

# Eaton 116431

Eaton Moeller series Power Defense -  
Molded Case Circuit Breaker. Circuit-breaker  
LZM, 4 p, 160A, B2-4-A160-I

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|                         |                                                                      |
| PRODUCT NAME            | Eaton Moeller series<br>Power Defense molded<br>case circuit-breaker |
| CATALOG NUMBER          | 116431                                                               |
| PRODUCT<br>LENGTH/DEPTH | 142 mm                                                               |
| PRODUCT HEIGHT          | 185 mm                                                               |
| PRODUCT WIDTH           | 140 mm                                                               |
| PRODUCT WEIGHT          | 3.5 kg                                                               |
| COMPLIANCES             | RoHS conform                                                         |
| CERTIFICATIONS          | VDE 0660<br>IEC<br>IEC/EN 60947                                      |

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| <b>AMPERAGE RATING</b>                                                                  | 160 A                                                                                                                            |
| <b>VOLTAGE RATING</b>                                                                   | 440 V - 440 V                                                                                                                    |
| <b>CIRCUIT BREAKER FRAME TYPE</b>                                                       | LZM2                                                                                                                             |
| <b>FEATURES</b>                                                                         | Protection unit<br>Motor drive optional                                                                                          |
| <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                                                                             |

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| <b>CHARACTERISTIC CURVE</b> | <a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-050.eps</a> |
|                             | <a href="#">eaton-circuit-breaker-basic-unit-lzm2-il01206012z.pdf</a>       |
|                             | <a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-035.eps</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>POLLUTION DEGREE</b>                                         | 3                                                                                                    |
| <b>MOUNTING METHOD</b>                                          | Fixed<br>Built-in device fixed built-in technique<br>DIN rail (top hat rail)<br>mounting optional    |
| <b>CLIMATIC PROOFING</b>                                        | Damp heat, constant, to IEC 60068-2-78<br>Damp heat, cyclic, to IEC 60068-2-30                       |
| <b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>            | 38.4 W                                                                                               |
| <b>UTILIZATION CATEGORY</b>                                     | A (IEC/EN 60947-2)                                                                                   |
| <b>ISOLATION</b>                                                | 500 V AC (between auxiliary contacts and main contacts)<br>300 V AC (between the auxiliary contacts) |
| <b>NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)</b>      | 0                                                                                                    |

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| <b>NUMBER OF AUXILIARY CONTACTS (NORMALLY CLOSED CONTACTS)</b> | 0                                                                                                                                                                                                                    |
| <b>NUMBER OF AUXILIARY CONTACTS (NORMALLY OPEN CONTACTS)</b>   | 0                                                                                                                                                                                                                    |
| <b>PROTECTION AGAINST DIRECT CONTACT</b>                       | Finger and back-of-hand proof to DIN EN 50274/VDE 0106 part 110                                                                                                                                                      |
| <b>DEGREE OF PROTECTION</b>                                    | In the area of the HMI devices: IP20 (basic protection type)<br>IP20                                                                                                                                                 |
| <b>DIRECTION OF INCOMING SUPPLY</b>                            | As required                                                                                                                                                                                                          |
| <b>ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT</b>              | Screw connection                                                                                                                                                                                                     |
| <b>CURRENT RATING OF NEUTRAL CONDUCTOR</b>                     | 200% of phase conductor                                                                                                                                                                                              |
| <b>LIFESPAN, MECHANICAL</b>                                    | 20000 operations                                                                                                                                                                                                     |
| <b>OVERVOLTAGE CATEGORY</b>                                    | III                                                                                                                                                                                                                  |
| <b>RATED OPERATIONAL CURRENT</b>                               | 160 A (415 V AC-3, making and breaking capacity)<br>300 A (380/400 V AC-1, making and breaking capacity)<br>300 A (415 V AC-1, making and breaking capacity)<br>160 A (660-690 V AC-3, making and breaking capacity) |
| <b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>                   | IP66 (with door coupling rotary handle)<br>IP40 (with insulating surround)                                                                                                                                           |
| <b>DEGREE OF PROTECTION (TERMINATIONS)</b>                     | IP00 (terminations, phase isolator and band terminal)<br>IP10 (tunnel terminal)                                                                                                                                      |
| <b>NUMBER OF POLES</b>                                         | Four-pole                                                                                                                                                                                                            |
| <b>TERMINAL CAPACITY (COPPER STRIP)</b>                        | Min. 2 segments of 16 mm x 0.8 mm at rear-side connection (punched)<br>Max. 10 segments of 16 mm x 0.8 mm at rear-side connection (punched)<br>Max. 10 segments of 16 mm x 0.8 mm at box terminal                    |

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|                                                                      | Min. 2 segments of 9 mm<br>x 0.8 mm at box terminal                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>LIFESPAN, ELECTRICAL</b>                                          | 6500 operations at 415 V<br>AC-3<br>10000 operations at 400 V<br>AC-1<br>10000 operations at 415 V<br>AC-1                                                                                                                                                                                                                                                                                                                          |
| <b>FUNCTIONS</b>                                                     | System and cable<br>protection                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>TYPE</b>                                                          | Circuit breaker                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>SPECIAL FEATURES</b>                                              | <ul style="list-style-type: none"> <li>• Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit breaker (Rated short-circuit breaking capacity <math>I_{cn}</math>)</li> <li>• Rated current = rated uninterrupted current: 160 A</li> <li>• Set value in neutral conductor is synchronous with set value <math>I_r</math> of main pole.</li> </ul> |
| <b>APPLICATION</b>                                                   | Use in unearthed supply systems at 440 V                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>SHOCK RESISTANCE</b>                                              | 20 g (half-sinusoidal shock 20 ms)                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b>               | Front side                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b> | 160 A                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>RELEASE SYSTEM</b>                                                | Thermomagnetic release                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>SHORT-CIRCUIT TOTAL BREAKTIME</b>                                 | < 10 ms                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>               | 1600 A                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING -</b>                   | 960 A                                                                                                                                                                                                                                                                                                                                                                                                                               |

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| <b>MIN</b>                                                           |                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>TERMINAL CAPACITY<br/>(CONTROL CABLE)</b>                         | 0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x)<br>0.75 mm <sup>2</sup> - 1.5 mm <sup>2</sup> (2x)                                                                                                                                                                                                                                                                                                  |
| <b>TERMINAL CAPACITY<br/>(COPPER BUSBAR)</b>                         | M8 at rear-side screw<br>connection<br>Min. 16 mm x 5 mm direct<br>at switch rear-side<br>connection<br>Max. 20 mm x 5 mm direct<br>at switch rear-side<br>connection                                                                                                                                                                                                                               |
| <b>TERMINAL CAPACITY<br/>(COPPER SOLID<br/>CONDUCTOR/CABLE)</b>      | 4 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct<br>at switch rear-side<br>connection<br>16 mm <sup>2</sup> (1x) at tunnel<br>terminal<br>4 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) direct<br>at switch rear-side<br>connection<br>4 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) at<br>box terminal<br>4 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) at<br>box terminal                             |
| <b>TERMINAL CAPACITY<br/>(ALUMINUM SOLID<br/>CONDUCTOR/CABLE)</b>    | 16 mm <sup>2</sup> (1x) at tunnel<br>terminal                                                                                                                                                                                                                                                                                                                                                       |
| <b>TERMINAL CAPACITY<br/>(COPPER STRANDED<br/>CONDUCTOR/CABLE)</b>   | 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x)<br>direct at switch rear-side<br>connection<br>25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) at<br>box terminal<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>tunnel terminal<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x)<br>direct at switch rear-side<br>connection<br>25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>box terminal |
| <b>TERMINAL CAPACITY<br/>(ALUMINUM STRANDED<br/>CONDUCTOR/CABLE)</b> | 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at<br>tunnel terminal                                                                                                                                                                                                                                                                                                                                 |
| <b>HANDLE TYPE</b>                                                   | Rocker lever                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MAX</b>                   | 0 A                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>SHORT DELAY CURRENT<br/>SETTING (ISD) - MIN</b>                   | 0 A                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>INSTANTANEOUS<br/>CURRENT SETTING (II) -<br/>MAX</b>              | 1600 A                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>INSTANTANEOUS<br/>CURRENT SETTING (II) -<br/>MIN</b>              | 960 A                                                                                                                                                                                                                                                                                                                                                                                               |

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| <b>NUMBER OF OPERATIONS PER HOUR - MAX</b>                                             | 120            |
| <b>OVERLOAD CURRENT SETTING (IR) - MAX</b>                                             | 160 A          |
| <b>OVERLOAD CURRENT SETTING (IR) - MIN</b>                                             | 125 A          |
| <b>OVERLOAD CURRENT SETTING (IR)</b>                                                   | 125 A - 160 A  |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ</b>     | 30 kA          |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ</b> | 25 kA          |
| <b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 440 V, 50/60 HZ</b>     | 18.5 kA        |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ</b>                  | 53 kA          |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ</b>                      | 53 kA          |
| <b>STANDARD TERMINALS</b>                                                              | Screw terminal |
| <b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ</b>                      | 63 kA          |
| <b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT AUXILIARY CONTACTS</b>                    | 6000 V         |
| <b>RATED IMPULSE WITHSTAND VOLTAGE (UIMP) AT MAIN CONTACTS</b>                         | 8000 V         |
| <b>RATED INSULATION VOLTAGE (UI)</b>                                                   | 690 V AC       |

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| PROJECT NAME:   |
| PROJECT NUMBER: |
| PREPARED BY:    |
| :               |



Eaton House  
30 Pembroke Road  
Dublin 4,  
Eaton.com

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