

# Product Environmental Profile

**M172 Perf. Disp. 18 I/O Eth 2 MB 2 SSR**

**Modicon M172 logic controllers**





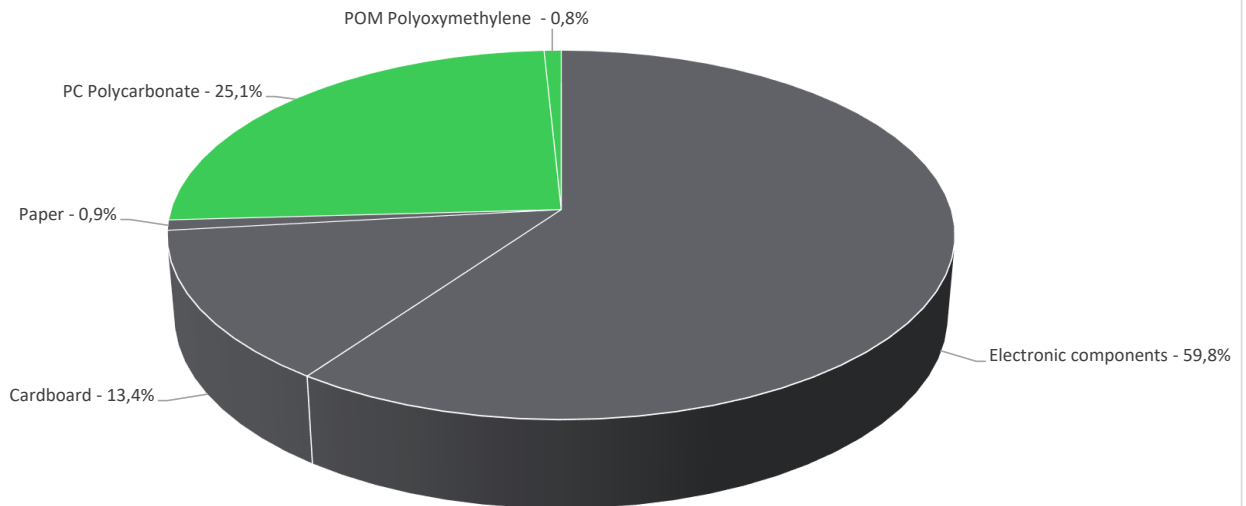
## General information

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reference product          | M172 Perf. Disp. 18 I/O Eth 2 MB 2 SSR - TM172PDG18S                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description of the product | TM172PDG18S is a programmable logic controller part of the Modicon M172 range, suitable for managing a wide range of HVAC, pumping and many other applications from the simplest to the most complex. This range is for OEMs and helps to maximize profitability or energy efficiency in HVAC applications.                                                                                                                                                                                 |
| Description of the range   | 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. programmable controller, suitable for managing a wide range of HVAC/R and many other applications, from the simplex to the most complex.<br>The products of the range are: programmable controller, suitable for managing a wide range of HVAC/R and many other applications, from the simplex to the most complex. |
| Functional unit            | To manage a wide range of HVAC/R and pumping applications with a 100% of the time for 10 years.                                                                                                                                                                                                                                                                                                                                                                                             |
| Specifications are:        | Built-in display 128x64 LCD with backlight<br>18 I/Os<br>8 analog inputs<br>2 digital inputs<br>2 analog outputs<br>6 digital outputs<br>1 Ethernet port<br>2 RS485 RS485 ports<br>1 CAN expansion bus<br>1 communication module port<br>1 USB-A<br>1 USB-microB<br>1 µSD Card slot                                                                                                                                                                                                         |



## Constituent materials

|                        |       |                                                                           |
|------------------------|-------|---------------------------------------------------------------------------|
| Reference product mass | 265 g | including the product, its packaging, additional elements and accessories |
|------------------------|-------|---------------------------------------------------------------------------|



|          |       |
|----------|-------|
| Plastics | 25,9% |
| Metals   | 0,0%  |
| Others   | 74,1% |



## Substance assessment

Details of ROHS and REACH substances information are available on the Schneider-Electric website  
<https://www.se.com>

Additional environmental information

|             |                          |      |                                                                                                                                                                                                                                                                                                                                                |
|-------------|--------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| End Of Life | Recyclability potential: | 0,4% | The recyclability rate was calculated from the recycling rates of each material making up the product based on REEECYLAB tool developed by Ecosystem, for components/materials not covered by the tool, data from the EIME database and the related PSR was taken. If no data was found a conservative assumption was used (0% recyclability). |
|-------------|--------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Environmental impacts

|                                  |                                                                                                                                                                                                                                                       |                                                        |                                                        |                                                        |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| Reference service life time      | 10 years                                                                                                                                                                                                                                              |                                                        |                                                        |                                                        |
| Product category                 | Other equipments - Active product                                                                                                                                                                                                                     |                                                        |                                                        |                                                        |
| Life cycle of the product        | The manufacturing, the distribution, the installation, the use and the end of life were taken into consideration in this study.                                                                                                                       |                                                        |                                                        |                                                        |
| Electricity consumption          | The electricity consumed during manufacturing processes is considered for each part of the product individually, the final assembly generates a negligible consumption.                                                                               |                                                        |                                                        |                                                        |
| Installation elements            | The installation requires cables.                                                                                                                                                                                                                     |                                                        |                                                        |                                                        |
| Use scenario                     | The product is in active mode 100% of the time with a power use of 11W, for 10 years.                                                                                                                                                                 |                                                        |                                                        |                                                        |
| Time representativeness          | The collected data are representative of the year 2025.                                                                                                                                                                                               |                                                        |                                                        |                                                        |
| 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 representative of the actual type of technologies used to make the product. |                                                        |                                                        |                                                        |
| Geographical representativeness  | Final assembly site                                                                                                                                                                                                                                   | Use phase                                              |                                                        | End-of-life                                            |
|                                  | Belluno, Italy                                                                                                                                                                                                                                        | Rest of the World                                      |                                                        | Rest of the World                                      |
| Energy model used                | [A1 - A3]                                                                                                                                                                                                                                             | [A5]                                                   | [B6]                                                   | [C1 - C4]                                              |
|                                  | Electricity Mix; Low voltage; 2020; Italy, IT                                                                                                                                                                                                         | Electricity Mix; Low voltage; 2020; Asia Pacific, APAC | Electricity Mix; Low voltage; 2020; Asia Pacific, APAC | Electricity Mix; Low voltage; 2020; Asia Pacific, APAC |
|                                  |                                                                                                                                                                                                                                                       | Electricity Mix; Low voltage; 2020; Brazil, BR         | Electricity Mix; Low voltage; 2020; Brazil, BR         | Electricity Mix; Low voltage; 2020; Brazil, BR         |
|                                  |                                                                                                                                                                                                                                                       | Electricity Mix; Low voltage; 2020; Europe, EU-27      | Electricity Mix; Low voltage; 2020; Europe, EU-27      | Electricity Mix; Low voltage; 2020; Europe, EU-27      |
|                                  |                                                                                                                                                                                                                                                       | Electricity Mix; Low voltage; 2020; Turkey, TR         | Electricity Mix; Low voltage; 2020; Turkey, TR         | Electricity Mix; Low voltage; 2020; Turkey, TR         |
|                                  |                                                                                                                                                                                                                                                       | Electricity Mix; Low voltage; 2020; United States, US  | Electricity Mix; Low voltage; 2020; United States, US  | Electricity Mix; Low voltage; 2020; United States, US  |

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.se.com/contact>

| Mandatory Indicators                                         |              |                          | M172 Perf. Disp. 18 I/O Eth 2 MB 2 SSR - TM172PDG18S |                     |                     |                 |                         |                          |
|--------------------------------------------------------------|--------------|--------------------------|------------------------------------------------------|---------------------|---------------------|-----------------|-------------------------|--------------------------|
| 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    | 4,88E+02                 | 3,11E+01                                             | 9,85E-02            | 0*                  | 4,56E+02        | 6,75E-01                | 1,46E-04                 |
| Contribution to climate change-fossil                        | kg CO2 eq    | 4,82E+02                 | 3,11E+01                                             | 9,85E-02            | 0*                  | 4,50E+02        | 6,74E-01                | -1,01E-03                |
| Contribution to climate change-biogenic                      | kg CO2 eq    | 5,55E+00                 | 0*                                                   | 0*                  | 0*                  | 5,59E+00        | 1,58E-03                | 1,16E-03                 |
| Contribution to climate change-land use and land use change  | kg CO2 eq    | 1,07E-05                 | 1,07E-05                                             | 0*                  | 0*                  | 0*              | 0*                      | 0,00E+00                 |
| Contribution to ozone depletion                              | kg CFC-11 eq | 6,75E-06                 | 4,72E-06                                             | 0*                  | 0*                  | 2,03E-06        | 7,54E-10                | -3,13E-11                |
| Contribution to acidification                                | mol H+ eq    | 2,74E+00                 | 1,54E-01                                             | 6,59E-04            | 0*                  | 2,58E+00        | 4,61E-04                | -5,38E-06                |
| Contribution to eutrophication, freshwater                   | kg P eq      | 7,72E-04                 | 1,12E-04                                             | 0*                  | 0*                  | 6,57E-04        | 3,54E-06                | -1,59E-08                |
| Contribution to eutrophication, marine                       | kg N eq      | 3,15E-01                 | 1,77E-02                                             | 3,11E-04            | 0*                  | 2,97E-01        | 2,27E-04                | -1,63E-06                |
| Contribution to eutrophication, terrestrial                  | mol N eq     | 4,33E+00                 | 1,89E-01                                             | 3,41E-03            | 0*                  | 4,14E+00        | 2,32E-03                | -1,35E-05                |
| Contribution to photochemical ozone formation - human health | kg COVNM eq  | 1,02E+00                 | 5,70E-02                                             | 8,64E-04            | 0*                  | 9,64E-01        | 5,62E-04                | -3,48E-06                |
| Contribution to resource use, minerals and metals            | kg Sb eq     | 7,53E-03                 | 7,43E-03                                             | 0*                  | 0*                  | 1,07E-04        | 0*                      | -1,08E-10                |
| Contribution to resource use, fossils                        | MJ           | 9,74E+03                 | 3,26E+02                                             | 1,38E+00            | 0*                  | 9,41E+03        | 0*                      | -1,23E-02                |
| Contribution to water use                                    | m3 eq        | 4,43E+01                 | 1,46E+01                                             | 0*                  | 0*                  | 2,97E+01        | 2,37E-02                | -2,52E-04                |

| Inventory flows Indicators                                        |      | M172 Perf. Disp. 18 I/O Eth 2 MB 2 SSR - TM172PDG18S |                           |                     |                     |                 |                         |                          |
|-------------------------------------------------------------------|------|------------------------------------------------------|---------------------------|---------------------|---------------------|-----------------|-------------------------|--------------------------|
| 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 renewable primary energy used as energy           | MJ   | 2,01E+03                                             | 2,34E+01                  | 0*                  | 0*                  | 1,98E+03        | 0*                      | 3,40E-03                 |
| Contribution to renewable primary energy used as raw material     | MJ   | 3,44E-01                                             | 3,44E-01                  | 0*                  | 0*                  | 0*              | 0*                      | -1,48E-02                |
| Contribution to total renewable primary energy                    | MJ   | 2,01E+03                                             | 2,38E+01                  | 0*                  | 0*                  | 1,98E+03        | 0*                      | -1,14E-02                |
| Contribution to non renewable primary energy used as energy       | MJ   | 9,73E+03                                             | 3,21E+02                  | 1,38E+00            | 0*                  | 9,41E+03        | 0*                      | -1,23E-02                |
| Contribution to non renewable primary energy used as raw material | MJ   | 4,27E+00                                             | 4,27E+00                  | 0*                  | 0*                  | 0*              | 0*                      | 0,00E+00                 |
| Contribution to total non renewable primary energy                | MJ   | 9,74E+03                                             | 3,26E+02                  | 1,38E+00            | 0*                  | 9,41E+03        | 0*                      | -1,23E-02                |
| Contribution to use of secondary material                         | kg   | 3,39E-02                                             | 3,39E-02                  | 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 fresh water                            | m³   | 1,03E+00                                             | 3,38E-01                  | 0*                  | 0*                  | 6,92E-01        | 5,51E-04                | -5,88E-06                |
| Contribution to hazardous waste disposed                          | kg   | 9,61E+01                                             | 8,41E+01                  | 0*                  | 0*                  | 1,19E+01        | 1,57E-01                | -3,08E-05                |
| Contribution to non hazardous waste disposed                      | kg   | 8,80E+01                                             | 1,30E+01                  | 0*                  | 3,66E-02            | 7,49E+01        | 7,49E-02                | -6,11E-04                |
| Contribution to radioactive waste disposed                        | kg   | 2,08E-02                                             | 7,79E-03                  | 2,46E-06            | 0*                  | 1,30E-02        | 3,70E-06                | -2,80E-07                |
| Contribution to components for reuse                              | kg   | 0,00E+00                                             | 0*                        | 0*                  | 0*                  | 0*              | 0*                      | 0,00E+00                 |
| Contribution to materials for recycling                           | kg   | 9,24E-03                                             | 8,42E-03                  | 0*                  | 0*                  | 0*              | 8,20E-04                | 0,00E+00                 |
| Contribution to materials for energy recovery                     | kg   | 0,00E+00                                             | 0*                        | 0*                  | 0*                  | 0*              | 0*                      | 0,00E+00                 |
| Contribution to exported energy                                   | MJ   | 5,62E-05                                             | 4,63E-06                  | 0*                  | 0*                  | 0*              | 5,16E-05                | 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 of C | 0,00E+00 |
| Contribution to biogenic carbon content of the associated packaging | kg of C | 1,03E-02 |

\* The calculation of the biogenic carbon is based on the Ademe for the Cardboard (28%), EN16485 for Wood (39,52%), and APESA/RECORD for Paper (37,8%)

| Mandatory Indicators                                         |              | M172 Perf. Disp. 18 I/O Eth 2 MB 2 SSR - TM172PDG18S |      |      |      |      |      |          |      |
|--------------------------------------------------------------|--------------|------------------------------------------------------|------|------|------|------|------|----------|------|
| Impact indicators                                            | Unit         | [B1 - B7] - Use                                      | [B1] | [B2] | [B3] | [B4] | [B5] | [B6]     | [B7] |
| Contribution to climate change                               | kg CO2 eq    | 4,56E+02                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 4,56E+02 | 0*   |
| Contribution to climate change-fossil                        | kg CO2 eq    | 4,50E+02                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 4,50E+02 | 0*   |
| Contribution to climate change-biogenic                      | kg CO2 eq    | 5,59E+00                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 5,59E+00 | 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 | 2,03E-06                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 2,03E-06 | 0*   |
| Contribution to acidification                                | mol H+ eq    | 2,58E+00                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 2,58E+00 | 0*   |
| Contribution to eutrophication, freshwater                   | kg P eq      | 6,57E-04                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 6,57E-04 | 0*   |
| Contribution to eutrophication marine                        | kg N eq      | 2,97E-01                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 2,97E-01 | 0*   |
| Contribution to eutrophication, terrestrial                  | mol N eq     | 4,14E+00                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 4,14E+00 | 0*   |
| Contribution to photochemical ozone formation - human health | kg COVNM eq  | 9,64E-01                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 9,64E-01 | 0*   |
| Contribution to resource use, minerals and metals            | kg Sb eq     | 1,07E-04                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 1,07E-04 | 0*   |
| Contribution to resource use, fossils                        | MJ           | 9,41E+03                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 9,41E+03 | 0*   |
| Contribution to water use                                    | m3 eq        | 2,97E+01                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 2,97E+01 | 0*   |

| Inventory flows Indicators                                                                                      |      | M172 Perf. Disp. 18 I/O Eth 2 MB 2 SSR - TM172PDG18S |      |      |      |      |      |          |      |
|-----------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------|------|------|------|------|------|----------|------|
| 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   | 1,98E+03                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 1,98E+03 | 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   | 1,98E+03                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 1,98E+03 | 0*   |
| Contribution to use of non renewable primary energy excluding non renewable primary energy used as raw material | MJ   | 9,41E+03                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 9,41E+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   | 9,41E+03                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 9,41E+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   | 6,92E-01                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 6,92E-01 | 0*   |
| Contribution to hazardous waste disposed                                                                        | kg   | 1,19E+01                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 1,19E+01 | 0*   |
| Contribution to non hazardous waste disposed                                                                    | kg   | 7,49E+01                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 7,49E+01 | 0*   |
| Contribution to radioactive waste disposed                                                                      | kg   | 1,30E-02                                             | 0*   | 0*   | 0*   | 0*   | 0*   | 1,30E-02 | 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 v6.2.5-6, database version 2024-01 in compliance with ISO14044, EF3.1 method is applied, for biogenic carbon storage, assessment methodology -1/1 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 :                                                                                             | ENVPEP1803011_V2 | Drafting rules                      | PEP-PCR-ed4-2021 09 06                                               |
| Date of issue                                                                                                     | 08-2025          | Supplemented by                     | No PSR                                                               |
|                                                                                                                   |                  | Information and reference documents | <a href="http://www.pep-ecopassport.org">www.pep-ecopassport.org</a> |
|                                                                                                                   |                  | 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" |                  |                                     |                                                                      |

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