SCU100 CONTROL UNIT WITH MODBUS ADAPTER

# PEP ecopassport®

## Product Environmental Profile

Product Environmental Profile - PEP Ecopassport.
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"

| ORGANIZATION | | CONTACT INFORMATION | | | |
|---|---|---|---|---|---|
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| ADDRESS | | WEBSITE | | | |
| ABB S.p.A. - ELSB Viale dell'Industria, 18 20009 Vittuone (MI) - Italy | | new.abb.com/it | | | |
| STATUS | SECURITY LEVEL | REGISTRATION NUMBER | REV. | LANG. | PAGE |
| Approved | Public | ABBG-00529-V01.01-EN | 1 | en | 1/11 |

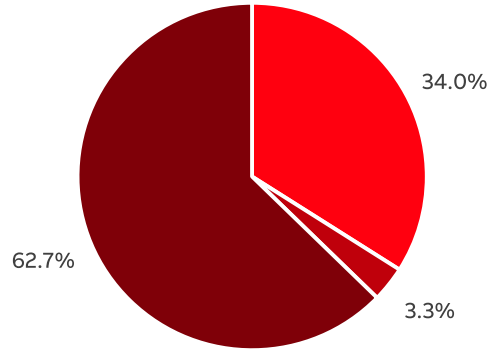
# ABB Purpose & Embedding Sustainability

ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow. With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.

# General Information

| | |
|---|---|
| **Reference product** | One Sub-contribution Control Unit 100 (2CCG000242R0001) with Modbus Adapter |
| **Description of the product** | The SCU100 control unit is a part of the InSite pro M compact - a monitoring system which brings complete overview of the system performances and enables energy and asset management. The system consists of field devices connected to the SCU100 control unit: energy and power meters, current sensors, digital input and output modules (I/O modules) |
| **Functional unit** | Collecting measurements and information simultaneously from up to 16 energy and power meters, in addition to 96 current sensors and digital channels, calculating the energy and number of operations at single line level and compares stored values by period or by device during 10 years with 100% use time rate, having the following dimensions 161 mm x 87 mm x 64.9 mm |
| **Other products covered** | n.a. |

# Constituent Materials




| | |
|---|---|
| **Total weight of Reference product with packaging** | 358.8 g plus 131.6 g of packaging = 490.4 g |

| **Plastics as % of weight** | | **Metals as % of weight** | | **Others as % of weight** | |
|---|---|---|---|---|---|
| Name and CAS number | Weight% | Name and CAS number | Weight% | Name and CAS number | Weight% |
| **glass fiber filled polycarbonate** | 32.2 | **steel** | 3.3 | **electronics** | 35.9 |
| **polyamide** | 1.6 | - | x | **cardboard** | 25.4 |
| **polyoxymethylene** | 0.2 | - | x | **paper** | 1.4 |

# Additional Environmental Information

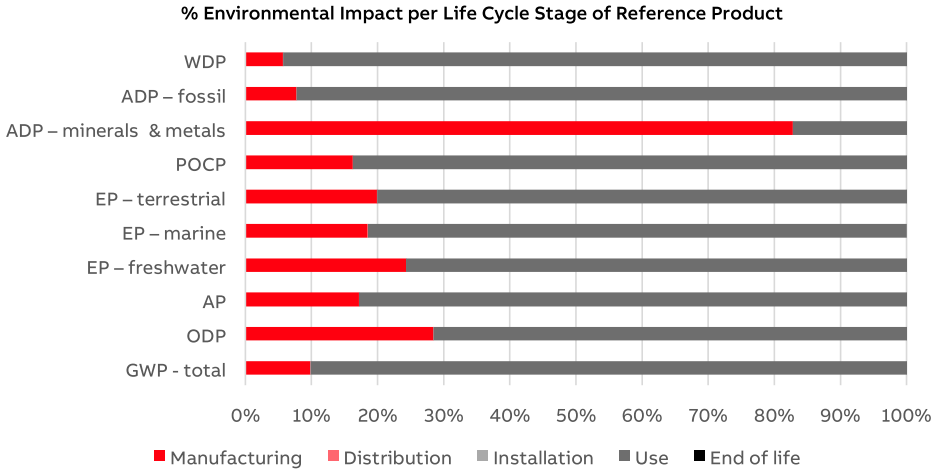
| | |
|---|---|
| **Manufacturing** | Manufacturing of plastic component of SCU100 in ABB Switzerland Ltd. CMC Low Voltage Products at Schaffhausen<br>Manufacturing of electronics of SCU100 by external supplier in Poland<br>Manufacturing of Modbus Adapter by external supplier globally |
| **Distribution** | Global distribution from Schaffhausen to countries where product was sold in 2022-2023 |
| **Installation** | For the installation of the product, only standard tools are needed. The installation stage includes the disposal of the packaging and the transport of packaging materials to disposal |
| **Use** | The product does not require special maintenance operations |
| **End of life** | The end of life stage is modelled according to PCR-ed4-EN-2021 09 06 and PSR-0005-ed3.1-EN-2023 08 12 |
| **Benefits and loads beyond the system boundaries** | The benefits are modelled according to PCR-ed4-EN-2021 09 06 methodology of calculating net benefits and loads beyond the system boundaries stage |

# Environmental Impacts

| | |
|---|---|
| **Reference lifetime** | 10 years |
| **Product category** | PCR-ed4-EN-2021 09 06<br>PSR-0005-ed3.1-EN-2023 08 12<br>Other equipment - active products |
| **Installation elements** | No additional elements needed during installation |
| **Use scenario** | Reference service life - 10 years<br>ON operating mode - power consumption 40 W, 100% use time<br>OFF operating mode - power consumption 0W, 0% use time rate |
| **Geographical representativeness** | Manufacturing: Switzerland, Poland, Global<br>Other stages: Global |
| **Technological representativeness** | Manufacturing representative of the year 2022<br>Primary data on materials were collected<br>The process datasets used are representative of the average industrial technology for a specific product group |
| **Software and database used** | SimaPro 9.6.0.1 and ecoinvent 3.9.1 |

| **Energy model used** | |
|---|---|
| **Manufacturing** | Swiss, Polish and global medium voltage |
| **Installation** | Medium voltage of countries where product was sold in 2022-2023 |
| **Use** | Low voltage of countries where product was sold in 2022-2023 |
| **End of life** | Medium voltage of countries where product was sold in 2022-2023 |

# Common base of mandatory indicators




## Environmental impact indicators

| Indicator | Unit | Total | Manu-facturing | Distri-bution | Installation | Use | End of life | Bene-fits |
|---|---|---|---|---|---|---|---|---|
| **GWP-total** | **kg $CO_2$ eq.** | 1.68E+03 | 1.65E+02 | 1.67E-01 | 2.26E-01 | 1.51E+03 | 3.50E-01 | -8.39E+00 |
| **GWP-fossil** | **kg $CO_2$ eq.** | 1.60E+03 | 1.64E+02 | 1.66E-01 | 1.81E-02 | 1.44E+03 | 3.50E-01 | -8.33E+00 |
| **GWP-biogenic** | **kg $CO_2$ eq.** | 7.07E+01 | 7.88E-01 | 1.04E-04 | 2.08E-01 | 6.97E+01 | 2.31E-04 | -5.17E-02 |
| **GWP-luluc** | **kg $CO_2$ eq.** | 6.82E+00 | 3.09E-01 | 8.97E-05 | 7.95E-06 | 6.51E+00 | 6.66E-05 | -1.60E-02 |
| GWP-fossil = Global Warming Potential fossil fuels<br>GWP-biogenic = Global Warming Potential biogenic<br>GWP-luluc = Global Warming Potential land use and land use change | | | | | | | | |
| **ODP** | **kg CFC-11 eq.** | 3.49E-05 | 9.92E-06 | 3.35E-09 | 4.51E-10 | 2.49E-05 | 1.65E-09 | -4.92E-07 |
| ODP = Depletion potential of the stratospheric ozone layer | | | | | | | | |
| **AP** | **H+ eq.** | 6.70E+00 | 1.15E+00 | 1.30E-03 | 7.02E-05 | 5.55E+00 | 3.74E-04 | -5.92E-02 |
| AP = Acidification potential, Accumulated Exceedance | | | | | | | | |
| **EP-freshwater** | **kg P eq.** | 1.02E+00 | 2.47E-01 | 1.08E-05 | 1.55E-06 | 7.69E-01 | 1.32E-05 | -1.23E-02 |
| **EP-marine** | **kg N eq.** | 1.27E+00 | 2.35E-01 | 3.33E-04 | 2.79E-05 | 1.04E+00 | 5.37E-04 | -1.18E-02 |
| **EP-terrestrial** | **mol N eq.** | 1.28E+01 | 2.55E+00 | 3.61E-03 | 2.58E-04 | 1.02E+01 | 1.03E-03 | -1.28E-01 |
| EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment<br>EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment<br>EP-terrestrial = Eutrophication potential, Accumulated Exceedance | | | | | | | | |
| **POCP** | **kg NMVOC eq.** | 4.31E+00 | 7.00E-01 | 1.25E-03 | 9.49E-05 | 3.61E+00 | 4.24E-04 | -3.53E-02 |
| POCP = Formation potential of tropospheric ozone | | | | | | | | |
| **ADP-minerals & metals** | **kg Sb eq.** | 8.61E-02 | 7.13E-02 | 3.94E-07 | 4.50E-08 | 1.48E-02 | 3.73E-07 | -3.48E-03 |
| **ADP-fossil** | **MJ** | 2.66E+04 | 2.05E+03 | 2.37E+00 | 2.30E-01 | 2.45E+04 | 1.25E+00 | -1.04E+02 |
| ADP-minerals & metals = Abiotic depletion potential for non-fossil resources<br>ADP-fossil = Abiotic depletion for fossil resources potential | | | | | | | | |
| **WDP** | **$m^3$ eq. depr.** | 4.75E+02 | 2.71E+01 | 1.03E-02 | 5.53E-03 | 4.48E+02 | 1.79E-02 | -1.39E+00 |
| WDP = Water Deprivation potential | | | | | | | | |

# Common base of mandatory indicators

### Inventory flows indicator – Resource use indicators

| Indicator | Unit | Total | Manu-facturing | Distri-bution | Installation | Use | End of life | Bene-fits |
|---|---|---|---|---|---|---|---|---|
| **PERE** | **MJ** | 6.53E+03 | 2.32E+02 | 3.11E-02 | 4.03E-03 | 6.29E+03 | 5.27E-02 | -1.18E+01 |
| **PERM** | **MJ** | 2.37E+00 | 2.37E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PERT** | **MJ** | 6.53E+03 | 2.34E+02 | 3.11E-02 | 4.03E-03 | 6.29E+03 | 5.27E-02 | -1.18E+01 |
| **PENRE** | **MJ** | 2.66E+04 | 2.05E+03 | 2.37E+00 | 2.30E-01 | 2.45E+04 | 1.25E+00 | -1.04E+02 |
| **PENRM** | **MJ** | 4.70E+00 | 4.70E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **PENRT** | **MJ** | 2.66E+04 | 2.05E+03 | 2.37E+00 | 2.30E-01 | 2.45E+04 | 1.25E+00 | -1.04E+02 |

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM = Use of renewable primary energy resources used as raw materials
PERT = Total Use of renewable primary energy resources
PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
PENRM = Use of non-renewable primary energy resources used as raw materials
PENRT = Total Use of non-renewable primary energy resources

### Inventory flows indicator – Indicators describing the use of secondary materials, water, and energy resources

| Indicator | Unit | Total | Manu-facturing | Distri-bution | Installation | Use | End of life | Bene-fits |
|---|---|---|---|---|---|---|---|---|
| **SM** | **kg** | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **RSF** | **MJ** | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **NRSF** | **MJ** | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| **FW** | **m³** | 1.93E+01 | 1.25E+00 | 3.41E-04 | 1.89E-04 | 1.80E+01 | 5.90E-04 | -6.41E-02 |

SM = Use of secondary material
RSF = Use of renewable secondary fuels
NRSF = Use of non-renewable secondary fuels
FW = Use of net fresh water

### Inventory flows indicator – Waste category indicators

| Indicator | Unit | Total | Manu-facturing | Distri-bution | Installation | Use | End of life | Bene-fits |
|---|---|---|---|---|---|---|---|---|
| **Hazardous waste disposed** | **kg** | 7.51E-02 | 8.93E-03 | 1.42E-05 | 1.40E-06 | 6.62E-02 | 6.47E-06 | -4.93E-04 |
| **Non- hazardous waste disposed** | **kg** | 1.23E+02 | 1.15E+01 | 1.73E-01 | 2.06E-02 | 1.11E+02 | 3.66E-01 | -5.94E-01 |
| **Radioactive waste disposed** | **kg** | 1.18E-01 | 4.81E-03 | 6.22E-07 | 7.13E-08 | 1.13E-01 | 9.23E-07 | -2.44E-04 |

# Common base of mandatory indicators

### Inventory flows indicator – Output flow indicators

| Indicator | Unit | Total | Manu-facturing | Distri-bution | Installation | Use | End of life | Bene-fits |
|---|---|---|---|---|---|---|---|---|
| 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 | 7.57E-02 | 3.64E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.94E-02 | 0.00E+00 |
| Materials for energy recovery | kg | 1.04E-01 | 2.03E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.33E-02 | 0.00E+00 |
| Exported energy | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

### Inventory flow indicator – other indicators

| Indicator | Unit | Total | Manu-facturing | Distri-bution | Installation | Use | End of life | Bene-fits |
|---|---|---|---|---|---|---|---|---|
| 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 | 8.11E-02 | 8.11E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

# Environmental Impact Indicator Glossary

## Impact indicators

| Indicator | Description | Distri-bution |
|---|---|---|
| Global warming potential (GWP) - total | Indicator of potential global warming caused by emissions to air contributing to the greenhouse effect. The total global warming potential (GWP-total) is the sum of three sub-categories of climate change.<br>GWP-total = GWP-fossil + GWP-biogenic + GWP- land use and land use change | kg $CO_2$ eq. |
| Ozone depletion (ODP) | Emissions to air that contribute to the destruction of the stratospheric ozone layer | kg CFC-11 eq. |
| Acidification of soil and water (A) | Acidification of soils and water caused by the release of certain gases to the atmosphere, such as nitrogen oxides and sulphur oxides | H+ eq. |
| Eutrophication (E) | Indicator of the contribution to eutrophication of water by the enrichment of the aquatic ecosystem with nutritional elements, e.g. industrial or domestic effluents, agriculture, etc. This indicator is divided to three: freshwater, marine and terrestrial. | kg P eq., kg N eq., mole N eq. |
| Photochemical ozone creation (POCP) | Indicator of emissions of gases that affect the creation of photochemical ozone in the lower atmosphere (smog) because of the rays of the sun. | kg NMVOC eq. |
| Depletion of abiotic resources – elements (ADPe) | Indicator of the depletion of natural non-fossil resources | kg Sb eq. |
| Depletion of abiotic resources – fossil fuels (ADPf) | The use of non-renewable fossil resources in an unsustainable way (e.g. from material to waste) | MJ (lower heating value) |
| Water Deprivation potential (WDP) | Deprivation-weighted water consumption. Assesses the potential of water deprivation, to either humans or ecosystems, building on the assumption that the less water remaining available per area, the more likely another user will be deprived. | $m^3$ eq. depr. |

## Resource use indicators

| Indicator | Description | Distri-bution |
|---|---|---|
| Total use of primary energy | Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) + Total use of renewable primary energy re-sources (primary energy and primary energy resources used as raw materials) | MJ (lower heating value) |

## References

PCR-ed4-EN-2021 09 06. Product Category Rules for Electrical, Electronic and HVAC-R Products. Paris: PEP Association.

PSR-0005-ed3.1-EN-2023 08 12. Specific Rules for Electrical switchgear and control gear Solutions.

ISO 14040: Life cycle assessment. Environmental management. Principles and Framework. International Organization for Standardization, 2006.

ISO 14044: Life cycle assessment. Environmental management. Requirements and guidelines. International Organization for Standardization, 2006.

UNI EN 15804:2012+A2:2019: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

Ecoinvent, Allocation, cut-off by classification, ecoinvent database version 3.9.1 (2023)

ABB website with the detailed information of the SCU100 product. https://new.abb.com/products/2CCG000242R0001/scu100

EN 50693:2019: Product category rules for life cycle assessments of electronic and electrical products and systems

Product Environmental Profile. Life Cycle Assessment report for SCU100 with modbus adapter

| | |
|---|---|
| Registration number: **ABBG-00529-V01.01-EN** | Drafting Rules: ***PCR-ed4-EN-2021 09 06***<br>***Supplemented by:*** ***PSR-0005-ed3.1-EN-2023 08 12*** |
| Verifier accreditation number: ***VH50*** | Information and reference documents: **www.pep-ecopassport.org** |
| Date of issue: ***06-2024*** | Validity period: **5 years** |
| **Independent verification of the declaration and data, in compliance with ISO 14025: 2006** | |
| **Internal:** ○ | **External:** ◉ |
| The PCR review was conducted by a panel of experts chaired by Julie ORGELET (DDemain) | |
| PEP are compliant with XP C08-100-1 :2016 or EN 50693:2019 or NE E38-500 :2022<br>The components of the present PEP may not be compared with elements from any other program. | |
| Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations" | |