

Product Environmental Profile

SAFETY MODULE FOR PLC TM2XX, 3 FUNCTIONS

Modicon TM3 Safety modules





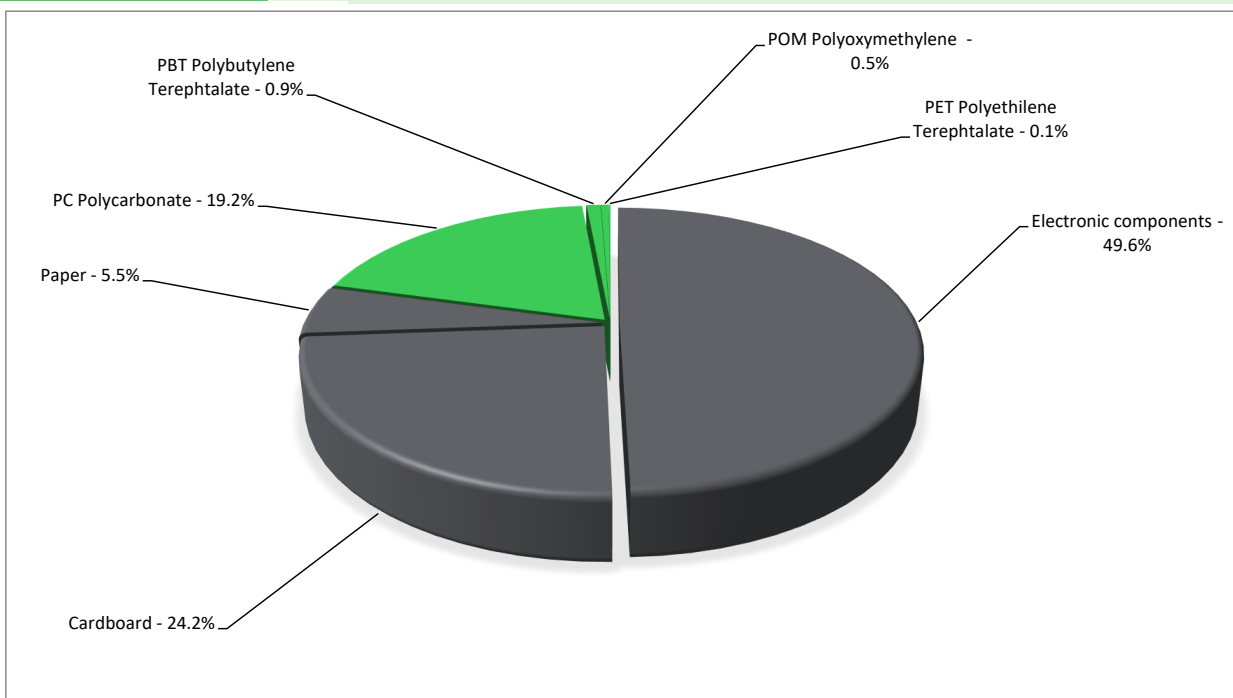
General information

| | |
|----------------------------|--|
| Reference product | SAFETY MODULE FOR PLC TM2XX, 3 FUNCTIONS - TM3SAK6R |
| Description of the product | The TM3S Safety Modules extend the M221, M41 and M251 range by safety related functionality, e.g. emergency stop or safe guarding. The safety related processing is done exclusively by the safety modules independently from the rest of the system. The TM3S modules provide status information to the PLC and can receive parameters from the PLC. In most of the applications, the relay outputs of the modules are energized nearly 100% of the time. |
| Description of the range | The products of the range are: This range consists of safety modules for M221, M41 and M251 PLC The environmental impacts of this reference product are representative of the impacts of the other products of the range which are developed with a similar technology. |
| Functional unit | to enhance safety related functionality of the M221, M41 and M251 controllers 100% of the time for 10 years at 3.6W based on following specific parameter: |
| Specifications are: | Technical Data - Degree of protection IP20 according to IEC 60529 - Supply voltage: SELV/PELV = 24 V - 15...+ 20 % - Rated power: Bus = 5 V 0.2 W External Supply (= 24 V) 3.6 W |



Constituent materials

| | | |
|------------------------|-------|--|
| Reference product mass | 270 g | including the product, its packaging and additional elements and accessories |
|------------------------|-------|--|



| | |
|----------|--------|
| Plastics | 20.70% |
| Metals | 0.00% |
| Others | 79.30% |



Substance assessment

Details of ROHS and REACH substances information are available on the Schneider-Electric Green Premium website

<https://www.se.com/ww/en/work/support/green-premium/>



Additional environmental information

| | | | |
|-------------|--------------------------|----|---|
| End Of Life | Recyclability potential: | 0% | The recyclability rate was calculated from the recycling rates of each material making up the product with the exception of data using the ESR database. For materials or components using the ESR database or the absence of data the conservative hypothesis "0% recyclability" was used. |
|-------------|--------------------------|----|---|



Environmental impacts

| | | | | |
|----------------------------------|---|---|---|---|
| Reference service life time | 10 years | | | |
| Product category | Other equipments - Active product | | | |
| Installation elements | This product does not require any installation operations | | | |
| Use scenario | The product is in active mode 100% of the time with a power use of 3.6W for 10 years | | | |
| Time representativeness | The collected data are representative of the year 2023 | | | |
| Technological representativeness | The Modules of Technologies such as material production, manufacturing processes and transport technology used in the PEP analysis (LCA EIME in the case) are Similar and représentative of the actual type of technologies used to make the product. | | | |
| Geographical representativeness | Rest of the World | | | |
| Energy model used | [A1 - A3] | [A5] | [B6] | [C1 - C4] |
| | Electricity Mix; Low voltage; 2018; France, FR | Electricity Mix; Low voltage; 2018; Germany, DE | Electricity Mix; Low voltage; 2018; Germany, DE | Electricity Mix; Low voltage; 2018; Germany, DE |
| | | Electricity Mix; Low voltage; 2018; Canada, CA | Electricity Mix; Low voltage; 2018; Canada, CA | Electricity Mix; Low voltage; 2018; Canada, CA |
| | | Electricity Mix; Low voltage; 2018; France, FR | Electricity Mix; Low voltage; 2018; France, FR | Electricity Mix; Low voltage; 2018; France, FR |
| | | Electricity Mix; Low voltage; 2018; New-Zealand, NZ | Electricity Mix; Low voltage; 2018; New-Zealand, NZ | Electricity Mix; Low voltage; 2018; New-Zealand, NZ |
| | | Electricity Mix; Low voltage; 2018; Spain, ES | Electricity Mix; Low voltage; 2018; Spain, ES | Electricity Mix; Low voltage; 2018; Spain, ES |

Detailed results of the optional indicators mentioned in PCRed4 are available in the LCA report and on demand in a digital format - Country Customer Care Center - <http://www.schneider-electric.com/contact>

| Mandatory Indicators | | | SAFETY MODULE FOR PLC TM2XX, 3 FUNCTIONS - TM3SAK6R | | | | | |
|--|---------------------------|--------------------------|---|---------------------|---------------------|-----------------|-------------------------|--------------------------|
| Impact indicators | Unit | Total (without Module D) | [A1 - A3] - Manufacturing | [A4] - Distribution | [A5] - Installation | [B1 - B7] - Use | [C1 - C4] - End of life | [D] - Benefits and loads |
| Contribution to climate change | kg CO2 eq | 9.19E+01 | 8.57E+00 | 1.35E-02 | 0* | 8.27E+01 | 5.81E-01 | 0.00E+00 |
| Contribution to climate change-fossil | kg CO2 eq | 9.18E+01 | 8.53E+00 | 1.35E-02 | 0* | 8.27E+01 | 5.81E-01 | 0.00E+00 |
| Contribution to climate change-biogenic | kg CO2 eq | 1.07E-01 | 3.79E-02 | 0* | 0* | 6.87E-02 | 0* | 0.00E+00 |
| Contribution to climate change-land use and land use change | kg CO2 eq | 6.37E-05 | 6.37E-05 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to ozone depletion | kg CFC-11 eq | 1.47E-06 | 1.06E-06 | 0* | 0* | 4.15E-07 | 4.63E-10 | 0.00E+00 |
| Contribution to acidification | mol H+ eq | 5.89E-01 | 6.02E-02 | 9.00E-05 | 0* | 5.28E-01 | 3.85E-04 | 0.00E+00 |
| Contribution to eutrophication, freshwater | kg (PO4) ³⁻ eq | 3.14E-04 | 1.83E-05 | 0* | 0* | 2.92E-04 | 3.12E-06 | 0.00E+00 |
| Contribution to eutrophication marine | kg N eq | 6.48E-02 | 6.51E-03 | 4.24E-05 | 1.97E-05 | 5.80E-02 | 1.92E-04 | 0.00E+00 |
| Contribution to eutrophication, terrestrial | mol N eq | 9.19E-01 | 6.93E-02 | 4.66E-04 | 2.01E-04 | 8.47E-01 | 1.96E-03 | 0.00E+00 |
| Contribution to photochemical ozone formation - human health | kg NMVOC eq | 2.13E-01 | 2.42E-02 | 1.18E-04 | 4.82E-05 | 1.88E-01 | 4.74E-04 | 0.00E+00 |
| Contribution to resource use, minerals and metals | kg Sb eq | 2.22E-03 | 2.21E-03 | 0* | 0* | 8.35E-06 | 0* | 0.00E+00 |
| Contribution to resource use, fossils | MJ | 2.43E+03 | 1.17E+02 | 0* | 0* | 2.32E+03 | 6.81E-01 | 0.00E+00 |
| Contribution to water use | m3 eq | 5.66E+00 | 2.36E+00 | 0* | 7.33E-03 | 3.27E+00 | 1.83E-02 | 0.00E+00 |

| Inventory flows Indicators | | SAFETY MODULE FOR PLC TM2XX, 3 FUNCTIONS - TM3SAK6R | | | | | | |
|---|------|---|---------------------------|---------------------|---------------------|-----------------|-------------------------|--------------------------|
| Inventory flows | Unit | Total (without Module D) | [A1 - A3] - Manufacturing | [A4] - Distribution | [A5] - Installation | [B1 - B7] - Use | [C1 - C4] - End of life | [D] - Benefits and loads |
| Contribution to use of renewable primary energy excluding renewable primary energy used as raw material | MJ | 8.92E+02 | 2.49E+00 | 0* | 0* | 8.89E+02 | 0* | 0.00E+00 |
| Contribution to use of renewable primary energy resources used as raw material | MJ | 1.62E+00 | 1.62E+00 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to total use of renewable primary energy resources | MJ | 8.93E+02 | 4.12E+00 | 0* | 0* | 8.89E+02 | 0* | 0.00E+00 |
| Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material | MJ | 2.43E+03 | 1.13E+02 | 0* | 0* | 2.32E+03 | 6.81E-01 | 0.00E+00 |
| Contribution to use of non renewable primary energy resources used as raw material | MJ | 3.15E+00 | 3.15E+00 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to total use of non-renewable primary energy resources | MJ | 2.43E+03 | 1.17E+02 | 0* | 0* | 2.32E+03 | 6.81E-01 | 0.00E+00 |
| Contribution to use of secondary material | kg | 1.83E-05 | 1.83E-05 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to use of renewable secondary fuels | MJ | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to use of non renewable secondary fuels | MJ | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to net use of freshwater | m³ | 1.32E-01 | 5.57E-02 | 0* | 1.71E-04 | 7.61E-02 | 4.26E-04 | 0.00E+00 |
| Contribution to hazardous waste disposed | kg | 7.08E+00 | 5.04E+00 | 0* | 0* | 1.91E+00 | 1.34E-01 | 0.00E+00 |
| Contribution to non hazardous waste disposed | kg | 1.62E+01 | 3.59E+00 | 0* | 8.01E-02 | 1.25E+01 | 6.10E-02 | 0.00E+00 |
| Contribution to radioactive waste disposed | kg | 2.20E-03 | 9.15E-04 | 3.37E-07 | 0* | 1.28E-03 | 3.04E-06 | 0.00E+00 |
| Contribution to components for reuse | kg | 0.00E+00 | 0* | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to materials for recycling | kg | 1.28E-06 | 1.28E-06 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to materials for energy recovery | kg | 3.94E-08 | 3.94E-08 | 0* | 0* | 0* | 0* | 0.00E+00 |
| Contribution to exported energy | MJ | 4.46E-05 | 4.46E-05 | 0* | 0* | 0* | 0* | 0.00E+00 |

* represents less than 0.01% of the total life cycle of the reference flow

| | | |
|---|---------|----------|
| Contribution to biogenic carbon content of the product | kg de C | 0.00E+00 |
| Contribution to biogenic carbon content of the associated packaging | kg de C | 2.39E-02 |

| Mandatory Indicators | | SAFETY MODULE FOR PLC TM2XX, 3 FUNCTIONS - TM3SAK6R | | | | | | | |
|--|---------------------------|---|------|------|------|------|------|----------|------|
| Impact indicators | Unit | [B1 - B7] - Use | [B1] | [B2] | [B3] | [B4] | [B5] | [B6] | [B7] |
| Contribution to climate change | kg CO2 eq | 8.27E+01 | 0* | 0* | 0* | 0* | 0* | 8.27E+01 | 0* |
| Contribution to climate change-fossil | kg CO2 eq | 8.27E+01 | 0* | 0* | 0* | 0* | 0* | 8.27E+01 | 0* |
| Contribution to climate change-biogenic | kg CO2 eq | 6.87E-02 | 0* | 0* | 0* | 0* | 0* | 6.87E-02 | 0* |
| Contribution to climate change-land use and land use change | kg CO2 eq | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to ozone depletion | kg CFC-11 eq | 4.15E-07 | 0* | 0* | 0* | 0* | 0* | 4.15E-07 | 0* |
| Contribution to acidification | mol H+ eq | 5.28E-01 | 0* | 0* | 0* | 0* | 0* | 5.28E-01 | 0* |
| Contribution to eutrophication, freshwater | kg (PO4) ³⁻ eq | 2.92E-04 | 0* | 0* | 0* | 0* | 0* | 2.92E-04 | 0* |
| Contribution to eutrophication marine | kg N eq | 5.80E-02 | 0* | 0* | 0* | 0* | 0* | 5.80E-02 | 0* |
| Contribution to eutrophication, terrestrial | mol N eq | 8.47E-01 | 0* | 0* | 0* | 0* | 0* | 8.47E-01 | 0* |
| Contribution to photochemical ozone formation - human health | kg NMVOC eq | 1.88E-01 | 0* | 0* | 0* | 0* | 0* | 1.88E-01 | 0* |
| Contribution to resource use, minerals and metals | kg Sb eq | 8.35E-06 | 0* | 0* | 0* | 0* | 0* | 8.35E-06 | 0* |
| Contribution to resource use, fossils | MJ | 2.32E+03 | 0* | 0* | 0* | 0* | 0* | 2.32E+03 | 0* |
| Contribution to water use | m³ eq | 3.27E+00 | 0* | 0* | 0* | 0* | 0* | 3.27E+00 | 0* |

| Inventory flows Indicators | | SAFETY MODULE FOR PLC TM2XX, 3 FUNCTIONS - TM3SAK6R | | | | | | | |
|---|------|---|------|------|------|------|------|----------|------|
| Inventory flows | Unit | [B1 - B7] - Use | [B1] | [B2] | [B3] | [B4] | [B5] | [B6] | [B7] |
| Contribution to use of renewable primary energy excluding renewable primary energy used as raw material | MJ | 8.89E+02 | 0* | 0* | 0* | 0* | 0* | 8.89E+02 | 0* |
| Contribution to use of renewable primary energy resources used as raw material | MJ | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to total use of renewable primary energy resources | MJ | 8.89E+02 | 0* | 0* | 0* | 0* | 0* | 8.89E+02 | 0* |
| Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material | MJ | 2.32E+03 | 0* | 0* | 0* | 0* | 0* | 2.32E+03 | 0* |
| Contribution to use of non renewable primary energy resources used as raw material | MJ | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to total use of non-renewable primary energy resources | MJ | 2.32E+03 | 0* | 0* | 0* | 0* | 0* | 2.32E+03 | 0* |
| Contribution to use of secondary material | kg | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to use of renewable secondary fuels | MJ | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to use of non renewable secondary fuels | MJ | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to net use of freshwater | m³ | 7.61E-02 | 0* | 0* | 0* | 0* | 0* | 7.61E-02 | 0* |
| Contribution to hazardous waste disposed | kg | 1.91E+00 | 0* | 0* | 0* | 0* | 0* | 1.91E+00 | 0* |
| Contribution to non hazardous waste disposed | kg | 1.25E+01 | 0* | 0* | 0* | 0* | 0* | 1.25E+01 | 0* |
| Contribution to radioactive waste disposed | kg | 1.28E-03 | 0* | 0* | 0* | 0* | 0* | 1.28E-03 | 0* |
| Contribution to components for reuse | kg | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to materials for recycling | kg | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to materials for energy recovery | kg | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |
| Contribution to exported energy | MJ | 0* | 0* | 0* | 0* | 0* | 0* | 0* | 0* |

* represents less than 0.01% of the total life cycle of the reference flow

Life cycle assessment performed with EIME version v6.1, database version 2023-02 in compliance with ISO14044, EF 3.0 method is applied, for biogenic carbon storage, assessment methodology 0/0 is used

According to this environmental analysis, proportionality rules may be used to evaluate the impacts of other products of this range, ratios to apply can be provided upon request

Please note that the values given above are only valid within the context specified and cannot be used directly to draw up the environmental assessment of an installation.

| | | | |
|---|------------------|-------------------------------------|--|
| Registration number : | ENVPEP1403010_V4 | Drafting rules | PCR-4-ed4-EN-2021 09 06 |
| Date of issue | 09-2024 | Supplemented by | PSR-0005-ed3-EN-2023 06 06 |
| | | Information and reference documents | www.pep-ecopassport.org |
| | | Validity period | 5 years |
| Independent verification of the declaration and data, in compliance with ISO 14021 : 2016 | | | |
| Internal | X | External | |
| The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain) | | | |
| PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 or NF E38-500 :2022 | | | |
| The components of the present PEP may not be compared with components from any other program. | | | |
| Document complies with ISO 14021:2016 "Environmental labels and declarations. Type II environmental declarations" | | | |

Schneider Electric Industries SAS

Country Customer Care Center
<http://www.se.com/contact>

35, rue Joseph Monier
CS 30323
F- 92500 Rueil Malmaison Cedex
RCS Nanterre 954 503 439
Capital social 928 298 512 €

www.se.com

ENVPEP1403010_V4

Published by Schneider Electric

©2024 - Schneider Electric – All rights reserved

09-2024