

# Specifications



Photo is representative

## Eaton 147397

Eaton Moeller series NZM - Molded Case Circuit Breaker. Circuit-breaker, 4p, 160A, box terminals, selectivity protection

### General specifications

<b>PRODUCT NAME</b>	Eaton Moeller series NZM molded case circuit breaker electronic
<b>CATALOG NUMBER</b>	147397
<b>MODEL CODE</b>	NZMN2-4-VE160-BT
<b>EAN</b>	4015081438976
<b>PRODUCT LENGTH/DEPTH</b>	149 mm
<b>PRODUCT HEIGHT</b>	184 mm
<b>PRODUCT WIDTH</b>	140 mm
<b>PRODUCT WEIGHT</b>	3.662 kg
<b>COMPLIANCES</b>	RoHS conform
<b>CERTIFICATIONS</b>	IEC IEC/EN 60947
<b>GLOBAL CATALOG</b>	147397

## Product specifications

<b>AMPERAGE RATING</b>	160 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

<b>BROCHURES</b>	<a href="#">eaton-digital-nzm-brochure-br013003en-en-us.pdf</a>
<b>CATALOGS</b>	<a href="#">eaton-digital-nzm-catalog-ca013003en-en-us.pdf</a>
<b>CHARACTERISTIC CURVE</b>	<a href="#">eaton-circuit-breaker-let-through-current-nzm-mccb-characteristic-curve-004.eps</a>
<b>DECLARATIONS OF CONFORMITY</b>	<a href="#">eaton-circuit-breaker-characteristic-power-defense-mccb-characteristic-curve-036.eps</a>
<b>DRAWINGS</b>	<a href="#">eaton-circuit-breaker-nzm-mccb-characteristic-curve-054.eps</a>
<b>INSTALLATION VIDEOS</b>	<a href="#">eaton-molded-case-circuit-breaker-declaration-of-conformity-eu250291en.pdf</a>
<b>MCAD MODEL</b>	<a href="#">eaton-circuit-breaker-switch-nzm-mccb-dimensions-017.eps</a>
<b>PEP ECO-PASSPORT</b>	<a href="#">eaton-circuit-breaker-nzm-mccb-dimensions-035.eps</a>
<b>TECHNICAL DATA SHEETS</b>	<a href="#">Introduction of the new digital circuit breaker NZM Range</a>
	<a href="#">The new digital NZM Range</a>
	<a href="#">DA-CD-nzm2_4p</a>
	<a href="#">DA-CS-nzm2_4p</a>
	<a href="#">eaton-molded-case-switches-pep-eato-00195-v0101-en.pdf</a>
	<a href="#">eaton-nzm-technical-information-sheet</a>

<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>	DIN rail (top hat rail) mounting optional Built-in device fixed built-in technique Fixed
<b>CLIMATIC PROOFING</b>	Damp heat, constant, to IEC 60068-2-78 Damp heat, cyclic, to IEC 60068-2-30
<b>EQUIPMENT HEAT DISSIPATION, CURRENT-DEPENDENT</b>	21.12 W
<b>UTILIZATION CATEGORY</b>	A (IEC/EN 60947-2)
<b>ISOLATION</b>	300 V AC (between the auxiliary contacts) 500 V AC (between auxiliary contacts and main 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>NUMBER OF AUXILIARY</b>	0

<b>CONTACTS (CHANGE-OVER CONTACTS)</b>	
<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>CURRENT RATING OF NEUTRAL CONDUCTOR</b>	200% of phase conductor
<b>LIFESPAN, MECHANICAL</b>	20000 operations
<b>OVERVOLTAGE CATEGORY</b>	III
<b>DEGREE OF PROTECTION (IP), FRONT SIDE</b>	IP40 (with insulating surround) IP66 (with door coupling rotary handle)
<b>DEGREE OF PROTECTION (TERMINATIONS)</b>	IP10 (tunnel terminal) IP00 (terminations, phase isolator and strip 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) Max. 10 segments of 24 mm x 0.8 mm at rear-side connection (punched) Min. 2 segments of 9 mm x 0.8 mm at box terminal Max. 10 segments of 16 mm x 0.8 mm at box terminal Max. 8 segments of 24 mm x 1 mm (2x) at box terminal
<b>LIFESPAN, ELECTRICAL</b>	6500 operations at 400 V AC-3 10000 operations at 400 V AC-1 5000 operations at 690 V AC-3 6500 operations at 415 V

AC-3
10000 operations at 415 V
AC-1
7500 operations at 690 V
AC-1

<b>FUNCTIONS</b>	Systems, cable, selectivity and generator protection
<b>TYPE</b>	Circuit breaker

- 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  $I_{cn}$ )
- R.m.s. value measurement and "thermal memory"
- Adjustable time delay setting to overcome current peaks  $t_r$  at  $6 \times I_r$  also infinity (without overload releases)
- Adjustable delay time  $t_{sd}$
- $i^2t$  constant function: fixed OFF
- Set value in neutral conductor is synchronous with set value  $I_r$  of main pole.
- Rated current = rated uninterrupted current: 160 A

<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>• R.m.s. value measurement and "thermal memory"</li> <li>• Adjustable time delay setting to overcome current peaks <math>t_r</math> at <math>6 \times I_r</math> also infinity (without overload releases)</li> <li>• Adjustable delay time <math>t_{sd}</math></li> <li>• <math>i^2t</math> constant function: fixed OFF</li> <li>• Set value in neutral conductor is synchronous with set value <math>I_r</math> of main pole.</li> <li>• Rated current = rated uninterrupted current: 160 A</li> </ul>

<b>APPLICATION</b>	Use in unearthing supply systems at 690 V
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<b>SHOCK RESISTANCE</b>	20 g (half-sinusoidal shock 20 ms)
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<b>POSITION OF CONNECTION FOR MAIN CURRENT CIRCUIT</b>	Front side
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<b>RATED OPERATIONAL CURRENT FOR SPECIFIED HEAT DISSIPATION (IN)</b>	160 A
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<b>POWER LOSS</b>	21.12 W
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<b>RELEASE SYSTEM</b>	Electronic release
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<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>	1600 A
<b>SHORT-CIRCUIT RELEASE DELAYED SETTING - MIN</b>	160 A
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MAX</b>	1920 A
<b>SHORT-CIRCUIT RELEASE NON-DELAYED SETTING - MIN</b>	1920 A
<b>TERMINAL CAPACITY (CONTROL CABLE)</b>	0.75 mm <sup>2</sup> - 1.5 mm <sup>2</sup> (2x) 0.75 mm <sup>2</sup> - 2.5 mm <sup>2</sup> (1x)
<b>TERMINAL CAPACITY (COPPER BUSBAR)</b>	Max. 24 mm x 8 mm direct at switch rear-side connection Min. 16 mm x 5 mm direct at switch rear-side connection M8 at rear-side screw connection
<b>TERMINAL CAPACITY (COPPER SOLID CONDUCTOR/CABLE)</b>	10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) at box terminal 16 mm <sup>2</sup> (1x) at tunnel terminal 10 mm <sup>2</sup> - 16 mm <sup>2</sup> (1x) direct at switch rear-side connection 6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) direct at switch rear-side connection 6 mm <sup>2</sup> - 16 mm <sup>2</sup> (2x) at box terminal
<b>TERMINAL CAPACITY (ALUMINUM SOLID CONDUCTOR/CABLE)</b>	16 mm <sup>2</sup> (1x) at tunnel terminal
<b>TERMINAL CAPACITY (COPPER STRANDED CONDUCTOR/CABLE)</b>	25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) at box terminal 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at 1-hole tunnel terminal 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) direct at switch rear-side connection 25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at box terminal 25 mm <sup>2</sup> - 70 mm <sup>2</sup> (2x) direct at switch rear-side connection

<b>TERMINAL CAPACITY (ALUMINUM STRANDED CONDUCTOR/CABLE)</b>	25 mm <sup>2</sup> - 185 mm <sup>2</sup> (1x) at tunnel terminal
<b>HANDLE TYPE</b>	Rocker lever
<b>SHORT DELAY CURRENT SETTING (ISD) - MAX</b>	1600 A
<b>SHORT DELAY CURRENT SETTING (ISD) - MIN</b>	160 A
<b>INSTANTANEOUS CURRENT SETTING (II) - MAX</b>	1920 A
<b>INSTANTANEOUS CURRENT SETTING (II) - MIN</b>	1920 A
<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>	80 A
<b>OVERLOAD CURRENT SETTING (IR)</b>	80 A - 160 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 MAKING CAPACITY ICM AT 525 V, 50/60 Hz</b>	53 kA

<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 690 V, 50/60 HZ</b>	40 kA
<b>STANDARD TERMINALS</b>	Box terminal
<b>OPTIONAL TERMINALS</b>	Connection on rear. Screw terminal. Tunnel terminal
<b>RATED SHORT-CIRCUIT MAKING CAPACITY ICM AT 240 V, 50/60 HZ</b>	187 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>	1000 V AC

**PROJECT NAME:**

**PROJECT NUMBER:**

**PREPARED BY:**

**DATE:**



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