



Residual current circuit breaker (RCCB), 40A, 4p, 300mA, type A

Part no. **FRCMM-40/4/03-A-NA-110**  
 Catalog No. **167703**

Similar to illustration

### Delivery program

|                              |                |      |                                   |
|------------------------------|----------------|------|-----------------------------------|
| Basic function               |                |      | Residual current circuit-breakers |
| Number of poles              |                |      | 4 pole                            |
| Application                  |                |      | Switchgear for 110-V systems      |
| Rated current                | $I_n$          | A    | 40                                |
| Rated short-circuit strength | $I_{cn}$       | kA   | 10 with back-up fuse              |
| Rated fault current          | $I_{\Delta N}$ | A    | 0.3                               |
| Type                         |                |      | Type A                            |
| Tripping                     |                | s... | non-delayed                       |
| Product range                |                |      | FRCmM-NA-110                      |
| Sensitivity                  |                |      | Pulse-current sensitive           |
| Impulse withstand current    |                |      | Partly surge-proof 250 A          |
| Contact sequence             |                |      |                                   |

### Technical data

#### Electrical

|  |                      |      |                             |
|--|----------------------|------|-----------------------------|
| Types conform to   |                      |      | IEC/EN 61008<br>ÖVE E 8601  |
| Current test marks   |                      |      | As per inscription          |
| Tripping   |                      | s... | non-delayed                 |
| Rated voltage according to IEC/EN 60947-2  | $U_n$                | V AC | 110/190                     |
| Rated frequency  | f                    | Hz   | 50/60                       |
| Limit values of the operating voltage  |                      |      |                             |
| Test circuit   |                      | V AC | 100 - 210                   |
| Rated fault current  | $I_{\Delta n}$       | mA   | 300                         |
| Sensitivity  |                      |      | Pulse-current sensitive     |
| Rated insulation voltage   | $U_i$                | V    | 440                         |
| Rated impulse withstand voltage  | $U_{imp}$            | kV   | 4 (1.2/50µs)                |
| Rated short-circuit strength   | $I_{cn}$             | kA   | 10 with back-up fuse        |
| Impulse withstand current  |                      |      | 250 A (8/20 µs) surge-proof |
| Max. admissible back-up fuse   |                      |      |                             |
| Short-circuit  | gG/gL                | A    | 63                          |
| Overload   | gG/gL                | A    | 40                          |
| Rated making and breaking capacity / Rated residual making and breaking capacity | $I_m / I_{\Delta m}$ | A    | 500                         |
| lifespan   |                      |      |                             |
| Electrical   | Operations           |      | ≥ 4000                      |
| Mechanical   | Operations           |      | ≥ 10000                     |

#### Electrical

|                                       |       |      |                    |
|---------------------------------------|-------|------|--------------------|
| Types conform to                      |       |      | UL1053             |
| Current test marks                    |       |      | As per inscription |
| Tripping                              |       |      | non-delayed        |
| Rated voltage according to UL         | $U_n$ | V AC | 208/120 V, 60 Hz   |
| Limit values of the operating voltage |       |      |                    |

|  |                      |      |  |
|--|----------------------|------|--|
| Test circuit   |                      | V AC | 94 - 230   |
| Pick-up current  |                      | mA   | 200  |
| Sensitivity  |                      |      | Pulse-current sensitive  |
| Overvoltage-tested   |                      | V    | 530  |
| Rated impulse withstand voltage  | $U_{imp}$            | kV   | 4 (1.2/50 $\mu$ s)   |
| Rated short-circuit strength   | $I_{cn}$             | kA   | 5 as per CSA   |
| Max. admissible back-up fuse   |                      |      |  |
| Short-circuit  |                      |      | 70 A class J fuse  |
| Overload   |                      |      | The maximum operating current must not exceed the residual current circuit-breaker's rated operational current |
| Rated making and breaking capacity / Rated residual making and breaking capacity | $I_m / I_{\Delta m}$ | A    | 500  |
| lifespan   |                      |      |  |
| Electrical   | Operations           |      | $\geq 4000$  |
| Mechanical   | Operations           |      | $\geq 10000$   |

## 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                           |  |                 | IP40, IP54 (with moisture-proof enclosure)                                |
| Terminals top and bottom                       |  |                 | Lift terminals  |
| Terminal protection                            |  |                 | Busbar tag shroud to BGV A3, ÖVE-EN 6                                     |
| Terminal cross-section                         |  |                 |   |
| Solid  |  | mm <sup>2</sup> | 1.5 - 35  |
| Stranded                                       |  | mm <sup>2</sup> | 2 x 16  |
| Terminal cross-section                         |  |                 | M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, Pozidriv PZ2) |
| 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                 |
| Humidity                                       |  | %               | 5 - 95  |
| Pollution degree                               |  |                 | 2   |
| Mounting position                              |  |                 | As required   |
| Contact position indicator                     |  |                 | red / green   |
| Trip indication                                |  |                 | white / blue  |

## 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  | 2.2   |
| Equipment heat dissipation, current-dependent  | $P_{vid}$ | W  | 8.8   |
| Operating ambient temperature min.   |           | °C | -25   |
| Operating ambient temperature max.   |           | °C | 75  |
|  |           |    | 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) (ec1@ss10.0.1-27-14-22-01 [AAB906014]) |                 |          |
| Number of poles   |                 | 4        |
| Rated voltage   | V               | 190      |
| Rated current   | A               | 40       |
| Rated fault current   | mA              | 300      |
| 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   |                 | No       |
| Short-circuit breaking capacity (Icw)   | kA              | 10       |
| Surge current capacity  | kA              | 0.25     |
| Frequency   |                 | 50/60 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 <sup>2</sup> | 1.5 - 16 |
| Connectable conductor cross section solid-core  | mm <sup>2</sup> | 1.5 - 35 |

## Dimensions

