# DATASHEET - EASY820-DC-RC

Control relay, 24 V DC, 12DI(4AI), 6DO relays, 1AO, display, time, expandable, easyNet

**EAT•N**

*Powering Business Worldwide™*

| Part no. | EASY820-DC-RC |
|---|---|
| Catalog No. | 256271 |
| EL-Nummer (Norway) | 4520965 |

## Delivery program

| Basic function | | | easy800 (expandable, easyNet) |
|---|---|---|---|
| Description | | | Expandable: Digital/analog inputs/outputs and AS-Interface, PROFIBUS-DP, CANopen®, DeviceNet bus systems<br>Bus system easyNet on board<br>customized laser inscription or delivery with user program possible with EASY-COMBINATION-* product (article No. 2010781) |

### Inputs

| Digital | | | 12 |
|---|---|---|---|
| of which can be used as analog | | | 4 |

### Outputs

| Quantity of outputs | | | Relays: 6<br>Relays: 6; analog: 1 |
|---|---|---|---|
| Outputs | | Number | 7 |

### Additional features

| Real time clock | | | # |
|---|---|---|---|
| Display & keypad | | | # |
| Expansions | | | Expandable<br>Networkable (easyNet) |
| Supply voltage | | | 24 V DC |
| Software | | | EASY-SOFT-PRO |

## Technical data

### General

| Standards | | | EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27 |
|---|---|---|---|
| Approvals | | | CSA<br>UL<br>EAC |
| Dimensions (W x H x D) | | mm | 107.5 x 90 x 72 (6 PE) |
| Weight | | kg | 0.3 |
| 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 | In accordance with IEC 60068-2-1, -25 - +55 |
|---|---|---|---|
| Condensation | | | Take appropriate measures to prevent condensation |
| LCD display (clearly legible) | | °C | 0 - 55 |
| Storage | ϑ | °C | In accordance with IEC 60068-2-1, -2, -14<br>-40 - +70 |
| relative humidity | | % | in accordance with IEC 60068-2-30, IEC 60068-2-78<br>5 - 95 |
| Air pressure (operation) | | hPa | 795 - 1080 |

### Ambient conditions, mechanical

| Protection type (IEC/EN 60529, EN50178, VBG 4) | | | IP20 |
|---|---|---|---|
| Vibrations | | Hz | In accordance with IEC 60068-2-6<br>constant amplitude 0.15 mm: 10 - 57<br>constant acceleration 2 g: 57 - 150 |
| Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms | | Impacts | 18 |

| | | | |
|---|---|---|---|
| Drop to IEC/EN 60068-2-31 | Drop height | mm | 50 |
| Free fall, packaged (IEC/EN 60068-2-32) | | m | 1 |
| Mounting position | | | Vertical or horizontal |
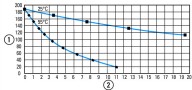
## Electromagnetic compatibility (EMC)

| | | | |
|---|---|---|---|
| Overvoltage category/pollution degree | | | III/2 |
| Electrostatic discharge (ESD) | | | |
| applied standard | | | according to IEC EN 61000-4-2 |
| Air discharge | | kV | 8 |
| Contact discharge | | kV | 6 |
| Electromagnetic fields (RFI) to IEC EN 61000-4-3 | | V/m | 0.8 - 1.0 GHz: 10<br>1.4 - 2 GHz: 3<br>2.0 - 2.7 GHz: 1 |
| Radio interference suppression | | | EN 55011 Class B |
| Burst | | kV | according to IEC/EN 61000-4-4 |
| power pulses (Surge) | | | according to IEC/EN 61000-4-5<br>1 kV (supply cables, symmetrical) |
| 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 |

## Back-up of real-time clock

| | | | |
|---|---|---|---|
| Back-up of real-time clock | | |  |
| | | | ① Backup time (hours) with fully charged double layer capacitor<br>② Service life (years) |
| Accuracy of real-time clock to inputs | | s/day | typ. ± 2 (± 0.2 h/Year) |
| | | | depending on ambient air temperature fluctuations of up to ± 5 s/day (± 0.5 h/year) are possible |

## Repetition accuracy of timing relays

| | | | |
|---|---|---|---|
| Accuracy of timing relays (of values) | | % | ± 0.02 |
| Resolution | | | |
| Range "S" | | ms | 5 |
| Range "M:S" | | s | 1 |
| Range "H:M" | | min | 1 |

## Retentive memory

| | | | |
|---|---|---|---|
| Write cycles of the retentive memory | | | $10^{12}$ (read/write cycles) |

## 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 |
| Siemens MPI, (optional) | | | yes |
| Input current | | | 140 mA at $U_e$ |
| Voltage dips | | ms | ≦ In accordance with IEC 61131-2<br>≦ 20 |
| Fuse | | A | ≧ 1A (T) |
| Power loss | P | W | Normally 3.4 |

## Digital inputs 24 V DC

| | | | |
|---|---|---|---|
| Number | | | 12 |
| Inputs can be used as analog inputs | | | 4 (I7, I8, I11, I12) |
| Status Display | | | LCD-Display |
| Potential isolation | | | from power supply: no<br>between digital inputs: no<br>from the outputs: yes<br>to interface/memory card: no<br>to easyLink: no<br>to easyNet: yes |
| Rated operational voltage | $U_e$ | V DC | 24 |
| Input voltage | | V DC | Signal 0: ≦ 5 (I1 - I6, I9, I10), ≦ 8 (I7, I8, I11, I12)<br>Signal 1: ≧ 15 (I1 - I6, I9, I10), ≧ 8 (I7, I8, I11, I12) |
| Input current at signal 1 | | mA | I1 - I6, I9, I10: 3.3 (at 24 V DC)<br>I7, I8, I11, I12: 2.2 (at 24 V DC) |

| | | | |
|---|---|---|---|
| Deceleration time | | ms | 20 (0 -> 1/1 -> 0, Debounce ON) |
| | | | normally 0.025 (0 -> 1/1 -> 0, Debounce OFF, I1 - I4) |
| | | | normally 0.25 (0 -> 1/1 -> 0, Debounce OFF, I5, I6, I9, I10) |
| | | | normally 0.15 (0 -> 1/1 -> 0, Debounce OFF, I7, I8, I11, I12) |
| Cable length | | m | 100 (unshielded) |
| Frequency counter | | | |
|    Number | | | 4 (I1, I2, I3, I4) |
|    Counter frequency | | kHz | ≦ 5 |
|    Pulse shape | | | Square |
|    Pulse pause ratio | | | 1:1 |
|    Cable length | | m | ≦ 20 (screened) |
| Incremental counter | | | |
|    Number of counter inputs | | | 2 (I1 + I2, I3 + I4) |
|    Counter frequency | | kHz | ≦ 3 |
|    Pulse shape | | | Square |
|    Signal offset | | | 90° |
|    Pulse pause ratio | | | 1:1 |
| Rapid counter inputs | | | |
|    Number | | | 4 (I1, I2, I3, I4) |
|    Cable length | | m | ≦ 20 (screened) |
|    Counter frequency | | kHz | ≦ 5 |
|    Pulse shape | | | Square |
|    Pulse pause ratio | | | 1:1 |

### Digital inputs 24 V AC

| | | | |
|---|---|---|---|
| Status Display | | | LCD-Display |

### Analog inputs

| | | | |
|---|---|---|---|
| Number | | | 4 (I7, I8, I11, I12) |
| Potential isolation | | | from power supply: no |
| | | | between digital inputs: no |
| | | | from the outputs: yes |
| | | | to interface/memory card: no |
| | | | to easyLink: no |
| | | | to easyNet: yes |
| Input type | | | DC voltage |
| Signal range | | | 0-10 V DC |
| Resolution | | | 0.01 V analog |
| | | | 0.01 V digital |
| | | | 10 Bit (value 0 - 1023) |
| Input impedance | | kΩ | 11.2 |
| Accuracy of actual value | | | |
|    two devices from series | | % | ± 3 |
|    Within a single device | | % | ± 2, (I7, I8, I11, I12) ± 0.12 V |
| Conversion time, analog/digital | | ms | each CPU cycle |
| Input current | | mA | < 1 |
| Cable length | | m | ≦ 30, screened |

### Analog outputs

| | | | |
|---|---|---|---|
| Number | | | 1 |
| Potential isolation | | | from power supply: no |
| | | | To the digital inputs: no |
| | | | From the digital outputs: yes |
| | | | to interface/memory card: yes |
| | | | to easyNet: yes |
| | | | to easyLink: yes |
| Output type | | | DC voltage |
| Signal range | | | 0-10 V DC |
| Max. output current | | A | 0.01 |
| Load resistance | | | 1 kΩ |
| Overload and short-circuit protection | | | Yes |
| Resolution | | | 0.01 V DC analog |
| | | | 10 Bit (value 0 - 1023) digital |
| Recovery time | | µs | 100 |
| Accuracy | | | |
|    -25 °C - 55 °C | | % | 2 |

| | | | |
|---|---|---|---|
| 25°C | | % | 1 |
| Conversion time, analog/digital | | ms | each CPU cycle |

## Relay outputs

| | | | |
|---|---|---|---|
| Number | | | 6 |
| 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<br>From the inputs: yes<br>between digital inputs: yes<br>to the interface: yes<br>to easyLink: yes<br>to easyNet: yes<br>Safe isolation according to EN 50178: 300 V AC<br>Basic isolation: 600 V AC |
| Lifespan, mechanical | Operations | x 10$^6$ | 10 |
| Contacts | | | |
|   Conventional thermal current (10 A UL) | | A | 8 |
|   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<br>300 between two contacts |
| Making 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 |
| 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 |

## Supply voltage U~Aux~

| | | | |
|---|---|---|---|
| Power loss | P | W | 3.4 |

## Network easyNet

| | | |
|---|---|---|
| Data transfer rate/distance | | 1000 KBit/s, 6 m<br>500 KBit/s, 25 m<br>250 Kbit/s, 40 m<br>125 Kbit/s, 300 m<br>50 KBit/s, 300 m<br>20 KBit/s, 700 m<br>10 KBit/s, 1000 m<br>Lengths from 40 m can be obtained only with cables with reinforced cross-section and terminal adapter. |
| Potential isolation | | from power supply POW: yes<br>From the inputs: yes<br>from the outputs: yes<br>to easyLink: yes<br>to the interface: yes |
| Bus termination (first and last station) | | yes |
| Terminal types | | RJ45, 8-polig |
| Terminal capacity | | up to 1000 m, < 16 mΩ/m: 1.5 (AWG: 16)<br>up to 600 m, < 26 mΩ/m: 0.75 - 0.8 (AWG: 18)<br>up to 600 m, < 26 mΩ/m: 0.5 - 0.6 (AWG: 20, 19)<br>up to 400 m, < 40 mΩ/m: 0.34 - 0.5 (AWG: 22, 21, 20)<br>up to 250 m, < 60 mΩ/m: 0.25 - 0.34 (AWG: 23, 22)<br>up to 175 m, < 70 mΩ/m: 0.13 (AWG: 26)<br>up to 40 m, < 140 mΩ/m: 1.5 (AWG: 16) |

# 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) / Logic module (EC001417)

Electric engineering, automation, process control engineering / Control / Programmable logic control (SPS) / Logic module (ecl@ss10.0.1-27-24-22-16 [AKE539014])

| | | | |
|---|---|---|---|
| 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 |
| Switching current | | A | 8 |
| Number of analogue inputs | | | 4 |
| Number of analogue outputs | | | 1 |
| Number of digital inputs | | | 12 |
| Number of digital outputs | | | 6 |
| With relay output | | | Yes |
| Number of HW-interfaces industrial Ethernet | | | 0 |
| 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 | | | 3 |
| With optical interface | | | No |
| Supporting protocol for TCP/IP | | | No |
| 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 | | | No |
| 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 | | | Yes |
| 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 timer | | | Yes |
| Rail mounting possible | | | Yes |
| Wall mounting/direct mounting | | | Yes |
| Front build in possible | | | No |
| Rack-assembly possible | | | No |
| Suitable for safety functions | | | No |
| Category according to EN 954-1 | | | None |
| 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 | 107.5 |
| Height | | mm | 90 |
| Depth | | mm | 72 |

## Approvals

| | | |
|---|---|---|
| Product Standards | | IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking |
| UL File No. | | E135462 |
| UL Category Control No. | | NRAQ |
| CSA File No. | | 012528 |
| CSA Class No. | | 2252-01 + 2258-02 |
| North America Certification | | UL listed, CSA certified |
| Degree of Protection | | IEC: IP20, UL/CSA Type: - |

## Dimensions
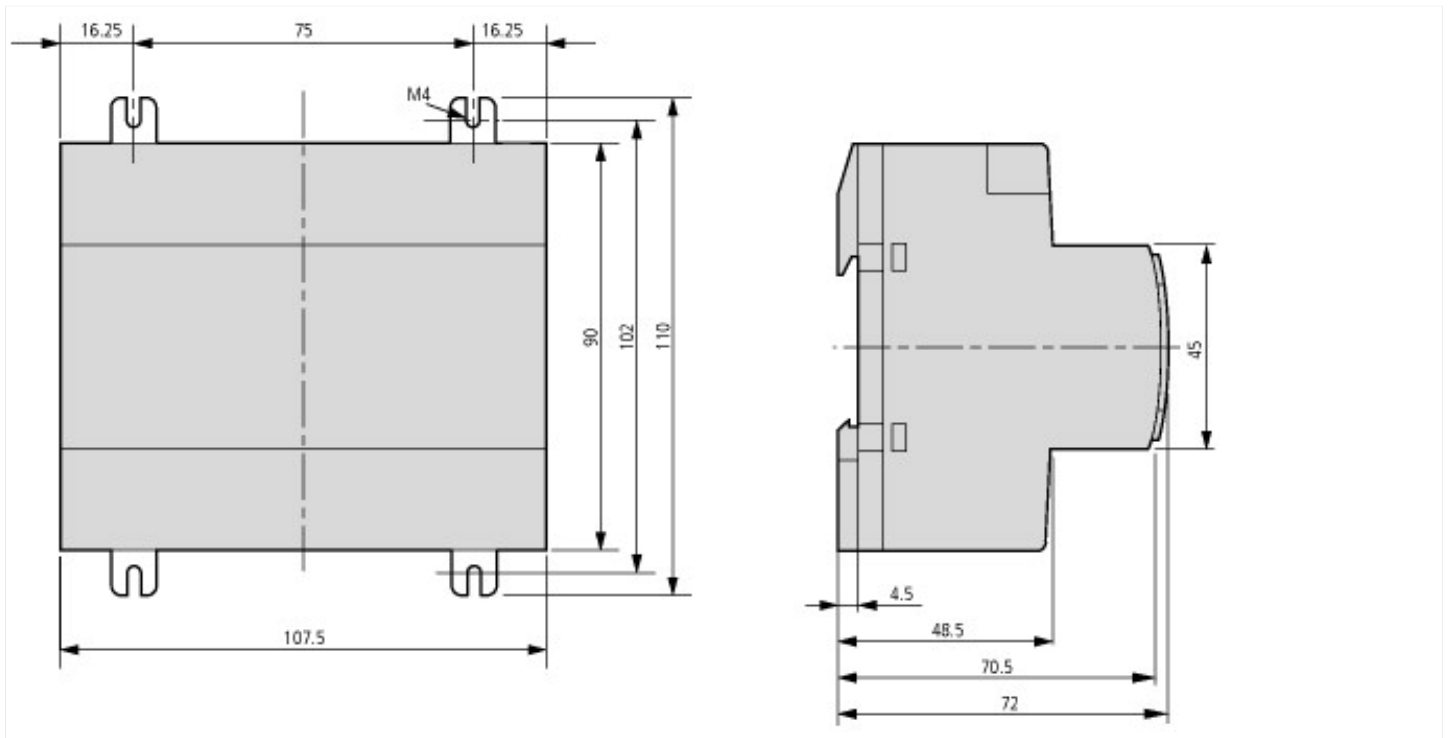
# Assets (links)

**Declaration of CE Conformity**
00003063

**Instruction Leaflets**
IL05013012Z2018_02

**Manuals**
MN04902001Z_EN (English)

# Additional product information (links)

| Instruction leaflet "easy control relays" IL05013012Z (AWA2528-1979) | |
|---|---|
| Instruction leaflet "easy control relays" IL05013012Z (AWA2528-1979) | ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL05013012Z2010_11.pdf |
| Instruction leaflet "easy control relays" IL05013012Z (AWA2528-1979) | ftp://ftp.moeller.net/DOCUMENTATION/AWA_INSTRUCTIONS/IL05013012Z2018_02.pdf |
| **Manual "easy800 control relays" MN04902001Z (AWB2528-1423)** | |
| Handbuch „Steuerrelais easy800" MN04902001Z (AWB2528-1423) - Deutsch | ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04902001Z_DE.pdf |
| Manual "easy800 control relays" MN04902001Z (AWB2528-1423) - English | ftp://ftp.moeller.net/DOCUMENTATION/AWB_MANUALS/MN04902001Z_EN.pdf |
| f1=1454&f2=1174&f3=1718;Download Software easySoft V6 | http://applications.eaton.eu/sdlc?LX=11&amp |
| f1=1454&f2=1179;Labeleditor | http://applications.eaton.eu/sdlc?LX=11&amp |