

## Residual current circuit breaker (RCCB), 40A, 4p, 30mA, type G/F



**Part no.** FRCMM-40/4/003-G/F  
**Catalog No.** 187409

**EL-Nummer** 1605283  
**(Norway)**

Similar to illustration

## Delivery program

|                              |                |      |                                                                |
|------------------------------|----------------|------|----------------------------------------------------------------|
| Basic function               |                |      | Residual current circuit-breakers                              |
| Number of poles              |                |      | 4 pole                                                         |
| Application                  |                |      | Switchgear for industrial and advanced commercial applications |
| 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    | 0.03                                                           |
| Type                         |                |      | Type G/F (ÖVE E 8601)                                          |
| Tripping                     |                | s... | 10 ms delayed                                                  |
| Product range                |                |      | FRCmM                                                          |
| Sensitivity                  |                |      | Pulse-current sensitive                                        |
| Impulse withstand current    |                |      | Surge-proof, 3 kA                                              |

## Technical data

## Electrical

|                                                                                  |                      |      |                                       |
|----------------------------------------------------------------------------------|----------------------|------|---------------------------------------|
| Types conform to                                                                 |                      |      | IEC/EN 61008<br>IEC/EN 62423          |
| Standards                                                                        |                      |      | IEC/EN 61008<br>EN 45545-2; IEC 61373 |
| 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   | 50/60                                 |
| Limit values of the operating voltage                                            |                      |      |                                       |
| Test circuit                                                                     |                      | V AC | 184 - 440                             |
| Rated fault current                                                              | $I_{\Delta n}$       | mA   | 30                                    |
| Sensitivity                                                                      |                      |      | Pulse-current sensitive               |
| Enhanced sensitivity                                                             |                      |      | Frequency mix (10 Hz, 50 Hz, 1000 Hz) |
| 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                                                        |                      |      | 3 kA (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           |      | ≥ 20000                               |

## 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 <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) |
| Tightening torque of fixing screws             |  | N/m             | 2 - 2.4                                                                   |
| Thickness of busbar material                   |  | mm              | 0.8 - 2                                                                   |
| Admissible ambient temperature range           |  | °C              | -25 - +75                                                                 |
| 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                                                              |

## Design verification as per IEC/EN 61439

|                                                                                                                        |                   |    |                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------|-------------------|----|----------------------------------------------------------------------------------------------------------------------------------|
| Technical data for design verification                                                                                 |                   |    |                                                                                                                                  |
| Rated operational current for specified heat dissipation                                                               | I <sub>n</sub>    | A  | 40                                                                                                                               |
| Heat dissipation per pole, current-dependent                                                                           | P <sub>vid</sub>  | W  | 3.275                                                                                                                            |
| Equipment heat dissipation, current-dependent                                                                          | P <sub>vid</sub>  | W  | 13.1                                                                                                                             |
| Static heat dissipation, non-current-dependent                                                                         | P <sub>vs</sub>   | W  | 0                                                                                                                                |
| Heat dissipation capacity                                                                                              | P <sub>diss</sub> | W  | 0                                                                                                                                |
| 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)

|                                                 |  |                 |          |
|-------------------------------------------------|--|-----------------|----------|
| Number of poles                                 |  |                 | 4        |
| Rated voltage                                   |  | V               | 240      |
| 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                            |  |                 | Other    |
| Selective protection                            |  |                 | No       |
| Short-time delayed tripping                     |  |                 | Yes      |
| Short-circuit breaking capacity (Icw)           |  | kA              | 10       |
| Surge current capacity                          |  | kA              | 3        |
| 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 - 75 |
| 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 |