

# Specifications



## Eaton 167696

Eaton Moeller series xEffect - FRCmM-NA RCCB. FRCmM-NA-110, 2 pole, In: 25 A, Icn: 10 with back-up fuse kA, IΔN: 0.3 A, 110-V systems

### General specifications

|                      |                                                                                                    |
|----------------------|----------------------------------------------------------------------------------------------------|
| PRODUCT NAME         | Eaton Moeller series xEffect - FRCmM-NA RCCB                                                       |
| CATALOG NUMBER       | 167696                                                                                             |
| MODEL CODE           | FRCMM-25/2/03-G/A-NA-110                                                                           |
| EAN                  | 4015081642380                                                                                      |
| PRODUCT LENGTH/DEPTH | 76 mm                                                                                              |
| PRODUCT HEIGHT       | 80 mm                                                                                              |
| PRODUCT WIDTH        | 35 mm                                                                                              |
| PRODUCT WEIGHT       | 0.22 kg                                                                                            |
| COMPLIANCES          | RoHS conform                                                                                       |
| CERTIFICATIONS       | UL 1053<br>IEC/EN 61008<br>ÖVE E 8601<br>EN45545-2<br>IEC 61373                                    |
| CATALOG NOTES        | Additionally protects against special forms of residual pulsating DC which have not been smoothed. |



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## Product specifications

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>USED WITH</b>                                                                  | Type G/A (◆VE E 8601)<br>FRCmM-NA-110<br>Residual current circuit breakers                                                                                                                                                                                                                                                                                                 |
| <b>TYPE</b>                                                                       | <ul style="list-style-type: none"> <li>Current test marks as per inscription</li> <li>Maximum operating temperature is 55 °C: Starting at 40 °C, the max. permissible continuous current decreases by 3% 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> |
| <b>SPECIAL FEATURES</b>                                                           | <ul style="list-style-type: none"> <li>FRCmM-NA-110</li> <li>Residual current circuit breakers</li> <li>Type G/A (ÖVE E 8601)</li> </ul>                                                                                                                                                                                                                                   |
| <b>APPLICATION</b>                                                                | Switchgear for 110-V systems                                                                                                                                                                                                                                                                                                                                               |
| <b>AMPERAGE RATING</b>                                                            | 25 A                                                                                                                                                                                                                                                                                                                                                                       |
| <b>FEATURES</b>                                                                   | Additional equipment possible<br>Residual current circuit breaker                                                                                                                                                                                                                                                                                                          |
| <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.</b>                                                 | Meets the product standard's                                                                                                                                                                                                                                                                                                                                               |

## Resources

|                                      |                                                                                                                                                                                                                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>APPLICATION NOTES</b>             | <a href="#">eaton-rcd-application-guide-br019003en-en-us.pdf</a>                                                                                                                                                                                                                           |
| <b>CATALOGS</b>                      | <a href="#">eaton-xeffect-frcmm-na-rccb-catalog-ca003019en-en-us.pdf</a><br><br><a href="#">Circuit Protection, Miniature Circuit Breakers and Supplementary Protectors, Volume 4, Tab 1</a><br><br><a href="#">eaton-xeffect-industrial-switchgear-range-catalog-ca003002en-en-us.pdf</a> |
| <b>DECLARATIONS OF CONFORMITY</b>    | <a href="#">DA-DC-03_FRCm</a>                                                                                                                                                                                                                                                              |
| <b>DRAWINGS</b>                      | <a href="#">eaton-circuit-breaker-xeffect-frcmm-na-rccb-dimensions.eps</a>                                                                                                                                                                                                                 |
| <b>ECAD MODEL</b>                    | <a href="#">ETN.FRCMM-25_2_03-G_A-NA-110.edz</a>                                                                                                                                                                                                                                           |
| <b>INSTALLATION INSTRUCTIONS</b>     | <a href="#">MA180503312</a>                                                                                                                                                                                                                                                                |
| <b>MCAD MODEL</b>                    | <a href="#">eaton-residual-current-circuit-breakers-drawings-f9-ul1053-2p.dwg</a><br><br><a href="#">eaton-residual-current-circuit-breakers-3d-models-f9-ul1053-2p.stp</a>                                                                                                                |
| <b>SPECIFICATIONS AND DATASHEETS</b> | <a href="#">Eaton Specification Sheet - 167696</a>                                                                                                                                                                                                                                         |
| <b>WIRING DIAGRAMS</b>               | <a href="#">eaton-xeffect-frcmm-rccb-wiring-diagram.jpg</a><br><br><a href="#">eaton-circuit-breaker-xeffect-frcmm-na-rccb-wiring-diagram.eps</a>                                                                                                                                          |

|                                                                 |                                                                               |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>MAT. TO ABNORMAL HEAT/FIRE BY INTERNAL ELECT. EFFECTS</b>    | 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 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>MOUNTING METHOD</b>                                          | Quick attachment with 2 latch positions for DIN-rail 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>            | 1.3 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>                  | 25 A gG/gL                                                       |
| <b>AMBIENT HUMDITY RANGE</b>                                   | 5 - 95 %                                                         |
| <b>BUILT-IN WIDTH (NUMBER OF UNITS)</b>                        | 35 mm (2 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, DGVV VS3, EN 50274                   |
| <b>TERMINALS (TOP AND BOTTOM)</b>                              | Lift terminals                                                   |
| <b>TEST CIRCUIT RANGE</b>                                      | 100 V AC - 121 V AC, 94 V AC - 132 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>            | 0.65 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>LIFESPAN, MECHANICAL</b>                                    | 10000 operations                                                 |
| <b>DEGREE OF PROTECTION</b>                                    | IP20<br>IP20, IP40 with suitable enclosure                       |
| <b>IMPULSE WITHSTAND CURRENT</b>                               | 3 kA (8/20 µs) surge-proof                                       |

|                                                                      |                                                                   |
|----------------------------------------------------------------------|-------------------------------------------------------------------|
| <b>NUMBER OF POLES</b>                                               | Two-pole                                                          |
| <b>LEAKAGE CURRENT TYPE</b>                                          | A                                                                 |
| <b>LIFESPAN, ELECTRICAL</b>                                          | 4000 operations                                                   |
| <b>FUNCTIONS</b>                                                     | Short-time delayed tripping                                       |
| <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> | 25 A                                                              |
| <b>RATED OPERATIONAL VOLTAGE (UE) - MAX</b>                          | 110 V                                                             |
| <b>RATED RESIDUAL MAKING AND BREAKING CAPACITY</b>                   | 500 A                                                             |
| <b>SURGE CURRENT CAPACITY</b>                                        | 3 kA                                                              |
| <b>WIDTH IN NUMBER OF MODULAR SPACINGS</b>                           | 2                                                                 |
| <b>VOLTAGE RATING (IEC/EN 60947-2)</b>                               | 110/190 V                                                         |
| <b>VOLTAGE RATING (UL)</b>                                           | 208/120 V, 60 Hz                                                  |
| <b>VOLTAGE TYPE</b>                                                  | AC                                                                |
| <b>TERMINAL CAPACITY (SOLID WIRE)</b>                                | 1.5 mm <sup>2</sup> - 35 mm <sup>2</sup>                          |
| <b>TRIPPING TIME</b>                                                 | 10 ms delay at 50 Hz<br>Short time-delayed<br>8 ms delay at 60 Hz |
| <b>RATED SHORT-CIRCUIT STRENGTH</b>                                  | 10 kA with back-up fuse<br>5 kA (UL, as per CSA)                  |
| <b>TERMINAL CAPACITY (STRANDED CABLE)</b>                            | 16 mm <sup>2</sup> (2x)                                           |
| <b>RAL-NUMBER</b>                                                    | 7035                                                              |
| <b>COLOR</b>                                                         | Gray                                                              |

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



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