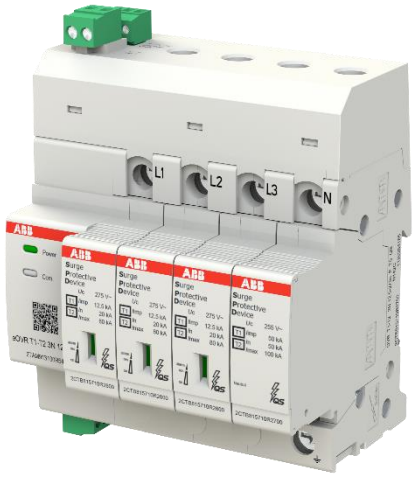
PRODUCTS FAMILY DECLARATION FOR – – eOVR SERIES OF INTELLIGENT SURGE PROTECTIVE DEVICE OF ABB

PEP ecopassport®

Product Environmental Profile



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Contact information:	**Leon-Lixiong Huang, leon-lixiong.huang@cn.abb.com**	Supplemented by:	**PSR-0005-ed3.1-EN-2023 12 08**
Verifier accreditation number:	**VH51**	Information and reference documents:	**www.pep-ecopassport.org**
Date of issue:	**September-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)			
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 14025:2006 "Environmental labels and declarations. Type III environmental declarations"			

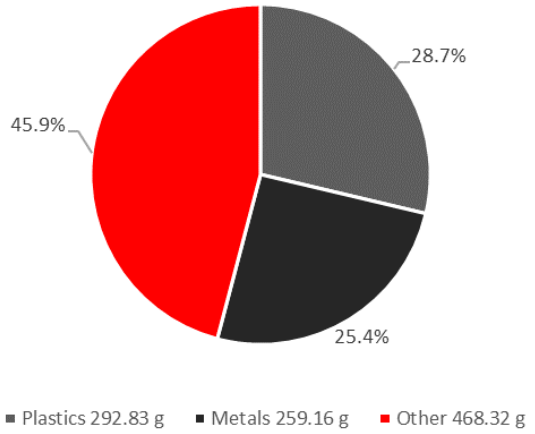
ABB Purpose & Embedding Sustainability

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.
The contect of this PEP cannot be compared with the content based on another program/database.
Scan QR code for more information

General Information

Reference product	One unit of intelligent surge protective device - produced by ABB, the representative product is eOVR T1-T2 3N 12.5-275s.
Description of the product	eOVR Series of products are Intelligent Surge Protection Device (SPD) products which protect low-voltage consumer systems against direct and indirect effects of lightning or against transient overvoltages In addition, this product also integrates various functions such as measurement, monitoring, indication, communication, etc. It monitors the in-rush current and leakage current flowing through SPD in real time, which can comprehensively realize the monitoring of the working status of SPD and its backup protector, the prediction of the whole life cycle of SPD, and the prediction of the deterioration of the MOV in the whole life stage by giving the percentage of the remaining life. The products comply with the standard IEC 61643-11 and NB/T 10284-2019 allowing their use in all application areas. The representative product is eOVR T1-T2 3N 12.5-275s.
Functional unit	Protect, against direct and indirect effects of lightning or against transient overvoltages, electronic equipment connected to networks with a rated operational voltage of up to 275 V AC, via a surge arrester of type T1+T2, with 3P+N poles, according to the appropriate use scenario (Load rate = 100% Ic, Use rate = 100 % RLT), and for the reference service life of the product of 20 years.
Products concerned	The products covered by this PEP are: eOVR Series
Manufacturing address	Organization: ABB LV INSTALLATION MATERIALS CO., LTD. BEIJING Address: NO.17 Kangding Street, Beijing Economic-Technological Development Area, Beijing, China Website: https://new.abb.com/cn

Constituent materials



Total weight of reference product and packaging	**1020.3**	**g**

Plastics as % of weight		**Metals as % of weight**		**Other as % of weight**	
Name and CAS number	Weight-%	Name and CAS number	Weight-%	Name and CAS number	Weight-%
PA66/PA6+GF	17.2	Steel	11.4	Electronic component	31.9
PA66	8.5	Cu	13.5	Corrugated board & Paper	14.0
Other plastic	3.0	Al	0.5		

These products comply with actual requirements of Low Voltage Directives - 2014/35/EU and RoHS Directives 2011/65/EU including 2014/13/EU & 2015/863/EU and do not contain or only contain in the authorised proportions lead, mercury, cadmium, hexavalent chromium or flame retardants (polybrominated biphenyls -PBB, polybrominated diphenyl ethers - PBDE) as mentioned in the Directive.

Additional Environmental Information

Manufacturing	The components are transported by lorry from the suppliers to the manufacturing site and product is assembled and packed in ABB's sub-contract plants and ABB's plant. The electricity mix on the manufacturing site of ABB's plant are photovoltaic power and hydropower of China. The electricity mix on the manufacturing site of ABB's sub-contract plants is average electricity mix of China. Production waste is assumed to be transported by lorry and treated by disposal. Specific one-year data from 2023 on the manufacturing site level was collected and allocated to the product economic allocation.
Distribution	100% distribution in China.
Installation	For the installation of the product, only standard tools (electric screw) are needed. For treatment of packaging waste, the scenario set by the PSR is followed.
Use	This product requires no servicing, no maintenance or additional products. The only energy used is low voltage electricity of China.
End of life	The reference product is assumed to be partly recycled and recovered. And the remaining part is treated to the end-of-life stage.
Benefits and loads beyond the system boundaries	/

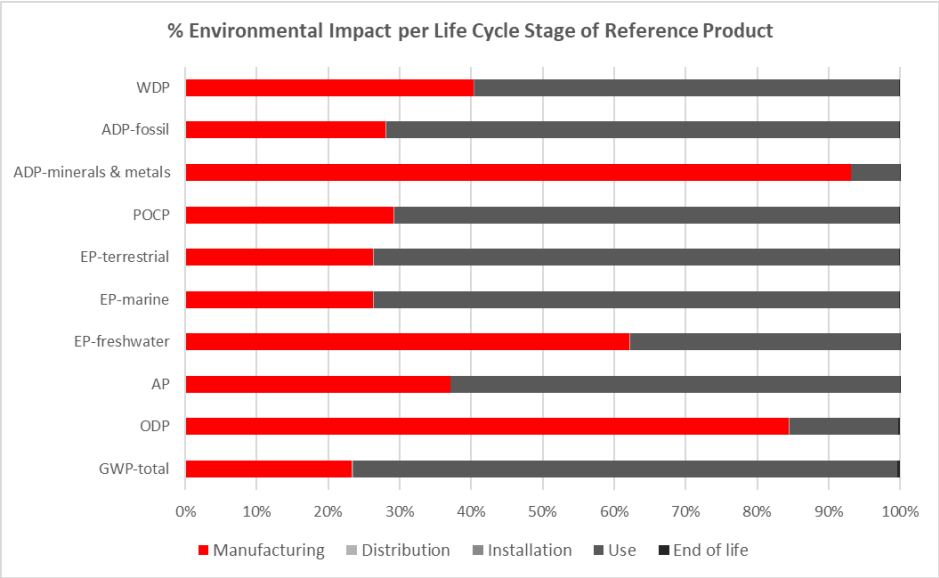
Environmental impacts

Reference lifetime	20 years.
Product category	PSR-0005-ed3.1-EN-2023 12 08, 3.13. Surge arresters
Installation elements	Electric screw is used for installation, not other material is needed.
Use scenario	Load rate=100% Ic, Use time rate: 100 % of RLT, Reference lifetime: 20 years
Geographical representativeness	Raw materials and Manufacturing: Global; Assembly: China; Distribution: China; Use: China; EoL: Global and China
Technological representativeness	In the manufacturing stage, specific data was collected to calculate the environmental impact caused by the manufacturing process. For the production of raw materials and parts, datasets from Ecoinvent 3.9.1 were used. During the dataset selection, the technological representation was considered carefully. Datasets with the same production processes were preferred. If not available, datasets with similar production processes were chosen.
Time representativeness	The generic data were extracted from databases (mainly Ecoinvent). Furthermore, the reference years of the datasets are between 2011 – 2022 and no data used in the model are older than 10 years. The primary data is from 2023.
Software and database used	SimaPro version 9.5.0.2. & databases ecoinvent 3.9.1 & EF3.1

Energy model used

Manufacturing	Materials and parts production: Global electricity mix Product assembly: average electricity mix of China
Installation	Global electricity mix and average electricity mix of China
Use	Average electricity mix of China
End of life	Global electricity mix and average electricity mix of China

Common base of mandatory indicators



Environmental impact indicators

Indicators		Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
GWP	Total	kg CO2 eq	3.92E+02	9.14E+01	3.34E-01	3.36E-01	2.98E+02	1.74E+00
	Fossil	kg CO2 eq	3.91E+02	9.12E+01	3.33E-01	1.16E-01	2.98E+02	1.74E+00
	Biogenic	kg CO2 eq	3.45E-01	6.80E-02	1.14E-04	2.19E-01	5.76E-02	2.28E-04
	Luluc	kg CO2 eq	3.21E-01	1.99E-01	1.71E-04	3.49E-05	1.22E-01	1.68E-04
ODP		kg CFC11 eq	4.19E-06	3.54E-06	5.04E-09	3.33E-10	6.38E-07	9.09E-09
AP		mol H+ eq	2.62E+00	9.70E-01	1.19E-03	4.80E-04	1.64E+00	1.72E-03
EP	Freshwater	kg P eq	1.58E-01	9.82E-02	2.71E-05	1.67E-05	5.96E-02	6.02E-05
	Marine	kg N eq	4.60E-01	1.21E-01	3.94E-04	1.09E-04	3.38E-01	5.49E-04
	Terrestrial	mol N eq	4.90E+00	1.29E+00	4.16E-03	1.13E-03	3.60E+00	5.33E-03
POPCD		kg NMVOC eq	1.35E+00	3.95E-01	1.60E-03	3.00E-04	9.55E-01	1.66E-03
ADP	minerals & metals	kg Sb eq	1.79E-02	1.66E-02	1.06E-06	3.42E-07	1.22E-03	1.29E-06
	fossil	MJ	4.04E+03	1.13E+03	4.67E+00	8.35E-01	2.90E+03	4.10E+00
WDP		m3 world eq. depr.	5.80E+01	2.34E+01	2.29E-02	1.35E-02	3.45E+01	1.14E-01

Resource use indicators

Indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
PERE	MJ	5.10E+02	1.61E+02	5.98E-02	9.59E-02	3.49E+02	1.78E-01
PERM	MJ	1.85E+00	1.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	5.11E+02	1.63E+02	5.98E-02	9.59E-02	3.49E+02	1.78E-01
PENRE	MJ	4.03E+03	1.12E+03	4.67E+00	8.35E-01	2.90E+03	4.10E+00
PENRM	MJ	9.15E+00	9.15E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	4.04E+03	1.13E+03	4.67E+00	8.35E-01	2.90E+03	4.10E+00

Common base of mandatory indicators

Use of secondary materials, water, and energy resources

Indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
SM	**kg**	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
NRSF	**MJ**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	**M³**	1.69E+00	8.51E-01	7.29E-04	3.66E-04	8.36E-01	3.33E-03

Waste category indicators

Indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Hazardous waste disposed	**kg**	3.52E-01	1.69E-01	7.18E-04	9.95E-04	1.23E-01	5.88E-02
Non-hazardous waste disposed	**kg**	3.67E+01	1.05E+01	2.27E-01	1.03E-02	2.49E+01	1.06E+00
Radioactive waste disposed	**kg**	5.55E-03	2.42E-03	9.51E-07	8.66E-07	3.13E-03	5.55E-06

Output flow indicators

Indicators	Unit	Total	Manufacturing	Distribution	Installation	Use	End of life
Components for re-use	**kg**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	**Kg**	1.79E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.79E+02
Materials for energy recovery	**Kg**	1.40E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.40E+02
Exported energy	**MJ**	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Other indicators

Indicators		Unit	Total
Biogenic carbon	**Product**	**kg of C**	0.00E+00
	Packaging	**kg of C**	5.98E-02

Note 1: In manufacturing stage, the recycled content of raw materials is 0, and scrap value is considered according to PSR. In EoL stage, recovery rate and disposal rate is based on PCR.
Note 2: As no biogenic carbon in the product, thus, only the biogenic carbon in the packaging was calculated. Of the product packaging and packaging for transportation, the materials containing biogenic carbon are wood pallet and paper board.

Extrapolation Rules

For other products than the Reference product covered by this PEP, the environmental impacts for each phase of the lifecycle are obtained by multiplying the values of the Reference product by the following coefficients:

* if the coefficient is 1, the impacts of the phase of the life cycle are assimilated to the Reference product, meaning that the impacts are unchanged in comparison to the Reference product

The impact for Manufacturing, Distribution, Installation and End of life phases of a product covered by the PEP other than the representative product is proportional to weight of the product, weight of the packaged product, weight of the product packaging and weight of the product, thus, the impacts of these phases should be separately calculated by multiple the coefficients factor_1, factor_2, factor_3, and factor_1 by the environmental impact for this phase of the representative product.

The environmental impact for Use phase of a product covered by the PEP other than the representative product is proportional to the amount of the electricity used in use stage, thus, the impacts should be calculated by multiple the coefficients factor_4 by the environmental impact for this phase of the representative product.

Product name	Manufacturing	Distribution	Installation	Use	End of life
	Factor_1	Factor_2	Factor_3	Factor_4	Factor_1
eOVR T1-T2 3N 12.5-275s	1.00	1.00	1.00	1.00	1.00
eOVR T2 3N 40-350	0.80	0.83	1.00	1.00	0.80
eOVR T2 3N 80-440s	0.94	0.95	1.00	1.00	0.94
eOVR T2-T3 3N 20-275	0.76	0.80	1.00	1.00	0.76
eOVR T2 3L 40-275s	0.70	0.75	1.00	1.00	0.70
eOVR T2-T3 1N 20-275	0.54	0.61	1.00	0.33	0.54
eOVR T2 1N 40-350	0.63	0.64	0.66	0.33	0.63
eOVR T1-T2 3N 12.5-440s	1.39	1.39	1.31	1.00	1.39
eOVR T1-T2 3L 12.5-440s	1.29	1.29	1.11	1.00	1.29
eOVR T1-T2 4L 12.5-440s	1.49	1.47	1.31	1.33	1.49

Glossary

Environmental impact Indicators	
GWP-total	Global Warming Potential total (Climate hange)
GWP-fossil	Global Warming Potential fossil
GWP-biogenic	Global Warming Potential biogenic
GWP-luluc	Global Warming Potential land use and land use change
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential
EP-freshwater	Eutrophication potential - freshwater compartment
EP-marine	Eutrophication potential - fraction of nutrients reachin marine end compartment
EP-terrestrial	Eutrophication potential - Accumulated Exceedance
POCP	Formation potential of tropospheric ozone
ADP- minerals & metals	Abiotic Depletion for non-fossil resources potential
ADP-fossil	Abiotic Depletion for fossil resources potential
WDP	Water deprivation potential

Resource use indicators	
PENRE	Use of non-renewable primary energy excluding renewable primary energy resources used as raw
PENRM	Use of non-renewable primary energy resources used as raw material
PENRT	Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials
PERE	Use of renewable primary energy excluding non-renewable primary energy resources used as raw material.
PERM	Use of renewable primary energy resources used as raw material
PERT	Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)

Secondary materials, water and energy resources		Waste category indicators	
SM	Use of secundary materials	**HWD**	Hazardous waste disposed
RSF	Use of renewable secondary fuels	**N-HWD**	Non-hazardous waste disposed
NRSF	Use of non-renewable secondary fuels	**RWD**	Radioactive waste disposed
FW	Net use of fresh water		

Output flow indicators		Optional indicators	
CfRu	Components for re-use	**Tot PE**	Total use of primary energy during the life cycle
MfR	Materials for recycling	**Efp**	Emissions of Fine particles
MfER	Materials for energy recovery	**RWD**	Radioactive waste disposed
EE	Exported Energy	**IrHH**	Ionizing radiation, human health
		ETX FW	Ecotoxicity, freshwater
		HTX CE	Human toxicity, carcinogenic effects
		HTX N-CE	Human toxicity, non-carcinogenic effects
		IrLS	Impact related to Land use / soil quality

References

[1] PCR “PEP-PCR-ed4-EN-2022_09_06” - Product Category Rules for Electrical, Electronic and HVAC-R Products (published: 6th September 2022)

[2] PSR “PSR-0005-ed3.1-EN-2023 12 08” - SPECIFIC RULES FOR Electrical switchgear and control gear Solutions

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

[4] ISO 14040:2006 - Environmental management -Life cycle assessment - Principles and framework

[5] ISO 14044:2006 - Environmental management - Life cycle assessment - Requirements and guidelinesISO 14044:2006/Amd 1:2017/Amd 2:2020 Environmental management – Life cycle assessment – Requirements and guidelines.

[6] EN 15804 +A2:2019, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

[7] ecoinvent v3.9.1 (2023). ecoinvent database version 3.9.1 - (https://ecoinvent.org/)

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[9] IEC/TR 62635 - Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment - Edition 1.0 2012-10

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[11] LB-DT 17-21D - RoHS II (MCCBs and ACBs)

[12] LB-DT 18-21D - REACH (MCCBs and ACBs)

[13] 1SDL000571R0 Ver 01 - RoHS Exemptions (MCCBs and ACBs)

[14] 1SDL000572R0 Ver 01 - SVHC present in excess of 0.1% (MCCBs and ACBs)

[15] LCA report - eOVR Series of Intelligent Surge Protective Device