

# Specifications



Photo is representative

## Eaton 107593

Eaton Moeller series NZM - Molded Case Circuit Breaker. Circuit-breaker, 3p, 150A, box terminals, N2-VEF150-BT-NA

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller series NZM molded case circuit breaker electronic
<b>CATALOG NUMBER</b>	107593
<b>EAN</b>	4015081072736
<b>PRODUCT LENGTH/DEPTH</b>	149 mm
<b>PRODUCT HEIGHT</b>	195 mm
<b>PRODUCT WIDTH</b>	105 mm
<b>PRODUCT WEIGHT</b>	2.345 kg
<b>COMPLIANCES</b>	RoHS conform
<b>CERTIFICATIONS</b>	UL (Category Control Number DIVQ) IEC/EN 60947 CSA (Class No. 1432-01) Specially designed for North America UL listed IEC 60947-2 IEC CSA certified CE marking UL/CSA UL 489 CSA (File No. 22086) CSA-C22.2 No. 5-09 UL (File No. E31593)
<b>MODEL CODE</b>	NZMN2-VEF150-BT-NA

## Product specifications

<b>AMPERAGE RATING</b>	150 A
<b>VOLTAGE RATING</b>	690 V - 690 V
<b>CIRCUIT BREAKER FRAME TYPE</b>	NZM2
<b>FEATURES</b>	Motor drive optional Protection unit
<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 be evaluated.
<b>10.2.7 INSCRIPTIONS</b>	Meets the product standard's requirements.

## Resources

### BROCHURES

[eaton-digital-nzm-brochure-br013003en-en-us.pdf](#)

[eaton-feerum-the-whole-grain-solution-success-story-en-us.pdf](#)

### CATALOGUES

[eaton-digital-nzm-catalog-ca013003en-en-us.pdf](#)

[eaton-circuit-breaker-current-nzm-mccb-characteristic-curve-006.eps](#)

### CHARACTERISTIC CURVE

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-054.eps](#)

[eaton-circuit-breaker-nzm-mccb-characteristic-curve-043.eps](#)

### DECLARATIONS OF CONFORMITY

[eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250291en.pdf](#)

### DRAWINGS

[eaton-circuit-breaker-switch-nzm-mccb-dimensions-017.eps](#)

[eaton-circuit-breaker-nzm-mccb-dimensions-019.eps](#)

### INSTALLATION INSTRUCTIONS

[eaton-circuit-breakers-basic-device-nzm2-il01206006z.pdf](#)

### INSTALLATION VIDEOS

[The new digital NZM Range](#)

[Introduction of the new digital circuit breaker NZM](#)

### MCAD MODEL

[DA-CS-nzm2\\_3p](#)

[DA-CD-nzm2\\_3p](#)

### TECHNICAL DATA SHEETS

[eaton-nzm-technical-information-sheet](#)

<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 Built-in device fixed built-in technique DIN rail (top hat rail) mounting optional
<b>CLIMATIC PROOFING</b>	Damp heat, cyclic, to IEC 60068-2-30 Damp heat, constant, to IEC 60068-2-78
<b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>	18.56 W
<b>UTILIZATION CATEGORY</b>	A (IEC/EN 60947-2)
<b>ISOLATION</b>	500 V AC (between auxiliary contacts and main contacts) 300 V AC (between the auxiliary contacts)
<b>AMBIENT OPERATING TEMPERATURE - MAX</b>	70 °C
<b>AMBIENT OPERATING TEMPERATURE - MIN</b>	-25 °C
<b>AMBIENT STORAGE TEMPERATURE - MAX</b>	70 °C
<b>AMBIENT STORAGE TEMPERATURE - MIN</b>	40 °C
<b>LOW-VOLTAGE HBC FUSE</b>	355 A gG/gL

<b>- MAX</b>	
<b>NUMBER OF AUXILIARY CONTACTS (CHANGE-OVER CONTACTS)</b>	0
<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>	IP20 IP20 (basic degree of protection, in the operating controls area)
<b>DIRECTION OF INCOMING SUPPLY</b>	As required
<b>ELECTRICAL CONNECTION TYPE OF MAIN CIRCUIT</b>	Frame clamp
<b>LIFESPAN, MECHANICAL</b>	20000 operations
<b>OVERVOLTAGE CATEGORY</b>	III
<b>RATED OPERATIONAL CURRENT</b>	300 A (380/400 V AC-1, making and breaking capacity) 150 A (690 V AC -1, making and breaking capacity) 150 A (660-690 V AC-3, making and breaking capacity) 300 A (415 V AC-1, making and breaking capacity)
<b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>	IP66 (with door coupling rotary handle) IP40 (with insulating surround)
<b>DEGREE OF PROTECTION (TERMINATIONS)</b>	IP10 (tunnel terminal) IP00 (terminations, phase isolator and strip terminal)
<b>NUMBER OF POLES</b>	Three-pole
<b>TERMINAL CAPACITY (COPPER STRIP)</b>	Max. 10 segments of 16 mm x 0.8 mm at rear-side connection (punched) Min. 2 segments of 16 mm x 0.8 mm at rear-side connection (punched) Max. 10 segments of 16 mm x 0.8 mm at box terminal Min. 2 segments of 9 mm x 0.8 mm at box terminal

<b>LIFESPAN, ELECTRICAL</b>	10000 operations at 400 V AC-1 5000 operations at 690 V AC-3 6500 operations at 400 V AC-3 6500 operations at 415 V AC-3 7500 operations at 690 V AC-1
<b>FUNCTIONS</b>	Systems, cable, selectivity and generator protection Current limiting circuit breaker
<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: 150 A</li> <li>• Switches conform to UL/CSA as well as the IEC regulations. IEC switching performance values are contained on the rating plate.</li> <li>• Fixed overload releases <math>I_r</math></li> <li>• R.m.s. value measurement and "thermal memory"</li> <li>• adjustable time delay setting to overcome current peaks <math>t_r</math>: 2 – 20 s at <math>6 \times I_r</math></li> <li>• Adjustable delay time <math>t_{sd}</math>: Steps: 0, 20, 60, 100, 200, 300, 500, 750, 1000 ms</li> <li>• <math>i^2t</math> constant function: fixed OFF</li> </ul>

<b>APPLICATION</b>	<ul style="list-style-type: none"> <li>• Branch circuits, feeder circuits</li> <li>• Use in unearthed supply systems at 690 V</li> </ul>
<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>	150 A
<b>POWER LOSS</b>	18.56 W
<b>RELEASE SYSTEM</b>	Electronic release
<b>SHORT-CIRCUIT TOTAL BREAKTIME</b>	< 10 ms
<b>RATED SHORT-TIME WITHSTAND CURRENT (T = 0.3 S)</b>	1.9 kA
<b>RATED SHORT-TIME WITHSTAND CURRENT (T = 1 S)</b>	1.9 kA
<b>SHORT-CIRCUIT RELEASE DELAYED SETTING - MAX</b>	1500 A
<b>SHORT-CIRCUIT RELEASE DELAYED SETTING - MIN</b>	300 A
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>	1800 A
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN</b>	1800 A
<b>TERMINAL CAPACITY (CONTROL CABLE)</b>	<p>16 mm<sup>2</sup> - 18 mm<sup>2</sup> (2x) 14 mm<sup>2</sup> - 18 mm<sup>2</sup> (1x)</p>
<b>TERMINAL CAPACITY (COPPER BUSBAR)</b>	<p>M8 at rear-side screw connection Max. 20 mm x 5 mm direct at switch rear-side connection Min. 16 mm x 5 mm direct at switch rear-side connection</p>
<b>TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)</b>	<p>6 mm<sup>2</sup> - 12 mm<sup>2</sup> (1x) at box terminal 6 mm<sup>2</sup> - 11 mm<sup>2</sup> (1x) direct at switch rear-side connection 16 mm<sup>2</sup> (1x) at tunnel terminal</p>
<b>TERMINAL CAPACITY (ALUMINUM SOLID</b>	16 mm <sup>2</sup> (1x) at tunnel terminal

**CONDUCTOR/CABLE)**

<b>TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)</b>	4 mm <sup>2</sup> - 350 mm <sup>2</sup> (1x) at tunnel terminal 4 mm <sup>2</sup> - 3/0 mm <sup>2</sup> (1x) direct at switch rear-side connection 4 mm <sup>2</sup> - 350 mm <sup>2</sup> (1x) at box terminal
<b>HANDLE TYPE</b>	Rocker lever
<b>SHORT DELAY CURRENT SETTING (ISD) - MAX</b>	1500 A
<b>SHORT DELAY CURRENT SETTING (ISD) - MIN</b>	300 A
<b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>	1800 A
<b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>	1800 A
<b>NUMBER OF OPERATIONS PER HOUR - MAX</b>	120
<b>OVERLOAD CURRENT SETTING (IR) - MAX</b>	150 A
<b>OVERLOAD CURRENT SETTING (IR) - MIN</b>	150 A
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 230 V, 50/60 HZ</b>	85 kA
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 400/415 V, 50/60 HZ</b>	50 kA
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 440 V, 50/60 HZ</b>	35 kA
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 525 V, 50/60 HZ</b>	25 kA
<b>RATED SHORT-CIRCUIT BREAKING CAPACITY ICS (IEC/EN 60947) AT 690 V, 50/60 HZ</b>	5 kA
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 400/415 V, 50/60 HZ</b>	105 kA
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 440 V, 50/60 HZ</b>	74 kA
<b>RATED SHORT-CIRCUIT</b>	53 kA

**MAKING CAPACITY ICM  
AT 525 V, 50/60 Hz**

**RATED SHORT-CIRCUIT  
MAKING CAPACITY ICM  
AT 690 V, 50/60 Hz**

**STANDARD TERMINALS** Box terminal

**RATED OPERATING  
VOLTAGE UE (UL) - MAX** 600Y/347 V, 480 V

**RATED SHORT-CIRCUIT  
MAKING CAPACITY ICM  
AT 240 V, 50/60 Hz**

**RATED IMPULSE  
WITHSTAND VOLTAGE  
(UIMP) AT AUXILIARY  
CONTACTS** 6000 V

**RATED IMPULSE  
WITHSTAND VOLTAGE  
(UIMP) AT MAIN  
CONTACTS** 8000 V

**RATED INSULATION  
VOLTAGE (UI)** 1000 V AC

**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**



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