ABB SN201 MINIATURE CIRCUIT BREAKER

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			
ABB S.p.A.		EPD_ELSB@abb.com			
ADDRESS		WEBSITE			
ABB S.p.A. - ELSB Viale dell'Industria 18, 20009 Vittuone (MI)		new.abb.com/it			
STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	ABBG-00602-V01.01-EN	1	en	1/16

ABB Purpose & Embedding Sustainability

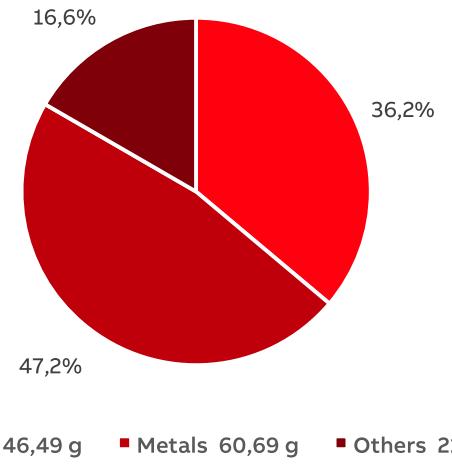
ABB is committed to continually promoting and embedding sustainability across its operations and value chain, aspiring to become a role model for others to follow. With its ABB Purpose, ABB is focusing on reducing harmful emissions, preserving natural resources and championing ethical and humane behavior.

"other points or for example a QR code or link to ABB website, where more information on the topic"

General Information

Reference product	2CSS245101R0164 - SN201 L-C16
Description of the product	The SN201 L-C16 products are universal Miniature circuit breakers ; designed for the protection of circuits against overload and short circuit.
Functional unit	Protect the installation from overloads and short circuits in a circuit with rated voltage 230V, rated current 16A, with 1P+N poles, a rated breaking capacity 6kA, and the tripping curve C, and, if applicable, the specific specifications, in the Household/Commercial application area, according to the appropriate use scenario, and during the reference service life of the product of 20 years.[1]
Other products covered	List of other products covered or a reference from page 11

Constituent Materials



Total weight of Reference product included packaging	128,6	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%
PA	24,5	**STEEL**	37,7	**CARDBOARD**	15,2
PE + PTFE + GF	7,9	**COPPER**	8,6	**Wood**	0,5
POM	1,6	**OTHER METALS**	0,7	**Paper**	0,6
PC	1,2	**Zinc**	0,2	**Miscellaneous**	0,2
PPS	0,9	–	–	–	–

Total weight of the reference product 107,8 g plus packaging 20,8 g

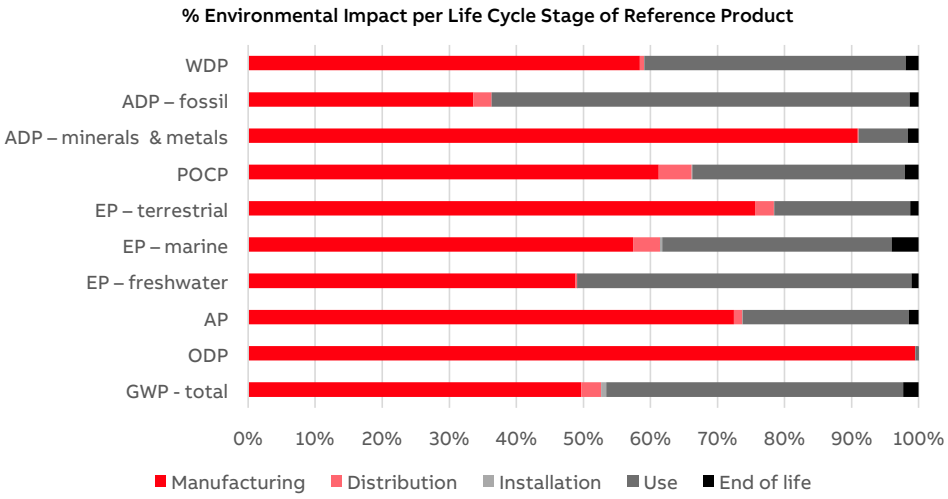
Additional Environmental Information

Manufacturing	The manufacturing stage includes the production and transportation to the manufacturer's last logistic platform of SN201 and its packaging. The production occurs at the ABB factory located in Santa Palomba (RM).
Distribution	The transport from ABB Santa Palomba factory to the Regional Distribution Centre in Vignate (Italy) was taken into account. For the distribution of the product from Vignate to the final customer, the intracontinental transport scenario provided by PCR-ed4-EN-2021 09 06 standard was adopted, considering the European macro-area.
Installation	The installation phase only implies manual activities and no energy is consumed. This phase also includes the disposal of the packaging of the product. Statistical average data from Eurostat databases [2023] were considered for the disposal of the product and its packaging.
Use	During the use phase, the product dissipates some electricity due to power losses. The average power loss of the switch has been calculated by ABB following the assumption indicated in the PSR-0005-ed3-EN-2023 06 06: • Nominal current load rate @15% (Household/Commercial scenario) • RSL of 20 years. • Functioning time of 30% of the RSL (α).No maintenance is planned for the product.
End of life	The default end of life scenario provided by the IEC/TR 62635 [2019] document has been adopted, considering the product transport by lorry over 1000 km and its disposal.
Benefits and loads beyond the system boundaries	The potential benefits derives from the impacts prevented by recycling and waste to energy recovery of the packaging in the installation phase.

Environmental Impacts

Reference lifetime	20 years
Product category	Miniature circuit-breakers
Installation elements	No installation materials are required in the life cycle of the product.
Use scenario	The calculation of the use stage electricity consumption from the average power consider the following assumptions: - Nominal current load rate as 15% (Household / Commercial); - RSL of 20 years; - Functioning time of 30% of the RSL. No maintenance is planned for the product
Geographical representativeness	Europe
Technological representativeness	Technological representativeness refers to the specific production process for primary data.
Software and database used	SimaPro 9.5 and ecoinvent 3.9.1
Energy model used	
Manufacturing	ABB GO energy mix 2022. The energy-related processes used for the remaining inputs are those included in the ecoinvent v3.9.1 datasets.
Installation	No energy consumption occur during the installation stage.
Use	Electricity, low voltage {RER}| market group for electricity, low voltage | Cut-off, S
End of life	The energy-related processes used for the inputs of the end-of-life stage are those included in the ecoinvent datasets selected for the analysis.

Common base of mandatory indicators



Environmental impact indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
GWP-total	**kg CO_2 eq.**	3,52E+00	1,75E+00	1,04E-01	2,58E-02	1,56E+00	8,09E-02	-2,38E-01
GWP-fossil	**kg CO_2 eq.**	3,27E+00	1,60E+00	1,04E-01	1,82E-03	1,51E+00	6,15E-02	-2,47E-01
GWP-biogenic	**kg CO_2 eq.**	2,49E-01	1,53E-01	9,46E-05	2,39E-02	5,26E-02	1,93E-02	8,33E-03
GWP-luluc	**kg CO_2 eq.**	5,86E-03	2,00E-03	5,08E-05	6,51E-07	3,76E-03	5,03E-05	-1,40E-04
GWP-fossil = Global Warming Potential fossil fuels GWP-biogenic = Global Warming Potential biogenic GWP-luluc = Global Warming Potential land use and land use change								
ODP	**kg CFC-11 eq.**	5,77E-06	5,74E-06	2,28E-09	3,18E-11	2,87E-08	9,07E-10	-1,70E-09
ODP = Depletion potential of the stratospheric ozone layer								
AP	**H+ eq.**	3,48E-02	2,52E-02	4,30E-04	7,90E-06	8,64E-03	4,99E-04	-5,11E-03
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	**kg P eq.**	2,86E-03	1,40E-03	7,32E-06	1,81E-07	1,43E-03	3,08E-05	-4,07E-04
EP-marine	**kg N eq.**	4,09E-03	2,35E-03	1,64E-04	1,45E-05	1,40E-03	1,65E-04	-3,94E-04
EP-terrestrial	**mol N eq.**	6,22E-02	4,70E-02	1,75E-03	2,98E-05	1,26E-02	7,80E-04	-4,88E-03
EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment EP-terrestrial = Eutrophication potential, Accumulated Exceedance								
POCP	**kg NMVOC eq.**	1,28E-02	7,85E-03	6,30E-04	1,38E-05	4,06E-03	2,66E-04	-1,63E-03
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	**kg Sb eq.**	2,49E-04	2,26E-04	3,36E-07	5,73E-09	1,83E-05	3,99E-06	-5,67E-05
ADP-fossil	**MJ**	5,50E+01	1,85E+01	1,48E+00	1,79E-02	3,43E+01	7,40E-01	-2,80E+00
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	**m^3 eq. depr.**	9,84E-01	5,75E-01	6,02E-03	1,23E-04	3,84E-01	1,88E-02	-8,74E-02
WDP = Water Deprivation potential								

Common base of mandatory indicators

Inventory flows indicator – Resource use indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
PERE	**MJ**	1,47E+01	6,92E+00	2,30E-02	8,84E-04	7,68E+00	7,38E-02	-2,19E-01
PERM	**MJ**	8,16E-01	8,16E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	**MJ**	1,55E+01	7,73E+00	2,30E-02	8,84E-04	7,68E+00	7,38E-02	-2,19E-01
PENRE	**MJ**	5,32E+01	1,67E+01	1,48E+00	1,79E-02	3,43E+01	7,40E-01	-2,80E+00
PENRM	**MJ**	1,78E+00	1,78E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	**MJ**	5,50E+01	1,85E+01	1,48E+00	1,79E-02	3,43E+01	7,40E-01	-2,80E+00

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 (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
SM	**kg**	1,54E-02	1,54E-02	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	**m^3**	5,22E-02	2,36E-02	2,11E-04	7,82E-06	2,77E-02	6,25E-04	-2,22E-03

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 (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Hazardous waste disposed	**kg**	3,25E-04	2,51E-04	9,44E-06	1,04E-07	6,02E-05	3,68E-06	-9,07E-06
Non- hazardous waste disposed	**kg**	5,92E-01	2,89E-01	7,24E-02	7,30E-03	1,38E-01	8,52E-02	-3,97E-02
Radioactive waste disposed	**kg**	2,80E-04	2,99E-05	4,82E-07	1,88E-08	2,47E-04	2,14E-06	-2,13E-07

Common base of mandatory indicators

Inventory flows indicator – Output flow indicators

Indicator	Unit	Total (no Benefits)	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	2,20E-01	1,52E-01	0,00E+00	1,19E-02	0,00E+00	5,69E-02	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	4,02E-02	0,00E+00	0,00E+00	1,23E-02	0,00E+00	2,79E-02	0,00E+00

Inventory flow indicator – other indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Biogenic carbon content of the product	kg of C	1,79E-04	1,79E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	---
Biogenic carbon content of the associated packaging	kg of C	2,58E-02	2,58E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	---

Optional indicators

Environmental indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Total use of primary energy during the life cycle	MJ	7,05E+01	2,62E+01	1,51E+00	1,88E-02	4,19E+01	8,14E-01	-3,02E+00
Emissions of fine particles	incidence of diseases	1,96E-07	1,51E-07	8,51E-09	1,35E-10	3,17E-08	4,94E-09	-2,12E-08
Ionizing radiation, human health	kBq U235 eq.	1,09E+00	1,18E-01	1,98E-03	7,65E-05	9,66E-01	8,38E-03	-8,44E-04
Ecotoxicity (fresh water)	CTUe	3,11E+01	2,39E+01	7,31E-01	4,07E-02	5,76E+00	6,77E-01	-5,66E+00
Human toxicity, car-cinogenic effects	CTUh	7,88E-09	5,76E-09	4,75E-11	1,66E-12	7,08E-10	1,36E-09	-2,54E-10
Human toxicity, non-carcinogenic effects	incidence of diseases	2,48E-07	2,11E-07	1,04E-09	3,53E-11	2,82E-08	8,32E-09	-5,59E-08
Impact related to land use/soil quality		3,47E+01	2,67E+01	8,83E-01	1,11E-02	6,68E+00	4,48E-01	-1,48E+00

Other indicators

Indicator	Unit	Total (no Benefits)	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
No Other indicators used								

Extrapolation Factors

For other products than the Reference product covered by this PEP, the environmental impacts for each phase of the lifecycle are obtained by a linear correlation with respect to weight for the production, distribution, and end-of-life phase and with respect to average power loss for the use phase. Each environmental indicator value shall be calculated using the following formulas:

Impact	MANUFACTURING		DISTRIBUTION		INSTALLATION		USE		END OF LIFE	
	a1	b1	a2	b2	a3	b3	a4	b4	a5	b5
Climate change	1,48E-02	2,29E-01	8,03E-04	2,13E-02	0,00E+00	2,58E-02	4,34E-01	5,32E-05	7,85E-04	-2,81E-05
Climate change - Fossil	1,39E-02	1,62E-01	8,02E-04	2,13E-02	0,00E+00	1,82E-03	4,18E-01	5,12E-05	5,97E-04	-2,13E-05
Climate change - Biogenic	8,46E-04	6,59E-02	7,30E-07	1,94E-05	0,00E+00	2,39E-02	1,46E-02	1,79E-06	1,88E-04	-6,71E-06
Climate change - Land use and LU change	1,37E-05	5,87E-04	3,92E-07	1,04E-05	0,00E+00	6,51E-07	1,04E-03	1,28E-07	4,88E-07	-1,75E-08
Ozone depletion	5,57E-08	4,10E-09	1,76E-11	4,66E-10	0,00E+00	3,18E-11	7,98E-09	9,77E-13	8,81E-12	-3,15E-13
Acidification	2,24E-04	2,20E-03	3,32E-06	8,82E-05	0,00E+00	7,90E-06	2,40E-03	2,94E-07	4,84E-06	-1,73E-07
Eutrophication, freshwater	1,25E-05	1,10E-04	5,65E-08	1,50E-06	0,00E+00	1,81E-07	3,96E-04	4,85E-08	2,99E-07	-1,07E-08
Eutrophication, marine	1,91E-05	3,75E-04	1,27E-06	3,36E-05	0,00E+00	1,45E-05	3,88E-04	4,75E-08	1,60E-06	-5,72E-08
Eutrophication, terrestrial	4,19E-04	3,86E-03	1,35E-05	3,59E-04	0,00E+00	2,98E-05	3,51E-03	4,30E-07	7,57E-06	-2,71E-07
Photochemical ozone formation	6,52E-05	1,13E-03	4,86E-06	1,29E-04	0,00E+00	1,38E-05	1,13E-03	1,38E-07	2,58E-06	-9,22E-08
Resource use, minerals and metals	2,02E-06	1,80E-05	2,59E-09	6,88E-08	0,00E+00	5,73E-09	5,07E-06	6,21E-10	3,88E-08	-1,38E-09
Resource use, fossils	1,58E-01	2,27E+00	1,14E-02	3,04E-01	0,00E+00	1,79E-02	9,52E+00	1,17E-03	7,19E-03	-2,57E-04
Water use (from AWARE)	4,73E-03	8,77E-02	4,64E-05	1,23E-03	0,00E+00	1,23E-04	1,07E-01	1,31E-05	1,82E-04	-6,52E-06
Components for re-use	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	9,58E-04	5,29E-02	0,00E+00	0,00E+00	0,00E+00	1,19E-02	0,00E+00	0,00E+00	5,53E-04	-1,97E-05
Materials for energy recovery	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,23E-02	0,00E+00	0,00E+00	2,71E-04	-9,67E-06
Particulate matter	1,33E-09	1,44E-08	6,57E-11	1,75E-09	0,00E+00	1,35E-10	8,80E-09	1,08E-12	4,80E-11	-1,71E-12
Ionising radiation	1,00E-03	1,52E-02	1,53E-05	4,07E-04	0,00E+00	7,65E-05	2,68E-01	3,29E-05	8,14E-05	-2,91E-06
PENRE	1,41E-01	2,16E+00	1,14E-02	3,04E-01	0,00E+00	1,79E-02	9,52E+00	1,17E-03	7,19E-03	-2,57E-04
PENRM	1,63E-02	1,01E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	1,58E-01	2,27E+00	1,14E-02	3,04E-01	0,00E+00	1,79E-02	9,52E+00	1,17E-03	7,19E-03	-2,57E-04
PERE	4,07E-02	2,73E+00	1,78E-04	4,72E-03	0,00E+00	8,84E-04	2,13E+00	2,61E-04	7,16E-04	-2,56E-05
PERM	2,73E-03	5,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	4,34E-02	3,26E+00	1,78E-04	4,72E-03	0,00E+00	8,84E-04	2,13E+00	2,61E-04	7,16E-04	-2,56E-05
PE	2,01E-01	5,53E+00	1,16E-02	3,09E-01	0,00E+00	1,88E-02	1,17E+01	1,43E-03	7,91E-03	-2,82E-04
Use of secondary material	0,00E+00	1,54E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of renewable secondary fuels	0,00E+00	0,00E+00	0,00E+00	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	0,00E+00	0,00E+00	0,00E+00	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	1,69E-04	6,18E-03	1,63E-06	4,33E-05	0,00E+00	7,82E-06	7,71E-03	9,44E-07	6,07E-06	-2,17E-07
Hazardous waste disposed	2,24E-06	2,02E-05	7,28E-08	1,93E-06	0,00E+00	1,04E-07	1,67E-05	2,05E-09	3,57E-08	-1,28E-09
Non-hazardous waste disposed	2,41E-03	4,16E-02	5,59E-04	1,48E-02	0,00E+00	7,30E-03	3,83E-02	4,69E-06	8,28E-04	-2,96E-05
Radioactive waste disposed	2,53E-07	3,87E-06	3,72E-09	9,87E-08	0,00E+00	1,88E-08	6,87E-05	8,41E-09	2,08E-08	-7,44E-10
Ecotoxicity, freshwater	2,14E-01	1,82E+00	5,65E-03	1,50E-01	0,00E+00	4,07E-02	1,60E+00	1,96E-04	6,57E-03	-2,35E-04
Human toxicity, cancer	4,95E-11	6,64E-10	3,66E-13	9,73E-12	0,00E+00	1,66E-12	1,97E-10	2,41E-14	1,32E-11	-4,73E-13
Human toxicity, non-cancer	1,82E-09	2,33E-08	8,06E-12	2,14E-10	0,00E+00	3,53E-11	7,84E-09	9,60E-13	8,08E-11	-2,89E-12
Land use	1,57E-01	1,06E+01	6,81E-03	1,81E-01	0,00E+00	1,11E-02	1,86E+00	2,27E-04	4,35E-03	-1,56E-04
Biogenic C content_product	1,74E-06	-6,22E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biogenic C content_packaging	8,30E-05	1,72E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

PE = Total use of primary energy during the life cycle
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

Extrapolation Factors

ABB Code of the specific product	Name	Weight of the product [g]	Avg power loss @15%In [w]
2CDS251220U0165	SN201S-B16 HAF	1,03E+02	8,10E-02
2CDS251220R0165	SN201S-B16 HAF	1,03E+02	8,10E-02
2CDS251220R0164	SN201S-C16 HAF	1,03E+02	8,10E-02
2CSS245101R0105	SN201 L-B10	1,03E+02	4,30E-02
2CSS245101R0025	SN201 L-B2	1,03E+02	4,70E-02
2CSS245101R0165	SN201 L-B16	1,03E+02	8,10E-02
2CSS245101R0064	SN201 L-C6	1,03E+02	5,20E-02
2CSS245101R0044	SN201 L-C4	1,03E+02	5,40E-02
2CSS255101R0134	SN201-C13	1,03E+02	8,10E-02
2CSS255101R0034	SN201 C3	1,03E+02	5,40E-02
2CSS245101R0104	SN201 L-C10	1,03E+02	4,30E-02
2CSS255101R0204	SN201-C20	1,10E+02	1,08E-01
2CSS255101R0024	SN201-C2	1,03E+02	4,70E-02
2CSS245101R0024	SN201 L-C2	1,03E+02	4,70E-02
2CSS255101R0164	SN201-C16	1,03E+02	8,10E-02
2CSS245101R0164	SN201 L-C16	1,03E+02	8,10E-02
2CSS255101R0404	SN201-C40	1,12E+02	1,69E-01
2CSS245102R0164	SN201 L-C16-L	1,03E+02	8,10E-02
2CSS245101R0045	SN201 L-B4	1,03E+02	5,40E-02
2CSS245102R0404	SN201 L-C40-L	1,12E+02	1,69E-01
2CSS255101R0255	SN201-B25	1,10E+02	9,90E-02
2CSS245102R0204	SN201 L-C20-L	1,10E+02	1,08E-01
2CSS255101R0325	SN201-B32	1,12E+02	1,51E-01
2CSS245101R0065	SN201 L-B6	1,03E+02	5,20E-02
2CSS245102R0254	SN201 L-C25-L	1,10E+02	9,90E-02
2CSS255101R0405	SN201-B40	1,12E+02	1,69E-01
2CSS235102R0324	SN201 T-C32-L	1,12E+02	1,51E-01
2CSS245102R0324	SN201 L-C32-L	1,12E+02	1,51E-01
2CSS235102R0204	SN201 T-C20-L	1,10E+02	1,08E-01
2CSS255101R0165	SN201-B16	1,03E+02	8,10E-02
2CSS245102R0014	SN201 L-C1-L	1,03E+02	4,70E-02
2CSS245202R0324	SN201S L-C32-L	1,12E+02	1,51E-01
2CSS235102R0254	SN201 T-C25-L	1,10E+02	9,90E-02
2CSS235102R0024	SN201 T-C2-L	1,03E+02	4,70E-02
2CSS245102R0134	SN201 L-C13-L	1,03E+02	8,10E-02
2CSS255101R0105	SN201-B10	1,03E+02	4,30E-02
2CSS245202R0404	SN201S L-C40-L	1,12E+02	1,69E-01
2CSS235102R0064	SN201 T-C6-L	1,03E+02	5,20E-02
2CSS245202R0024	SN201S L-C2-L	1,03E+02	4,70E-02
2CSS235102U0104	SN201 T-C10 U-L	1,03E+02	4,30E-02
2CSS255101R0161	SN201-D16	1,03E+02	8,10E-02
2CSS235102R0104	SN201 T-C10-L	1,03E+02	4,30E-02

Extrapolation Factors

ABB Code of the specific product	Name	Weight of the product [g]	Avg power loss @15%In [w]
2CSS245101R0324	SN201 L-C32	1,12E+02	1,51E-01
2CSS255101R0064	SN201-C6	1,03E+02	5,20E-02
2CSS235102U0164	SN201 T-C16 U-L	1,03E+02	8,10E-02
2CSS245101R0404	SN201 L-C40	1,12E+02	1,69E-01
2CSS245202R0044	SN201S L-C4-L	1,03E+02	5,40E-02
2CSS235102R0134	SN201 T-C13-L	1,03E+02	8,10E-02
2CSS235102U0204	SN201 T-C20 U-L	1,10E+02	1,08E-01
2CSS245101R0204	SN201 L-C20	1,10E+02	1,08E-01
2CSS245202R0064	SN201S L-C6-L	1,03E+02	5,20E-02
2CSS235102R0164	SN201 T-C16-L	1,03E+02	8,10E-02
2CSS245102R0024	SN201 L-C2-L	1,03E+02	4,70E-02
2CSS255101R0044	SN201-C4	1,03E+02	5,40E-02
2CSS245202R0254	SN201S L-C25-L	1,10E+02	9,90E-02
2CSS235102U0324	SN201 T-C32 U-L	1,12E+02	1,51E-01
2CSS255101R0324	SN201-C32	1,12E+02	1,51E-01
2CSS245202R0204	SN201S L-C20-L	1,10E+02	1,08E-01
2CSS235102U1104	SN201 T-C10-L	1,03E+02	4,30E-02
2CSS245102R0104	SN201 L-C10-L	1,03E+02	4,30E-02
2CSS255101R0254	SN201-C25	1,10E+02	9,90E-02
2CSS235102U1164	SN201 T-C16-L	1,03E+02	8,10E-02
2CSS245101R0254	SN201 L-C25	1,10E+02	9,90E-02
2CSS245202R0164	SN201S L-C16-L	1,03E+02	8,10E-02
2CSS245102R0064	SN201 L-C6-L	1,03E+02	5,20E-02
2CSS245202R0104	SN201S L-C10-L	1,03E+02	4,30E-02
2CSS235102U1204	SN201 T-C20-L	1,10E+02	1,08E-01
2CSS245102R0044	SN201 L-C4-L	1,03E+02	5,40E-02
2CSS255101R0101	SN201-D10	1,03E+02	4,30E-02
2CSS245202R0134	SN201S L-C13-L	1,03E+02	8,10E-02
2CSS235102U1324	SN201 T-C32-L	1,12E+02	1,51E-01
2CSS255101R0321	SN201-D32	1,12E+02	1,51E-01
2CSS245202R0014	SN201S L-C1-L	1,03E+02	4,70E-02
2CSS245101R0405	SN201 L-B40	1,12E+02	1,69E-01
2CSS245101R0205	SN201 L-B20	1,10E+02	1,08E-01
2CSS255101R0104	SN201-C10	1,03E+02	4,30E-02
2CSS245101R0255	SN201 L-B25	1,10E+02	9,90E-02
2CSS255101R0061	SN201-D6	1,03E+02	5,20E-02
2CSS255101R0205	SN201-B20	1,10E+02	1,08E-01
2CSS245101R0325	SN201 L-B32	1,12E+02	1,51E-01
2CSS255101R0251	SN201-D25	1,10E+02	9,90E-02
2CSS255101R0201	SN201-D20	1,10E+02	1,08E-01
2CSS255101R0065	SN201-B6	1,03E+02	5,20E-02
2CSS255101R0401	SN201-D40	1,12E+02	1,69E-01

Extrapolation Factors

ABB Code of the specific product	Name	Weight of the product [g]	Avg power loss @15%In [w]
2CSS255101R0135	SN201-B13	1,03E+02	8,10E-02
2CSS245105R0105	SN201 L-B10 240V	1,03E+02	4,30E-02
2CSS245105R0325	SN201 L-B32 240V	1,12E+02	1,51E-01
2CSS245105R0205	SN201 L-B20 240V	1,10E+02	1,08E-01
2CSS245105R0065	SN201 L-B6 240V	1,03E+02	5,20E-02
2CSS245102R0034	SN201 L-C3-L	1,03E+02	5,40E-02
2CSS255102R0024	SN201-C2-L	1,03E+02	4,70E-02
2CSS255102R0204	SN201-C20-L	1,10E+02	1,08E-01
2CSS255102R0201	SN201-D20-L	1,10E+02	1,08E-01
2CSS255102R0164	SN201-C16-L	1,03E+02	8,10E-02
2CSS255102R0161	SN201-D16-L	1,03E+02	8,10E-02
2CSS255102R0101	SN201-D10-L	1,03E+02	4,30E-02
2CSS255102R0044	SN201-C4-L	1,03E+02	5,40E-02
2CSS255102R0404	SN201-C40-L	1,12E+02	1,69E-01
2CSS255102R0061	SN201-D6-L	1,03E+02	5,20E-02
2CSS255102R0251	SN201-D25-L	1,10E+02	9,90E-02
2CSS255102R0254	SN201-C25-L	1,10E+02	9,90E-02
2CSS255102R0401	SN201-D40-L	1,12E+02	1,69E-01
2CSS255102R0324	SN201-C32-L	1,12E+02	1,51E-01
2CSS255105R0404	SN201-C40 240V	1,12E+02	1,69E-01
2CSS255105R0325	SN201-B32 240V	1,12E+02	1,51E-01
2CSS275101R0064	SN201 M-C6	1,03E+02	5,20E-02
2CSS255102R0321	SN201-D32-L	1,12E+02	1,51E-01
2CSS275101R0065	SN201 M-B6	1,03E+02	5,20E-02
2CSS255102R0064	SN201-C6-L	1,03E+02	5,20E-02
2CSS275101R0165	SN201 M-B16	1,03E+02	8,10E-02
2CSS255102R0104	SN201-C10-L	1,03E+02	4,30E-02
2CSS255105R0104	SN201-C10 240V	1,03E+02	4,30E-02
2CSS275101R0105	SN201 M-B10	1,03E+02	4,30E-02
2CSS275101R0104	SN201 M-C10	1,03E+02	4,30E-02
2CSS255105R0324	SN201-C32 240V	1,12E+02	1,51E-01
2CSS275101R0405	SN201 M-B40	1,12E+02	1,69E-01
2CSS255105R0105	SN201-B10 240V	1,03E+02	4,30E-02
2CSS255105R0204	SN201-C20 240V	1,10E+02	1,08E-01
2CSS275101R0255	SN201 M-B25	1,10E+02	9,90E-02
2CSS255105R0254	SN201-C25 240V	1,10E+02	9,90E-02
2CSS275101R0325	SN201 M-B32	1,12E+02	1,51E-01
2CSS255105R0134	SN201-C13 240V	1,03E+02	8,10E-02
2CSS275101R0404	SN201 M-C40	1,12E+02	1,69E-01
2CSS255105R0061	SN201-D6 240V	1,03E+02	5,20E-02
2CSS255105R0044	SN201-C4 240V	1,03E+02	5,40E-02
2CSS275101R0044	SN201 M-C4	1,03E+02	5,40E-02

Extrapolation Factors

ABB Code of the specific product	Name	Weight of the product [g]	Avg power loss @15%In [w]
2CSS255105R0024	SN201-C2 240V	1,03E+02	4,70E-02
2CSS275101R0324	SN201 M-C32	1,12E+02	1,51E-01
2CSS255105R0065	SN201-B6 240V	1,03E+02	5,20E-02
2CSS275101R0164	SN201 M-C16	1,03E+02	8,10E-02
2CSS255105R0164	SN201-C16 240V	1,03E+02	8,10E-02
2CSS275101R0254	SN201 M-C25	1,10E+02	9,90E-02
2CSS255105R0064	SN201-C6 240V	1,03E+02	5,20E-02
2CSS275101R0204	SN201 M-C20	1,10E+02	1,08E-01
2CSS275101R0024	SN201 M-C2	1,03E+02	4,70E-02
2CSS275101R0205	SN201 M-B20	1,10E+02	1,08E-01
2CSS275105R0254	SN201 M-C25 240V	1,10E+02	9,90E-02
2CSS275105R0204	SN201 M-C20 240V	1,10E+02	1,08E-01
2CSS275105R0104	SN201 M-C10 240V	1,03E+02	4,30E-02
2CSS275105R0024	SN201 M-C2 240V	1,03E+02	4,70E-02
2CSS275105R0044	SN201 M-C4 240V	1,03E+02	5,40E-02
2CSS275105R0164	SN201 M-C16 240V	1,03E+02	8,10E-02
2CSS275105R0064	SN201 M-C6 240V	1,03E+02	5,20E-02
2CSS275105R0404	SN201 M-C40 240V	1,12E+02	1,69E-01
2CSS275105R0324	SN201 M-C32 240V	1,12E+02	1,51E-01

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. 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

PEP ecopassport® PROGRAM. PCR-ed4-EN-2021 09 06. Product Category Rules for Electrical. Electronic and HVAC-R Products.
PEP ecopassport® PROGRAMME. PSR-0005-ed3-EN-2023 06 06. Specific rules for Electrical switchgear and control gear Solutions.
PRé Consultants. Software SimaPro 9.5. 2022 (www.simapro.com).
ISO 14040:2006/Amd 1:2020. Life cycle assessment. Environmental management. Principles and Framework. International Organization for Standardization. 2020.
ISO 14044:2006/Amd 1:2017/Amd 2:2020. Life cycle assessment. Environmental management. Requirements and guidelines. International Organization for Standardization. 2020.
ABB website. (https://global.abb/group/en/about) [accessed 12-01-2023].
ABB website. (https://global.abb/group/en/sustainability/sustainability-strategy-2030) [accessed 12-01-2023].
ABB website. (https://new.abb.com/low-voltage/products/system-pro-m/residual-current-devices/dda200) [accessed 15-12-2023].
Ecoinvent. 2022. Swiss Centre for Life Cycle Assessment. v3.9.1 (www.ecoinvent.ch).
UNI EN 15804:2012+A2:2019: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
Google Maps. (https://www.google.it/maps/preview).
Sea Rates. (https://www.searates.com/).
VAC – Advanced Magnetic Solutions, VITROPERM® 800 / 500 (VITROPERM 500 - 800.pdf (vacuumschmelze.com)).
Wikipedia, Alnico (Alnico - Wikipedia).
Kruzhanov, Vladislav & Arnhold, Volker. (2012). Energy consumption in powder metallurgical manufacturing. Powder Metallurgy. 55. 14-21. 10.1179/174329012X13318077875722 ((PDF) Energy consumption in powder metallurgical manufacturing (researchgate.net)).
GO CERTIFICATES ABB SPA 2022.
Eurostat. (https://ec.europa.eu/eurostat/web/products-datasets/-/ENV_WASPAC).
Eurostat. (https://ec.europa.eu/eurostat/web/products-datasets/-/ENV_WASTRT).
International Electrotechnical Commission. IEC/TR 62635 Ed. 1.0 en:2012. Guidelines For End-Of-Life Information Provided By Manufacturers And Recyclers And For Recyclability Rate Calculation Of Electrical And Electronic Equipment. 2012. ISBN 978-2-83220-413-9.
Product Environmental Footprint (PEF), Annex_C_V2.1_May2020.
Imballaggi & Riciclo. 2011. Packaging in legno dalla culla alla culla.
PlasticFinder (https://www.plasticfinder.it/) [accessed 06-03-2024].
Delem, L. and Wastiels, L., 2019, IOP Conf. Ser.: Earth Environ, The practical use of module D in a building case study: assumptions, limitations and methodological issues, Sci. 323 012048.
EEA (European Environment Agency), Technical report No 3/2012. Annual European Union greenhouse gas inventory 1990–2010 and inventory report 2012

Registration number: **ABBG-00602-V01.01-EN**	Drafting Rules: ***PCR-ed4-EN-2021 09 06*** ***Supplemented by:*** ***PSR-0005-ed3-EN-2023 06 06***
Verifier accreditation number: ***VH50***	Information and reference documents: **www.pep-ecopassport.org**
Date of issue: ***05-2024***	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 The components of the present PEP cannot be compared with components from any other program.	
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations"	