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Powering Business Worldwide

NZML2-ME140-SVE - Circuit-breaker, 3 p, 140A, plug-in module



169026 NZML2-ME140-SVE

[Overview](#) [Specifications](#) [Resources](#)

## 169026 NZML2-ME140-SVE

Circuit-breaker, 3 p, 140A, plug-in module

Alternate Catalog No.

NZML2-ME140-SVE

EL-Nummer (Norway)

4357076

Series NZM circuit-breakers cover all application cases with just four compact sizes and are suitable for the IEC market. Installation is always flexible thanks to the use of modular function groups.

- Delivery program
- Technical data
- Design verification as per IEC/EN 61439
- Technical data ETIM 7.0
- Characteristics
- Dimensions

### Delivery program

Product range

Circuit-breaker

Protective function

Motor protection

IEC

Standard/Approval

IEC

Installation type

Withdrawable

Release system

Electronic release

Construction size

NZM2

Description

IEC/EN 60947-4-1, IEC/EN 60947-2

The circuit-breaker fulfills all requirements for AC-3 switching category.

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)

All AC-3 rating data applies to direct switching by the circuit-breaker under normal operating conditions. If, for example, a contactor takes over AC-3 switching under normal operating conditions, the full rated uninterrupted current

applies to the circuit-breaker,  $I_n = I_u$ .

Number of poles

3 pole

Standard equipment

Screw connection

Switching capacity

400/415 V 50 Hz [ $I_{cu}$ ]

150 kA

Rated current = rated uninterrupted current [ $I_h = I_u$ ]

140 A

**Setting range**

Overload trip  [ $I_t$ ]

70 - 140 A

Short-circuit releases  [ $I_{rm}$ ] Non-delayed  [ $I_t = I_h \times \dots$ ]

2 - 14

Motor rating AC-3 50/60 Hz [P]

380 V 400 V [P]

75 kW

660 V 690 V [P]

132 kW

Motor rating AC-3 50/60 Hz [P]

400 V [P]

75 kW

660 V 690 V [P]

132 kW

Rated operational current AC-3 50/60 Hz [ $I_e$ ]

400 V [ $I_e$ ]

134 A

690 V

134 A

## Technical data

General

Standards

IEC/EN 60947

Protection against direct contact

Finger and back-of-hand proof to VDE 0106 part 100

Climatic proofing

Damp heat, constant, to IEC 60068-2-78

Damp heat, cyclic, to IEC 60068-2-30

Ambient temperatureAmbient temperature, storage

-40 - +70 °C

Ambient temperatureOperation

-25 - +70 °C

Mechanical shock resistance (10 ms half-sinusoidal shock) according to IEC 60068-2-27

20 (half-sinusoidal shock 20 ms) g

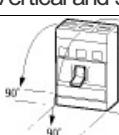
Safe isolation to EN 61140 between auxiliary contacts and main contacts

500 V AC

Safe isolation to EN 61140 between the auxiliary contacts

300 V AC

Mounting position

Vertical and 90° in all directions

With XFI earth-fault release:
- NZM1, N1, NZM2, N2: vertical and 90° in all directions
with plug-in unit
- NZM1, N1, NZM2, N2: vertical, 90° right/left
with withdrawable unit:
- NZM3, N3: vertical, 90° right/left
- NZM4, N4: vertical
with remote operator:
- NZM2, N(S)2, NZM3, N(S)3, NZM4, N(S)4: vertical and 90° in all directions

Direction of incoming supply

as required

Degree of protectionDevice

In the operating controls area: IP20 (basic degree of protection)

Degree of protectionEnclosures

With insulating surround: IP40  
 With door coupling rotary handle: IP66  
 Degree of protection Terminations  
 Tunnel terminal: IP10  
 Phase isolator and strip terminal: IP00  
 Other technical data (sheet catalogue)  
**Temperature dependency, Derating**  
 Circuit-breakers  
 Rated current = rated uninterrupted current [ $I_n = I_u$ ]  
 140 A  
 Rated surge voltage invariability [ $U_{imp}$ ] Main contacts  
 8000 V  
 Rated surge voltage invariability [ $U_{imp}$ ] Auxiliary contacts  
 6000 V  
 Rated operational voltage [ $U_e$ ]  
 690 V AC  
 Overvoltage category/pollution degree  
 III/3  
 Rated insulation voltage [ $U_i$ ]  
 1000 V  
 Use in unearthed supply systems  
 690 V  
 Switching capacity  
 Rated short-circuit making capacity [ $I_{cm}$ ] 240 V [ $I_{cm}$ ]  
 330 kA  
 Rated short-circuit making capacity [ $I_{cm}$ ] 400/415 V [ $I_{cm}$ ]  
 330 kA  
 Rated short-circuit making capacity [ $I_{cm}$ ] 440 V 50/60 Hz [ $I_{cm}$ ]  
 286 kA  
 Rated short-circuit making capacity [ $I_{cm}$ ] 525 V 50/60 Hz [ $I_{cm}$ ]  
 220 kA  
 Rated short-circuit making capacity [ $I_{cm}$ ] 690 V 50/60 Hz [ $I_c$ ]  
 176 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-OO [ $I_{cu}$ ] 240 V 50/60 Hz [ $I_{cu}$ ]  
 150 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-OO [ $I_{cu}$ ] 400/415 V 50/60 Hz [ $I_{cu}$ ]  
 150 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-OO [ $I_{cu}$ ] 440 V 50/60 Hz [ $I_{cu}$ ]  
 130 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-OO [ $I_{cu}$ ] 525 V 50/60 Hz [ $I_{cu}$ ]  
 100 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cu}$  to IEC/EN 60947 test cycle O-t-OO [ $I_{cu}$ ] 690 V 50/60 Hz [ $I_{cu}$ ]  
 80 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-OO-t-OO [ $I_{cs}$ ] 240 V 50/60 Hz [ $I_{cs}$ ]  
 150 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-OO-t-OO [ $I_{cs}$ ] 400/415 V 50/60 Hz [ $I_{cs}$ ]  
 150 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-OO-t-OO [ $I_{cs}$ ] 440 V 50/60 Hz [ $I_{cs}$ ]  
 130 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-OO-t-OO [ $I_{cs}$ ] 525 V 50/60 Hz [ $I_{cs}$ ]  
 100 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  $I_{cs}$  to IEC/EN 60947 test cycle O-t-OO-t-OO [ $I_{cs}$ ] 690 V 50/60 Hz [ $I_{cs}$ ]  
 80 kA  
 Rated short-circuit breaking capacity  $I_{cn}$  [ $I_{cn}$ ]  
 Maximum back-up fuse, if the expected short-circuit currents at the installation location exceed the switching capacity of the circuit-breaker.  
 Rated short-time withstand currentt = 0.3 s [ $I_{cw}$ ]  
 1.3 kA  
 Rated short-time withstand currentt = 1 s [ $I_{cw}$ ]  
 1.3 kA  
 Utilization category to IEC/EN 60947-2  
 A  
 Lifespan, mechanical (of which max. 50 % trip by shunt/undervoltage release) [Operations]  
 20000  
 Lifespan, electrical AC-1400 V 50/60 Hz [Operations]  
 10000  
 Lifespan, electrical AC-1415 V 50/60 Hz [Operations]  
 10000  
 Lifespan, electrical AC-1690 V 50/60 Hz [Operations]

7500  
 Lifespan, electricalAC-3400 V 50/60 Hz [Operations]  
 6500  
 Lifespan, electricalAC-3415 V 50/60 Hz [Operations]  
 6500  
 Lifespan, electricalAC-3690 V 50/60 Hz [Operations]  
 5000  
 Lifespan, electricalMax. operating frequency  
 120 Ops/h  
 Total break time at short-circuit  
 < 10 ms  
**Terminal capacity**  
 Standard equipment  
 Screw connection  
 Accessories required  
 NZM2-XSVS  
 Optional accessories  
 Box terminal  
 Tunnel terminal  
 connection on rear  
 Round copper conductorBox terminalSolid  
 1 x (10 - 16)  
 2 x (6 - 16) mm<sup>2</sup>  
 Round copper conductorBox terminalStranded  
 1 x (25 - 185)  
 2 x (25 - 70) mm<sup>2</sup>  
 Round copper conductorTunnel terminalSolid  
 1 x 16 mm<sup>2</sup>  
 Round copper conductorTunnel terminalStranded1-hole  
 1 x (25 - 185) mm<sup>2</sup>  
 Round copper conductorBolt terminal and rear-side connectionDirect on the switchSolid  
 1 x (10 - 16)  
 2 x (6 - 16) mm<sup>2</sup>  
 Round copper conductorBolt terminal and rear-side connectionDirect on the switchStranded  
 1 x (25 - 185)  
 2 x (25 - 70) mm<sup>2</sup>  
 Al circular conductor Tunnel terminalSolid  
 1 x 16 mm<sup>2</sup>  
 Al circular conductor Tunnel terminalStrandedStranded  
 1 x (25 - 185) mm<sup>2</sup>  
 Cu strip (number of segments x width x segment thickness)Box terminal [min.]  
 2 x 9 x 0.8 mm  
 Cu strip (number of segments x width x segment thickness)Box terminal [max.]  
 10 x 16 x 0.8  
 (2x) 8 x 15.5 x 0.8 mm  
 Cu strip (number of segments x width x segment thickness)Bolt terminal and rear-side connectionFlat copper strip,  
 with holes [min.]  
 2 x 16 x 0.8 mm  
 Cu strip (number of segments x width x segment thickness)Bolt terminal and rear-side connectionFlat copper strip,  
 with holes [max.]  
 10 x 24 x 0.8 mm  
 Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionScrew connection  
 M8  
 Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionDirect on the switch [min.]  
 16 x 5 mm  
 Copper busbar (width x thickness) [mm]Bolt terminal and rear-side connectionDirect on the switch [max.]  
 24 x 8 mm  
 Control cables  
 1 x (0.75 - 2.5)  
 2 x (0.75 - 1.5) mm<sup>2</sup>

## Design verification as per IEC/EN 61439

Technical data for design verification  
 Rated operational current for specified heat dissipation [ $I_h$ ]  
 140 A  
 Equipment heat dissipation, current-dependent [ $P_{id}$ ]  
 16.17 W  
 Operating ambient temperature min.

-25 °C  
Operating ambient temperature max.  
+70 °C  
IEC/EN 61439 design verification  
10.2 Strength of materials and parts 10.2.2 Corrosion resistance  
Meets the product standard's requirements.  
10.2 Strength of materials and parts 10.2.3.1 Verification of thermal stability of enclosures  
Meets the product standard's requirements.  
10.2 Strength of materials and parts 10.2.3.2 Verification of resistance of insulating materials to normal heat  
Meets the product standard's requirements.  
10.2 Strength of materials and parts 10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects  
Meets the product standard's requirements.  
10.2 Strength of materials and parts 10.2.4 Resistance to ultra-violet (UV) radiation  
Meets the product standard's requirements.  
10.2 Strength of materials and parts 10.2.5 Lifting  
Does not apply, since the entire switchgear needs to be evaluated.  
10.2 Strength of materials and parts 10.2.6 Mechanical impact  
Does not apply, since the entire switchgear needs to be evaluated.  
10.2 Strength of materials and parts 10.2.7 Inscriptions  
Meets the product standard's requirements.  
10.3 Degree of protection of ASSEMBLIES  
Does not apply, since the entire switchgear needs to be evaluated.  
10.4 Clearances and creepage distances  
Meets the product standard's requirements.  
10.5 Protection against electric shock  
Does not apply, since the entire switchgear needs to be evaluated.  
10.6 Incorporation of switching devices and components  
Does not apply, since the entire switchgear needs to be evaluated.  
10.7 Internal electrical circuits and connections  
Is the panel builder's responsibility.  
10.8 Connections for external conductors  
Is the panel builder's responsibility.  
10.9 Insulation properties 10.9.2 Power-frequency electric strength  
Is the panel builder's responsibility.  
10.9 Insulation properties 10.9.3 Impulse withstand voltage  
Is the panel builder's responsibility.  
10.9 Insulation properties 10.9.4 Testing of enclosures made of insulating material  
Is the panel builder's responsibility.  
10.10 Temperature rise  
The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.  
10.11 Short-circuit rating  
Is the panel builder's responsibility. The specifications for the switchgear must be observed.  
10.12 Electromagnetic compatibility  
Is the panel builder's responsibility. The specifications for the switchgear must be observed.  
10.13 Mechanical function  
The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

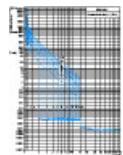
## Technical data ETIM 7.0

Low-voltage industrial components (EG000017) / Motor protection circuit-breaker (EC000074)  
Electric engineering, automation, process control engineering / Low-voltage switch technology / Circuit breaker (LV < 1 kV) / Motor protection circuit-breaker (ecl@ss10.0.1-27-37-04-01 [AGZ529016])  
Overload release current setting  
70 - 140 A  
Adjustment range undelayed short-circuit release  
280 - 1960 A  
With thermal protection  
Yes  
Phase failure sensitive  
Yes  
Switch off technique  
Electronic  
Rated operating voltage  
690 - 690 V  
Rated permanent current I<sub>u</sub>  
140 A  
Rated operation power at AC-3, 230 V

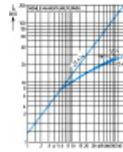
140 kW  
Rated operation power at AC-3, 400 V  
68 kW  
Type of electrical connection of main circuit  
Screw connection  
Type of control element  
Rocker lever  
Device construction  
Built-in device plug-in technique  
With integrated auxiliary switch  
Nb  
With integrated under voltage release  
Nb  
Number of poles  
3  
Rated short-circuit breaking capacity Icu at 400 V, AC  
150 kA  
Degree of protection (IP)  
IP20  
Height  
245 mm  
Width  
105 mm  
Depth  
180 mm

## Characteristics

Characteristic curve

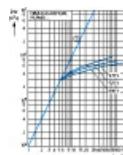


Characteristic curve



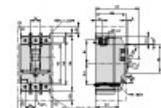
Let-through current

Characteristic curve



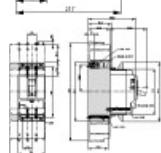
Let-through energy

## Dimensions



□ Blow out area, minimum clearance to adjacent parts

□ Minimum clearance to adjacent parts



## CAD data

- [Product-specific CAD data \(Web\)](#)
- [3D Preview \(Web\)](#)

## DWG files

- [DA-CD-nzml2\\_ve100\\_sve](#)  
File  
(Web)

## edz files

- [DA-CE-ETN.NZML2-ME140-SVE](#)  
File  
(Web)

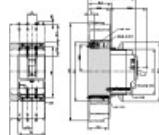
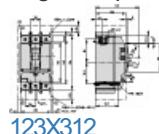
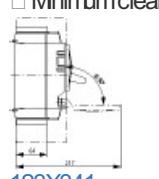
## Step files

- [DA-CS-nzml2\\_ve100\\_sve](#)  
File  
(Web)

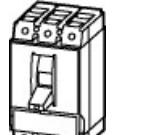
## Additional product information

- [Temperature dependency, Derating \(Web\)](#)
- [additional technical information for NZM power switch \(PDF\)](#)

## Dimensions single product

-   
**123X029**  
Line drawing  
Plug-in adapter elements
-   
**123X312**  
Line drawing  
Circuit-breaker, switch-disconnector, 3-pole
  - Blow out area, minimum clearance to adjacent parts
  - Minimum clearance to adjacent parts
-   
**123X341**  
Line drawing  
Circuit-breakers, switch-disconnectors

## 3D drawing

-   
**123I247**  
Line drawing  
Circuit-breakers, switch-disconnectors

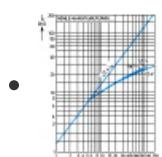
# Product photo



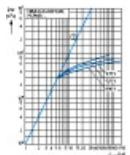
# Standards



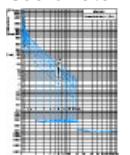
# Characteristic curve



Coordinate visualization



Coordinate visualization



Coordinate visualization

NZM2-ME90...220 tripping characteristic

# Instruction Leaflet

- [NZMB, NZMN \(IL01206006Z\)](#)  
Asset  
(PDF, 11/2015, Language independent)

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