



Digital residual current circuit-breaker, 40A, 4p, 30mA, type U



Part no. FRCDM-40/4/003-U
Catalog No. 168643
Alternate Catalog No. FRCDM-40/4/003-U

Similar to illustration

Delivery program

| | | | |
|------------------------------|----------------|------|---|
| Basic function | | | Residual current circuit-breakers , digital |
| Number of poles | | | 4 pole |
| Application | | | Residual current circuit-breaker - frequency converter-proof |
| Rated current | I_n | A | 40 |
| Rated short-circuit strength | I_{cn} | kA | 10 |
| Rated fault current | $I_{\Delta N}$ | A | 0.03 |
| Type | | | Type U |
| Tripping | | s... | Short time-delayed |
| Product range | | | FRCDM |
| Sensitivity | | | pulse-current sensitive, suitable for variable frequency drives |
| Impulse withstand current | | | Surge-proof, 3 kA |
| Contact sequence | | | |

Technical data

Electrical

| | | | |
|--|----------------------|------|---|
| Types conform to | | | IEC/EN 61008 |
| Current test marks | | | As per inscription |
| Tripping | | s... | 10 ms delayed |
| Rated voltage according to IEC/EN 60947-2 | U_n | V AC | 240/415 |
| Rated frequency | f | Hz | 50 |
| Limit values of the operating voltage | | | |
| electronic | | V AC | 50 - 264 |
| Test circuit | | V AC | 196 - 264 |
| Rated fault current | $I_{\Delta n}$ | mA | 30 |
| Sensitivity | | | pulse-current sensitive, suitable for variable frequency drives |
| Enhanced sensitivity | | | Suitable for variable frequency drives |
| Rated insulation voltage | U_i | V | 440 |
| Rated impulse withstand voltage | U_{imp} | kV | 4 |
| Rated short-circuit strength | I_{cn} | kA | 10 |
| Impulse withstand current | | | 3 kA (8/20 μ s) surge-proof |
| Max. admissible back-up fuse | | | |
| Short-circuit | gG/gL | A | 63 |
| Overload | gG/gL | A | 63 |
| Rated making and breaking capacity / Rated residual making and breaking capacity | $I_m / I_{\Delta m}$ | A | 500 |
| lifespan | | | |
| Electrical | Operations | | ≥ 4000 |
| Mechanical | Operations | | ≥ 20000 |

Dry auxiliary contact

| | | | |
|--------------------------|--|---|---|
| Rated switching capacity | | | |
| 30 VDC (resistive load) | | A | 2 |

| | | |
|--|-----------------|----------------------|
| 240 VAC (resistive load) | A | 0.25 |
| Max. switching duty (resistive load) | W | 60 |
| Max. switching voltage AC | V | 240 |
| Max. switching voltage DC | V | 220 |
| Maximum switching current | A | 2 |
| Min. switching capacity (reference value) | | 10 μ A, 10 mV DC |
| lifespan | | |
| Electrical (at 20 switching operations per minute) 2 A 30 VDC resistive load | Operations | $\geq 10^5$ |
| Electrical (at 20 switching operations per minute) 1 A 30 VDC resistive load | Operations | $\geq 5 \times 10^5$ |
| Terminal capacity | mm ² | 0.25 - 1.5 |

Mechanical

| | | |
|---|-----------------|---|
| Standard front dimension | mm | 45 |
| Device height | mm | 80 |
| Built-in width | mm | 70 (4TE) |
| Mounting | | Quick attachment with 2 latch positions for DIN-rail IEC/EN 60715 |
| Degree of Protection | | IP20, IP40 with suitable enclosure |
| Terminals top and bottom | | Twin-purpose terminals |
| Terminal protection | | finger and hand touch safe, DGUV VS3, EN 50274 |
| Terminal cross-section | | |
| Solid | mm ² | 1.5 - 35 |
| Stranded | mm ² | 2 x 16 |
| Terminal cross-section | | M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2) |
| Tightening torque of fixing screws | N/m | 2 - 2.4 |
| Thickness of busbar material | mm | 0.8 - 2 |
| Admissible ambient temperature range | °C | -25 - +40 |
| Permissible storage and transport temperatures | °C | -35 - +60 |
| Climatic proofing | | 25-55°C/90-95% relative humidity according to IEC 60068-2 |
| Mounting position | | As required |
| Contact position indicator | | red / green |
| Trip indication | | white / blue |
| Internal resistance (at room temperature, single-pole, 50 Hz) | | |
| Complete unit | R _i | m Ω 0.64 |

Design verification as per IEC/EN 61439

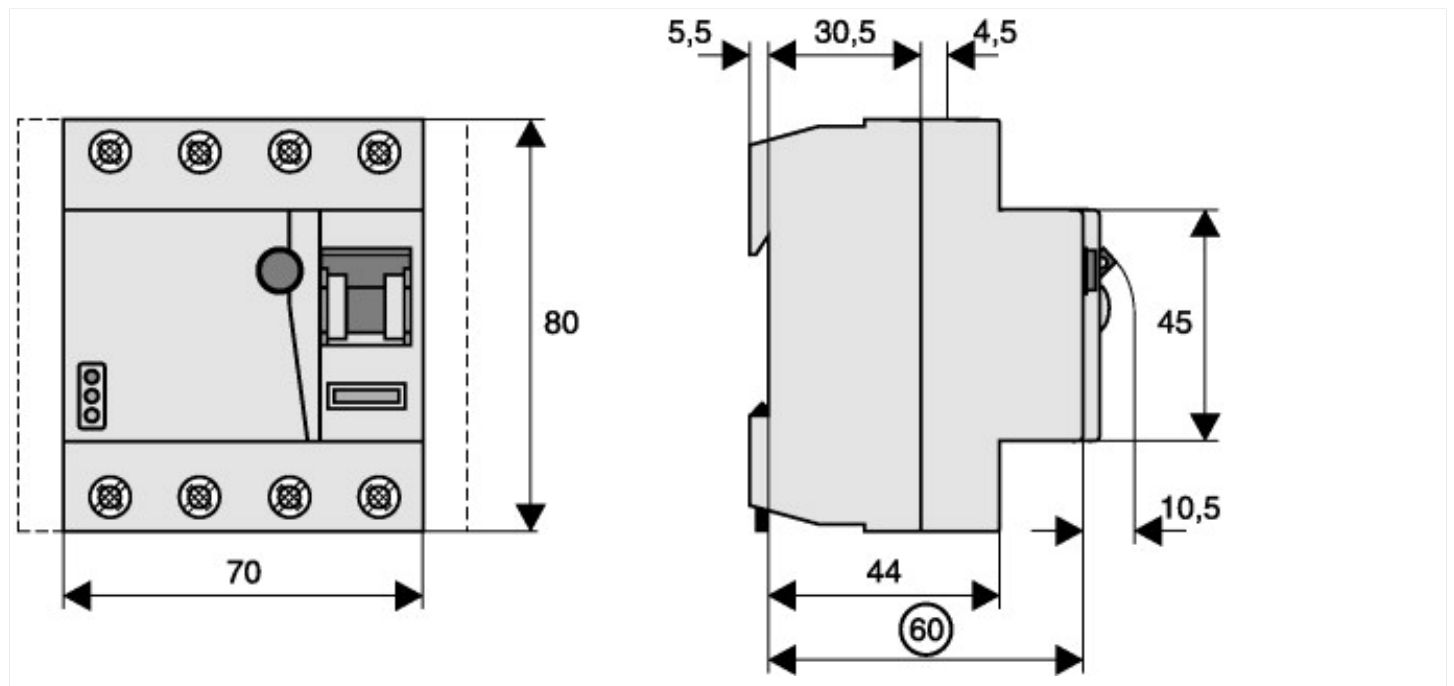
| | | | |
|--|-------------------|----|---|
| Technical data for design verification | | | |
| Rated operational current for specified heat dissipation | I _n | A | 40 |
| Heat dissipation per pole, current-dependent | P _{vid} | W | 0 |
| Equipment heat dissipation, current-dependent | P _{vid} | W | 6.2 |
| Static heat dissipation, non-current-dependent | P _{vs} | W | 0 |
| Heat dissipation capacity | P _{diss} | W | 0 |
| Operating ambient temperature min. | | °C | -25 |
| Operating ambient temperature max. | | °C | 60 |
| | | | Starting at 40 °C, the max. permissible continuous current decreases by 2.5% for every 1 °C |
| 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 | | Does not apply, since the entire switchgear needs to be evaluated. |
| 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. The specifications for the switchgear must be observed. |
| 10.12 Electromagnetic compatibility | | Is the panel builder's responsibility. The specifications for the switchgear must be observed. |
| 10.13 Mechanical function | | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed. |

Technical data ETIM 7.0

| | | |
|---|-----------------|----------|
| Circuit breakers and fuses (EG000020) / Residual current circuit breaker (RCCB) (EC000003) | | |
| Electric engineering, automation, process control engineering / Electrical installation, device / Residual current protection system / Residual current circuit breaker (RCCB) (ecl@ss10.0.1-27-14-22-01 [AAB906014]) | | |
| Number of poles | | 4 |
| Rated voltage | V | 415 |
| Rated current | A | 40 |
| Rated fault current | mA | 30 |
| Rated insulation voltage Ui | V | 440 |
| Rated impulse withstand voltage Uimp | kV | 4 |
| Mounting method | | DIN rail |
| Leakage current type | | A |
| Selective protection | | No |
| Short-time delayed tripping | | Yes |
| Short-circuit breaking capacity (Icw) | kA | 10 |
| Surge current capacity | kA | 3 |
| Frequency | | 50 Hz |
| Additional equipment possible | | Yes |
| With interlocking device | | Yes |
| Degree of protection (IP) | | IP20 |
| Width in number of modular spacings | | 4 |
| Built-in depth | mm | 70.5 |
| Ambient temperature during operating | °C | -25 - 40 |
| Pollution degree | | 2 |
| Connectable conductor cross section multi-wired | mm ² | 1.5 - 16 |
| Connectable conductor cross section solid-core | mm ² | 1.5 - 35 |

Dimensions



Additional product information (links)

Product overview (Web)

<http://www.eaton.eu/Europe/Electrical/ProductsServices/CircuitProtection/DigitalCircuitBreakers/index.htm>