voltage dips  |  |  | ≤ 10 ms, Bridging voltage dips  |
| <b>Terminal capacities</b>  |  |  |   |
| Terminal capacity   |  |  | 0.2 - 2.5 mm <sup>2</sup> (22 - 12 AWG), flexible with ferrule<br>0.2 - 4 mm <sup>2</sup> (AWG 22 - 12), solid  |
| <b>Electrical rating</b>  |  |  |   |
| Conventional thermal current I <sub>th</sub> of auxiliary contacts (1-pole, open) |  |  | 0.5 A   |
| Power consumption   |  |  | 2 W   |
| Power loss  |  |  | 2 W   |

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| Rated operational current (I <sub>e</sub> ) |  | Max. 0.5 A at signal „1“ DC per channel  |
| Rated operational voltage                   |  | 20.4 - 28.8 V DC<br>20.4 - 28.8 V DC (Transistor outputs)<br>24 V DC (-15 %/+ 20 % - power supply)<br>24 V DC (transistor outputs)<br>24 V DC (digital inputs)   |
| Supply voltage at AC, 50 Hz - min           |  | 0 V AC   |
| Supply voltage at AC, 50 Hz - max           |  | 0 V AC   |
| Supply voltage at DC - min                  |  | 20.4 V DC  |
| Supply voltage at DC - max                  |  | 28.8 V DC  |
| <b>Short-circuit rating</b>                 |  |  |
| Short-circuit current                       |  | 6.8 A, Transistor outputs  |
| Short-circuit protection                    |  | ≥ 1A (T), Fuse, Power supply<br>Yes, electronic (Q1 - Q4), Transistor outputs  |
| Short-circuit tripping current              |  | 0.7 ≤ I <sub>e</sub> ≤ 1.7 per output, For R <sub>a</sub> ≤ 10 mΩ, Depending on number of active channels and their load, Transistor outputs   |
| <b>Communication</b>                        |  |  |
| Connection type                             |  | Ethernet: RJ45 plug, 8-pole<br>Push in terminals   |
| Data transfer rate                          |  | 10/100 MBit/s  |
| <b>Cable</b>                                |  |  |
| Cable length                                |  | 30 m, screened, Analog inputs<br>100 m, unscreened, Digital inputs 12 V DC<br>100 m, unscreened, Digital inputs 24 V AC  |
| Cable type                                  |  | CAT5   |
| <b>Input/Output</b>                         |  |  |
| Accuracy                                    |  | ± 2 s/day, Real-time clock to inputs (± 0.2 h/Year)<br>± 1 %, Repetition accuracy of timing relays (of values)<br>± 2 %, (I7, I8) ± 0.12 V, of actual value, within a single device (Analog Inputs)<br>± 3 %, of actual value, two easy devices (Analog Inputs)  |
| Conversions                                 |  | Each CPU cycle, Analog inputs  |
| Delay time                                  |  | 39 ms typ., Digital Inputs 100 - 240 V AC 50 Hz (I1 - I8), Delay time from 1 to 0, Debounce OFF<br>32 ms typ., Digital Inputs 100 - 240 V AC 60 Hz (I1 - I8), Delay time from 1 to 0, Debounce OFF<br>80 ms, Digital inputs 115/230 V AC 50 Hz (I7, I8), Delay time from 0 to 1, Debounce ON<br>0.5 ms typ., Digital Inputs 100 - 240 V DC (I1 - I8), Delay time from 1 to 0, Debounce OFF<br>39 ms typ., Digital Inputs 100 - 240 V AC 50 Hz (I1 - I8), Delay time from 0 to 1, Debounce OFF<br>32 ms typ., Digital Inputs 100 - 240 V AC 60 Hz (I1 - I8), Delay time from 0 to 1, Debounce OFF<br>0.5 ms typ., Digital Inputs 100 - 240 V DC (I1 - I8), Delay time from 0 to 1, Debounce OFF |
| Incremental counter                         |  | Pulse shape: Square<br>Signal offset: 90°<br>Counter frequency: ≤ 5 kHz<br>Number of counter inputs: 2 (I1 + I2, I3 + I4)<br>Pulse pause ratio: 1:1<br>Value range: -2147483648 to +2147483647   |
| Incremental encoder                         |  | Cable length: ≤ 20 m (screened)  |
| Input                                       |  | Voltage (DC)   |
| Input current                               |  | 80 mA  |
| Input impedance                             |  | 13.3 kΩ  |
| Input voltage                               |  | Signal 0: ≤ 5 V DC (I1 - I8, Digital inputs, 24 V DC)  |
| Number of inputs (analog)                   |  | 4  |
| Number of inputs (digital)                  |  | 4<br>8   |
| Number of outputs (analog)                  |  | 0  |
| Number of outputs (digital)                 |  | 4  |
| Output                                      |  | Voltage<br>Current<br>4 Transistor Outputs<br>Parallel connection of max. 2 Transistor outputs   |
| Output voltage                              |  | Max. 2.5 V (at status 0 per channel, transistor outputs)<br>U = U# - 1 V (signal 1 at I# = 0.5 A, transistor outputs)  |
| Rapid counter inputs                        |  | 1:1 (Pulse pause ratio)<br>10 kHz, Counter frequency<br>≤ 20 m (cable length, screened)  |

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|--|--|--|---|
|  |  |  | -2147483648 - 2147483647 (value range)<br>Square (pulse shape)<br>Number: 4 (I1, I2, I3, I4 - Digital inputs 24 V DC)   |
| Signal range   |  |  | 0 - 10 V DC, Analog inputs  |
| Utilization factor   |  |  | 0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, T0.95 = 15 ms, R = 48 Ω, L = 0.24 H)<br>1 (Inductive load to EN 60947-5-1, With external suppressor circuit)<br>0.25 (Inductive load to EN 60947-5-1, Without external suppressor circuit, DC-13, T0.95 = 72 ms, R = 48 Ω, L = 1.15 H) |
| <b>Safety</b>  |  |  |   |
| Explosion safety category for gas  |  |  | None  |
| Potential isolation  |  |  | Between Analog inputs and Digital inputs: no<br>Between Transistor outputs: no  |
| Protection against polarity reversal   |  |  | Yes (Caution: A short circuit will result if 0 V or earth is applied to the outputs in the event that the supply voltage is connected to the wrong poles.)  |
| Explosion safety category for dust   |  |  | None  |
| <b>Design verification</b>   |  |  |   |
| Equipment heat dissipation, current-dependent Pvid                               |  |  | 0 W   |
| Heat dissipation capacity Pdis   |  |  | 0 W   |
| Heat dissipation per pole, current-dependent Pvid                                |  |  | 0 W   |
| Static heat dissipation, non-current-dependent Pvs                               |  |  | 2 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

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|--|--|---|-------------|
| 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 | 0 - 0       |
| Supply voltage AC 60 Hz  |  | V | 0 - 0       |
| Supply voltage DC  |  | V | 20.4 - 28.8 |
| Voltage type (supply voltage)  |  |   | DC          |
| Switching current  |  | A | 0.5         |
| Power consumption  |  | W | 2           |
| Number of analogue inputs  |  |   | 4           |
| Number of analogue outputs   |  |   | 0           |
| Number of digital inputs   |  |   | 4           |
| Number of digital outputs  |  |   | 4           |
| With relay output  |  |   | No          |

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|---|--|------|
| 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  |  | No   |
| Expandable  |  | Yes  |
| Expansion device                                    |  | No   |
| With time switch clock                              |  | Yes  |
| Rail mounting possible                              |  | Yes  |
| Wall mounting/direct mounting                       |  | No   |
| 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   |