

# Specifikace



## Eaton 167113

Eaton Moeller series xEffect - FRCmM-NA RCCB. Residual current circuit breaker (RCCB), 25A, 2p, 30mA, type A, UL

### General specifications

|                             |                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------|
| <b>PRODUCT NAME</b>         | Eaton Moeller series<br>xEffect - FRCmM-NA RCCB                                       |
| <b>CATALOG NUMBER</b>       | 167113                                                                                |
| <b>EAN</b>                  | 4015081636150                                                                         |
| <b>PRODUCT LENGTH/DEPTH</b> | 76 mm                                                                                 |
| <b>PRODUCT HEIGHT</b>       | 80 mm                                                                                 |
| <b>PRODUCT WIDTH</b>        | 35 mm                                                                                 |
| <b>PRODUCT WEIGHT</b>       | 0.22 kg                                                                               |
| <b>COMPLIANCES</b>          | RoHS conform                                                                          |
| <b>CERTIFICATIONS</b>       | UL 1053<br>IEC/EN 61008<br>EN45545-2<br>IEC 61373                                     |
| <b>CATALOG NOTES</b>        | Protects against special forms of residual pulsating DC which have not been smoothed. |
| <b>MODEL CODE</b>           | FRCMM-25/2/003-A-NA                                                                   |



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## Delivery program

|                                     |                                                                                                                             |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>APPLICATION</b>                  | Switchgear for export to North America (UL-listed)                                                                          |
| <b>NUMBER OF POLES</b>              | Two-pole                                                                                                                    |
| <b>TRIPPING TIME</b>                | Non-delayed                                                                                                                 |
| <b>AMPERAGE RATING</b>              | 25 A                                                                                                                        |
| <b>RATED SHORT-CIRCUIT STRENGTH</b> | 5 kA (UL, as per CSA)<br>10 kA with back-up fuse                                                                            |
| <b>FAULT CURRENT RATING</b>         | 30 mA                                                                                                                       |
| <b>SENSITIVITY TYPE</b>             | Pulse-current sensitive                                                                                                     |
| <b>IMPULSE WITHSTAND CURRENT</b>    | 250 A (8/20 µs) surge-proof<br>Partly surge-proof 250 A                                                                     |
| <b>TYPE</b>                         | <ul style="list-style-type: none"> <li>• FRCmM-NA</li> <li>• Residual current circuit breakers</li> <li>• Type A</li> </ul> |

## Technical Data - Electrical

|                                                    |                                                                  |
|----------------------------------------------------|------------------------------------------------------------------|
| <b>VOLTAGE RATING (IEC/EN 60947-2)</b>             | 240 V AC / 415 V AC                                              |
| <b>VOLTAGE RATING (UL)</b>                         | 480Y/277 V, 60 Hz                                                |
| <b>RATED OPERATIONAL VOLTAGE (UE) - MAX</b>        | 277 V                                                            |
| <b>RATED INSULATION VOLTAGE (UI)</b>               | 440 V                                                            |
| <b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP)</b>      | 4 kV                                                             |
| <b>OVERVOLTAGE TESTED - MAX</b>                    | 530 V                                                            |
| <b>RATED FAULT CURRENT - MIN</b>                   | 0.03 A                                                           |
| <b>RATED FAULT CURRENT - MAX</b>                   | 0.03 A                                                           |
| <b>FREQUENCY RATING</b>                            | 50 Hz / 60 Hz                                                    |
| <b>SHORT-CIRCUIT RATING</b>                        | Max. admissible back-up fuse: 63 A gG/gL, 70 A class J fuse (UL) |
| <b>LEAKAGE CURRENT TYPE</b>                        | A                                                                |
| <b>RATED RESIDUAL MAKING AND BREAKING CAPACITY</b> | 500 A                                                            |
| <b>ADMISSIBLE BACK-UP FUSE OVERLOAD - MAX</b>      | 25 A gG/gL                                                       |
| <b>RATED SHORT-TIME WITHSTAND CURRENT (ICW)</b>    | 10 kA                                                            |
| <b>SURGE CURRENT CAPACITY</b>                      | 0.25 kA                                                          |
| <b>PICK-UP CURRENT</b>                             | 22 mA                                                            |
| <b>TEST CIRCUIT RANGE</b>                          | 184 V AC - 440 V AC, 196 V AC - 305 V AC (UL)                    |
| <b>POLLUTION DEGREE</b>                            | 2                                                                |
| <b>LIFESPAN, ELECTRICAL</b>                        | 4000 operations                                                  |

## Technical Data - Mechanical

|                                                         |                                                                               |
|---------------------------------------------------------|-------------------------------------------------------------------------------|
| FRAME                                                   | 45 mm                                                                         |
| WIDTH IN NUMBER OF MODULAR SPACINGS                     | 2                                                                             |
| BUILT-IN WIDTH (NUMBER OF UNITS)                        | 35 mm (2 SU)                                                                  |
| BUILT-IN DEPTH                                          | 70.5 mm                                                                       |
| MOUNTING METHOD                                         | Quick attachment with 2 latch positions for DIN-rail IEC/EN 60715<br>DIN rail |
| MOUNTING POSITION                                       | As required                                                                   |
| DEGREE OF PROTECTION                                    | IP20, IP40 with suitable enclosure<br>IP20                                    |
| STATUS INDICATION                                       | White / blue                                                                  |
| TERMINALS (TOP AND BOTTOM)                              | Lift terminals                                                                |
| TERMINAL CAPACITY (SOLID WIRE)                          | 1.5 mm <sup>2</sup> - 35 mm <sup>2</sup>                                      |
| CONNECTABLE CONDUCTOR CROSS SECTION (SOLID-CORE) - MIN  | 1.5 mm <sup>2</sup>                                                           |
| CONNECTABLE CONDUCTOR CROSS SECTION (SOLID-CORE) - MAX  | 35 mm <sup>2</sup>                                                            |
| TERMINAL CAPACITY (STRANDED CABLE)                      | 16 mm <sup>2</sup> (2x)                                                       |
| CONNECTABLE CONDUCTOR CROSS SECTION (MULTI-WIRED) - MIN | 1.5 mm <sup>2</sup>                                                           |
| CONNECTABLE CONDUCTOR CROSS SECTION (MULTI-WIRED) - MAX | 16 mm <sup>2</sup>                                                            |
| TERMINAL CAPACITY (CABLE)                               | M5 (with cross-recessed screw as defined in EN ISO 4757-Z2, PZ2)              |
| TERMINAL PROTECTION                                     | Finger and hand touch safe, DGUV VS3, EN 50274                                |
| CONTACT POSITION INDICATOR COLOR                        | Red / green                                                                   |
| LIFESPAN, MECHANICAL                                    | 10000 operations                                                              |
| PERMITTED STORAGE AND TRANSPORT TEMPERATURE - MIN       | -35 °C                                                                        |
| PERMITTED STORAGE                                       | 60 °C                                                                         |

## Design verification as per IEC/EN 61439 - technical data

|                                                               |        |
|---------------------------------------------------------------|--------|
| RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN) | 25 A   |
| HEAT DISSIPATION PER POLE, CURRENT-DEPENDENT                  | 1 W    |
| EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT                 | 2 W    |
| STATIC HEAT DISSIPATION, NON-CURRENT-DEPENDENT                | 0 W    |
| HEAT DISSIPATION CAPACITY                                     | 0 W    |
| AMBIENT OPERATING TEMPERATURE - MIN                           | -25 °C |
| AMBIENT OPERATING TEMPERATURE - MAX                           | 40 °C  |

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**AND TRANSPORT  
TEMPERATURE - MAX**

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|                                  |          |
|----------------------------------|----------|
| <b>AMBIENT HUMDITY<br/>RANGE</b> | 5 - 95 % |
|----------------------------------|----------|

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|                          |                                                                    |
|--------------------------|--------------------------------------------------------------------|
| <b>CLIMATIC PROOFING</b> | 25-55 °C / 90-95% relative<br>humidity according to IEC<br>60068-2 |
|--------------------------|--------------------------------------------------------------------|

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## Design verification as per IEC/EN 61439

|                                                                                         |                                                                    |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <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 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>10.10 TEMPERATURE RISE</b>                                                           | The panel builder is responsible for the                           |

## Additional information

|                         |                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FEATURES</b>         | Additional equipment possible<br>Residual current circuit breaker                                                                                                                                                                                                                                                                                                          |
| <b>FITTED WITH:</b>     | Interlocking device                                                                                                                                                                                                                                                                                                                                                        |
| <b>SPECIAL FEATURES</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>USED WITH</b>        | Type A<br>Residual current circuit breakers<br>FRCmM-NA                                                                                                                                                                                                                                                                                                                    |

|                                            |                                                                                                          |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------|
|                                            | 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. |

## Zdroje

|                               |                                                                                                                                                                         |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DECLARATIONS OF CONFORMITY    | <a href="#">eaton-rccb-declaration-of-conformity-uk251420en.pdf</a><br><a href="#">eaton-rccb-declaration-of-conformity-eu250057en.pdf</a>                              |
| ECAD MODEL                    | <a href="#">ETN.FRCMM-25_2_003-A-NA</a>                                                                                                                                 |
| INSTALAČNÍ NÁVODY             | <a href="#">MA180503312</a>                                                                                                                                             |
| MCAD MODEL                    | <a href="#">eaton-residual-current-circuit-breakers-3d-models-f9-ul1053-2p.stp</a><br><a href="#">eaton-residual-current-circuit-breakers-drawings-f9-ul1053-2p.dwg</a> |
| PEP ECO-PASSPORT              | <a href="#">eaton-residual-current-circuit-breakers-pep-eato-00111-v0101-en.pdf</a>                                                                                     |
| SPECIFICATIONS AND DATASHEETS | <a href="#">Eaton Specification Sheet - 167113</a>                                                                                                                      |

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**NÁZEV PROJEKTU:**

**ČÍSLO PROJEKTU:**

**PŘIPRAVIL:**

**DATUM:**

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