

# Specifications



## Eaton 167704

Eaton Moeller series xEffect - FRCmM-NA RCCB. Residual current circuit breaker (RCCB), 63A, 4p, 300mA, type A, UL, 110V

### General specifications

|                             |                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton Moeller series<br>xEffect - FRCmM-NA RCCB                                       |
| <b>CATALOG NUMBER</b>       | 167704                                                                                |
| <b>MODEL CODE</b>           | FRCMM-63/4/03-A-NA-110                                                                |
| <b>EAN</b>                  | 4015081642458                                                                         |
| <b>PRODUCT LENGTH/DEPTH</b> | 76 mm                                                                                 |
| <b>PRODUCT HEIGHT</b>       | 80 mm                                                                                 |
| <b>PRODUCT WIDTH</b>        | 70 mm                                                                                 |
| <b>PRODUCT WEIGHT</b>       | 0.32 kg                                                                               |
| <b>COMPLIANCES</b>          | RoHS conform                                                                          |
| <b>CERTIFICATIONS</b>       | UL 1053<br>IEC/EN 61008<br>ÖVE E 8601<br>EN45545-2<br>IEC 61373                       |
| <b>CATALOG NOTES</b>        | Protects against special forms of residual pulsating DC which have not been smoothed. |
| <b>GLOBAL CATALOG</b>       | 167704                                                                                |
| <b>PRODUCT TYPE</b>         | RCCB                                                                                  |

## Product specifications

|                                                                                         |                                                                                                                                  |
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| <b>USED WITH</b>                                                                        | Type A<br>Residual current circuit breakers<br>FRCmM-NA-110                                                                      |
| <b>AMPERAGE RATING</b>                                                                  | 63 A                                                                                                                             |
| <b>FEATURES</b>                                                                         | Residual current circuit breaker<br>Additional equipment possible                                                                |
| <b>10.10 TEMPERATURE RISE</b>                                                           | The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices. |
| <b>10.11 SHORT-CIRCUIT RATING</b>                                                       | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| <b>10.12 ELECTROMAGNETIC COMPATIBILITY</b>                                              | Is the panel builder's responsibility. The specifications for the switchgear must be observed.                                   |
| <b>10.13 MECHANICAL FUNCTION</b>                                                        | The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.                         |
| <b>10.2.2 CORROSION RESISTANCE</b>                                                      | Meets the product standard's requirements.                                                                                       |
| <b>10.2.3.1 VERIFICATION OF THERMAL STABILITY OF ENCLOSURES</b>                         | Meets the product standard's requirements.                                                                                       |
| <b>10.2.3.2 VERIFICATION OF RESISTANCE OF INSULATING MATERIALS TO NORMAL HEAT</b>       | Meets the product standard's requirements.                                                                                       |
| <b>10.2.3.3 RESIST. OF INSUL. MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b> | Meets the product standard's requirements.                                                                                       |
| <b>10.2.4 RESISTANCE TO ULTRA-VIOLET (UV) RADIATION</b>                                 | Meets the product standard's requirements.                                                                                       |
| <b>10.2.5 LIFTING</b>                                                                   | Does not apply, since the entire switchgear needs to be evaluated.                                                               |
| <b>10.2.6 MECHANICAL IMPACT</b>                                                         | Does not apply, since the entire switchgear needs to                                                                             |

## Resources

|                               |                                                                                                                                                                                                        |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APPLICATION NOTES             | <a href="#">eaton-rcd-application-guide-br019003en-en-us.pdf</a>                                                                                                                                       |
| BROCHURES                     | <a href="#">UL 1053 DIN rail RCCB</a>                                                                                                                                                                  |
| CATALOGS                      | <a href="#">eaton-xeffect-industrial-switchgear-range-catalog-ca003002en-en-us.pdf</a><br><a href="#">Circuit Protection, Miniature Circuit Breakers and Supplementary Protectors, Volume 4, Tab 1</a> |
| DECLARATIONS OF CONFORMITY    | <a href="#">eaton-rccb-declaration-of-conformity-uk251420en.pdf</a><br><a href="#">eaton-rccb-declaration-of-conformity-eu250057en.pdf</a>                                                             |
| DRAWINGS                      | <a href="#">eaton-circuit-breaker-xeffect-frcmm-na-rccb-dimensions.eps</a>                                                                                                                             |
| ECAD MODEL                    | <a href="#">ETN.FRCMM-63_4_03-A-NA-110.edz</a>                                                                                                                                                         |
| INSTALLATION INSTRUCTIONS     | <a href="#">MA180503312</a>                                                                                                                                                                            |
| MCAD MODEL                    | <a href="#">eaton-residual-current-circuit-breakers-3d-models-frcmm-4p-na.stp</a>                                                                                                                      |
| SPECIFICATIONS AND DATASHEETS | <a href="#">Eaton Specification Sheet - 167704</a>                                                                                                                                                     |
| WIRING DIAGRAMS               | <a href="#">eaton-circuit-breaker-xeffect-frcmm-rccb-wiring-diagram-002.eps</a><br><a href="#">eaton-xeffect-frcmm-rccb-wiring-diagram-002.jpg</a>                                                     |

|                                                                 |                                                                                  |
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|                                                                 | be evaluated.                                                                    |
| <b>10.2.7 INSCRIPTIONS</b>                                      | Meets the product standard's requirements.                                       |
| <b>10.3 DEGREE OF PROTECTION OF ASSEMBLIES</b>                  | Does not apply, since the entire switchgear needs to be evaluated.               |
| <b>10.4 CLEARANCES AND CREEPAGE DISTANCES</b>                   | Meets the product standard's requirements.                                       |
| <b>10.5 PROTECTION AGAINST ELECTRIC SHOCK</b>                   | Does not apply, since the entire switchgear needs to be evaluated.               |
| <b>10.6 INCORPORATION OF SWITCHING DEVICES AND COMPONENTS</b>   | Does not apply, since the entire switchgear needs to be evaluated.               |
| <b>10.7 INTERNAL ELECTRICAL CIRCUITS AND CONNECTIONS</b>        | Is the panel builder's responsibility.                                           |
| <b>10.8 CONNECTIONS FOR EXTERNAL CONDUCTORS</b>                 | Is the panel builder's responsibility.                                           |
| <b>10.9.2 POWER-FREQUENCY ELECTRIC STRENGTH</b>                 | Is the panel builder's responsibility.                                           |
| <b>10.9.3 IMPULSE WITHSTAND VOLTAGE</b>                         | Is the panel builder's responsibility.                                           |
| <b>10.9.4 TESTING OF ENCLOSURES MADE OF INSULATING MATERIAL</b> | Is the panel builder's responsibility.                                           |
| <b>FITTED WITH:</b>                                             | Interlocking device                                                              |
| <b>FRAME</b>                                                    | 45 mm                                                                            |
| <b>FREQUENCY RATING</b>                                         | 50 Hz / 60 Hz                                                                    |
| <b>POLLUTION DEGREE</b>                                         | 2                                                                                |
| <b>LIFESPAN, MECHANICAL</b>                                     | 10000 operations                                                                 |
| <b>MOUNTING METHOD</b>                                          | Quick attachment with 2 latch positions for DIN-rail<br>IEC/EN 60715<br>DIN rail |
| <b>CLIMATIC PROOFING</b>                                        | 25-55 °C / 90-95% relative humidity according to IEC 60068-2                     |
| <b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>            | 10.5 W                                                                           |
| <b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP)</b>                   | 4 kV                                                                             |
| <b>RATED SHORT-TIME WITHSTAND CURRENT (ICW)</b>                 | 10 kA                                                                            |
| <b>ADMISSIBLE BACK-UP FUSE OVERLOAD - MAX</b>                   | 40 A gG/gL                                                                       |
| <b>AMBIENT HUMDITY</b>                                          | 5 - 95 %                                                                         |

| RANGE                                                          |                                                                  |
|----------------------------------------------------------------|------------------------------------------------------------------|
| <b>BUILT-IN WIDTH<br/>(NUMBER OF UNITS)</b>                    | 70 mm (4 SU)                                                     |
| <b>SHORT-CIRCUIT RATING</b>                                    | Max. admissible back-up fuse: 63 A gG/gL, 70 A class J fuse (UL) |
| <b>STATUS INDICATION</b>                                       | White / blue                                                     |
| <b>TERMINAL PROTECTION</b>                                     | Finger and hand touch safe, DGUV VS3, EN 50274                   |
| <b>TERMINALS (TOP AND BOTTOM)</b>                              | Lift terminals                                                   |
| <b>TEST CIRCUIT RANGE</b>                                      | 100 V AC - 210 V AC, 94 V AC - 230 V AC (UL)                     |
| <b>AMBIENT OPERATING TEMPERATURE - MAX</b>                     | 40 °C                                                            |
| <b>AMBIENT OPERATING TEMPERATURE - MIN</b>                     | -25 °C                                                           |
| <b>BUILT-IN DEPTH</b>                                          | 70.5 mm                                                          |
| <b>CONNECTABLE CONDUCTOR CROSS SECTION (MULTI-WIRED) - MAX</b> | 16 mm <sup>2</sup>                                               |
| <b>CONNECTABLE CONDUCTOR CROSS SECTION (MULTI-WIRED) - MIN</b> | 1.5 mm <sup>2</sup>                                              |
| <b>CONNECTABLE CONDUCTOR CROSS SECTION (SOLID-CORE) - MAX</b>  | 35 mm <sup>2</sup>                                               |
| <b>CONNECTABLE CONDUCTOR CROSS SECTION (SOLID-CORE) - MIN</b>  | 1.5 mm <sup>2</sup>                                              |
| <b>FAULT CURRENT RATING</b>                                    | 300 mA                                                           |
| <b>HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT</b>            | 2.625 W                                                          |
| <b>OVERVOLTAGE TESTED - MAX</b>                                | 530 V                                                            |
| <b>PERMITTED STORAGE AND TRANSPORT TEMPERATURE - MAX</b>       | 60 °C                                                            |
| <b>PERMITTED STORAGE AND TRANSPORT TEMPERATURE - MIN</b>       | -35 °C                                                           |
| <b>CONTACT POSITION INDICATOR COLOR</b>                        | Red / green                                                      |
| <b>MOUNTING POSITION</b>                                       | As required                                                      |
| <b>DEGREE OF PROTECTION</b>                                    | IP20, IP40 with suitable enclosure                               |

|                                  |                                                                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|                                  | IP20                                                                                                                            |
| <b>IMPULSE WITHSTAND CURRENT</b> | Partly surge-proof 250 A<br>250 A (8/20 µs) surge-proof                                                                         |
| <b>NUMBER OF POLES</b>           | Four-pole                                                                                                                       |
| <b>LEAKAGE CURRENT TYPE</b>      | A                                                                                                                               |
| <b>LIFESPAN, ELECTRICAL</b>      | 4000 operations                                                                                                                 |
| <b>TYPE</b>                      | <ul style="list-style-type: none"> <li>• FRCmM-NA-110</li> <li>• Residual current circuit breakers</li> <li>• Type A</li> </ul> |

|                         |                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SPECIAL FEATURES</b> | <ul style="list-style-type: none"> <li>• Current test marks as per inscription</li> <li>• Maximum operating temperature is 75 °C: Starting at 40 °C, the max. permissible continuous current decreases by 1.8% for every 1 °C</li> <li>• The maximum operating current of back-up fuse must not exceed the residual current circuit breaker's rated operational current</li> </ul> |
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|                                                                      |                                                                  |
|----------------------------------------------------------------------|------------------------------------------------------------------|
| <b>APPLICATION</b>                                                   | Switchgear for 110-V systems                                     |
| <b>PICK-UP CURRENT</b>                                               | 200 mA                                                           |
| <b>SENSITIVITY TYPE</b>                                              | Pulse-current sensitive                                          |
| <b>TERMINAL CAPACITY (CABLE)</b>                                     | M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, PZ2) |
| <b>RATED FAULT CURRENT - MAX</b>                                     | 0.3 A                                                            |
| <b>RATED FAULT CURRENT - MIN</b>                                     | 0.3 A                                                            |
| <b>RATED INSULATION VOLTAGE (UI)</b>                                 | 440 V                                                            |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 63 A                                                             |
| <b>RATED OPERATIONAL VOLTAGE (UE) - MAX</b>                          | 190 V                                                            |
| <b>RATED RESIDUAL MAKING AND BREAKING</b>                            | 630 A                                                            |

|                                     |                                                  |
|-------------------------------------|--------------------------------------------------|
| CAPACITY                            |                                                  |
| SURGE CURRENT CAPACITY              | 0.25 kA                                          |
| WIDTH IN NUMBER OF MODULAR SPACINGS | 4                                                |
| VOLTAGE RATING (IEC/EN 60947-2)     | 110/190 V                                        |
| VOLTAGE RATING (UL)                 | 208/120 V, 60 Hz                                 |
| VOLTAGE TYPE                        | AC                                               |
| TERMINAL CAPACITY (SOLID WIRE)      | 1.5 mm <sup>2</sup> - 35 mm <sup>2</sup>         |
| TRIPPING TIME                       | Non-delayed                                      |
| RATED SHORT-CIRCUIT STRENGTH        | 10 kA with back-up fuse<br>5 kA (UL, as per CSA) |
| TERMINAL CAPACITY (STRANDED CABLE)  | 16 mm <sup>2</sup> (2x)                          |
| RAL-NUMBER                          | 7035                                             |
| COLOR                               | Gray                                             |

|                 |
|-----------------|
| PROJECT NAME:   |
| PROJECT NUMBER: |
| PREPARED BY:    |
| DATE:           |



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