Busch-Jaeger Elektro GmbH

LED ROTARY DIMMER WITH N TERMINAL

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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Freisenbergstraße 2, 58513 Lüdenscheid, Germany		https://www.busch-jaeger.de/online-katalog/detail/2CKA006512A0353			
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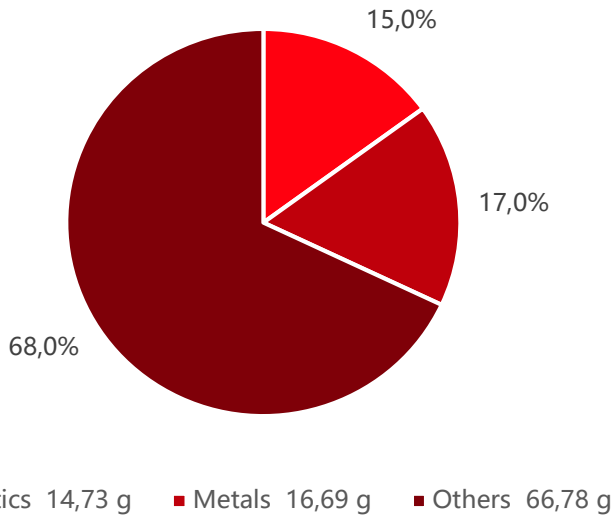
ABB Purpose & Embedding Sustainability

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	LED Rotary Dimmer with N-Terminal (6523 UR-104 / 2CKA006512A0353)
Description of the product	The Dimmer is used for switching and dimming LED bulbs and luminaires. It is designed for indoor use only and installed in a flush mounted wall box.
Functional unit	Establish, support and interrupt the rated current I and rated voltage U, and, if applicable, the specific specifications, for a wall-mounted installation, according to the appropriate use scenario, and for the reference service life of the product of 20 years.
Other products covered	LED-Dim. 2+3 w, N-terminal, w/o claws (6523 UR-104-500 / 2CKA006512A0354)

Constituent Materials



Total weight of Reference product with packaging	98,2	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 reinforced plastic	3,0	Aluminum	10,0	PCBA	26,0
Nylon	8,0	Stainless steel	1,0	Cardboard (packaging)	42,0
Flass fiber	4,0	Unalloyed steel	6,0	–	x

The product is in conformity with the provisions of RoHS directive 2011/65/EU, covering 2015/863(EU), REACH regulation No 1907/2006 and national legislation.

Additional Environmental Information

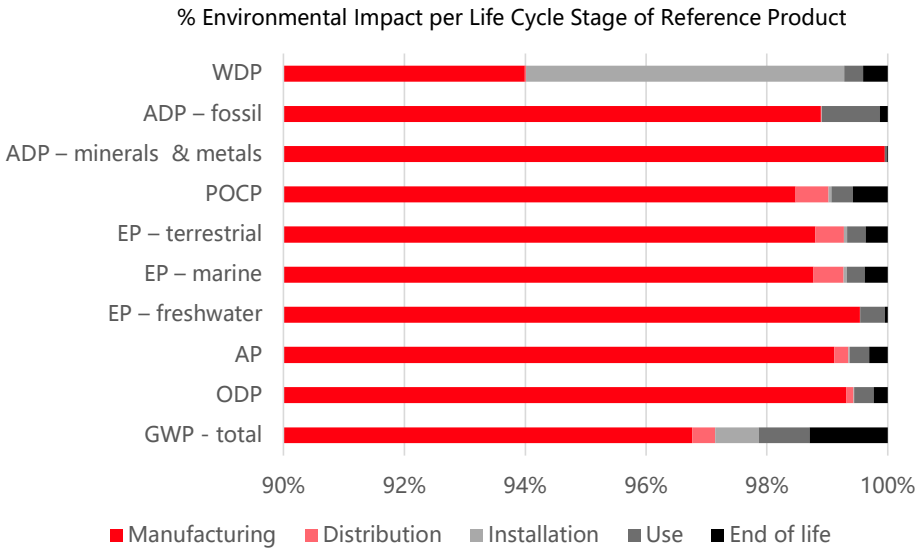
Manufacturing	The LED Rotary Dimmer with N Terminal is produced at and delivered from two internal BJE sites in Germany. One site is in Lüdenscheid and the other one in Bad Berleburg/Aue. No recycled material content is assumed. All components are transported by lorry from the supplier to these two manufacturing sites.The manufacturing waste for all materials is included. The electricity mix on both manufacturing sites is largely renewable from Scandinavian hydropower and rooftop solar power on the Lüdenscheid site (together 90% in Bad Berleburg/Aue and 89% in Lüdenscheid). Instead of hydropwer, a German market mix for electricity was modelled to avoid double counting. The amount of natural gas for both on-site electricity generation (CHP) and heating, as well as the emissions of both was used as an input to the model. All CO2 emissions are compensated through ClimatePartner, but this compensation is not accounted for in the EPD. For transport of waste from the manufacturing site to the treatment facility, the default distance of 100 km by truck is used, in line with chapter 3.1.5.1.2 of PSR-0005-ed3. Specific one-year data from 2023 on manufacturing site level was collected and allocated to the products components which are manufactured in-house by mass allocation following the requirements of ISO 14044.
Distribution	The transport scenario is estimated based on the distance to the capital city of the countries it is sold to, according to the sales data for 2023.
Installation	Installation is done manually without using energy or other auxiliary materials. Treatment of packaging waste is included in this stage, assuming the European end-of-life scenario mentioned in chapter 5.1.5.2.1 of the PSR.
Use	The power consumption of the switch is 0,036 W. With a 30% use time rate and a load rate of 10% for (in line with the PSR), this comes down to a power consumption of 0,25 kWh over the reference lifetime of 20 years. A regional electricity mix is used to model the fraction of the product to each destination country.
End of life	The standard scenario set in the PCR is consideredm with parameters listed in Appendix D and a transport distance of 1000 km.
Benefits and loads beyond the system boundaries	Steel has a recovery rate of 80% and aluminum has one of 70% according to the PCR. The Module D formula from the PCR was used to calculate the benefits of these components. Other materials were not included here, due to a material recovery rate of 0. For the product packaging, the default (European) end-of-life data from chapter 3.1.5.2.1 of the PSR is used to determine the recycling rates. According to that, cardboard and paper have a recovery rate of 82%, which are also included in this stage.

Environmental Impacts

Reference lifetime	20 year (for which 1,3 products are needed)
Product category	3.7 "Switches"
Installation elements	Not applicable
Use scenario	Wall-mounted switch for all application areas
Geographical representativeness	Production site data is for Germany, and all other data has a European scope.
Technological representativeness	Materials and process data are specific for the production of LED Rotary Dimmer with N Terminal.
Software and database used	SimaPro version 9.6.0.1 and Ecoinvent 3.10

Energy model used	
Manufacturing	Electricity, high voltage {DE}| market for | Cut-off, U Electricity, low voltage {DE}| electricity production, photovoltaic, 3kWp slanted-roof installation, single-Si, panel, mounted | Cut-off, U Natural gas, high pressure {DE}| market for | Cut-off, S
Installation	Not applicable
Use	Electricity, low voltage {AT}| market for electricity, low voltage | Cut-off, S Electricity, low voltage {DE}| market for electricity, low voltage | Cut-off, S Electricity, low voltage {NL}| market for electricity, low voltage | Cut-off, S
End of life	Not applicable

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.	1,23E+01	1,19E+01	4,73E-02	8,88E-02	1,04E-01	1,59E-01	-1,33E-01
GWP-fossil	kg CO_2 eq.	1,22E+01	1,19E+01	4,73E-02	3,55E-03	9,69E-02	1,52E-01	-1,41E-01
GWP-biogenic	kg CO_2 eq.	1,16E-01	1,61E-02	6,31E-06	8,52E-02	6,91E-03	7,51E-03	1,05E-02
GWP-luluc	kg CO_2 eq.	1,66E-02	1,65E-02	2,85E-06	1,75E-06	1,41E-04	2,80E-05	-1,91E-03
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.	6,12E-07	6,07E-07	7,14E-10	6,09E-11	1,96E-09	1,43E-09	-2,15E-09
ODP = Depletion potential of the stratospheric ozone layer								
AP	H+ eq.	8,30E-02	8,23E-02	1,93E-04	2,08E-05	2,67E-04	2,55E-04	-8,58E-04
AP = Acidification potential, Accumulated Exceedance								
EP-freshwater	kg P eq.	2,44E-03	2,43E-03	8,21E-08	6,83E-08	9,91E-06	1,17E-06	-7,82E-06
EP-marine	kg N eq.	1,56E-02	1,54E-02	7,78E-05	8,38E-06	4,65E-05	5,91E-05	-1,63E-04
EP-terrestrial	mol N eq.	1,79E-01	1,77E-01	8,51E-04	8,71E-05	5,53E-04	6,55E-04	-1,58E-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.	5,01E-02	4,93E-02	2,74E-04	2,45E-05	1,78E-04	2,89E-04	-5,16E-04
POCP = Formation potential of tropospheric ozone								
ADP-minerals & metals	kg Sb eq.	4,63E-03	4,63E-03	9,45E-09	8,89E-09	1,23E-06	9,07E-07	-3,85E-07
ADP-fossil	MJ	9,17E+01	9,06E+01	1,18E-02	7,44E-03	8,77E-01	1,21E-01	-8,59E-01
ADP-minerals & metals = Abiotic depletion potential for non-fossil resources ADP-fossil = Abiotic depletion for fossil resources potential								
WDP	m³ eq. depr.	3,88E+00	3,65E+00	8,60E-04	2,04E-01	1,19E-02	1,59E-02	-4,58E-02
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	1,71E+01	1,66E+01	2,22E-03	4,89E-03	5,35E-01	3,03E-02	-4,68E-01
PERM	MJ	3,69E-01	3,69E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-2,96E-01
PERT	MJ	1,75E+01	1,69E+01	2,22E-03	4,89E-03	5,35E-01	3,03E-02	-7,64E-01
PENRE	MJ	9,16E+01	9,06E+01	1,18E-02	7,44E-03	8,77E-01	1,21E-01	-8,58E-01
PENRM	MJ	9,62E-03	9,62E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	9,16E+01	9,06E+01	1,18E-02	7,44E-03	8,77E-01	1,21E-01	-8,58E-01

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	1,27E-01	1,21E-01	2,84E-05	4,78E-03	9,70E-04	4,51E-04	-2,95E-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	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Hazardous waste disposed	kg	3,49E-02	2,65E-04	0,00E+00	0,00E+00	0,00E+00	3,47E-02	0,00E+00
Non- hazardous waste disposed	kg	5,78E-02	2,27E-02	0,00E+00	9,79E-03	0,00E+00	2,53E-02	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

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	8,80E-02	2,69E-02	0,00E+00	4,46E-02	0,00E+00	1,65E-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	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	0,00E+00	2,47E-02	0,00E+00	-2,47E-02	0,00E+00	0,00E+00	0,00E+00

Optional indicators

Environmental indicators

Indicator	Unit	Total	Manu-facturing	Distri-bution	Installation	Use	End of life	Bene-fits
Total use of primary energy during the life cycle	MJ	1,09E+02	1,08E+02	1,41E-02	1,23E-02	1,41E+00	1,51E-01	-1,62E+00
Emissions of fine particles	incidence of diseases	6,42E-07	6,36E-07	4,32E-10	2,29E-10	1,25E-09	3,45E-09	-9,14E-09
Ionizing radiation, human health	kBq U235 eq.	6,42E-07	4,95E-01	7,24E-05	5,12E-05	4,85E-03	8,41E-04	-5,34E-03
Ecotoxicity (fresh water)	CTUe	6,42E-07	2,48E+02	6,20E-02	1,18E-01	1,64E+00	4,09E+00	-1,86E+00
Human toxicity, car-cinogenic effects	CTUh	6,42E-07	3,04E-08	4,24E-11	2,81E-11	2,17E-10	4,67E-10	-5,09E-09
Human toxicity, non-carcinogenic effects	incidence of diseases	6,42E-07	4,22E-07	5,17E-10	2,36E-10	1,50E-09	1,51E-09	-2,84E-09
Impact related to land use/soil quality		6,42E-07	5,49E+01	3,98E-02	2,85E-02	4,89E-01	2,95E-01	-1,86E+00

Other indicators

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

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)

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Date of issue: ***09-2024***	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
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"