

PRESENCE DETECTOR KNX

Product Environmental Profile

Environmental Product Declaration



Document in compliance with ISO 14025: 2010 "Environmental labels and declarations. Type III environmental declarations"

ORGANIZATION		CONTACT INFORMATION			
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STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
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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.



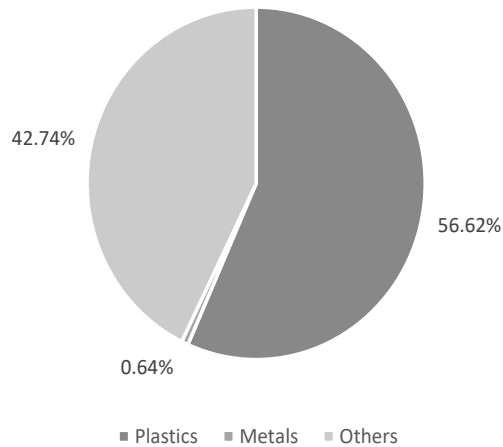
General Information

Reference product	Presence Detector corridor - premium - studio white mat (2CKA006132A0411)
Description of the product	The product family covered in this study is called Presence Detector KNX. It is designed for switching and regulating lighting systems and/or HKL (HVAC) systems in dependence of brightness and/or movement. It makes possible the specific deactivation and activation of light rows in dependence of the brightness of the room, and dimming/regulating the brightness to a defined value in a designated detection range with the corresponding device is also possible. The reference product additionally contains a room temperature controller object, as it is the premium version of the product. The presence detector is designed for the indoor application, and the installation is conducted by professionals with the help of manual tooling.
Functional unit	Regulate during 10 years the activation, deactivation and level of brightness of light rows in dependence of brightness and/or movement in the room, while remaining on standby mode in the absence of movement, with the option to regulate the brightness and temperature of a room to a defined value.
Other products covered	Variant 1: PD mini – basic: 2CKA006132A0329, 2CKA006132A0330, 2CKA006132A0342, 2CKA006132A0343, 2CKA006132A0435, 2CKA006132A0436; Variant 2: PD mini - premium: 2CKA006132A0331, 2CKA006132A0332, 2CKA006132A0344, 2CKA006132A0345, 2CKA006132A0437, 2CKA006132A0438; Variant 3: PD standard - basic: 2CKA006132A0333, 2CKA006132A0334, 2CKA006132A0346, 2CKA006132A0347, 2CKA006131A0056, 2CKA006132A0439, 2CKA006132A0440, 2CKA006132A0441; Variant 4: PD standard - premium: 2CKA006132A0335, 2CKA006132A0336, 2CKA006132A0348, 2CKA006132A0349, 2CKA006131A0057, 2CKA006132A0442, 2CKA006132A0443, 2CKA006132A0444; Variant 5: PD sky: 2CKA006132A0337, 2CKA006132A0350, 2CKA006132A0445, 2CKA006132A0446, 2CKA006132A0447; Variant 6: PD corridor - basic: 2CKA006132A0397, 2CKA006132A0398, 2CKA006132A0399, 2CKA006132A0400, 2CKA006131A0054, 2CKA006132A0448, 2CKA006132A0449, 2CKA006132A0450; Variant 7: PD corridor - premium: 2CKA006132A0411, 2CKA006132A0412, 2CKA006132A0413, 2CKA006132A0414, 2CKA006131A0058, 2CKA006132A0451, 2CKA006132A0452, 2CKA006132A0453;

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	PEP ecopassport®: ABBG-00134-V01.02-EN	1	en	2/12



Constituent materials



Total weight of Reference product

155,17 g including the product and its packaging

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-%
LDPE	2.59	Low-alloyed steel	0.64	Cardboard	27.07
Polycarbonate	25.93	–	–	Printed paper	5.75
Nylon 6-6	11.60	–	–	PCBA	8.89
Nylon 6	0.90	–	–	Electr. Connector	1.03
Glass fiber	11.99	–	–	–	–

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.

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	PEP ecopassport®: ABBG-00134-V01.02-EN	1	en	3/12

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Additional Environmental Information

Manufacturing	The production of the reference product happens at two different sites in Germany: Lüdenscheid and Bad Berleburg/Aue. While most metal parts are manufactured in Lüdenscheid, the thermoplast molding happens in Bad Berleburg/Aue. The PCBA is procured from Hornberg (Germany). No recycled material content is assumed. All components are transported by lorry from the supplier to these two manufacturing sites. The electricity mix on both manufacturing sites is largely renewable from Scandinavian hydropower and rooftop solar power on the Lüdenscheid site (together 82% in Bad Berleburg/Aue and 77% in Lüdenscheid). Instead of hydropower, a German electricity market mix was modelled to avoid double counting of renewable energy. The remaining power and heating demand is met by combustion of natural gas, for which all CO₂ emissions are compensated through ClimatePartner. Nevertheless, this compensation is not accounted for in the model of this EPD. Production waste is assumed to be transported by lorry (1000 km by default in the PCR) and treated by incineration (without energy recovery). Specific one-year data from 2021 on manufacturing site level was collected and allocated to the product by economic partitioning 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 2022.
Installation	Installation is done manually, without using energy or other auxiliary materials. Treatment of packaging waste is included in this stage, assuming an incineration scenario.
Use	The standby power consumption is 0,1 W, the max. operational energy consumption is 1,05kWh/year, and the product has a reference lifetime of 10 years. The use scenario described in the PSR is followed. At an active use time of 30%, the power consumption over the lifetime of the product is 9,28 kWh. A regional electricity mix is used to model the fraction of the product to each country it is sold to according to sales data.
End of life	Considering the complexity and the lack of knowledge of the electric and electronic recycling processes, the standard scenario set in the PCR is considered.
Benefits and loads beyond the system boundaries	Steel has a recovery rate of 80% according to the PCR. The Module D formula from the PCR was used to calculate the benefits of steel. Other materials were not included here, due to a material recovery rate of 0 or lack of recycling in real life scenarios.

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	PEP ecopassport®: ABBG-00134-V01.02-EN	1	en	4/12

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Environmental impacts

Reference lifetime	10 years
Product category	Other equipment
Installation elements	Not applicable
Use scenario	Supply voltage of 24V, a standby power consumption of 0,1W and a max. operational energy consumption of 1,05kWh/year.
Geographical representativeness	Production site data is for Germany, power consumption during the use stage is related to the country it is sold to, all other data has a European scope.
Technological representativeness	Materials and process data are specific for the production of the Presence Detector KNX.
Software and database used	SimaPro 9.4.0.2., ecoinvent 3.8

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, medium voltage {DE} market for Cut-off, U Electricity, medium voltage {AE} market for Cut-off, U Electricity, medium voltage {SE} market for Cut-off, U Electricity, medium voltage {CN} market for Cut-off, U Electricity, medium voltage {AU} market for Cut-off, U Electricity, medium voltage {TR} market for Cut-off, U Electricity, medium voltage {GLO} market for Cut-off, U
End of life	A market for electricity from all European countries except Switzerland and Austria is included in the dataset used to model the End of Life of steel ("Steel, low-alloyed {Europe without Switzerland and Austria} steel production, electric, low-alloyed Cut-off, U")

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	PEP ecopassport®: ABBG-00134-V01.02-EN	1	en	5/12



Common base of mandatory indicators

Inventory flows indicator – Resource use indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Benefit s
PERE	MJ	1.81E+01	9.13E+00	3.19E-03	4.94E-03	8.92E+00	8.46E-03	-1.60E-03
PERM	MJ	5.60E-01	5.60E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.86E+01	9.69E+00	3.19E-03	4.94E-03	8.92E+00	8.46E-03	-1.60E-03
PENRE	MJ	1.63E+02	8.22E+01	3.22E-01	4.68E-01	7.94E+01	6.29E-01	-1.77E-02
PENRM	MJ	6.85E+00	6.85E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	1.70E+02	8.91E+01	3.22E-01	4.68E-01	7.94E+01	6.29E-01	-1.77E-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 re-sources)								

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

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Benefit s
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	m ³	9.06E-02	5.85E-02	2.89E-05	7.74E-05	3.18E-02	2.55E-04	-9.65E-06
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	Instal- lation	Use	End of life	Benefit s
Hazardous waste disposed	kg	6.47E-03	6.47E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non- hazardous waste disposed	kg	5.93E-01	4.38E-01	0.00E+00	5.67E-02	0.00E+00	9.85E-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

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	PEP ecopassport®: ABBG-00134-V01.02-EN	1	en	7/12

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Common base of mandatory indicators

Inventory flows indicator – Output flow indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Benefit s
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	7.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.70E-03	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	Instal- lation	Use	End of life	Benefit s
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	-2.29E-02	0.00E+00	2.29E-02	0.00E+00	0.00E+00	0.00E+00

Optional indicators

Environmental indicators

Indicator	Unit	Total	Manu- facturing	Distri- bution	Instal- lation	Use	End of life	Benefit s
Total use of primary energy during the life cycle	MJ	1.88E+02	9.88E+01	3.25E-01	4.73E-01	8.83E+01	6.37E-01	-1.93E-02
Emissions of fine particles	inci- dence of dis- eases	4.31E-07	2.83E-07	1.64E-09	9.91E-10	1.42E-07	3.66E-09	-1.27E-10
Ionizing radiation, human health	kBq U235 eq.	6.63E-01	2.86E-01	1.39E-03	1.98E-03	3.71E-01	2.65E-03	-3.06E-05
Ecotoxicity (fresh water)	CTUe	5.42E+02	4.57E+02	2.25E-01	6.20E+00	7.32E+01	5.10E+00	-5.32E-02
Human toxicity, carcinogenic effects	CTUh	5.64E-09	4.35E-09	1.09E-11	8.88E-11	1.07E-09	1.22E-10	-1.07E-11
Human toxicity, non-carcinogenic effects	CTUh	2.52E-07	2.08E-07	2.04E-10	6.84E-10	4.21E-08	1.15E-09	-4.06E-11
Impact related to land use/soil quality	Pt	3.69E+01	2.67E+01	2.13E-01	9.66E-02	9.52E+00	3.45E-01	-5.54E-03

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
Approved	Public	PEP ecopassport®: ABBG-00134-V01.02-EN	1	en	9/12

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

Product name	Manufacturing	Distribution	Installation	Use	End of life	Benefits
PD mini - basic - studio white mat	0.747	0.871	0.911	1	0.848	3
PD mini - premium - studio white mat	0.833	0.877	0.911	1	0.858	3
PD standard - basic - studio white mat	0.606	0.953	0.999	1	0.926	3
PD standard - premium - studio white mat	0.739	0.966	0.999	1	0.946	3
PD sky - studio white mat	0.852	0.971	1	1	0.954	3
PD corridor - basic - studio white mat	0.933	1	1	1	1	1
PD corridor - premium - studio white mat	1	1	1	1	1	1

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Verifier accreditation number:	Information and reference documents:	
VH32	www.pep-ecopassport.org	
Date of issue:	04/2023	Validity period: 5 years

Independent verification of the declaration and data, in compliance with ISO 14025:2006

Internal	☐	External	☒
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The PCR review was conducted by a panel of experts chaired by Julie Orgelet (DDemain)

PEPs are compliant with XP C08-100-1:2016 or EN 50693:2019
The components of the present PEP may not be compared with components from any other program.

Document in compliance with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"



Environmental Impact Indicator Glossary

Impact indicators

Indicator	Description	Unit
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 e depr.

Resource use indicators

Indicator	Description	Unit
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)

STATUS	SECURITY LEVEL	REGISTRATION NUMBER	REV.	LANG.	PAGE
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