



NZM4 MCCB (UL) with PXR Electronic Trip Unit and STD Technology, With or Without Earth Fault Protection

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| Representative product | NZMH4-VX1200-NA (Y7-192571) Product Category: Circuit Breaker |
| Description of the product | Eaton Moeller series NZM2 molded case circuit breaker with PXR Electronic Trip Unit, STD technology is designed to provide circuit protection for low-voltage distribution systems. The NZM circuit breakers protect entire systems and cables across all levels, from the main distribution board all the way to the load itself. |
| Homogeneous Environmental Families Covered | <p>The PEP concerns following product offerings from Eaton Moeller series NZM Circuit Breaker as mentioned below:</p> <ul style="list-style-type: none"> • Series: NZM4 Circuit Breaker • Switching Capacity: H (High), N (Normal) • Rated Current – Release type AX (LI – system protection, electronic): 800A, 1000A, 1200A. • Rated Current – Release type PX (LSI – selectivity and generator protection, electronic, with measuring equipment): 800A, 1000A, 1200A. • Rated Current – Release type VX (LSI – selectivity and generator protection, electronic): 800A, 1000A, 1200A. • Additional Function: With or Without Earth Fault Protection (T) (Only present with VX release type) • Region of Usage: North America, UL-listed / CSA-certified |
| Functional unit | ‘Protect the installation from overloads and short circuits in a circuit with rated voltage 690V, rated current 1200A, with 3 poles, a rated breaking capacity 50 kA, with IP20 Rating, in the Industrial application area, according to the appropriate use scenario, and during the reference service life of the product of 20 years.’ |

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| Company information | Eaton Electro Productie s.r.l, Independentei 8, Sarbi, Romania, 437157 Email: productstewardship-es@eaton.com |
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| Constituent Materials | | | |
|------------------------|-----------------------------------|-----------------|----------------|
| Reference product mass | 2.03E+01 Kg (With packaging) | | |
| Category PEP Material | Material constituent | Mass (kg) | % Contribution |
| Metals | Copper | 6.96E+00 | 34.3% |
| Plastics | Unsaturated Polyester Resin | 5.91E+00 | 29.1% |
| Metals | Steel | 3.44E+00 | 17.0% |
| Others | Cardboard | 1.05E+00 | 5.2% |
| Metals | Stainless Steel | 6.62E-01 | 3.3% |
| Plastics | Polycarbonate | 6.27E-01 | 3.1% |
| Others | Wood | 5.83E-01 | 2.9% |
| Plastics | Polyphenylene sulfide | 2.51E-01 | 1.2% |
| Plastics | Polyurethane | 2.07E-01 | 1.0% |
| Plastics | Polyamide 66 With Glass Fibre 30% | 1.45E-01 | 0.7% |
| Plastics | Polybutylene terephthalate | 1.16E-01 | 0.6% |
| Others | Paper | 1.02E-01 | 0.5% |
| Others | Printed Circuit Board | 8.25E-02 | 0.4% |
| Metals | Silver | 4.35E-02 | 0.2% |
| Others | Electronic Components | 3.75E-02 | 0.2% |
| Others | Miscellaneous | 7.12E-02 | 0.4% |
| Total | | 2.03E+01 | 100.0% |

| Substance Assessment |
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| The representative product is compliant/exempted with the EU-RoHS Directive (2011/65/EU) and the product does contain Lead and Perfluoro butane sulfonic acid (PFBS) and its salts as substance listed as Substance-of-Very-High-Concern (SVHC) on the Candidate List of the EU-REACH Regulation (1907/2006/EC). |

| Additional Environmental Information | |
|--------------------------------------|--|
| Manufacturing | The reference product is assembled at an Eaton plant Sarbi, Romania holding management system certifications according to ISO 14001 standards. |
| Distribution | Eaton is committed to minimizing weight and volume of product and packaging with focus to optimize transport efficiency. |
| Installation | The installation process does not require any energy consumption and there is no waste other than the obsolete product packaging generated during this step. |
| Use | The product requires energy consumption during operation. |
| End of life | The product is assumed to be disposed with 100% incineration without energy recovery. |

| Environmental Impacts | |
|--|--|
| <p>The calculation of the environmental impacts is the result of the Product's Life Cycle Analysis in accordance with ISO 14040/44, covering the entire lifecycle, i.e., "Cradle-to-Grave" including the following life cycle phases: production, distribution, installation, use and end of life.</p> <p>System modelling was carried out using the commercial LCA software EIME v6.2.4-11 with database version CODDE-2024-04 (Updated on 2024-06-04).</p> <p>Indicators Set: PEF EF 3.1 (Compliance: PEP ed.4, EN15804+A2) v2.0</p> | |
| Manufacturing Phase | The product is assembled as well as packed at Eaton facility in Romania. Product is then shipped to distribution centre in Rheinbach. Energy model used: Romania |
| Distribution Phase | Distribution of the product in its packaging from the Eaton's last logistics platform to the installation place in North America is considered as per PSR rules. |
| Installation Phase | Product is installed in North America, United States. Installation of product and treatment of packaging waste are considered in this phase. There is no energy consumption for reference product. |
| Use Phase | Reference lifetime: 20 Years Usage profile: The product has power loss of 160 W at full load condition. For Industrial applications considering 50% of the loading rate and 30% of the use time rate, total losses are 2102.4 kWh over the 20 years. Product do not require any maintenance/replacement during useful life. Industrial application is considered as per PSR-0005 section 3.2.2. Energy model used: United States |
| End of life Phase | Product is disposed assuming default scenario of 100% incineration without energy recovery. |
| Module-D | Module D is calculated according to PCR-ed4-EN-2021 09 06 based on the materials recycled and the modelled end-of-life scenario. It expresses the net benefits and loads beyond the boundaries of the system and are not to be included in the life cycle totals. |

Environmental Impact Indicators: Mandatory

| Mandatory environmental impact indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|--|------------------------|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Climate change - total (GWP) | kg CO ₂ eq. | 1.19E+03 | 1.68E+02 | 6.47E+00 | 3.30E+00 | 1.01E+03 | 9.17E+00 | 0.00E+00 |
| Climate change - fossil fuels (GWP-f) | kg CO ₂ eq. | 1.19E+03 | 1.68E+02 | 6.47E+00 | 6.42E-01 | 1.01E+03 | 9.15E+00 | 0.00E+00 |
| Climate change - biogenics (GWP-b) | kg CO ₂ eq. | 4.16E+00 | 4.26E-02 | 0.00E+00 | 2.66E+00 | 1.44E+00 | 2.51E-02 | 0.00E+00 |
| Climate change - land use and land use transformation (GWP-lu) | kg CO ₂ eq. | 8.77E-04 | 8.77E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Ozone depletion (ODP) | kg eq. CFC-11 | 9.72E-05 | 9.23E-05 | 8.50E-09 | 2.16E-08 | 4.00E-06 | 8.48E-07 | 0.00E+00 |
| Acidification (AP) | mole of H+ eq. | 7.06E+00 | 2.20E+00 | 2.15E-01 | 3.79E-03 | 4.57E+00 | 6.72E-02 | 0.00E+00 |
| Freshwater eutrophication (Ep-fw) | kg P eq. | 1.88E-02 | 1.69E-02 | 2.24E-06 | 5.03E-07 | 1.80E-03 | 1.17E-05 | 0.00E+00 |
| Marine aquatic eutrophication (Ep-m) | kg of N eq. | 7.85E-01 | 1.35E-01 | 5.11E-02 | 9.36E-04 | 5.80E-01 | 1.75E-02 | 0.00E+00 |

| Mandatory environmental impact indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|--|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Terrestrial eutrophication (Ep-t) | mole of N eq. | 9.20E+00 | 1.48E+00 | 5.60E-01 | 1.22E-02 | 6.92E+00 | 2.25E-01 | 0.00E+00 |
| Photochemical ozone formation (POCP) | kg of NMVOC eq. | 2.67E+00 | 5.59E-01 | 1.44E-01 | 2.64E-03 | 1.91E+00 | 5.01E-02 | 0.00E+00 |
| Depletion of abiotic resources - elements (ADP-e) | kg eq. Sb | 3.47E-01 | 3.46E-01 | 2.32E-07 | 4.54E-08 | 1.34E-04 | 6.47E-07 | 0.00E+00 |
| Depletion of abiotic resources - fossil fuels (ADP-f) | MJ | 2.60E+04 | 3.34E+03 | 8.23E+01 | 1.18E+01 | 2.24E+04 | 1.59E+02 | 0.00E+00 |
| Water scarcity (WDP) | m ³ eq. deprivation worldwide | 2.18E+02 | 1.70E+02 | 2.15E-02 | 2.62E-02 | 4.71E+01 | 8.73E-01 | 0.00E+00 |

Inventory Flow Indicators: Mandatory

| Inventory flow indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|-------|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Use of renewable primary energy, excluding renewable primary energy resources used as raw materials | MJ | 2.61E+03 | 1.77E+02 | 1.06E-01 | 8.83E-01 | 2.43E+03 | 9.00E+00 | 0.00E+00 |
| Use of renewable primary energy resources used as raw materials | MJ | 3.23E+01 | 3.23E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 2.65E+03 | 2.09E+02 | 1.06E-01 | 8.83E-01 | 2.43E+03 | 9.00E+00 | 0.00E+00 |
| Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials | MJ | 2.58E+04 | 3.16E+03 | 8.23E+01 | 1.18E+01 | 2.24E+04 | 1.59E+02 | 0.00E+00 |
| Use of non-renewable primary energy resources used as raw materials | MJ | 1.87E+02 | 1.87E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) | MJ | 2.60E+04 | 3.34E+03 | 8.23E+01 | 1.18E+01 | 2.24E+04 | 1.59E+02 | 0.00E+00 |

| Inventory flow indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|---------------------|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Use of secondary materials | kg | 2.52E-06 | 2.52E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Use of non-renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Net use of fresh water | m ³ | 5.09E+00 | 3.97E+00 | 5.00E-04 | 1.02E-03 | 1.10E+00 | 2.47E-02 | 0.00E+00 |
| Hazardous waste disposed of | kg | 2.44E+03 | 2.38E+03 | 0.00E+00 | 6.45E-01 | 2.18E+01 | 3.13E+01 | 0.00E+00 |
| Non-hazardous waste disposed of | kg | 2.23E+02 | 7.12E+01 | 1.99E-01 | 9.11E-02 | 1.50E+02 | 1.23E+00 | 0.00E+00 |
| Radioactive waste disposed of | kg | 2.17E-01 | 1.80E-01 | 1.39E-04 | 3.78E-05 | 3.58E-02 | 5.94E-04 | 0.00E+00 |
| Components for re-use | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials for recycling | kg | 4.92E+00 | 4.92E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Materials for energy recovery | kg | 1.21E-02 | 1.21E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy | MJ by energy vector | 3.93E-05 | 3.93E-05 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Biogenic carbon content of the product | kg of C. | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Biogenic carbon content of the associated packaging | kg of C. | 7.23E-01 | 7.23E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

Environmental Impact Indicators: Optional

| Optional Environmental impact indicators | Units | Sum | A1-A3 - Manufacturing | A4 - Distribution | A5 - Installation | B6 - Operational energy use | C1-C4 - End of life | D - Benefits and loads beyond the system boundaries |
|---|--------------------------|----------|-----------------------|-------------------|-------------------|-----------------------------|---------------------|---|
| Emission of fine particles | incidence of diseases | 5.07E-05 | 1.57E-05 | 1.14E-06 | 2.65E-08 | 3.34E-05 | 4.52E-07 | 0.00E+00 |
| Ionizing radiation, human health | kBq U ²³⁵ eq. | 3.64E+03 | 2.65E+03 | 1.35E-02 | 2.64E-01 | 9.86E+02 | 3.11E+00 | 0.00E+00 |
| Ecotoxicity, fresh water | CTUe | 3.08E+03 | 1.39E+03 | 3.89E+00 | 1.47E+01 | 1.38E+03 | 2.90E+02 | 0.00E+00 |
| Human toxicity, cancer effects | CTUh | 1.01E-05 | 9.85E-06 | 9.71E-11 | 1.09E-10 | 1.18E-07 | 9.84E-08 | 0.00E+00 |
| Human toxicity, non-cancer effects | CTUh | 3.20E-05 | 2.88E-05 | 2.15E-09 | 4.43E-09 | 3.06E-06 | 1.43E-07 | 0.00E+00 |
| Impacts related to land use/soil quality | - | 7.12E+01 | 5.24E+01 | 0.00E+00 | 1.23E-02 | 1.85E+01 | 2.37E-01 | 0.00E+00 |
| Total use of primary energy during the life cycle | MJ | 2.87E+04 | 3.55E+03 | 8.24E+01 | 1.27E+01 | 2.48E+04 | 1.68E+02 | 0.00E+00 |

To evaluate the environmental impact of other product covered by this PEP, multiply the impact figures by-
Multiplying Factors for Manufacturing, Distribution, Installation, Use, End-Of-Life and Module-D phases:

| Part Number | Product Description | All Phases Except Use-Phase Extrapolation Factors | Use Phase Extrapolation Factors |
|-------------|--------------------------------|--|------------------------------------|
| Y7-192571 | NZMH4-VX1200-NA (Reference) | 1.00 | 1.00 |
| Y7-192542 | NZMN4-AX800-NA | 1.00 | 0.66 |
| Y7-192543 | NZMN4-AX1000-NA | 1.00 | 1.03 |
| Y7-192544 | NZMN4-AX1200-NA | 1.00 | 1.00 |
| Y7-192551 | NZMN4-VX800-NA | 1.00 | 0.66 |
| Y7-192552 | NZMN4-VX1000-NA | 1.00 | 1.03 |
| Y7-192553 | NZMN4-VX1200-NA | 1.00 | 1.00 |
| Y7-192560 | NZMH4-AX800-NA | 1.00 | 0.49 |
| Y7-192561 | NZMH4-AX1000-NA | 1.00 | 0.77 |
| Y7-192562 | NZMH4-AX1200-NA | 1.00 | 1.00 |
| Y7-192569 | NZMH4-VX800-NA | 1.00 | 0.49 |
| Y7-192570 | NZMH4-VX1000-NA | 1.00 | 0.77 |
| Y7-192592 | NZMN4-PX800-NA | 1.00 | 0.66 |
| Y7-192593 | NZMN4-PX1000-NA | 1.00 | 1.03 |
| Y7-192594 | NZMN4-PX1200-NA | 1.00 | 1.00 |
| Y7-192595 | NZMH4-PX800-NA | 1.00 | 0.49 |
| Y7-192596 | NZMH4-PX1000-NA | 1.00 | 0.77 |
| Y7-192597 | NZMH4-PX1200-NA | 1.00 | 1.00 |
| Y7-306569 | NZMN4-VX800-T-NA | 1.00 | 0.66 |
| Y7-306574 | NZMN4-VX1000-T-NA | 1.00 | 1.03 |
| Y7-306585 | NZMN4-VX1200-T-NA | 1.00 | 1.00 |
| Y7-306586 | NZMH4-VX800-T-NA | 1.00 | 0.49 |
| Y7-306587 | NZMH4-VX1000-T-NA | 1.00 | 0.77 |
| Y7-306588 | NZMH4-VX1200-T-NA | 1.00 | 1.00 |

Disclaimer

This Product Environmental Profile and its content is based on information available to us. It refers to the product at the date of issue. We make no express or implied representations or warranties with respect to the information contained herein.

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| <i>Registration Number</i> | EATO-00268-V01.01-EN | <i>Drafting rules</i> | PCR-ed4-EN-2021 09 06 |
| <i>Verifier accreditation Number</i> | VH-53 | Supplemented by | PSR-0005-ed3.1-EN-2023 12 08 |
| <i>Date of issue</i> | 12-2024 | <i>Information and reference documents</i> | www.pep-ecopassport.org |
| | | <i>Validity period</i> | 5 years |
| Independent verification of the declaration and data, in compliance with ISO 14025: 2006 | | | |
| Internal | X | External | |
| The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain) | | |  |
| <i>PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019</i> | | | |
| <i>The components of the present PEP may not be compared with components from any other program.</i> | | | |
| <i>Document complies with ISO 14025: 2006 « Environmental labels and declarations. Type III environmental declarations »</i> | | | |